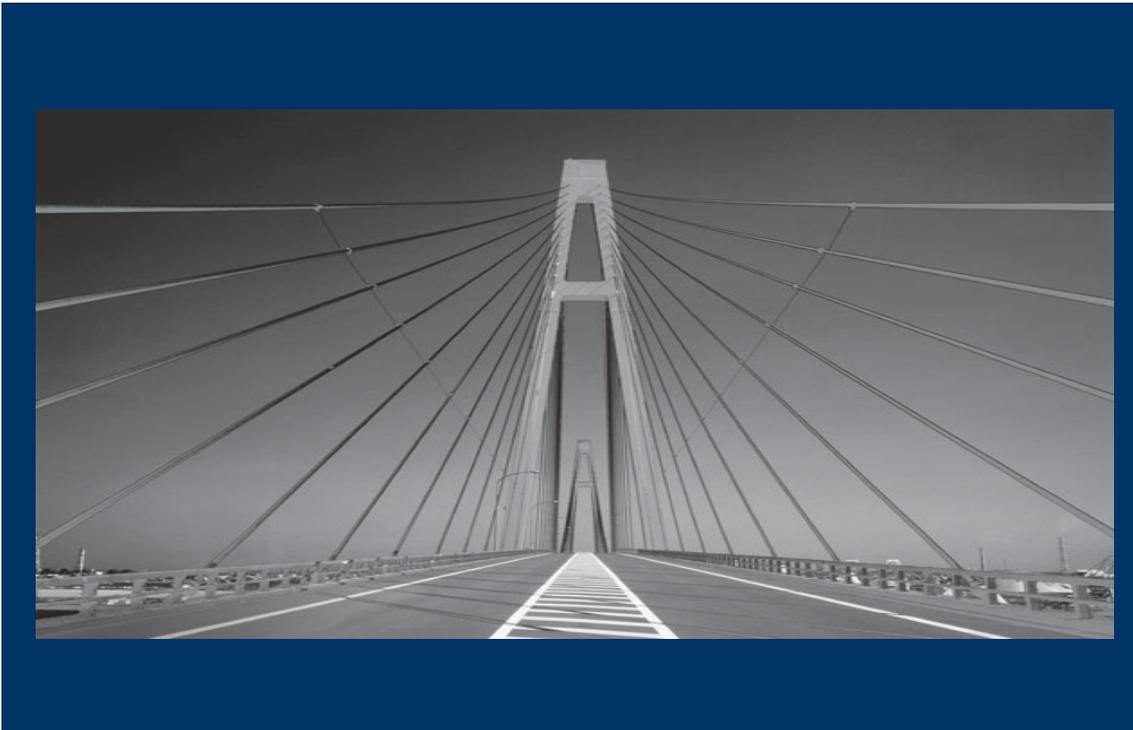


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LOGISTICS SERVICE PROVIDERS: AN INSTITUTIONAL PERSPECTIVE TO LSP INNOVATION

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The Logistics Institute – Asia Pacific (TLI – Asia Pacific) is a collaboration between the National University of Singapore and the Georgia Institute of Technology. Modelled after The Logistics Institute (TLI) at Georgia Tech, the Institute’s vision is to be the premier institute in Asia Pacific nurturing logistics excellence through research and education. TLI - Asia Pacific was awarded the prestigious Asian Freight & Supply Chain Award (AFSCA) for Best Educational Course Provider for four consecutive years, from 2003 to 2006.

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LOGISTICS SERVICE PROVIDERS: AN INSTITUTIONAL PERSPECTIVE TO LSP INNOVATION

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The logistics landscape in Asia has witnessed several degrees of evolution, with mergers & acquisitions, joint ventures, and strategic alliances taking place among the existing logistics service providers (LSPs) as well as between the logistics service providers and new entrants. Further, an increasing number of vendors are outsourcing their logistics to 3PLs, creating a new competitive space. As a result, the increasing competition is pushing LSPs to innovate themselves to meet the clients' changing business needs. This paper adopts the institutional perspective to better understand and appreciate the changes in the LSP landscape. Specifically, the paper seeks to identify three new business models- orchestration innovators, portfolio innovators, and yield innovators.

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THINK LOGISTICS 2006: CREATING THE FUTURE TODAY

“Logistics Service Providers: Genesis of Network-Driven Business Models”

17 November 2006



LOGISTICS SERVICES PROVIDERS

An Institutional Perspective to LSP Innovation

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INTRODUCTION

Exhibit 1: Projected Growth in Logistics Outsourcing

ASEAN: 9.9% to US\$14.8 billion in 2006 from US\$13.5 billion in 2005 ¹
Singapore: 8% to US\$2.4 billion in 2006 from US\$2.2 billion in 2005 ¹
Malaysia: 8-9% to US\$3.25 billion in 2006 from US\$3.0 billion in 2005 ²
China: 25% annually for the next decade ³
Philippines: US\$12.4 billion by 2012 from US\$2 billion in 2004 ⁴
Europe: €69.70 billion in 2004 to €124.10 billion in 2012 ⁵
Poland: 8-10% annual growth till 2010 ⁶

Exhibit 2 : Reasons for Logistics Outsourcing

Cost reduction, high-speed delivery and tightening budgets are all playing a role in enterprises gradually moving away from in-house logistics model¹⁰

- High Shipping Costs: Logistics costs for U.S. shippers soared more than 15 percent in 2005, jumping to 9.5 percent of GDP. This provides a dramatic evidence of rising shipping expenses and a warning that worse is still to come⁷.
- Rising Fuels Costs: Rising rates and fuel surcharges fed a 14.1 percent increase in transportation costs which is nearly double the largest one year increase shippers spend on transportation⁷.
- Focus on Core competencies: A lot of companies want to get back to core competencies and outsource the rest. A 3PL knows how to run a logistics function better than a shipper does. Since logistics is not a core competency for many companies, it makes sense to let the experts handle it, says Karl Manrodt, Professor, Georgia Southern University⁸.
- Other reasons: Asset reduction, headcount reduction, complexities of global trade, increased flexibility, and technology improvements⁹.

services¹⁰ (Exhibit 1)." In other words, logistics outsourcing is still on the rise. Companies outsource because they perceive that third-party vendor processing company's logistics could be of a strategic advantage, if executed properly. Exhibit 2 describes some of the key drivers for outsourcing.

Although the market in Asia is developing with huge opportunities for outsourcing in logistics, there are some areas of concern for both the LSPs and the shipper. Many shippers do not outsource as they feel that logistics is or should remain their core competence [11]. Moreover, a large percentage of shippers lack confidence that cost would reduce through outsourcing and they are concerned about diminished management control after outsourcing [11]. Another major concern is that the LSPs do not provide all the services required for outsourcing. For instance, an LSP may have expertise in transportation and fleet management; however, it may not have the capability for services such as

Beyond focusing on improving manufacturing efficiency, companies are now setting their eyes on a new field to get rid of the unnecessary costs buried in the rest of their supply chain. Labeled as logistics outsourcing, this emerging field involves a third-party vendor (LSP) processing the shipping, storage and delivery requirements of another company, albeit in a cheaper, more efficient manner. Many multinational corporations are accelerating the adoption of 3PL services. Companies such as Dell, McDonald's and Nokia have demonstrated the benefits of capitalizing on a 3PL's expertise, capabilities, and assets to facilitate worldwide distribution and logistics services³. According to Mr. Mills, "There will be a continued growth in the outsourcing of more complex logistics tasks such as logistics management, order handling, and the provision of value-added

¹ Top Logistics Firms Honored at the 2006 Frost & Sullivan ASEAN 4 Logistics Awards Hindustan Times, 2006.

² Yeow J., Special Report: Third-party logistics gaining ground in Malaysia, The Edge Malaysia, 26 June 2006.

³ Byrne P.M., Five trends support logistics success in China, Logistics Management, 45(6), 1 June 2006.

⁴ Al Labita Manila Correspondent, Outsourcing raking in billions for Philippines, Business Times Singapore, 9 Feb 2006.

⁵ PR Newswire Europe, Investment of Western European Manufacturers and Retailers to Increase Revenues in Eastern European Logistics Markets, 20 December 2005.

⁶ Interfax Poland Weekly Business Report, Poland's logistics market will grow 8-10% annually in coming five years – expert, 31 December.

⁷ Hoffman W., Logistics' Bigger Bite, Traffic World, 26 June 2006.

⁸ Atkinson, W., Working Outside the Box, Material Handling Management, 61(1), 1 January 2006.

⁹ Maloni M.J., Carter C.R., Opportunities for Research in Third-Party Logistics, Transportation Journal 45(2), 1 April 2006.

¹⁰ Estavillo M. E., Logistics outsourcing: the next gold mine? M2 Presswire, 30 September 2004.

order management and customs brokerage and clearance. While seemingly crude as an example, nevertheless it reiterates the point that shippers will outsource only according to the capability of the LSP.

Further, LSPs need to address the growing competition in the region. As many new firms enter the LSP landscape, existing LSPs will be relegated down the competitive ladder if they do not innovate. Moreover, in a continuing and aggressive cost reduction exercise, many manufacturers have realistically relocated their manufacturing activities to more cost-effective locations, such as Eastern Europe or the Far East. As a result, companies that are sourcing from Southeast Asia are finding their supply chains stretched over long distances, with increased complexity in coordinating inbound flows [10]. Such companies need LSPs with a global presence so that they can help these companies consolidate shipments at source, handle goods and data flows from various sources, and provide reliable global freight transportation management.

Another deterrent to switching carriers for chemical shippers is the risk of poor or even dangerous service. "No chemical shipper wants a leak, spill or accident with their product on the equipment." Grossardt adds that when shippers change carriers, the new carrier may not be familiar with the company's processes and requirements. This introduces not only a potential cost risk, but an environmental and community risk. "The deeper you can make your relationship and work on lowering the total cost, that's the better approach right now in the marketplace than going out and bidding to try to get the lowest rate"¹¹

To address these and other concerns brought about by their operating environment, the LSP landscape has seen more than 100 mergers and acquisitions. The natural question which then arises is what would the future of LSPs in this landscape. In this research, we adopt the institutional perspective to understand the changes brought about by the institutional environment in the industry.

The rest of the paper is organized as follows. First, we discuss the existing LSP landscape with particular emphasis on the types of services provided by the LSPs and we categorize the existing LSPs according to the services provided by them. Next, we discuss the institutional perspective on LSP innovation to better understand the influence of institutional environment on the firms and the resultant response of the firms. We will validate the LSP innovation model through desk research and brief case studies.

THE EXISTING LSP LANDSCAPE

The LSPs in the LSP landscape are most commonly categorized, in terms of the services provided by them on a continuum of asset intensive activities to IT intensive activities. Exhibit 3 shows the services provided by the LSPs categorized as basic services, value-added services and strategic services. The basis services are commodity-like services that include transportation and warehousing. Such services are provided by asset-based transportation LSPs. On the other end of the LSP spectrum are IT intensive LSPs. Langley et al. [11] note that technical services are increasing in importance and visibility. Firms offering IT capabilities such as order entry/processing and fulfillment, visibility tools (event management) and web enabled communications are significant players in the LSP environment. These value added services are offered by fewer players than asset-based services; however more LSPs are moving towards an IT based value added services as a response to the customer orientation. The value-added services are all transportation services that do not require LSPs to own assets. Such services are provided by non-asset based transportation LSPs. Usually, these LSPs may own some assets, but are also IT intensive. They tend to develop longer-term relationships with their customers

¹¹ Prema K., Chemical shippers, carriers still feel the pinch, Purchasing, 134(16), 6 October 2005.

Exhibit 3: Major Services Outsourced to 3PLS

BASIC SERVICES	VALUE-ADDED SERVICES	STRATEGIC SERVICES
Customs Clearance	Factoring	Distribution Control
Customs Brokerage	Cross Checking	Procurement of Logistics Services (3 rd party)
Freight Forwarding	Freight Bill Auditing/Payment	Carrier Selection (3 rd party)
Inbound Transportation	Return/Reverse Logistics	Rate Negotiation
Outbound Transportation	Order Fulfillment	4PL Services
Warehousing	Order Entry/Order Processing	Supply Chain Management
Customer Service	Customer Service	Inventory Ownership
Tracking and Tracing	Event Logistics	Inventory Management / Replenishment
Shipment(Freight) Consolidation/Distribution	Project Logistics	Information Technology
Fleet Management	Co-manufacturing and co-packing	Supply Chain and Logistics Info. Sys.
	Billing and Ordering	Traffic Management / Fleet Management / Operations
	Cross-Docking	Consulting Services

than asset based LSPs. The strategic services are related to the management and control aspects of logistics operations. Such services are provided by non-asset based LSPs who focus on the supply chain management aspects of the logistics services. These LSPs are IT intensive. However, their business model differs from the value added IT intensive firms. Along with IT capabilities, these firms offer strategic logistic services like broad supply chain expertise, procurement of logistic services, 4PL services amongst others. Firms offering strategic services are an emerging form of LSPs and are the most differentiated among the three models.

RECENT DEVELOPMENTS IN THE LSP LANDSCAPE

Consolidation will continue in the logistics service provider market in 2006, as service providers seek to offer clients end-to-end solutions, expand globally and serve new vertical industries. The gold rush by U.S. and European logistics service providers, such as DHL, UPS, Meridian IQ and Schneider Logistics, to develop a presence in China will gain momentum next year¹²

According to a study by Cambridge, an England-based research firm, the past five years have seen unprecedented levels of mergers and acquisitions in the European logistics industry. In the past two years, there have been over 100 mergers and acquisitions. Moreover, many LSPs are entering into strategic alliances and joint ventures with local or regional LSPs. Thus, LSPs are trying to innovate across various dimensions such as networks and alliances, product systems, services, geographical reach. Two major trends that are evident from the recent developments in LSP landscape are consolidation and redefinition. The LSP landscape is consolidating by way of mergers, acquisitions, JVs and strategic alliances. Through consolidation, LSPs are redefining themselves mainly in two ways, namely, geographical expansion and operational expansion. A large percentage of consolidation activity among LSPs is about geographical expansion. LSPs are prompted to go global in search of competitive

markets as well as to secure and enhance their market position. Moreover, through geographical expansion, LSPs can easily address the concerns of their global clients. A significant percentage of LSPs are also expanding their operations through consolidation in an attempt to become a one-stop-logistics solutions provider by providing value-added and strategic services to their clients. Moreover, some LSPs are also integrating vertically, thus strengthening their core businesses. Thus they afford themselves an opportunity of becoming a global market leader in specific logistics services, such as transportation and shipping. Thus, we see a surge of vertical and horizontal expansion among LSPs in a wake to improve their market position and customer service. To explain, understand, and analyze this phenomenon in the LSP landscape, we turn to the institutional perspective, which postulates that under pressure from the institutional environment, firms tend to innovate.

¹² Bierderman D., Seller's market, Journal of Commerce, 9 January 2006.

INSTITUTIONAL PERSPECTIVE TO LSP INNOVATION

The institutional approach to the study of organizations has led to significant insights regarding the importance of institutional environments to organizational structure and action [e.g., 1, 20]. Institutional theory argues that firms cannot freely and independently choose to adopt an innovation. Rather, they are subject to institutional pressures from different sources [14, 21]. When an innovation becomes socially accepted within its organizational field, organizations that do not adopt the innovation could appear illegitimate to their stockholders, customers, and regulators [14], and risk being screened out of consideration as being incomparable to others. Hence, firms may adopt industry-accepted practices as failure to conform could lead to legitimacy challenges that hinder resource acquisition [4].

Schelling [18] noted that organizations respond to an environment that consists of other organizations responding to that environment, which consists of organizations responding to an environment of organizations' responses [19]. Organizations are thus subject to pressures to be isomorphic with their environment, which incorporates both interconnectedness and structural equivalence [2]. Interconnectedness refers to the inter-organizational relations characterized by the existence of transactions tying organizations to one another while structural equivalence refers to the occupying of a similar position in an inter-organizational network. As LSPs are quite inter-dependent on shippers, competitors, shipping agencies and government, the institutional environment would pose pressure on them to become isomorphic, or in other words innovate. DiMaggio and Powell [4] identified three types of isomorphic pressures, namely, coercive, mimetic and normative. They suggest that coercive and normative pressures normally operate through interconnected relations while mimetic pressures act through structural equivalence. We discuss each of these pressures briefly:

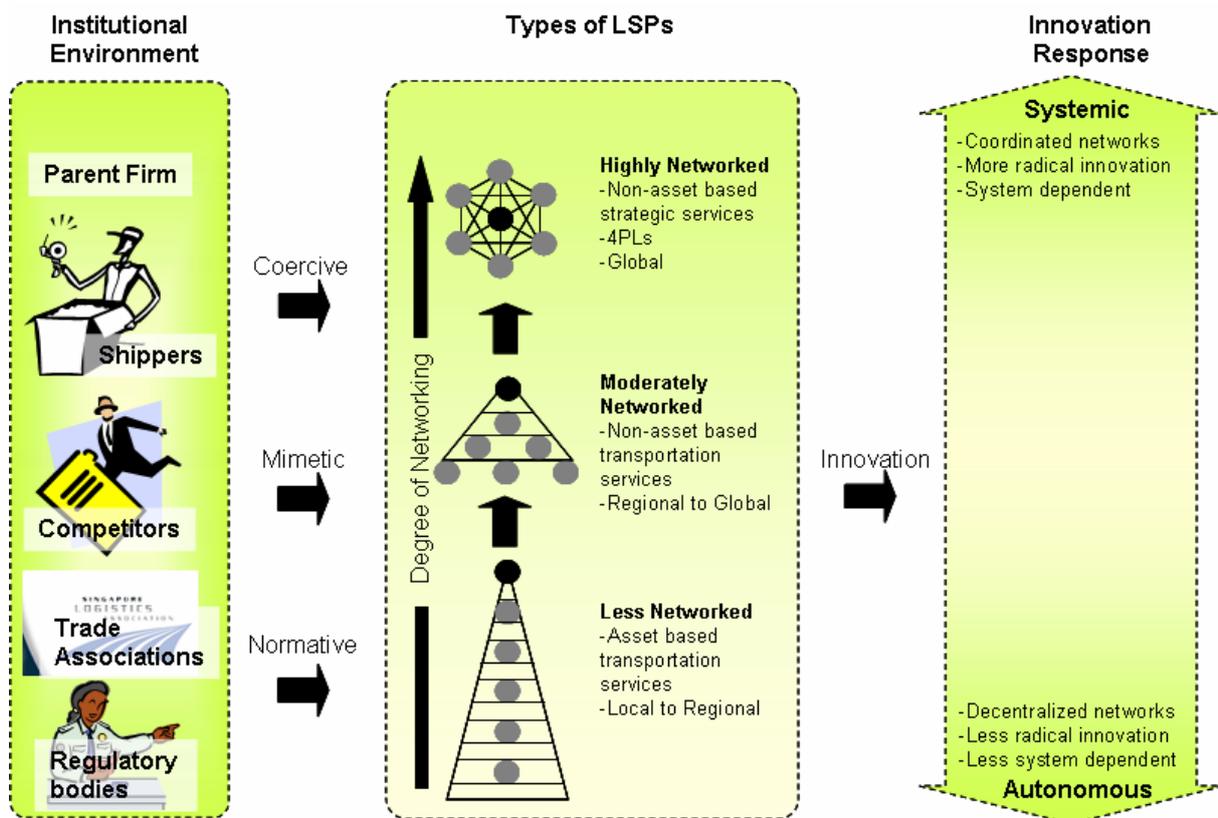
Mimetic Pressures: Mimetic pressures may cause an organization to change over time to become more like other organizations in its environment [4]. Mimetic pressures manifest themselves in two ways: the prevalence of a practice in the focal organization's industry and the perceived success of organizations within the focal organization's industry that have adopted the practice [7]. An organization will imitate the actions of other structurally equivalent organizations because those organizations occupy a similar economic network position in the same industry and, thus, share similar goals, produce similar commodities, share similar customers and suppliers, and experience similar constraints [2]. LSPs could face such pressures thus being inspired by other LSPs expanding their services portfolio as well as geographical operations. Also, the extent of such pressure would be greater if a number of firms have expanded their portfolio of services or increased their reach. Thus, if those LSPs who have already expanded have achieved success, the pressure on the aspiring LSPs would be even greater. Thus, mimetic pressures will force the LSPs to innovate.

Coercive Pressures: Coercive pressures are defined as formal or informal pressures exerted on organizations by other organizations upon which they are dependent [4]. Coercive pressures on organization may stem from a variety of sources including resource-dominant organizations, regulatory bodies, and parent corporations, and are built into exchange relationships. LSPs generally face pressure from these organizations to re-invent or change themselves. For example, resource-dominant organizations, such as Motorola and IBM exercise their prerogative on the LSPs to innovate. While such shippers tend to consolidate their suppliers or extend their global operations (but wanting to deal

with a single LSP), they are exercising their power relationship on the LSPs to innovate. The best example of regulatory bodies exercising pressure on the LSPs to innovate would be of the European Union, whereby the removal of customs and other barriers have forced LSPs to yield a part of their business (that obtained from border clearances) and “coerced” them to grow globally and move to Southeast Asia and other countries for business opportunities. Thus, coercive pressures will force LSPs to innovate.

Normative Pressures: According to the social contagion literature, a focal organization with direct or indirect ties to other organizations that have adopted an innovation is able to learn about that innovation and its associated benefits and costs, and is likely to be persuaded to behave similarly [3]. Sharing these norms through relational channels among members of a network facilitates consensus which in turn increases the strength of these norms and their potential influence on organizational behavior [15]. The norms are diffused through similar firms in the industry, through trade associations and so on. For example, if two firms have direct and frequent communication with each other, they are more likely to think alike or respond similarly. In the case of LSPs, the normative pressure may come from shippers consolidating their suppliers and other LSPs responding to such consolidation by increasing their portfolio of services or geographic expansion.

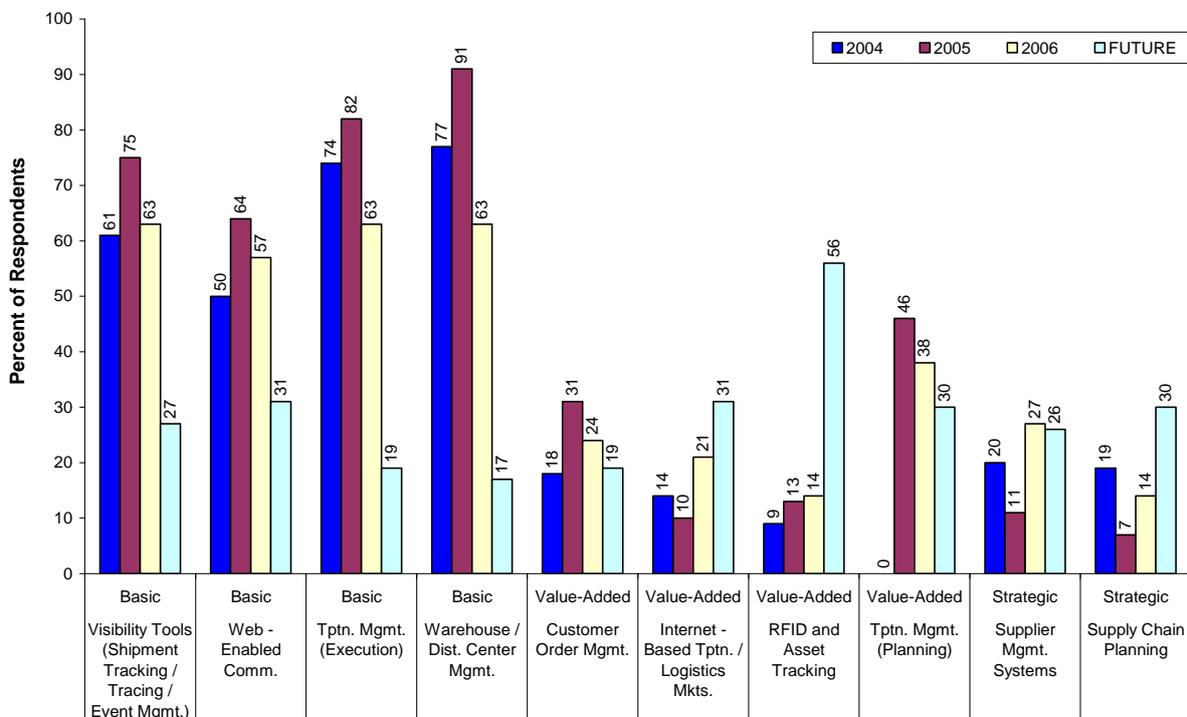
Exhibit 4: The conceptual Framework for LSP Innovation



A conceptual model for LSP innovation is shown in Exhibit 4. Exhibit 4 shows that, under the institutional environment, all firms innovate due to mimetic, coercive and normative pressure exerted by the firms in the institutional environment. Robertson and Langlois [16] assert that vertically integrated firms and loose webs of small producers are two types of networks operating in modern economies. Thus, based on the degree of network orientation, we can classify firms into highly vertically integrated at the one end and highly networked at the other. We also describe a moderately integrated firm as being one that is situated midway between vertically integrated and highly networked. Robertson and Langlois [16] further argue that both vertically integrated and horizontal networked firms can be successful growth-promoting adaptations to the competitive environment, although the characteristic of innovation taking place in these different firms may differ.

Innovation can be viewed both as a discrete product or outcome “a new idea, method or device” [8] and as a process “the process of introducing something new” [17]. The common thread that runs through both these phrases is ‘newness’; on the fundamental level, innovation means ‘something new’. In addition, innovations can either be systemic or autonomous. An innovation is said to be systemic when change in one part of the system necessitates corresponding change in other parts and an innovation is said to be autonomous when a change in one part can proceed without materially affecting the rest of the system. The decentralized networks, such as those found in vertically integrated firms would do well under conditions of autonomous innovations. In other words, the innovation vertically integrated firms, such as the asset-based LSPs would be more autonomous in character. In contrast, the networked organizations, such as the 4PLs would do better under conditions of systemic innovations.

Exhibit 5: Trend in IT based services for last 3 years [Based on Langley et al. 9, 10, 11]



IT strategy has strong correlation with firm's innovation strategy. According to Langley et al. [11], technology's role in the design, delivery, and continuing enhancement of 3PL services continues to grow in importance and visibility. About 92% of the respondents agreed that IT capabilities are a necessary element of the overall 3PL expertise. Further, a 3PL's IT capabilities were specifically assessed in 60% of the 3PL vendor selection processes. However, the type of IT services provided by the company would determine the innovation in 3PLs. Exhibit 5 shows the trend of IT based services since year 2004. We can infer that the trend in basic IT services (visibility tools, transportation management-execution, web-enabled communications, warehouse / distribution center management) shows a decline in 2006 and is likely to decrease further in future [11]. Some of the value-added IT services (customer order management and transportation management / planning) shows a decline whereas other value-added IT services (Internet-based transportation / logistics markets, and RFID and asset tracking) show an increase over previous years. The strategic IT services (supplier management systems and supply chain planning) show better forecasts for the future. Firms are giving significant emphasis on the planned future use of the strategic IT-based services. Langley et al. [11] conclude that 3PL users are now looking to their 3PLs to offer better and more comprehensive logistics services. The much higher results in the year 2006 for future use suggest that 3PLs will face even more pressure from their customers to deliver increasingly sophisticated IT-based services.

We will now identify the core dimensions of the logistics business models, then map the innovations among the LSPs that would emerge as a result of institutional pressure.

GENESIS OF NETWORK- DRIVEN BUSINESS MODELS

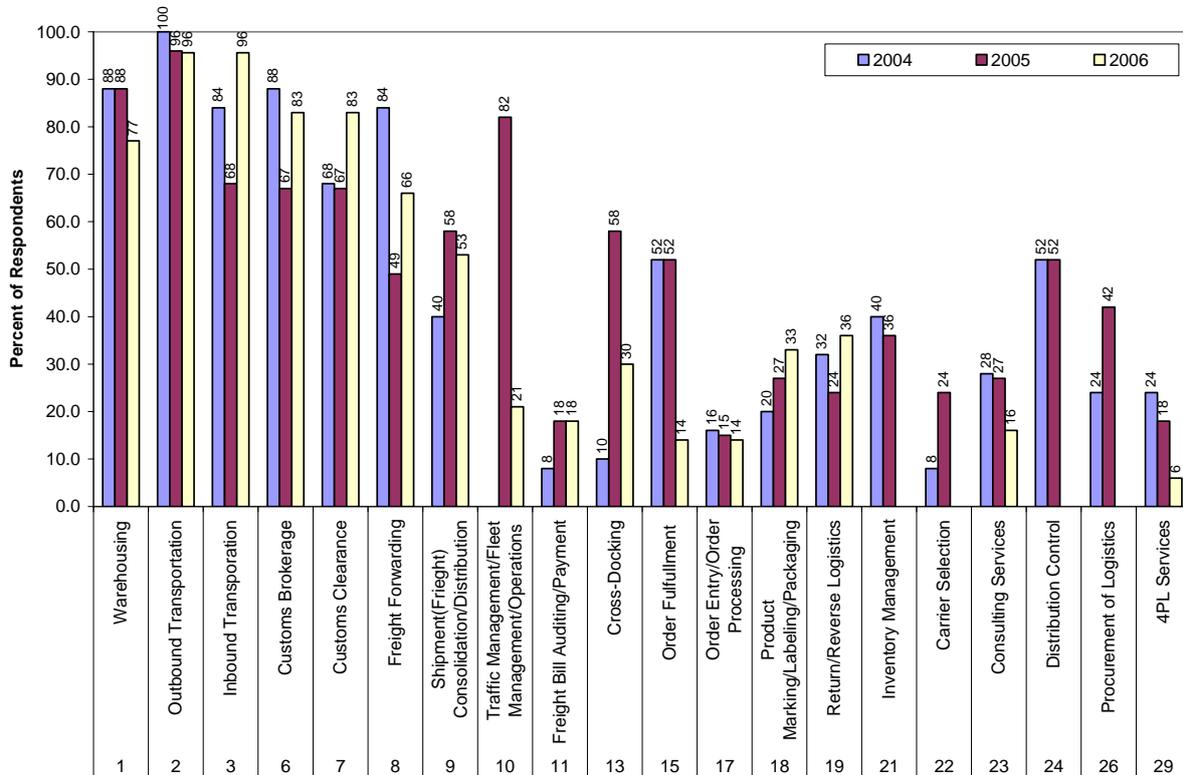
Hamel [6] identifies eight elements of a business model, namely, value proposition, revenue model, market opportunity, competitive advantage, competitive environment, market strategy, organizational development and management team. To identify the emerging business models in the LSP landscape, we will focus on the most important elements, namely, organizational development, value proposition, competitive environment and market strategy. Langley et al.'s [9, 10, 11] 3PL reports identify the trends in the 3PL industry and are a useful reference for understanding the structural changes in the LSP landscape. We draw from their reports various trends so as to identify the emerging business models.

Organizational Development: Langley's 3PL reports identify two major areas where organizational changes in LSP are taking place. Firms are increasing in their IT intensity. We label this area as Asset/IT intensity. Langley et al. [11] assert that as 3PL firms extend their supply chains around the globe, the resulting complexity will compel management to focus more on the enabling technologies in the supply chain management, specifically IT. They report that 92% of respondents agreed that IT capabilities are a necessary element of the overall 3PL expertise. The asset-intensive firms are those which own warehouses, fleets (trucks, ships, or airplanes). Then, there are firms that incorporate IT along with these assets and provide IT solutions such as warehouse/distribution center management, transportation management, and various web-enabled solutions. Langley et al. [11] report significant emphasis on planned future use of the 3PLs' technology services in the more strategic areas of supply chain planning (30%) and transportation planning (30%). These two areas of IT capability are further "upstream" in the supply chain business process. Thus, firms that are IT intensive would provide supply chain planning and management solutions.

Firms are increasing their geographic presence due to shippers going global as well as increasing competition. We label this as geographic reach. In tandem with the shipper's needs, LSPs have been increasing their geographical reach [10]. Amongst the most popular emerging markets in 2006, China and Russia are the most attractive to the LSPs. The regional scope of the LSPs is also on the increase. Langley et al. [10, p. 6, Exhibit 4] report that most of the LSPs surveyed have a regional or global scope.

Value Proposition: Langley et al. [11, p. 12, Exhibit 13] identify price of 3PL services and quality of tactical/operational logistics services as key criteria for selecting 3PLs". We denote price as value to a shipper which is measured in terms of reduced transportation costs, reduced logistics costs and lower supply chain costs. Logistics costs cover the costs of various related services along with transportation costs, and supply chain costs are overall costs of managing the supply chain of the shipper. On the quality of tactical / operational logistics services, LSPs are increasing their geographical scope and service offerings to provide tactical service to their customers over different geographical regions. The quality of service provided by the LSP depends on the duration of the relationship with the shipper. For tactical services, LSPs need only short-term relationships with their customers. However, when they need to provide strategic services, a long-term relationship with their customers is needed [10, p. 21, Exhibit 18].

Exhibit 6: Services provided by 3PLs [Based on Langley et al. 9, 10, 11]



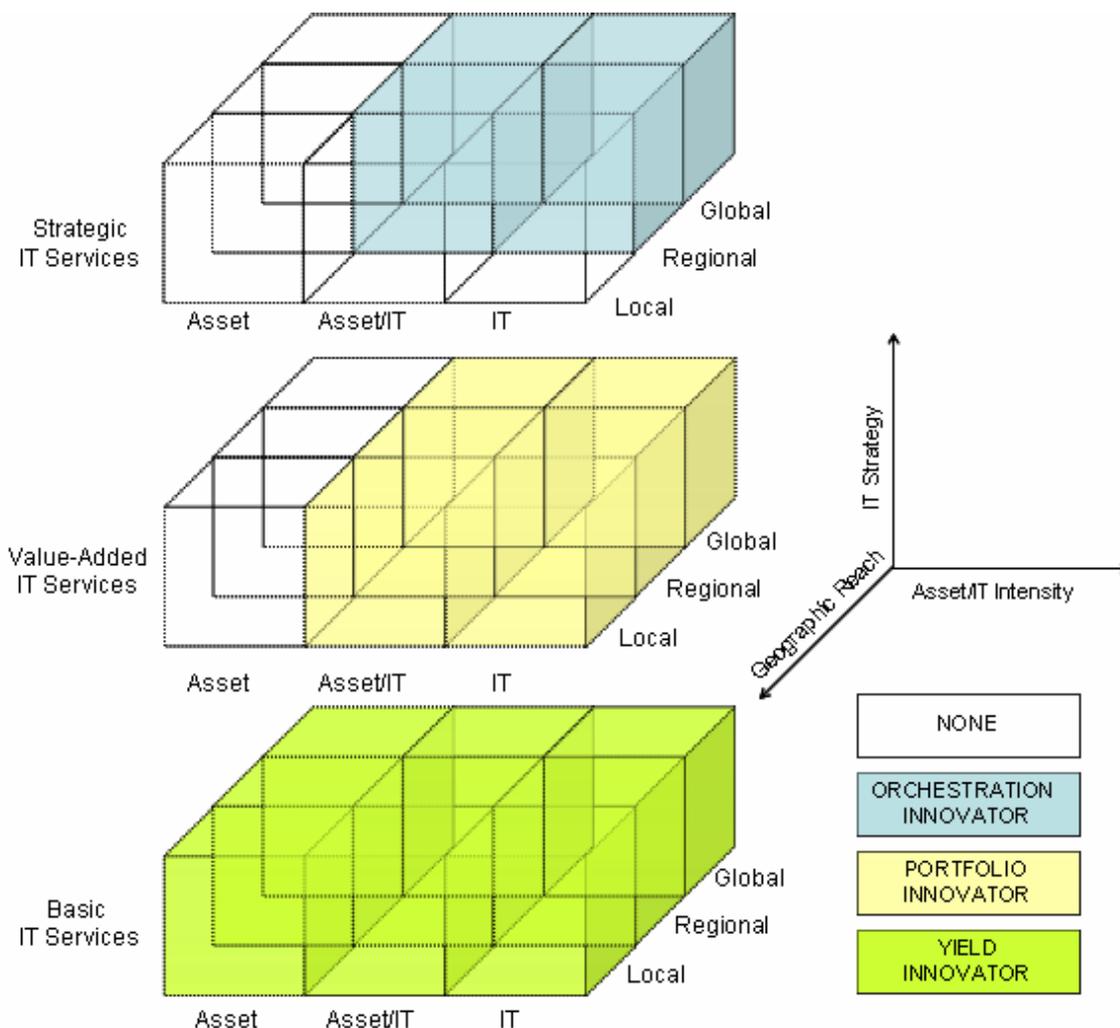
Competitive Environment. Competitive environment refers to the other companies operating in the same market-space selling similar products. In the LSP landscape, firms tend to gain competitive advantage by service differentiation, first mover advantages (by offering newer services), tactical geographic locations, or by vertical integration or complete niche offerings. Langley et al. [9, p. 23, Exhibit 18] show how different types of firms attempt to differentiate in services (Exhibit 6). At the lowest level are the basic service providers whose services are commodity in nature. Examples of such services would include warehousing and transportation. There are many players in such markets. At the intermediate level are the value-added service providers whose services are more differentiated as compared to others by including IT-based services, such as reverse logistics, and transportation management. At the top level are the lead logistics providers and 4PLs whose services offerings are further differentiated, such as, supply chain management. There are some players who provide highly differentiated services and thus gain competitive advantage.

Market Strategy. The most important element of a business model is the market strategy. In the LSP landscape the market strategy depends very much upon the services provided by the firm and its innovation strategy. Langley et al. [11] reports that traditional 3PL services, such as transportation, warehousing, and customs clearance, are the ones most often outsourced. These are also the services most likely to be outsourced in the future by those 3PL users who plan to increase their outsourcing over the next three to five years. Overall satisfaction with 3PL providers remains high in 2006, but 3PL users clearly expect continual improvement in service levels and information technology (IT) capabilities. Exhibit 6 shows the services outsourced by the shippers to the LSP from 2004 to

2006 [9, 10, 11]. There is a trend toward using IT-based services such as inventory management. However, strategic services of 4PLs show a decline in year 2006.

Another aspect of a firm's market strategy is its innovation strategy, which as described earlier is closely linked to the firm's IT strategy. At one end of the spectrum, most 3PLs provide basic IT services (such as warehouse / distribution center management and transportation management), which are closely linked to the logistics services. Their innovations would be autonomous in character as they influence only the focal firm. On the flip side, there are some 3PLs who have developed the strategic IT services to influence many firms in the supply chain. Such services include supplier and customer relationship management tools, supply chain planning, and 4PL services. Such innovations would be systemic in character as they influence many firms. At the mid-range of the spectrum are the 3PLs who attempt to add value to their services and hence increase service differentiation by offering services such as visibility tools, customer order management, collaboration tools, yard management and transportation planning. Their innovations are semi-autonomous to semi-systemic in character as they have some influence on other firms.

Exhibit 7: LSP Innovation Matrix



The firm's competitive environment and value proposition are dependent on the organizational development and market strategy (specifically IT strategy). Firms can easily control these aspects. Thus, based on the three important characteristics (namely, asset/IT intensity, geographic reach, and IT strategy), we develop an LSP innovation matrix as shown in Exhibit 7. Based on the 3PL reports [9, 10, 11], we identify three business models that would emerge as a result of changes taking place in the LSP landscape, namely, yield innovator, portfolio innovator and orchestration innovator, as shown in Exhibit 7.

The most basic LSP business model would be that of the **yield innovator**. Yield innovators have led the way in logistics outsourcing through asset based services such as inbound and outbound transportation, freight forwarding and warehousing. Most of these services have attained the status of commodity-like services. In order to remain competitive in the market, these LSPs innovate in basic services using IT tools. The IT based services thus provided by the yield innovators include warehouse/distribution center management, transportation management (execution), web-enabled communication and visibility tools. These LSPs are the members of the networks driven by the 4PLs, but they do not drive the network themselves. So, being situated at the low end of the network, the services provided by them would be autonomous in character. For example, they would innovate by providing bundled services, increasing their reach from local country to regional levels, joint ventures or mergers with companies to provide such services over a larger geography. Yield Innovators have not moved their commodity services to become true multi-service providers. Some domestic ones have not succeeded at venturing into international logistics services or have failed to differentiate themselves against the competition. Their strategy is to attract customers with low-cost service on a short-term level.

At the mid-range are the **portfolio innovators**. Portfolio innovators have emerged in the service vacuum created by the yield innovators. They may or may not own assets, but they are quite IT-intensive. The essence of the portfolio innovators is that they innovate by providing IT-based value-added services, such as customer order management, Internet-based transportation / logistics markets, RFID and asset tracking and transportation management (planning). These services are not related to any assets but add value to the logistics services. As portfolio innovators do some networking with the shipping companies, and customs department, their innovation strategy would be somewhere mid-way between being autonomous and systemic in character. Portfolio innovators develop solutions tailored to meet the unique and special needs of each customer.

At the top-end are the **orchestration innovators**. They provide strategic supply chain management services which optimize the entire supply chain, providing a long-term solution. The essence of the orchestration innovators is that they innovate by providing strategic IT-based services (such as supply chain planning and supplier management systems). They do not own assets, and even if they own assets such as warehouses, it is not the major service provided by them. As they are into managing the whole supply chain, they would have global reach. Also, since they are driving networks with shippers, 3PLs, and shipping agencies, their innovation strategy would be systemic in character. For example, they may decide to provide one-stop services and offer 4PL-like solutions to manage the full logistics requirements of large companies globally. Virtual collaboration would enable the individual parties to collaborate in a virtual domain and rein in their competencies for the benefit of the customer. Virtual integration would enable

such companies to operate with others was if they were a single, vertically integrated company. The three business models are summarized in Exhibit 8.

Exhibit 8: Elements of the Emerging LSP Business Models

ELEMENT OF BUSINESS MODEL	YIELD INNOVATOR	PORTFOLIO INNOVATOR	ORCHESTRATION INNOVATOR
ESSENCE	Innovation in basic services	Innovation in value-added services	Innovation in strategic services
ASSET/IT INTENSITY	Asset intensive	Asset/IT intensive	IT intensive
GEOGRAPHIC REACH	Local to Regional	Regional to Global	Global
VALUE TO CUSTOMER	Reduce transaction cost	Reduce total logistics and transportation costs	Reduce total costs and improve time to market
RELATIONSHIP WITH CUSTOMER	Short-term	Mid-term	Long-term
SERVICE DIFFERENTIATION	Low (commoditized)	Medium (Due to differentiation in IT)	High
NO. OF PLAYERS	Many	Fewer than Many	Many
SERVICES OFFERED	Basic	Value-Added services	Strategic
INNOVATION STRATEGY	Autonomous	Between autonomous and systemic	Systemic

INSTITUTIONAL PRESSURES AND LSP INNOVATION

LSPs are trying to innovate along various dimensions. Langley et al. [11] assert that capacity management and innovation are key challenges for the 3PL industry in the future. While 3PL users acknowledge innovations such as lead logistics providers and fourth-party logistics (4PL) providers, significant room for improvement still exists in the knowledge and use of these approaches. Langley et al. [11] allude to a number of dimensions along which innovation is taking place in the LSP landscape. These areas are mentioned below:

Growth and consolidation in the 3PL sector: A number of mergers and acquisitions have taken place in the LSP landscape driven by regional expansion, broadening service lines and industry specialization.

Development of a “Services Portfolio” by 3PLs: Shippers are interested in services that are responsive to their supply chain needs across the globe. Shippers generally perceive a lack of consistency in core services among 3PLs, both between providers and in what service levels are available from individual 3PLs across the regions they serve. Therefore, 3PLs are trying to articulate a meaningful services strategy to help meet the shipper’s logistics needs.

Emergence of the “Global 3PL”: Shippers are sometimes frustrated with apparent differences in doing business with specific 3PLs from one region to another. Shippers desire that their 3PLs help capture local benefits, such as low labor costs, thereby helping reduce the net landed cost of their products. Thus, in pursuit of customizing services to the region that they operate in, the 3PLs are trying to establish their presence as a “global 3PL”, who still caters to the local needs of the shippers.

3PL User/Provider Relationships: The objective of many 3PLs is to move their customers from a conventional customer-supplier relationship to a true partnership. But both 3PLs and users need to be more aggressive in making this

happen. While the importance of repeatable and leveraged solutions is obvious, it is also important for 3PLs to be forward looking, and to try to help customers identify and solve supply chain problems proactively. Users also need to be more inclusive; that is, they need to share information relating to their strategic direction with their 3PLs. Both parties need to look at longer-term issues and challenges, instead of inefficiently focusing on short-term concerns. Continued emphasis on customer-needs alignment and solution innovation are needed in most relationships.

RFID and IT: Recent studies have confirmed the need for 3PLs to develop suitable IT capabilities. In fact, users are already pressuring their 3PLs for increasingly sophisticated IT-based services. One of the technologies expected to become more prevalent is RFID, and there will be continued opportunities for 3PLs and users to determine how best to use RFID to address logistics and supply chain issues.

Future Growth of 4PL Concept: One anomaly is that the 4PL concept does not seem to be enjoying significant “marquee” presence as a likely future scenario for logistics outsourcing. This is substantiated by the 2006 3PL survey [11]: Users still focus on the more tactical services instead of the more strategic and IT-focused services. The 3PLs’ response in such cases, when they are not able to sell up the value chain, is to shift their emphasis to selling more of the current services to the same (or other) customers. The question for the future is whether 3PL users are sufficiently focused on the broader inter-organizational and regional issues to make proper use of 4PL capabilities.

Thus, due to the changing needs of the shippers, growing pressure from the other LSPs (either through mergers and acquisitions and other institutional pressures), firms are innovating along various dimensions such as innovation in business models, service portfolio, and networks and alliances as shown in Exhibit 9. Whether it is increasing the firm’s global reach, enhancing the service portfolio, forming networks or alliances, or developing strategic relationships with the customers, the LSP’s IT strategy play a critical role in innovation. Exhibit 9 attempts to map these innovations in the LSP landscape based on our conceptual framework presented in this document.

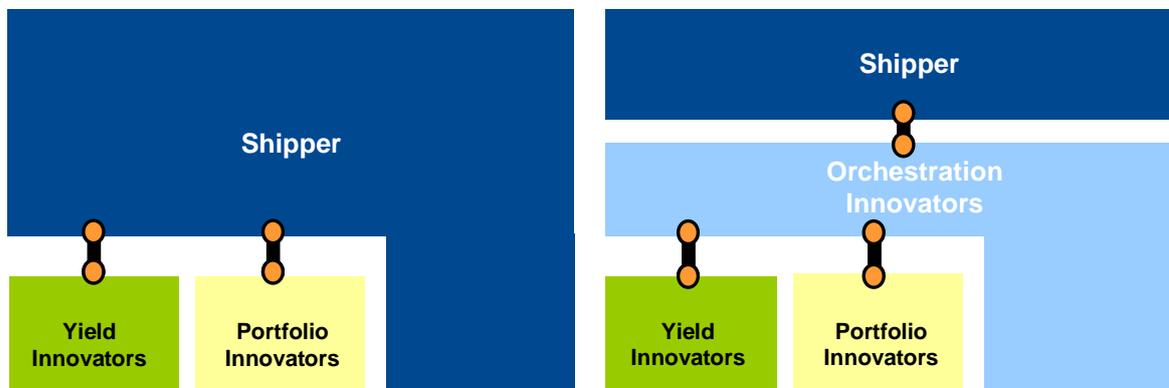
Exhibit 9: Mapping of Firm’s Innovation Strategy from Institutional Perspective

NO.	STRATEGIC ASSESSMENT	INNOVATION	INNOVATION DIMENSION	INSTITUTIONAL PRESSURE	TYPE OF INNOVATION
1	Growth and consolidation in 3PL sector	Regional Expansion	Business Model	Mimetic	Autonomous
		Broadening Service Lines	Service	Normative	Autonomous
		Industry Specialization	Business Model	Coercive	Semi-Autonomous
2	Development of a “Services Portfolio” by 3PLs	Service Portfolio	Service	Normative	Semi-Systemic
3	Emergence of the “Global 3PL ”	Global yet Local Presence	Networks and Alliances	Normative	Systemic
4	3PL User/Provider Relationships	Strategic Long-term relationship	Networks and Alliances	Normative	Systemic
5	RFID and IT	IT support	Enabling Process	Normative	Semi-Autonomous
6	Future Growth of 4PL Concept	Same services to other customers	Enabling Process	Coercive	Autonomous

INTEROPERABILITY OF BUSINESS MODELS

Gattorna [5, p. 431] describes two modes in which the LSPs can inter-operate. First, firms that outsource partially would deal with the LSPs directly and those that outsource fully would like to deal with a strategic logistics solution provider (referred to as a 4PL), who would in turn coordinate with various 3PLs to provide appropriate logistics services to the outsourcing firm. Thus, based on this model and the needs of the outsourcing firm, the business-models would interact as shown in Exhibit 10. In the first mode, shippers can outsource directly to 3PLs. This would be particularly true for companies that outsource partially. Some shippers desire to deal with a single LSP, or at best, a few LSPs. Therefore, there gives rise to 4PL who would act as intermediary between the shipper and the various 3PLs. Such 4PLs are conceivable orchestration innovators.

Exhibit 10: Modes of Interoperability of Business Models



RESEARCH METHODOLOGY, RESULTS AND FINDINGS

For validating the model, we conducted a desk review. We identified 25 M&As among LSPs in past two years and mapped it onto LSP innovation matrix to understand the kind of innovation in the LSPs business. We found that although many LSPs are IT intensive, they are not exactly orchestration innovators, because of their regional reach and mid-term strategic solutions. Such firms are moving towards being orchestration innovators by improving their geographical reach as well as portfolio of services to their customers. They can therefore be termed as portfolio innovators. As there are few local LSP, the sample may be biased toward portfolio innovators. Also, many other LSPs provide basic services augmented with supply chain solutions, which means that they are attempting to innovate in their basic services. These LSPs have presence in more than one country. Such firms may fall in the category of yield innovators. Moreover, there are hardly, if any, LSPs that fulfill the requirements for being an orchestration innovator. From this, we can conclude that there would be mostly yield and portfolio innovators in the LSP landscape.

Exhibit 11: Mapping on LSP Innovation Matrix

REACH	IT STRATEGY	ASSET / IT INTENSITY		
		ASSET INTENSIVE	ASSET/IT INTENSIVE	IT INTENSIVE
GLOBAL	Strategic innovation	----	Orchestration (0)	Orchestration (0)
	Value-added innovation	----	Portfolio (5)	Portfolio (4)
	Basic innovation	Yield (3)	Yield (1)	Yield (0)
REGIONAL	Strategic innovation	----	Orchestration (0)	Orchestration (1)
	Value-added innovation	----	Portfolio (2)	Portfolio (3)
	Basic innovation	Yield (3)	Yield (3)	Yield (0)
LOCAL	Strategic innovation	---	---	----
	Value-added innovation	---	Portfolio (0)	Portfolio (0)
	Basic innovation	Yield (1)	Yield (0)	Yield (0)

We also observed that there was only 1 orchestration innovator. Orchestration innovation comes through the new IT based services. According to the 2006 3PL report [11], the top four IT based services are warehouse/distribution center management, transportation management (execution), visibility tools (shipment tracking/tracing/event management), and web-enabled communications. 2006 3PL report [11] also shows that the 4PL provider (orchestrators) concept does not seem to be enjoying significant “marquee” presence as a likely future scenario for logistics outsourcing. Users still focus on the more tactical services instead of the more strategic and IT-focused services. The 3PLs’ response in such cases, when they are not able to sell up the value chain, is to shift their emphasis to selling more of the current services to the same (or other) customers.

We have also mapped the companies on the LSP innovation matrix as shown in Exhibit 11. We can draw a number of inferences from Exhibit 11. There is only one orchestration innovator, regional in scope but providing strategic IT services. It is a leading provider of SCM services in Europe and its innovation is more in terms of strengthening its position as a SCM service provider. Most of the yield innovators are regional in scope. This means that the LSPs which provide commodity-like services would innovate both in their geographical reach as well as in their IT scope to compete for markets. Some of the yield innovators also operate globally, such as shipping lines, which are heavily asset intensive, but compete in the global market by virtue of their global assets and specialized services. The scope of portfolio service providers is from regional to global, and there are a number of portfolio providers which operate globally.

CASE STUDY: LI & FUNG

To identify orchestration innovator's business models, we referred to some case studies. We came across the Harvard Business School's case study about Li & Fung whose business model resembles that of an orchestration innovator. We review their business model briefly to draw insights into an orchestration innovator business model.

Asset/IT Intensity: The Hong Kong based Li & Fung started as an export trading company offering warehousing and manufacturing facilities. However as their business model evolved to become a supply chain manager and an orchestrator, the firm acquired several intranet and other IT capabilities. In 1995, they launched an intranet website to link their own offices and improve internal communications. Soon after, they launched secure extranet sites. Each site linked them to their customers and provided online product development as well as order tracking decreasing costs of hard copy transfers. The firm recognized the value of internet technology and has been aggressively adopting it [12].

Li and Fung launched their e-commerce initiative in 1997 to combine the benefits of technology and supply-chain to transform retail. They adopted the 'bubble in' approach rather than outsourcing the e-commerce implementation. The target customers of the e-commerce venture were SMEs in the U.S.; retailers with a turnover of less than US\$100 million and wholesalers with turnovers less than US\$100 million.

Geographical Reach: One of the important aspects of organizational development as described by Hamel [6] is the wide geographic scope of the firm. In the case of Li & Fung, the growth of their business and the customer's needs helped the company to expand rapidly. By 2000, Li & Fung had established a wide geographic reach with over 48 offices in 32 countries worldwide. In addition to a global presence, their business also came from a wide geographic area. In 2000, 69% of the sales of this US\$2 billion export trading company were in the U.S. and 27% in Europe.

Value to Customers: The customer is an important link in Li & Fung's strategy. The client benefits from the optimization of their supply chains by decreasing the time to order fulfillment from three months to five weeks. This leads to a reduction in the inventory costs. Li & Fung acts as the middleman and reduce matching and credit risks and offer quality assurance to their customers.

Relationship with Customers: Li & Fung describe their relationship with customers as *narrow and deep* nurtured with a few customers and includes value-added services. They felt that B2B exchanges were *a molecule thick and a mile wide* i.e. impersonal and depthless. They responded to their customers' fears and expectations, and constantly focused on creating customized value chains for every customer order [13].

Number of Players and Service Differentiation: Li & Fung have few competitors since they offer highly differentiated services and their business model is based on inculcating deep and meaningful relationships with their customers. In addition, Li & Fung have acquired firms who are either their direct competitors or are related companies. For instance, their acquisition of the Swire Group makes them the only listed Supply Chain Management Company in Hong Kong and which is five times larger than its two closest competitors. Li & Fung also

acquired related services companies like Camberely which specialize in offering customers virtual manufacturing or product design services.

Services Provided: Li & Fung work with thousands of suppliers globally, sourcing raw materials and intermediate products for its European and U.S. based customers. Its Chairman Victor Fung sees it as an organization which provides a host of information intensive services including product development, sourcing, financing, and shipping handling and logistics over a wide geographic region.

Innovation Strategy: Li & Fung acts as the mastermind for managing the supply chain on behalf of their customers, orchestrating the whole production process that starts from raw materials right to the finished product. The company provides a “borderless manufacturing” environment by obtaining raw materials from various sources at the best cost and quality. The extent of differentiation is so high, that the firm also provides up-to date fashion and market trend information to clients. With acquisitions and mergers, and forming industry relationships, Li & Fung is a good example of an orchestration innovator in the global LSP environment.

CONCLUSION

With the increase in demand for logistics outsourcing, LSPs are continuously consolidating and redefining themselves. Many LSPs are attempting to improve their portfolio of services and increase geographical reach through mergers, acquisitions, joint-ventures and strategic alliances. In this study, we have identified the emergence of three major business models in the LSP landscape as a result of such changes, namely, yield innovators, portfolio innovators and orchestration innovators who innovate in the basic IT services, value-added IT services and strategic IT services respectively. While many LSPs are yield and portfolio innovators, there are only a few orchestration innovators. The use of such strategic services remains to be fully exploited. However, the horizon appears to suggest a bright future for such IT based services and firms (particularly portfolio innovators) would benefit richly from using their IT platforms for providing these strategic services.

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