By Ganesh Vaidyanathan

A FRAMEWORK FOR EVALUATING THIRD-PARTY LOGISTICS

3PL providers with advanced IT are expected to lower logistics costs and integrate the supply chain with increased productivity and growth. Here, a set of criteria for choosing the most suitable provider.

In recent years, companies have increasingly embraced one-stop global logistics services. By allowing companies to concentrate on their core competencies, these third-party logistics (3PL) providers can improve customer service and reduce costs. A 3PL provider can act as a lead logistics provider or a fourth-party logistics (4PL) provider aligned with a host of 3PL providers. This article explores the major considerations in searching for a 3PL provider to expedite the movement of goods and information. With the help of established theories in the literature, we use an evaluation criteria framework built around IT to examine a 3PL provider.

Five streams of literature relate to logistics provider models [9]: strategic decision making in organizations, industrial buying behavior, transportation purchasing, supplier selection, and logistics relationships. Among these topics, supplier selection, or how to evaluate 3PL providers and form strategic alliances with them, has been inadequately addressed in the current literature. Strategic alliances allow companies to reduce conflict, reciprocate regarding mutual goal-related matters, increase efficiency and stability, and establish marketplace legitimacy [3]. Logistics managers consider perceived performance, perceived capability, and responsiveness as important factors in selecting logistics providers [5]. In general, it appears that market and firm characteristics influence the choice of logistics providers [10], and managers achieve customer service improvement and cost reduction by outsourcing logistics services [8].

One study applied transaction cost economics to logistics provider selection to explore the conditions under which logistics functions are separated [1]. About 60% of the Fortune 500 companies surveyed reported having at least one logistics provider contract [7]. A conceptual model of the logistics provider buying process has been presented [9] in five steps, in which companies identify the need to outsource logistics, develop feasible alternatives, evaluate and select a supplier, implement service, and engage in ongoing service assessment.

A major shortcoming of the 3PL literature is the lack of consideration of IT as a primary component of logistics-providing solutions. The integration of IT with the logistics providers and their customers—known as Inter-organizational Systems (IOS)—essentially supports the outsourcing of logistics activities [6]. IT is a critical factor for 3PL performance since the logistics provider must integrate systems with its clients. IT links members of a supply chain, such as manufacturers, distributors, transportation firms, and retailers, as it automates some element of the logistics workload, such as order processing, order status inquiries, inventory management, or shipment tracking.

Framework of 3PL Functions

3PL services can be relatively limited or comprise a fully integrated set of logistics activities. Two surveys [8, 9] identified the following as significant outsourcing functions:

- Transportation
- Warehousing
- Freight consolidation and distribution
- Product marking, labeling, and packaging
- Inventory management
- Traffic management and fleet operations
- Freight payments and auditing
- Cross docking
- Product returns
- Order management
- Packaging
- Carrier selection
- Rate negotiation
- Logistics information systems

These functions can be divided into four categories, as shown in Figure 1: warehousing, transportation, customer service, and inventory and logistics management. Significant IT improvements are leading to lower transaction costs and allowing all supply chain participants to

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manage increased complexity [6]. The information and material flow among the four categories have been theorized [8] to validate the interrelationships between transportation and customer service. Material flow occurs as a result of integration of transportation and distribution systems, and information flow is essential to integrate the four categories.

To implement 3PL, real-time information flow is essential. A framework of 3PL provider functions and evaluation criteria can be derived that revolves around the information flow that affects the 3PL provider functions, as illustrated in Figure 2. First, material is transported to distributed-warehousing facilities. Then, using efficient inventory management and logistics techniques, global warehouses are fulfilled according to customized, dynamic allocation levels. The material is distributed either by 3PL or 4PL global transportation freight carriers, and global customer services including reverse logistics are provided. Here, I detail descriptions of the four categories of outsourced functions, and discuss global information flow.

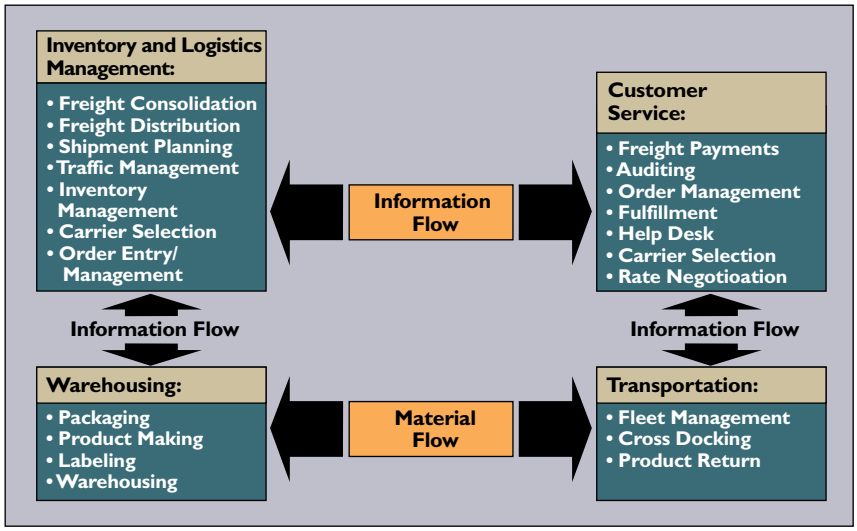

Figure 1. Categorization of logistics functions.

Global warehousing. Customers are demanding just-in-time delivery of material and warehousing. The warehousing component necessitates the strategic placement of global mini-distribution centers. Companies need an efficient end-to-end supply chain, and a single point of failure in warehousing can create disaster in order fulfillment. 3PL providers are ramping up their warehouses by investing in new fulfillment equipment and advanced technologies. Warehousing functions include receiving, sort and direct put-away, directed put-away, wave management, merge and pack-out, manifest documents, label or bar code printing, kitting, and pick/pack activities. Many companies, including Nabisco and International Paper, have outsourced their warehousing operations to concentrate on their core competencies.

Global transportation. This function must be completed by a freight carrier who can move any-sized units by land, sea, rail, river, and air in a timely manner. A partnership effort between the customer and a 3PL provider may be extended to a 4PL provider, but 4PL providers must work with 3PL providers to bring synergy to the information flow and to realize cost savings. Many companies, including Ford, Honeywell, National Semiconductor, and Cisco, have outsourced transportation operations.

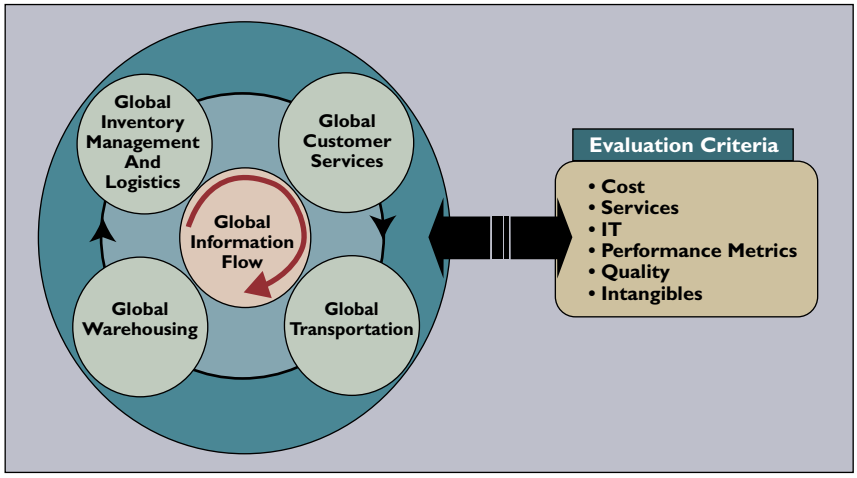

Figure 2. A framework of 3PL provider functions and evaluation criteria.

Global customer services. 3PL providers offer a wide range of customer services including warranty parts recovery, financial services, automating letters of credit (LOC), auditing, order management, fulfillment, carrier selection, rate negotiation, international trade management, and help desk or call center activities. In addition, with the increased returns generated by e-business, 3PL providers are playing a lead role in developing and executing reverse logistics. Many companies, including Nike, Scovill, Oneida, and Cisco, have outsourced customer services.

Global inventory management and logistics. This

function includes global inventory visibility, backorder capability and fulfillment, order-entry management, forecasting, cycle count and auditing, shipment management, rotable pool planning, and customs documentation. A planning solution system focusing on the unique complexities of company and customer needs is essential for inventory management and logistics. The system must optimize inventory based on service contracts and required response times, and it must have product-based forecasting capabilities utilizing product life curves. The inventory management system should also optimize placement of warehouses and stocking locations, and automate replenishment of parts. Companies such as Rolls Royce, National Semiconductor, and IBM have outsourced their inventory management and logistics operations to concentrate on their core competencies.

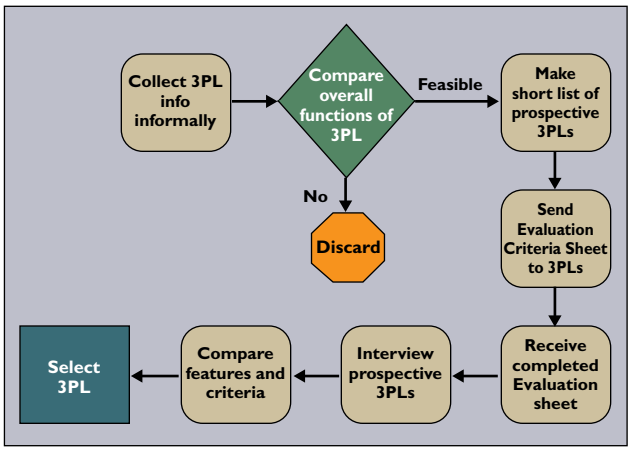

Figure 3. Evaluation process of 3PL.

Some may think logistics functions can be achieved by a supply chain management (SCM) solution, but many differences exist between service logistics and SCM, as illustrated in Table 1. A major difference is that a penalty for breech of service level agreement (SLA) usually enhances the performance of 3PL providers. Therefore, 3PL providers with SCM expertise and global trade expertise are much needed to provide strategic options and innovative solutions in the areas of logistics, inventory control, demand management to meet optimum allocation levels, multidirectional global transportation, and warehousing. Firms will gain competitive advantage if they fully understand the implications of SCM and tailor programs for customers. As e-commerce grows globally, the financial benefits of supply chain logistics leadership can be exponential.

Factors	Third-Party Logistics	Supply Chain Management
Goal	End User Satisfaction	Lower Inventory Levels
Demand Management	Just-in-case	Just-in-time
Flow of Links	Multiple directions	One way
Stocking Strategy	Highly distributed	Highly centralized
Transportation	Next day or Immediate	Freight
Penalty	Breech of Service Level Agreement	Out of stock

Table 1. Differences between 3PL and SCM

Global information flow. Information flow significantly enhances unit movement, as it helps determine how and when to move units most efficiently. 3PL providers are offering advanced IT and broader global coverage, enabling manufacturing and service industries to concentrate on their core competencies. Companies need a state-of-the-art 3PL provider with a wealth of IT deployment experience to achieve optimal information flow.

IT revolves around four major players: the 3PL customer, the customer's clients, the customer's suppliers and alliances, and the 3PL provider itself. Information flow begins with the 3PL customer. That information is analyzed by the 3PL provider, which dynamically changes the allocation levels at the appropriate warehouse locations globally. The analysis programs typically include software for dynamic material allocation, inventory control, supply chain management, logistics, transportation management, as well as intelligent decision-making algorithms. Each transaction is recorded in the customer system via electronic data interchange (EDI), among other methods. Many companies, including Cisco, Nike, and Ford, have outsourced IT services.

A 3PL Evaluation

Figure 3 describes a 3PL evaluation process, which includes a preliminary screening based on qualitative factors such as reputation. Depending on qualitative and feasibility factors, a short list of 3PL providers is obtained. An evaluation criterion is sent to the short-listed 3PL providers. After receiving the completed evaluation list, the prospective providers are interviewed. After the desired features and criteria are compared and analyzed, a 3PL provider is selected. This process has been tested in a Fortune 100 company and yielded good results. The basic process, as follows, was obtained from previous research [9].

Gathering 3PL information. A list of 3PL providers can be obtained from professional organizations. Google and Yahoo searches reveal about 430 logistics providers, of which roughly 75% are U.S.-based. Web

3PL Provider	Global Inventory Management and Logistics	Global Customer Services	Global Warehousing	Global Transportation (Integrated Carrier)	Global IT Services
ALI	●	○	●	○	○
BAX Global	●	●	●	●	●
Brokers	●	○	●	○	○
CNC	○	○	○	○	○
Emery	●	●	●	●	●
Pacer	○	○	○	○	○
Redwood	●	○	●	○	○
Lufthansa	●	●	●	●	●
Exel	●	○	●	○	○
Kace	○	○	○	○	○
KanelsAble	○	○	○	○	○
Menlo	●	○	●	○	○
NYK	○	○	○	○	○
Ozburn	○	○	○	○	○
Ryder	●	○	○	○	●
Wheels	○	○	○	○	○
UPS	●	●	●	●	●
USF	○	○	○	○	○

Key: ● Available ○ Partially available

Table 2. Comparative functions of 3PL providers.

sites such as 3plogistics.com, logisticsworld.com, inboundlogistics.com, and purchasingresearchservice.com offer informal organizational information.

Compiling the short list. This preliminary screening eliminates 3PL providers that do not provide the overall functions listed in Table 2. This table also illustrates framework features of few logistics providers, obtained from provider Web sites. Current suppliers of traditional transportation and distribution services, and outside consultants with logistics expertise can help compile the short list. Most companies usually consider six to eight potential suppliers, and evaluate two or three finalists.

Evaluation criteria. To evaluate prospective provider, a set of criteria must be defined. These evaluation criteria typically include quality, cost, capacity, delivery capability, and financial stability. In addition, cultural compatibility, customer references, financial strength, operating and pricing flexibility, and IT capabilities play predominant roles [9]. Performance metrics that must be part of the evaluation criteria [5] include shipment and delivery times, error rates, and responsiveness to unexpected events. The following set of factors can be used to evaluate a 3PL provider [5, 9]:

- IT
- Quality
- Cost
- Services
- Performance metrics
- Intangibles

Using the six factors against the framework we created for 3PL provider evaluation, we derived the criteria shown in Table 3.

Final 3PL selection. An evaluation criteria sheet as part of a formal request for proposal (RFP) is usually sent to the prospective short list finalists. This proposal initiates the process whereby the client and the 3PL provider enter into negotiations, not only regarding price, but also skill, culture, and commitment matching. RFP preparation is important because it forms the basis upon which the 3PL provider formulates its assessment of client needs, the resources needed to serve those needs and, finally, the cost of its services. A clear explanation of needs and requirements should be included in the RFP. In addition, a

Information Technology	Cost
• Transfer of data at scheduled intervals from 3PL to customer • Transfer of data in real time • Connectivity to warehouse locations to the data center • Encryption of data • Automated technology to capture data for all shipment, directed put-away, picking, and cycle counting • Accuracy of data transmissions with existing clients • Validation and verification of data from flat file transmissions and XML transmissions and usage of standards • Data security to maintain the security of customer data. • Application security to validate security and access to application programs and screens • Network security to prevent intruder access • Systems, Networks, Data Centers availability and compatibility analysis • IT infrastructure availability and compatibility analysis • Redundancy, Scalability, Availability of systems • FTP, VPN, extranet connectivity • EBPS and Billing systems • Data Integrity and reliability	• Cost of warehousing • Cost of IT services for effective information flow • Cost of transportation • Cost of logistics, supply chain and inventory management
Performance	**Quality**
• Historical On-time delivery schedules and deviations • Historical Inventory Carrying Rate • Historical average obsolescence rates • Historical forecast errors in a year • Historical average lead times • Historical shipment errors in the past • Historical productivity metrics • Historical DTT (Delivery Turnaround Time) • Historical quality of units delivered/month • Historical late/lost delivery	• FAA/FDA or other compliance requirements for warehousing requirements • ISO procedures for units handling, storing, and preservation • ISO procedures for Pick, Pack, and Ship facilities and quality requirements • ISO procedure for delivery • Six sigma and commitment to continuous improvement • Facilities and personnel to identify, correct, collect, index, access, file, store, maintain and dispose quality records in accordance with ISO • Training procedures
	Service
	• Physical warehousing services • Security and scalability services in warehousing • Monitoring/Tracking efforts in warehousing • Historical delivery and reverse logistics metrics • Historical order Management Metrics • Historical transportation Management Metrics • Customer support services (24x7 help desk) • Historical average time to settle warranty claim • Summarized reports available on monthly basis • Inventory Management historical metrics
	Intangibles
	The intangibles include questions on the business growth of the prospective 3PL to make sure that they will be conducting business for some time. • Financial stability • Strong profitability • Experience with similar companies • Global scope

Table 3. Criteria for 3PL evaluation.

A careful consideration of this framework and the use of IT in logistics and supply chain management can provide insights to logistics managers, procurement managers, IT managers, and academicians.

clear and concise statement of the tasks involved and the measurements against which success will be judged must also be included.

Once the evaluation sheets are received, prospective 3PL providers are interviewed. In this final face-to-face interview between the 3PL customer and the prospective 3PL provider, each party must clearly understand project details, goals, and expectations. During this step, problem resolution procedures are established, and incentives to assure continued process improvement are defined. A cultural match between a 3PL provider and the client is also established. A 3PL provider will likely have personnel operating at the client site and cultures must mesh for success. Based on the interviews, RFP responses, and a functional comparison, a 3PL can be selected.

Conclusion

The evaluation criteria framework presented in this article can help IT management evaluate outsourcing logistics services. The conceptual framework using IT as the focus peruses the core functionalities of 3PL providers such as inventory management, logistics, transportation, warehousing, and customer services. Using this framework and the factors essential to quantify outsourcing, we have established a set of criteria for 3PL provider selection. A careful consideration of this framework and the use of IT in logistics and supply chain management can provide insights to logistics managers, procurement managers, IT managers, and academicians. The continued presence of 3PL providers with advanced IT will lead to lower logistics costs and integrate all aspects of the supply chain with increased productivity and growth. C

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