



The successful management of a small logistics company

Management of a small company

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Abstract *In this paper, a case study conducted on a small third-party logistics (3PL) company in Hong Kong is presented. This company is interesting in that it has been designated as the “king” of Hong Kong’s 3PL (in-bound) logistics companies. The company has been successful in its overall business performance and in satisfying customers. This company’s strategic alliances with both clients and customers have helped to improve the utilization of its resources, such as warehouse space and transportation fleets. Also, the company is in the process of expanding its operations across greater China, with the objective of becoming a full-pledged 3PL company. The analysis of this case focuses on the critical success factors (strategies and technologies) that have allowed a small company started only in 1996 to become so successful in its operations. Also, a framework has been provided for the company to develop its logistics operations as a full-pledged 3PL company.*

1. Introduction

Logistics encompasses all of the information and material flows throughout an organization. It includes everything from the movement of a product or from a service that needs to be rendered, through to the management of incoming raw materials, production, the storing of finished goods, its delivery to the customer and after-sales service (Pollitt, 1998). The scope of logistics has changed since the emergence of new technologies and strategic alliances in order to compete on flexibility and responsiveness. The growing importance of logistics arises from companies becoming globalized to gain access to new markets, realize greater production efficiencies, and tap technological competencies beyond their own geographical borders (McFarlan, 1984; Bovet, 1991; Cooper, 1993; Fawcett *et al.*, 1993). A reduction in trade barriers and the emergence of advanced technologies have led to a great interest in logistics in recent years. Currently, logistics operations include purchasing, distribution, the managing

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of inventories, packaging, manufacturing, and even customer services (Bowersox and Closs, 1996).

In today's highly competitive environment, many companies are aiming to gain a share of the global market and to take advantage of higher production and sourcing efficiencies. A key determinant of business performance nowadays is the role of the "logistics function" in ensuring the smooth flow of materials, products and information throughout a company's supply chains (Sum *et al.*, 2001). More recently, logistics has become more prominent and is recognized as a critical factor in competitive advantage (Bowersox and Closs, 1996; Bowersox and Daugherty, 1995; Christopher, 1992). The logistics operations process includes the inputting, storing, transporting and distributing of physical goods.

Over years, logistics has developed from single-party logistics (self-managed) to 5PL (multi-party), using e-logistics networks focusing on global operations. 3PL is contractual logistics focusing on regional operations. The main objectives behind the outsourcing of logistics services are to:

- reduce operating costs;
- meet demand fluctuations; and
- reduce capital investment.

The general problems that arise in corporate logistics include delayed and inaccurate information, incomplete services, slow and inefficient operations, and a high product damage rate. The possible consequences are an inability to provide inter-linked services, high operating costs, a rate of high inaccuracy, and a lack of flexibility in responding to changing demand requirements.

A number of researchers have examined logistics issues in a global perspective, including Fawcett *et al.* (1993), Gary and Davies (1991), Quinn and Hilmer (1994), Welch and Nayak (1992) and Wyatt (1992). The integration of logistics with other functional areas will help bring a company to realize the full potential of its value-added activities and, hence, to gain a significant competitive advantage. It will also lead to a reduction in operational costs and an improvement in customer services (Christopher, 1989; Richardson, 1995).

E-logistics and the outsourcing of logistics business processes are subsets of a larger external logistics market. E-logistics can be defined as the transfer of goods and services using Internet communication technologies such as electronic data interchange (EDI), e-mail and World Wide Web (WWW). The supply chain is an integrated business model for logistics management. It covers the flow of goods from suppliers through manufacturing and distribution chains to the end consumer. Christopher (1992) argued that the real competition is not company against company, but rather supply chain against supply chain. In recent years, information systems (IS) are increasingly being regarded as resources that support various business processes (Alshawi, 2001).

Feraud (1998) pointed out similarities between the strategic management of information technology and logistics information management. Some researchers (Baglin *et al.*, 1996; Christopher, 1997; and Cooper, 1994) have explained the close links between information systems and the management of logistics. Chiu (1995) presented an integrated framework to improve the performance of distribution systems. He also highlighted the role of information technology (IT) in improving the efficiency of the logistics value chain.

Mourits and Evers (1996) have argued that complex logistics activities, such as stocks that need replenishing, deliveries that need routing and orders that need to be coordinated, require intensive communication. Due to the intensity of global competition, the performance of the logistics supply chain is considered an important strategic weapon to achieve and maintain competitive strength. Carter and Narasimhan (1990) and Bettis *et al.* (1992) pointed to the significant benefits that firms can derive from international purchasing. Quinn and Hilmer (1994) discussed how core competencies should be identified in evaluating items to be outsourced. Welch and Nayak (1992), Babbar and Prasad (1998) and Fawcett *et al.* (1993) explained how firms could become world-class competitors through global sourcing. All of this places a tremendous amount of pressure on companies to develop their logistics systems in order to manage complex global outsourcing and markets in a competitive manner. As indicated earlier, this has forced many manufacturing companies to outsource their logistics service requirements, leading to the growth of 3PL.

Aldin and Stahre (2003) presented a conceptual model (see Figure 1) for logistics supply chain management, with a special focus on 3PL. This model consists of three major components:

- (1) logistics structure;
- (2) logistics processes and related activities; and
- (3) information and reporting systems.

All three components are essential for a successful 3PL operation. Logistics structure includes the participants in the logistics processes, inventory storage points, multi-echelon distribution centers and warehouses. Logistics processes and related activities comprise order fulfillment processes, customer relationship management, and customer service, and procurement and demand management. Finally, information and reporting systems are essential for any management system, as they drive the decisions based on the data collected. These include the designing and planning of information systems, control and coordination, and cross-organizational coordination. IT such as the intranet, extranet, Internet, WWW and EDI facilitate the integration of activities in the logistics supply chain (Angeles, 2000; Calza and Passaro, 1997).

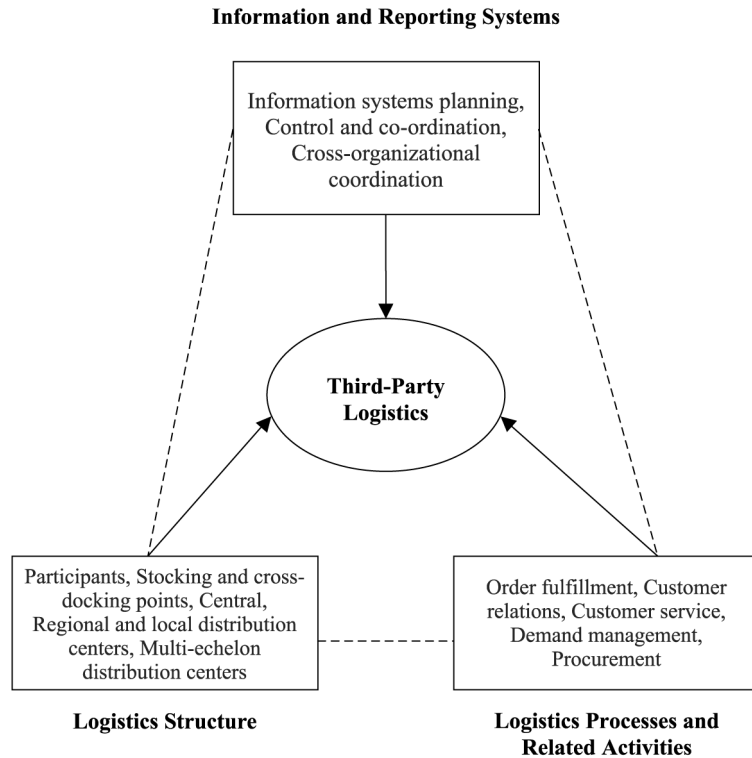


Figure 1.
A conceptual model for
supply chain
management

Source: Aldin and Stahre (2003)

Rao *et al.* (1993) discussed the role of 3PL in the logistics processes of global firms. Lieb *et al.* (1993) presented the results of a comparative study of 3PL services in American and European manufacturing companies. Some of the logistics activities include transport, transshipment, maintenance of the inventory, and the assembling or reconditioning of products. Korpela and Lehmusvaara (1999) argued that the problem of the location of a distribution center or warehouse is a strategic-level network design problem. This means that the nature of the decision is a long-term one; hence, the decision on where to locate a warehouse will have an impact on the profitability of a company for years.

The organization of the paper is as follows: section 2 presents the background for the research. The research methodology and a conceptual model for 3PL are presented in section 3. A case study is presented and analyzed in section 4, with reference to the model developed in section 3. Section 5 includes the lessons learned from the case study and a generic framework for developing an effective and comprehensive 3PL system. A summary and the conclusions are presented in section 6.

2. Background for the research

Logistics has a tremendous potential to play a major strategic role in companies. With increased global competition, the logistics function can be further exploited to allow a company to gain a competitive advantage (Sum *et al.*, 2001). Logistics can be defined as a process of operation that includes the purchasing, storing, transporting, and distributing of physical goods. Logistics can be classified into two types: social logistics and corporate logistics. Corporate logistics includes supply logistics, production logistics, sales logistics, reverse logistics and disposal logistics. Most companies prefer 3PL. In the new economy, the focus has been on core strengths; and on providing real-time information, globalizing service demands, visibility in key performance indicators, collaboration in supply chain operations, and e-commerce development (Deborah, 1997).

An overview of the functions that logistics service providers (LSP) typically perform, based on a survey among buyers of logistics services, is provided by Sink *et al.* (1996). The details are provided in Table I.

The logistics literature can be classified into two categories:

- (1) logistics users (e.g. manufacturers and retailers); and
- (2) logistics service providers (i.e. third-party logistics services).

Our case study deals with logistics service providers, i.e. 3PL. For good logistics management, Chiu (1995) highlighted the importance of integrating IT with logistics management concepts. He identified the critical success factors in effective logistics management. These include: good planning of the logistics system, a well-designed distribution organization, the prudent selection of allied companies, a close relationship with trading partners, good logistics investment analysis, the elimination of barriers to logistics management, the commitment of top management, and continuous improvement in logistics.

The Internet has been used as a dynamic medium of communication for channeling transactions between customers and firms in a virtual marketplace.

Function	Activities
Transportation	Shipping, forwarding, (de)consolidation, contract delivery, freight bill payment/audit, household goods, relocation, load tendering, brokering
Warehousing	Storing, receiving, assembling, returning goods, marking/labeling, knitting
Inventory management	Forecasting, location analysis, network consulting, slotting/layout design
Order processing	Order entry fulfillment
Information systems	EDI, e-commerce, Internet, WWW, routing/scheduling, AI and expert systems
Packaging	Designing, recycling

Source: Adapted from Sink *et al.* (1996)

Table I.
Activities of logistics
service providers

In particular, the WWW has emerged as a powerful new channel for distribution, eliminating many intermediaries and radically restructuring the value chain in several industries. Rao (1999) described how the Internet has had an impact on channels of distribution in three major industries: retailing; banking, brokerage and financial services; and music distribution.

The Web platform has several advantages, which will allow a company to overcome some traditional logistics problems. These include: real-time information on inventories, single data entry to minimize human errors as inputting of the data is handled by customers themselves and there is no need to re-enter the information, a real-time online ordering function, and multi-level password control so that different functions can have different access levels, controlled by the respective authorized people. Ligon *et al.* (1992) discussed the role of EDI in logistics services. Peng and Vellenga (1993) highlighted the importance of government support in promoting logistics services with reference to China. Feraud (1998) presented a framework for improving strategic decision making in logistics information management.

A review of the literature suggests that there are few studies on small- and medium-sized logistics companies. However, the role of 3PL has become increasingly important and, hence, the role of small- and medium-sized logistics (SML) companies. Many such companies lack strategic plans and are taking advantage of the benefits of implementing IT to facilitate the sharing of information among partners who are geographically dispersed all the over the world but are a part of the logistics supply chain. In this paper, we describe the success and challenges of a small logistics company located in Hong Kong. We use this opportunity to discuss how the development of a strategic partnership has led to the development of a successful logistics company. In the end, a framework has been proposed to take the company's logistics systems to the next level; i.e. to turn the company into a full-pledged 3PL company. There is no doubt in our minds that some of the experiences and lessons learned from this case study will be of benefit to other companies in developing their logistics systems for improved organizational performance and, hence, competitiveness.

3. Research methodology and a conceptual model for 3PL

In this section, the research methodology used and the conceptual framework employed in discussing the case study are presented. The conceptual framework was drawn up based on the literature survey and on some reported case experiences.

3.1 Research methodology

The methodology used in this research was based on a survey of the literature in the field and on a case study conducted at a small logistics company in Hong Kong. First, we reviewed the studies on small- and medium-sized logistics

companies with the objective of understanding the background of their logistics functions and the challenges that lie ahead as they strive to become more competitive. An empirical survey would provide macro perspectives, but we are interested in the detailed issues and problems that small- and medium-sized logistics companies face in the current operating environment. The data required for the case analysis have been collected by interviewing the CEO, the managing director and senior managers of the company with the help of a standard questionnaire addressing the research questions. Also, the company's annual reports and newsletters have been referred to for the data collection. The main objective of this research is to understand how the company has developed over the years, the changes it has undergone in the past and the opportunities for further development. We analyzed the history of the company, its strategic objectives and goals, strategies, and the methods and technologies they used to bring the company to the position it is in now. We also made an attempt to provide a framework describing how they can develop the company as a full-pledged 3PL.

3.2 The conceptual model for 3PL

A 3PL model with five major dimensions has been proposed. These are:

- (1) strategic planning;
- (2) inventory management;
- (3) transportation;
- (4) capacity planning; and
- (5) information technology.

This model has the objective of developing management control systems, resource management systems and integrating logistics activities. The details of the model are given in Figure 2.

Managing a small 3PL company requires strategic planning, which involves the making of long-term decisions concerning 3PL operations. These decisions should include those on corporate strategy such as the nature of the logistics business (e.g. transportation, warehousing, etc.), the location of distribution centers, outsourcing, the size of the business, and the budget for running the logistics business. Inventory management includes planning, coordinating and controlling of materials flow along the logistics supply chain. The major decisions should involve the volume and timing of orders and deliveries, and the packing of items in batches (consolidation). There are several constraints influencing the level of stock and the speed of the material flow along the logistics supply chain. The level of stock and the speeds the material flow also depend upon the nature of the supply and demand. Transportation or shipping involves such matters as the modes of transportation, utilization of available capacity, scheduling of transportation equipment and maintenance of transportation facilities. Next comes capacity planning. The management of

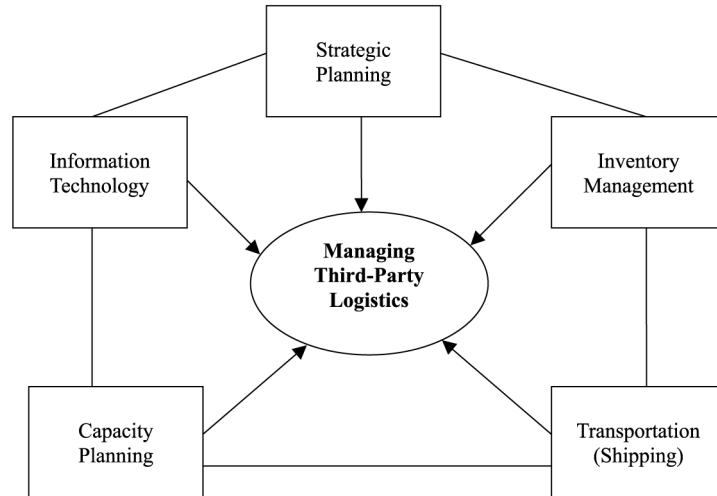


Figure 2.
A conceptual model for
3PL

both long-term and short-term demand drives the level of capacity required. For example, long-term decisions should revolve around issues such as the number of warehouses or distribution centers and their capacity; the number of transportation vehicles and the capacity of the material handling equipment, including the number of workers. These are, of course, driven by the demand for products along the logistics supply chain. Finally, information technology or systems help to integrate the activities in all of these areas by collecting the data on the performance and utilization of resources and, based on this, making the required changes to the logistics operations. Various types of IT can be used, including intranet, Internet and extranet, together with EDI, WWW and enterprise resource planning (ERP). The use of IT also involves data mining and data warehousing.

4. The case study

The conceptual model presented in Figure 2 has been used to discuss the case study. This case study starts with a discussion of the company's background and goes on to analyze the case company's logistics planning and operations.

4.1 Company background

The company considered for this case study, "Tolam Logistics (TL)", is located in Hong Kong. Its founder, Mr Eric Lam, established it in 1996. Mr Lam has over 20 years of experience in freight forwarding and delivery transportation. The company has five major customers including Toshiba, Carrier, Kelon, Sanyo Electronics (Hong Kong) and Alpa (Fuji's air conditioner and Fujitsu's plasma TV). It has rented 100,000 sq. feet of warehouse space in Hong Kong and owns about 32 trucks. The company's main operations include the distribution of goods and some value-added services. It employs over 100

full-time workers, including management staff. They make up one transportation team. Three part-time teams can be put together when required. The company has no overseas office at present. In 2002, the company recorded an annual turnover of HK\$30 million, with a profit margin of about 20 percent. It does not have any overseas office at present, but may in the future, most probably in mainland China.

The following are the major (in-bound logistics) operations at TL:

- drayage (i.e. container cargo handling and transportation from the port to the warehouse);
- vanning and devanning (i.e. break-bulk cargo handling for warehousing or delivery);
- import declaration;
- direct-to-store and warehouse bypass;
- warehousing and inventory management;
- testing and repackaging;
- local delivery (with selective deliveries);
- reverse logistics; and
- value-added services: quality checking and repairs, etc.

TL has some Web-enabled logistics operations, which were developed in 2002. The company also aims to expand into a full-pledged 3PL service provider in about two to three years.

4.2. Case analysis

Tolam Logistics is a logistics company that focuses on distributing goods sent by clients once they are received at TL's warehouse. Since the company's major operations are warehousing and distribution (*en phase* of downstream logistics), we decided to focus on these. The objective of the case study is to discuss the strategies, methods and technologies employed by TL in the following areas (see Figure 2):

- strategic planning;
- inventory management;
- transportation (shipping);
- capacity planning; and
- information technology.

China's unprecedented economic growth has strained its logistics infrastructure to the limit. The movement of goods is hampered by an inadequate transportation infrastructure and underdeveloped telecommunications network. For example, transport and warehouse capacity has not kept up with the demand for products. In addition, the lack

of coordination between central and provincial governments continues to be a problem, especially when seeking approvals from state officials. In such an environment of burgeoning demand, inadequate infrastructure and predominantly state-controlled logistics resources, multinational firms operating in China face a number of barriers to logistic success (Pollitt, 1998). This provides opportunities for even small logistics companies in Hong Kong, such as TL.

4.2.1 Strategic planning. TL has aligned with five major customers, Toshiba, Carrier, Kelon (all home-appliance makers), Sanyo Electronics (HK) and Alpa (Fuji's air-conditioner, Fujitsu's plasma TV). The company has focused on home appliances. In fact, TL is the largest 3PL (in-bound) logistics service provider in Hong Kong for appliances. Accordingly, it has developed the required facilities such as warehouses, transportation fleets and human resources. TL has received some support from clients regarding their logistics services requirements. The company is now expanding its logistics operations to mainland China, with the objective of becoming a full-pledged 3PL service provider in about two to three years. Also, when TL makes its deliveries to customers, local customs are followed in dealing with customers. This is important in improving customer satisfaction.

4.2.2 Inventory management. TL has a just-in-time inventory system. The delivery schedules of clients and consumer orders drive the management of the inventories. Goods are received during the night and are delivered to consumers in the daytime. TL has a quarterly rolling forecast horizon for warehouse space and transportation fleet capacity requirements. Companies reserve space in the warehouse based on the volume of their goods to be distributed in Hong Kong during a three-month time period. Clients such as Toshiba will pay for the space based on cubic meters.

4.2.3 Transportation planning. TL has its own trucks, about 32 in number. It does not outsource transportation services; however, at times, if the demand exceeds its service capacity, it will make use of that option. In cases of insufficient demand on the capacity of the fleet, TL does not hesitate to keep its trucks idle. They could certainly utilize their vehicles more efficiently, perhaps by contracting out their trucks for other purposes.

4.2.4 Capacity planning. TL owns all of the trucks that are used for distributing goods to its customers. However, the company has no permanent employees to operate the trucks, as they are hired when required. TL owns its own trucks but does not have full-time employees to drive them. There are 8-10 groups of people that TL regularly uses when hiring operators for its trucks. These individuals who are hired directly by TL on an as-needed basis therefore called employees. Each group of employees is team-managed and empowered. TL needs to forecast the growth in the logistic services so that it can be prepared to increase its capacity when the demand exceeds the available capacity. Clients pay for the warehouse space. A shared information system

facilitates coordination in dealing with just-in-time (JIT) deliveries and managing the inventory. A long-term relationship with, and the loyalty of, clients has led to the ability to manage the space available judiciously. The issue of reverse logistics is given due consideration in estimating the capacity required for storage space and transportation.

4.2.5 Information technology. TL has several legacy systems (computer) to serve different needs, such as for order recording, order delivery, and so on. Each client has a separate database that is operated independently of the information systems of other clients. Right now, TL is in the process of migrating to a more advanced and integrated IT system that will give the company the scope to expand their operations. The process of changing IT systems involves looking at the business process and considering if it needs to be reengineered before deciding on the architecture of the IT system for the company. The IT vendor mainly looked at the requirements of TL's clients regarding what sort of information should be made available, when and to whom. The IT system will attempt to bring in the concept of supply chain (SC). TL has decided to implement three major modules including order processing, warehousing and transportation. Sometimes, clients such as Toshiba prefer to have the originals of the invoice, to avoid any discrepancy in the process. The IT system will be based on object-oriented modeling and programming, with an SQL database. The plan is to integrate the IT system with the Web so that a Web-based logistics information system can be made available over time for TL. TL does have some problems integrating all of the legacy systems (for different clients). To overcome this problem, TL is in the processes of migrating to a Web-based information system with a common platform for all of the clients. This standardization can be accomplished only with the cooperation of all of the clients.

5. Lessons learned and a framework for developing an effective 3PL

A generic framework has been presented with the objective of developing a comprehensive 3PL for a small- to medium-sized company. This framework was based on a survey of the literature and on the case analysis, together with some critical success factors drawn from this research.

5.1 The lessons learned

The following are the lessons that have been learned from this study of Tolam Logistics that can be useful for other SML companies:

- A long-term relationship with, and the loyalty of, clients such as Toshiba and Sanyo Electronics: a good relationship with clients is very important. When clients develop confidence in a logistics company, this can lead to a business partnership. This requires networking with people along the value chain, to establish communication between them to facilitate collaboration.

- The localization of services combined with the delivery of goods: companies should locate their services such that they can deliver the goods on time with minimum cost. TL is located in Hong Kong to focus on Hong Kong customers.
- Strategic alliances with clients right from the inception of the company, to enable the company to take off with the required capital and other support resources including business for the facility: this highlights the role of a partnership between clients and the company in developing the organization. Partnership is not a question of resources, but of establishing demand for logistics services. A partnership will also facilitate knowledge and technology transfer between companies, especially when the company is in the stage of development.
- Customer relationship management (CRM) focusing on clients to make sure that there is no communication gap so that goods are made available as required and delivered on time: there are several ways by which communication between the logistics company and clients can be established. These include via strategic alliances, frequent meetings between suppliers and customers, and shared information systems.
- TL has an excellent feedback system on the timely delivery of goods and on whether any articles have been damaged: a high quality of logistics services is essential for the long-term survival and prosperity of a company. To ensure this requires the use of suitable performance measures and metrics to measure the quality of services and customer satisfaction along the logistics value chain.
- Value-added services (such as how to use the goods delivered) help to improve levels of customer satisfaction with the goods and services and, hence, represent an increased business opportunity: customer satisfaction cannot be improved simply by delivering the goods on time, but by additional services to ensure the products are fully functional and that the intended services are delivered to customers.
- Excellent reverse logistics services to instill confidence in customers in the goods: most companies suffer from poor after-sales service, including the return of products for replacement or for services. Since companies sell products on the Internet, an excellent reverse logistics service system is required so that customers can develop confidence in the overall service process. For example, companies like Bestbuy, Dell and Gateway have excellent reverse logistics service systems.
- The company uses a simple (absorption) costing system. However, the company needs to adopt a new costing method, such as activity-based costing (ABC), for their logistics operations that might open up further opportunities for improvement by eliminating non-value-added activities.

5.2 *A framework for the development of an effective 3PL*

A framework for developing an efficient 3PL system is presented in Table II. This framework consists of five major dimensions:

- (1) strategic planning;
- (2) inventory management;
- (3) transportation (shipping);
- (4) capacity planning; and
- (5) information technology.

Some of the major underlying activities in each of these areas are listed in the second column of Table II. The corresponding strategies/techniques and technologies are presented in columns 3 and 4, respectively.

5.2.1 Strategic planning. Generally speaking, small logistics companies have problems with acquiring enough capital, resources and skills. They also tend to lag behind in the implementation of IT systems such as EDI, intranet, Internet, extranet and ERP. At the same time small- and medium-sized companies are flexible and innovative when it comes to logistics operations. Because of the size of SML companies and the budget available to them for technology and skills, the forming of strategic alliances is a necessary means for them to be able to compete in logistics markets. Most small- and medium-sized enterprises (SMEs) lack a strategic plan, and end up working for short-term benefits. If companies are to survive in the long term, they should think about how to achieve their long-term survival and prosperity. For example, SMEs can form strategic alliances with both large and small companies, depending upon their core competencies and market opportunities. Also, government support is essential in helping SME logistics operators plan for their long-term survival.

Groupware and shared information systems such as WWW, Internet, EDI and ERP will support the development of corporate/business strategies by providing information on the market and infrastructure for 3PL services. Top management is essential for the development of appropriate strategies.

5.2.2 Inventory management. Inventory management is at the core of the logistics management function. All of the other functions revolve around managing the inventory with the objective of making available the right products, at the right time, in the right quantity, and in a cost-competitive manner. SML companies should forecast the demand for products at different points along the logistics value chain. Also, location analysis will influence the management of inventories. Order management involves planning the order and the resources required to deliver orders/goods on time, and controlling the delivery process in case things do not go according to plan. Several strategies/techniques are useful for inventory management, including the demand-pull system, JIT, material requirements planning (MRP), SCM and demand management. IT systems such as MRPII, EDI, ERP, WWW, and e-procurement can be used for managing inventories along the logistics value chain.

Table II.
A framework for transforming a SML company into a comprehensive 3PL company

Function	Activities	Strategies/techniques	Technologies
Strategic planning	Corporate/business strategy development, resource management, budgeting, product/service selection, market segment analysis	Forming strategic alliances, outsourcing, forecasting demand, aggregate planning, selecting partners, selecting criteria for partnership, gaining the support of top management, improving continuously, getting government support	Groupware, shared information systems such as WWW, the Internet and EDI, ERP
Inventory management	Forecasting, location analysis, network consulting, slotting/layout design, order management	Demand-pull system, just-in-time, Kanban, material requirements planning, supply chain management, demand management	MRPII, EDI, ERP, WWW, online purchasing
Transportation planning	Shipping, forwarding, de(consolidation), contract delivery, freight bill payment, load tendering and brokering	Outsourcing, forming strategic alliances, optimizing routing and scheduling, managing capacity, total productive maintenance	Groupware, Internet, e-mail, WWW, Intranet, extranet, linear programming
Capacity planning	Capacity of transportation vehicles, warehouse capacity, human resources, material handling equipment	Make or buy decisions, planning aggregate capacity, minimizing costs, maximizing capacity	Linear programming, waiting line models, scheduling optimization, MRPII, CRP, ERP
Information management	Performance measures and metrics, data collection, processing, reporting	Groupware, IT/IS, shareware, data mining, data warehousing, intranet, extranet	EDI, e-commerce, Internet, WWW, AI and expert systems, ERP

5.2.3 Transportation (shipping). Transportation planning involves shipping, forwarding, (de)consolidation, contract services, payment, local tendering and brokering. Since SML companies have limited resources, the better option is to outsource transportation services by forming strategic alliances in order to optimize routing and scheduling, with the objective of minimizing transportation costs. Many technologies are available to facilitate the effective transportation of goods. They include automated material handling devices, global positioning systems, systems for the online tracking of vehicles and delivery and payment confirmation systems. Also available for these purposes are groupware, the Internet, ERP, e-mail, WWW, intranet, Internet and extranet.

5.2.4 Capacity planning. Capacity planning is concerned with four major resources including warehousing, transportation, material handling devices and human resources. Strategies such as make or buy decisions, outsourcing, overtime and aggregate planning can be used to maximize the utilization of capacity and minimize the total costs of logistics services. Technologies such as MRPII, CRP and ERP can be used to manage capacity. Computer-aided operations research models such as linear programming, waiting line models and scheduling optimization also can be used in planning capacity, with the objective of providing high-quality customer service with minimum investment in capacity.

5.2.5 Information management. Information management deals with the managing of information systems with the objective of providing accurate information on the performance of different areas of the logistics value chain and on utilization of resources for value-adding activities. The information systems are used for measuring the performance of, and controlling the operations in, a logistics value chain. Activities such as the collecting, processing, retrieving, reporting and storing of data are part of information management. Strategies/techniques such as groupware, IT/IS, shareware, data mining and data warehousing can be used for the purpose of managing information. The technologies of information should include EDI, e-commerce, ERP, Internet, WWW, and artificial intelligence (AI) and expert systems. These information systems help to integrate various links along the logistics value chain.

6. Summary and conclusions

In this paper, an attempt has been made to discuss the experiences and success of a small 3PL (in-bound) logistics company, mainly serving the needs of Hong Kong on home appliances. According to the company's managing director, Mr Eric Lam, the success of the company depends upon the following factors:

- customer satisfaction;
- repeat customer visits to clients and hence improved business for TL; and
- responsiveness to clients and customer requirements.

Nevertheless, the government should support the development of such companies to enable Hong Kong companies to compete in the global market. As of now, companies like TL receive only some support for training and education. They should develop an IT system that is flexible and able to accommodate Web-based logistics information systems. The system of costing needs to be improved to highlight value-adding resources or any form of waste in terms of under-utilized equipment, human resources, warehouse space, and so on.

The case study presented in this paper demonstrates the importance of small logistics companies. It also shows the significance of strategic alliances and the implications of regional culture on partnership formation and, hence, on cooperative support work. The following are key aspects of the case study that we believe would require further attention:

- Government support is needed to train and educate employees in small logistics companies.
- It is important for small logistics companies to receive technical support from client companies.
- Employee empowerment is essential in small logistic companies.
- A company should learn to respect all customers.
- Educating the customers on how to use the logistics information system will certainly improve levels of customer satisfaction and reduce reverse logistics costs to a certain extent.
- Performance measures, metrics and costing systems should be developed to support small logistics companies in performing more efficiently.
- Web-based information will help to reduce communications barriers such as complex logistics operational systems.
- Both financial and non-financial factors, including tangible and intangible factors, should be considered when justifying investments in IT projects. Such investments should not simply be based on financial performance measures such as ROI.

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