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Logistics Outsourcing: Capabilities, Opportunities and Challenges in China, India and Singapore

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A Collaboration Between



**Logistics Outsourcing:
Capabilities, Opportunities and Challenges
in China, India and Singapore**

**Robert de Souza
Mark Goh
Lei Yijie**

**The Logistics Institute – Asia Pacific
National University of Singapore**

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“Optimizing Outsourced Regional Logistics Network”**

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ABOUT THE LOGISTICS INSTITUTE – ASIA PACIFIC

The Logistics Institute – 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.

The Institute provides postgraduate education in logistics and SCM at the MSc and PhD level; undertakes leading-edge research and development in supply chain engineering, technology and management in collaboration with industry; and hosts a regular series of Think Tables that brings thought leaders in research and industry to discuss contemporary issues, challenges and solutions in supply chain management in a dynamic environment.

The key research themes for Phase 2 include:

Supply Chain Intelligence: This area seeks to focus on providing an overarching analysis of the logistics market, the trade flows, and economic barometers of the various countries in Asia as far as it pertains to effective supply chain management for various industries. Interest in this area is heavily driven by data, empirics and company cases. The Institute conducts annual on-going surveys to test the pulse of the respective markets and industries such as cold chain, 3PL, etc.

Supply Chain Optimisation: This, being the traditional and existing strength of the Institute, seeks to deepen expertise in supply chain global network design and optimisation, involving the respective modes of transportation. Intensive supply network simulation on a regional/ international basis e.g. port and maritime logistics, consolidation of logistics hubs, flexibility of regional distribution centres are a primary feature of this group. Other areas of interest include system productivity at the port, the integration of manufacturing and services within the value network, dynamic pricing and revenue management for high end perishables, and the study of mergers and acquisition and its impact on the respective industries.

Supply Chain Technology: This is an emerging area for the Institute, which intends to look at the test bedding of RFID and data capture related technologies, within the context of an independent environment. Work done in this area involves both investigative led research and joint development of supply chain technology based innovation with other agencies and companies. Policy and implementation issues pertaining to new supply chain technology and the end-to-end supply chain network are undertaken on a contract research basis.

Logistics Outsourcing: Capabilities, Opportunities and Challenges in China, India and Singapore

Executive Summary

Success in today's business depends on superior supply chain planning and execution. Supply chain speed and flexibility have become two key levers for competitive differentiation and increased profitability. Within a global trade environment, one of the biggest challenges is the ability to manage seamless forward and backward flows of material and information. Faced with increasing global competition in the past two decades, a popular strategy adopted by many successful companies to address these challenges involves outsourcing logistics and supply chain activities/processes to reliable third-party logistics providers (3PLs), and focusing on core competency.

Globalization, development of information and communication technologies, as well as supply chain network optimization are reshaping trade flows. In the future, the logistics outsourcing industry will be more global, diversified and concentrated. With the help of state-of-the-art technologies, more 3PLs will be gearing up to meet the demand growth and improve their services offerings by incorporating newer value-added services and customizing their supply chain management solutions.

Indeed, logistics outsourcing continues to expand in the Asia-Pacific. With more than 84% of companies operating in the Asia-Pacific relying on 3PLs, the logistics outsourcing industry in this region increasingly attracts global 3PLs notably in countries such as China and India. However, challenges, such as poor infrastructure, complex regulations and industry readiness, still remain.

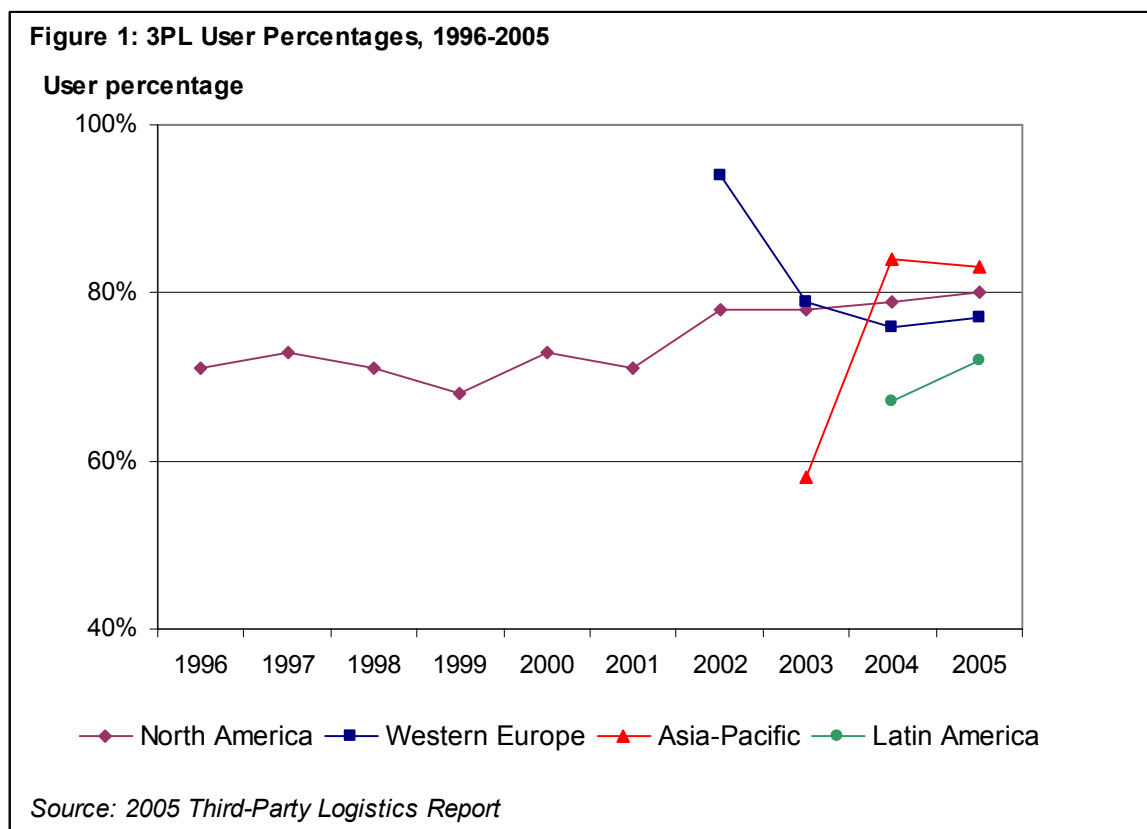
This white paper seeks to provide a better understanding of the logistics outsourcing challenges and opportunities in three Asian countries: China, India and Singapore.

Current empirical findings suggest that compared with the logistics outsourcing industry in more developed economies, the logistics sectors in most Asian countries are relatively weak. Asian companies need to develop a systematic methodology and strategy to enhance their competitiveness. Using Porter's (1998) cluster approach, we propose a cluster-based framework to integrate various players in the logistics outsourcing industry. Through the interaction between different players in the cluster, effective and innovative logistics solutions can thus be created.

Logistics Outsourcing Practices

Outsourcing of non-core operations is now an accepted major trend in many industries. Manufacturers have been turning to 3PLs to manage their increasing complex global supply chains. Meanwhile, there are also companies seeking to outsource the management of their supply chains to obtain reliable logistics services albeit at a lower cost. How 3PLs respond to this growth and to the challenges of meeting exacting customer demands is thus critical.

Since 2002, the use of 3PL services has been growing (see Figure 1). According to the recent Third-Party Logistics Report (Georgia Institute of Technology, 2005), the percentage of firms using 3PL services in Western Europe lies between 76% and 79%. In Asia-Pacific, this percentage has been 84% in 2004 and 83% in 2005 respectively. Considering the high percentage of using 3PLs worldwide, logistics outsourcing services offered by 3PLs continue to consume a considerable portion of overall outsourced logistics and supply chain budgets.



Some Reasons for outsourcing

Some of the typical drivers for organizations across the world to outsource their logistics activities include:

- **Globalization.** With globalization and ease of trade, organizations are increasingly sourcing, manufacturing and distributing on a global scale. This renders their supply chains very complex to manage. Thus, their logistics activities are increasingly being farmed out to experienced 3PLs, who have global reach, sophisticated IT platforms, and state-of-the-art transportation networks.
- **Effectiveness.** Logistics may not be the core activity of an organization. By outsourcing logistics, organization can re-focus on their core competences and thereby manage their resources more effectively.
- **Cost.** By outsourcing logistics, organizations can reduce both fixed and variable costs as the 3PLs can leverage on their economies of scale, which is sometimes not available to mid-sized regional manufacturers.
- **Customer satisfaction.** Ideally, logistics outsourcing improves the cycle time and delivery performance, thereby increasing customer satisfaction throughout the chain.
- **Value-added services.** Since 3PLs now offer a range of value-added services, such as multi-country consolidation, channel management, after sales support, and life cycle management, organizations can benefit from the richness of such services.

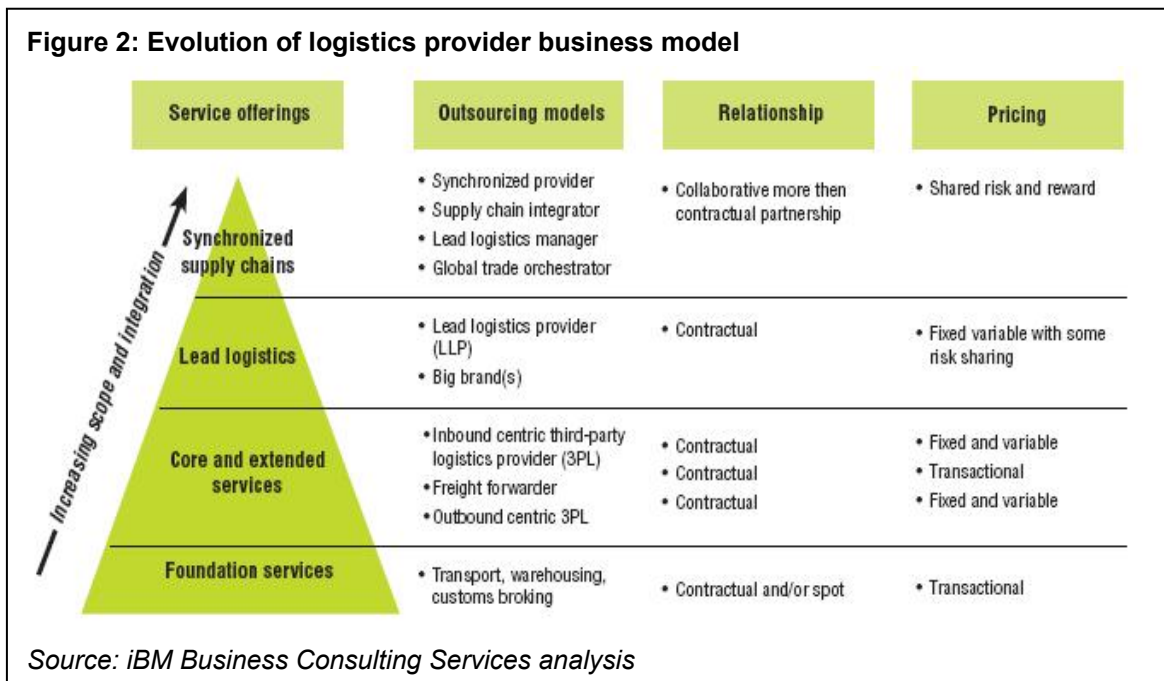
Outsourcing services provided by 3PLs

To continue to satisfy customer requirements, the 3PL service industry is also evolving to offer greater scope and more integrated solutions. While 3PLs continue to offer the basic traditional logistics services (e.g. transportation and warehousing), they also provide integrated logistics solutions, such as vendor management and inventory financing.

There are three levels of outsourcing (see Figure 2):

- **Transactional Outsourcing.** This is based on cost and activity transactions, with no long term contracts and partnership between the 3PL and the outsourcing company.
- **Tactical Outsourcing.** This mode of outsourcing is practiced on a mid- to long- term basis with negotiated contracts and integrated IT systems to facilitate better information flow and to create supply chain visibility.

Figure 2: Evolution of logistics provider business model



- Strategic Outsourcing.** In this level, sometimes known as best sourcing in some sectors, long-term relationships are formed, with successful outcomes, and 3PLs become key partners in a company’s supply chain management and transactional transparency is maintained on a mutual trust basis.

In the early years, 3PLs only provided core services such as transportation, warehousing and customs clearance. At this stage, the relationship between the 3PLs and the customers was strictly contractual, and services were charged by transactions. Later on, with an expanded service scope, 3PLs began to provide both core and extended services, including inbound and outbound centric 3PL services and freight forwarding. Nevertheless, the relationship remained contractual and services were charged either by transactions or based on fixed pricing. Both of these two stages are labelled as transactional outsourcing as no bond exists between the 3PL and the customer.

As customers seek integrated supply chain services, Lead Logistics Providers (LLP) evolved to serve them. Such LLPs are usually large global logistics players who have the capability to execute all of the logistics activities within their organization. At this stage, the LLPs share information as well as risk with their customers. Visibility in the entire supply chain is increased. LLPs provide tactical outsourcing to customers. Although the relationship between service provider and customer remains contract based, the duration of the contract is mid-term or long-term and risk sharing becomes evident.

In the last stage, the 3PL becomes a strategic partner with the customer. Risk and benefits are shared mutually. The relationship is transformed from contractual to one of collaborative partnership.

Logistics Activities Outsourced

As end-to-end supply chain integration, supported by sophisticated technologies, becomes a reality, customer needs and expectations of the services provided by 3PLs begin to grow in breadth and depth.

According to the 2005 Third-Party Logistics Report (Georgia Institute of Technology), the activities most frequently outsourced to 3PLs globally are outbound transportation, warehousing, customs clearance and brokerage, inbound transportation, and freight forwarding respectively (Table 1).

As shown in Table 1, the activities most frequently outsourced are those that are more asset intensive and require greater labour content, such as outbound transportation, warehousing, inbound transportation and transportation management. Conversely, those activities that are less frequently outsourced tend to be more technology intensive and require greater knowledge content, such as product assembly/installation/manufacturing, information technology and LLP/4PL services.

In addition, while most organizations are happy to transfer their physical warehousing operations to 3PLs, less than 10% of them place their inventory ownership in the hands of the supply chain expert. Likewise, less than 20% of the organizations outsource their information systems, perhaps suggesting a low level of confidence in the 3PL's capability in secure data management and the reluctance to provide information transparency.

Focusing on the Asia-Pacific, the traditional logistics services such as outbound transportation, inbound transportation and warehousing are being outsourced by most organizations. However, different from the other regions, organizations in the Asia-Pacific also tend to rely on the value-added logistics services provided by 3PLs, such as order fulfillment and distribution (52%), inventory management (36%) and customer service (15%).

According to Karim Alhusseini of Eaton Corporation and a CapGemini Accelerated Solutions Environment participant (2005), the "future expectations of a 3PL are to do more than the labor intensive and tactical activities, but to expand into consulting/implementation services that integrate the 3PL systems and tools with our applications for turnkey solutions." His opinion is that the execution processes are far easier to outsource. However, to improve

competence, organizations need to rely on capabilities provided by 3PLs to ensure sufficient depth of talent in the key service offerings.

Table 1: Logistics Activities Outsourced in 2005

Logistics Activity	Global	North America	Western Europe	Asia-Pacific	Latin America
Outbound Transportation	80%	78%	88%	96%	84%
Warehousing	64	63	72	88	55
Customs Clearance and Brokerage	56	63	49	67	55
Inbound Transportation	60	58	66	68	68
Freight Forwarding	51	56	53	49	45
Transportation Management	59	49	79	82	53
Freight Bill Auditing/Payment	27	45	10	18	11
Cross-Docking/Shipping Consolidation	42	39	50	58	43
Order Fulfillment and Distribution	28	29	31	52	19
Consulting Services	22	23	22	27	23
Procurement of Logistics	29	23	31	42	47
Carrier Selection	18	19	16	24	19
Product Marketing/Labeling/Packaging	21	18	27	27	19
Product Returns and Repair	19	18	25	30	9
Inventory Management	19	17	23	36	13
Reverse Logistics and Waste Disposal	22	16	31	24	25
Product Assembly/Installation/Manufacturing	13	16	16	18	0
Information Technology	17	15	21	18	19
Rate Negotiation	11	14	9	12	8
Fleet Management	18	13	26	36	19
LLP/4PL Services	11	11	13	18	8
Materials Management	9	10	10	6	9
Inventory Ownership	7	8	6	6	9
Order Entry/Processing/Customer Service	8	7	8	15	8
Customer and Supplier Compliance	4	5	4	0	2
Factoring (Trade Finance)	3	2	3	6	6
	n=1091	n=516	n=339	n=53	n=144

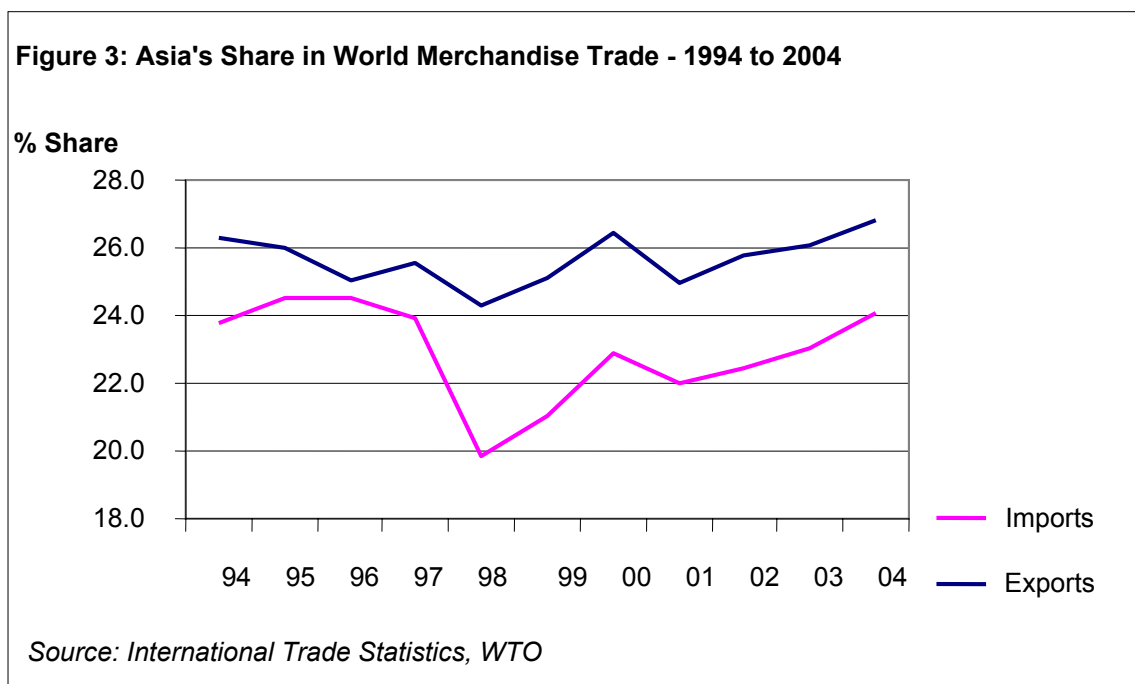
Source: 2005 Third-Party Logistics Report

(N=1091, including countries from South Africa and Middle East)

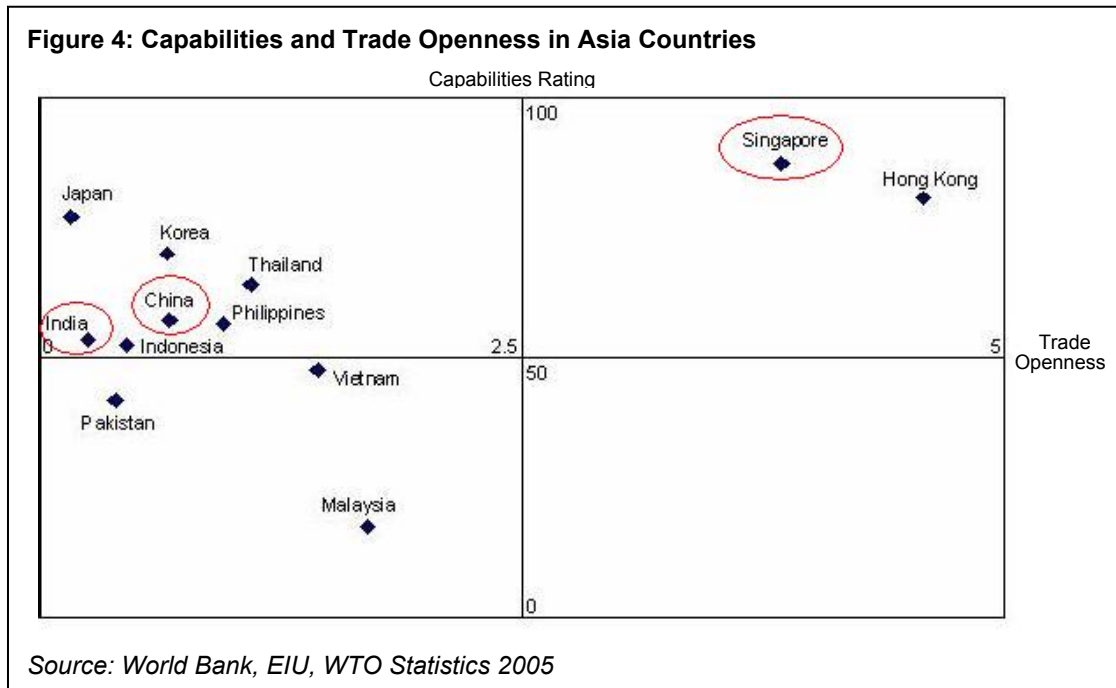
Logistics Outsourcing Opportunities and Challenges in Asia-Pacific

According to the “The Year 2004 Survey: CEO perspectives on the current status and future prospects of the third party logistics industry in the Asia-Pacific Region”, in 2003, 3PLs operating in the Asia-Pacific have reported average revenues of USD 425 million, a 16% growth y-o-y. Indeed, from 2004 to 2007, the annual growth rate is expected to be around 15%¹. This is hardly surprising given the robust growth in Asia’s share of global merchandise trade since 1994 (see Figure 3).

However, competing in the Asia-Pacific is quite different from competing in North America or Europe, given the diverse geography and complex government regulation prevalent here. In this section on logistics outsourcing challenges and opportunities, we focus on the countries of China, India and Singapore (see Figure 4).



¹ The Year 2004 Survey: CEO perspectives on the current status and future prospects of the third party logistics industry in the Asia-Pacific. By R. Lieb, Professor of Supply Chain Management, College of Business Administration, Northeastern University and B. A. Bentz, Associate Partner, Accenture – Supply Chain Management. (September 15, 2004).



Logistics Outsourcing Opportunities and Challenges in China

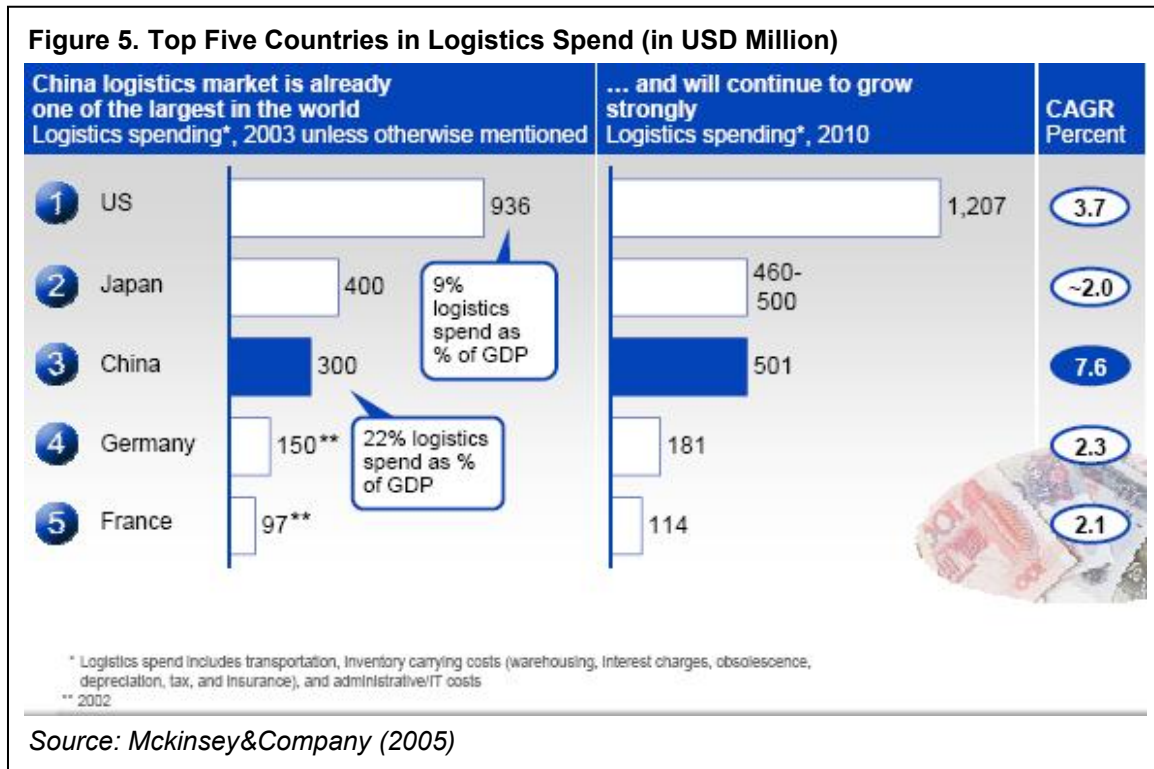
By 2010, China’s economy is expected to be twice that of Germany, which was the third largest in the world in 2004. China is also expected to overtake Japan as the world’s second largest economy with a GDP approaching USD 4.5 trillion by 2020².

The size of the logistics outsourcing market in China is extremely positive given that the country has a population of 1.3 billion and a GDP of USD 1.1 trillion. The China logistics market is already the third-largest worldwide (see Figure 5). Outsourced logistics services in China are reported to be growing by 22% per year, leading both North America (10-15% annual 3PL growth) and the rest of the world (5-10%)³.

One driver that stimulated the growth of logistics outsourcing is China’s entry into the World Trade Organization (WTO), as it has committed the country to greater liberalization in domestic logistics, including allowing foreign 3PLs to operate wholly owned logistics units by 2004. Other factors include the increasing activity level of multinational corporations in China,

² China Logistics – Challenges and opportunities. By EFT Research (November, 2005).

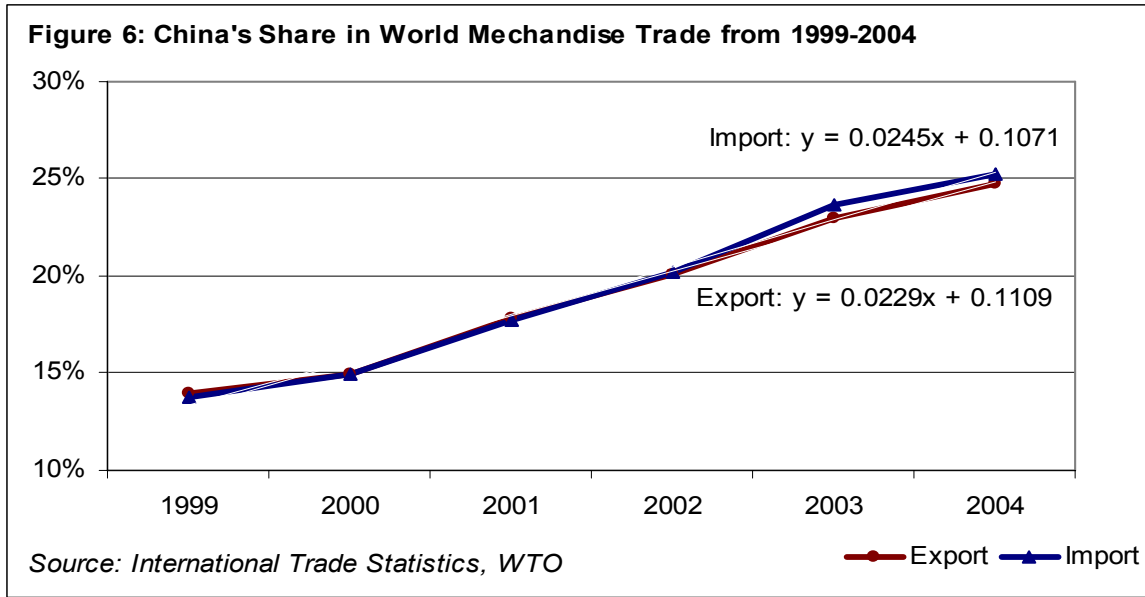
³ Mckinsey&Company, 2005



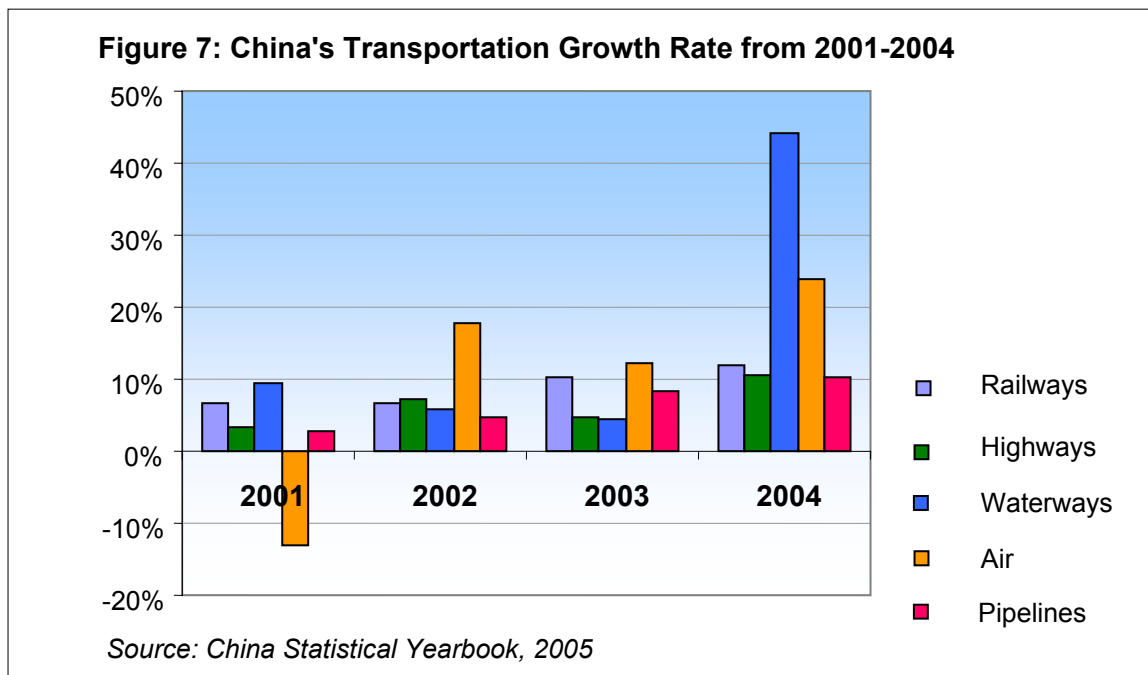
government support to developing China’s logistics infrastructure as well as overall pressure to reduce the to-market cost of goods. We list some of the opportunities below:

- Global trade powerhouse.** China often plays the role of an intermediate manufacturer, getting raw materials, processing them and exporting them. In recent years, China has also concentrated on improving the quality of goods, making the country as a hyper-competitive global manufacturing center. In 2005, China’s exports reached USD 760 billion, making it the fourth largest exporter globally⁴. China has also evolved from a net exporter to being a net importer, becoming the second largest world importer for crude oil. The huge trade volumes will continue to drive logistics services needs (see Figure 6).

⁴ China Economic Information Center, 2006



- Transportation growth.** In 2004, rail transportation in China increased by 11%. Inland waterway transport, which occupies around 60% of the total transportation volume in China, increased by 44%. Although air transport only shares a small portion of the whole transportation volume in China, it has increased by more than 10% each year from 2002 to 2004.



- **Cheaper labor cost.** China's huge availability of relatively cheap labor for manufacturing has driven the country's growth of manufactured goods for export.
- **Logistics market.** It is estimated that, by 2010, the Chinese logistics market will be worth more than USD\$ 510 million. The usage of value added logistic services is still very low, but customers in China would need to have value added services to stay competitive internationally. Presently, the logistics costs in China can account for up 21% of the product cost⁵, which is more than twice the average for developed markets. Again, another opportunity for outsourcing.

As a result of these opportunities, many foreign 3PLs have entered this market. Nevertheless, providing logistics services in China is not easy, given the following reasons provided below:

- **Infrastructure limitation.** China has just begun building an interstate highway network. Road handling capacity accounts for only 10% of the container traffic received at ports, since the average capacity of Chinese freight vehicles is two tons, and there is a shortage of heavy transport vehicles. The rail systems are old, and travel schedules are not well coordinated. It can only cope with 30% of the demand placed upon them⁶.
- **Regulatory restrictions.** In China, licences are required for many activities that foreign 3PLs often take for granted, such as the right for trucks to travel in certain provinces. Moreover, there is no one central authority that issues those permits and licences. 3PLs need to negotiate with various local governments and agencies for service permits (see Table 2 for details).
- **Domestic competition.** In China, there are many middle-sized logistics companies, providing basic logistics services to Chinese manufacturers. Not only do these domestic 3PLs have a strong customer base, but they also have a good relationship with the municipal, regional and national governments. This makes it difficult for foreign 3PLs to create a pan China network, without engaging the assistance of Chinese 3PLs.

The economic reform of more than two decades and the transition to a market economy have brought about unprecedented economic expansion to China. However, China still lacks integrated logistics. The future growth of China's economy will hinge on the ability of 3PLs to offer cost-effective and efficient supply chain management capabilities.

⁵ China Logistics – Challenges and opportunities. By EFT Research (November, 2005)

⁶ China Logistics – Challenges and Opportunities. By EFT Research (November, 2005)

Table 2: Example of complex licences in China

Role of 3PL	Licence	Authority	Min Paid up Capital	Guarantee Deposit
Air consolidator	Freight Forwarding Licence	MOFCOM	Sea -RMB5M (branch 0.5M) Air RMB3M (branch 0.5M) Road RMB2M (If JV USD1M)	
Airline's Agent	CAAC Sales License	CAAC	RMB1.5M	
NVOCC	NVOCC License	MOC		RMB0.8M
Customs broker	Customs clearance license	CGA	RMB1.5M	RMB0.2M
Road transport	Road Transport Operating Permit	MOC, COFTEC, MOFCOM	Normally is RMB0.5M	
Rail transport (JV)	Rail transport operating licence	Ministry of Railway	USD25M (Reg. capital)	

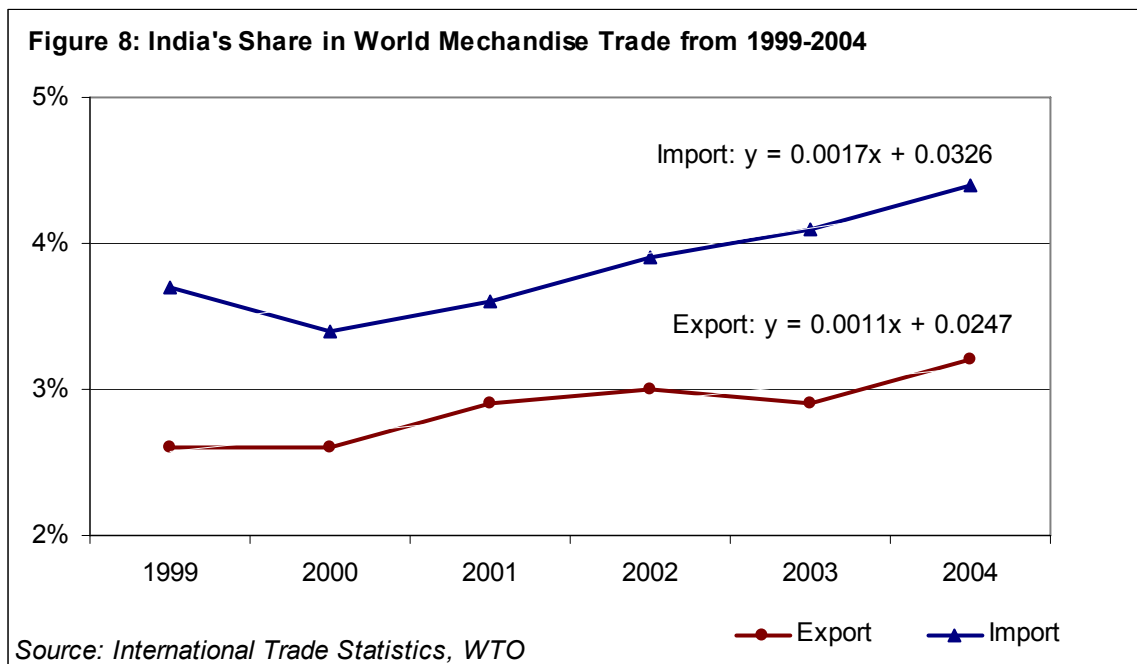
Logistics Outsourcing Opportunities and Challenges in India

The Indian logistics industry has evolved from being labor intensive during the 1960's to the present technology oriented system, which provides a wide range of logistics services. The concept of a 3PL is recent. Traditionally, manufacturers in India have managed their own logistics requirements. Gradually, Indian organizations outsource their labor requirements to avoid labor related issues. Subsequently, basic services, such as transportation and warehousing, were outsourced to 3PLs. In recent years, domestic and foreign 3PLs began providing integrated services as well as value added services.

The logistics market in India is huge but unexploited. Unlike China, the development in India's logistics market is relatively slow and still in the infancy stage. However, with the entry of several foreign 3PLs into the market, domestic 3PLs realize the importance of supply chain management and are now trying to provide integrated logistics services to remain competitive. According to a survey on the practices in the logistics industry in India⁷, warehousing, inbound and outbound transportation, customs clearing and forwarding are the most frequently outsourced activities. Activities such as packaging, fleet management and

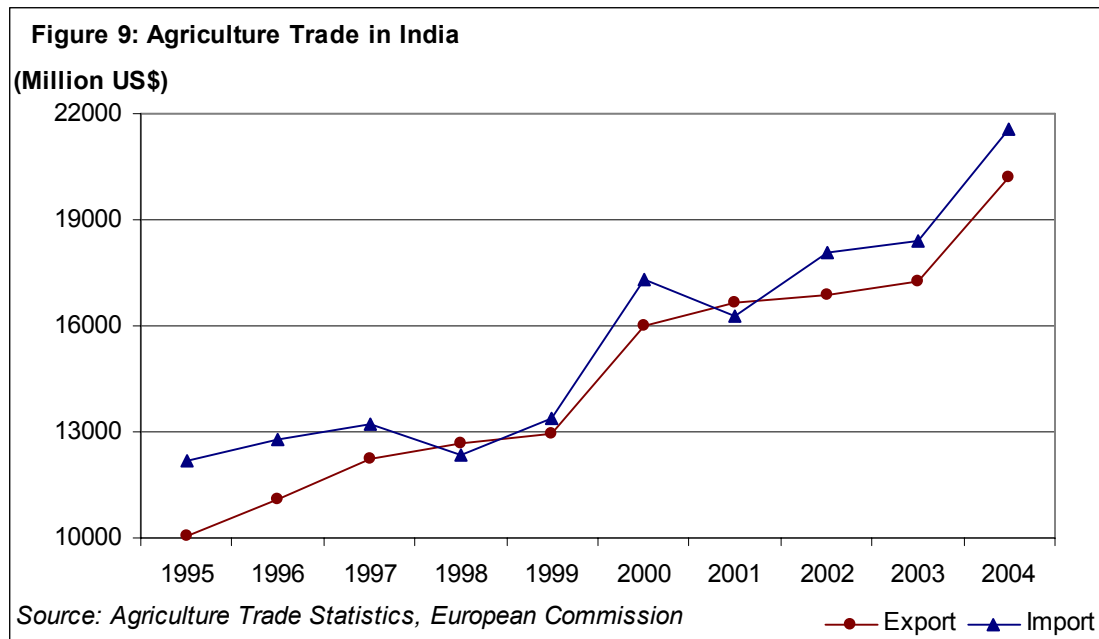
⁷ Mitra, S. 2005. "A Survey of the Third-Party Logistics (3PL) Service Providers in India," Working paper.

consolidation are growing in popularity. Also, more manufacturers are planning to use 3PL services. As such, we anticipate that the logistics outsourcing market and the 3PL industry will continue to grow.



This then suggests some opportunities for local and foreign 3PLs. We list some of these:

- Research & development of IT enabled logistics.** India is a globally acknowledged IT powerhouse. This strength must be exploited by Indian companies to develop specific capabilities in IT-enabled logistics, such as the development of logistics planning and coordination systems. With the increasing trend towards 3PL services, this capability will be highly valued.
- Agricultural logistics** – Although the Indian economy is driven by the agricultural sector, less attention has been paid to logistics in this sector. Moreover, since the bread baskets are quite distant from the urban consumer base, there is an opportunity for 3PLs to focus on the inefficiencies in the agricultural logistics services and coordinate the movement of food products across the country (see Figure 9).
- Logistics for large infrastructure projects.** Economic development in India has led to several large infrastructure projects, such as the construction of airports, seaports, industrial parks and national highways. Previously, such projects have always run into budget overruns as well as delays. Through proper logistics management and coordination of various activities, these overruns can be reined.



Despite the opportunities, the Indian logistics industry is still considered to be relatively underdeveloped. Some challenges hindering the growth of logistics industry and 3PL services in India are:

- Poor infrastructure and transport vehicles.** Poor infrastructure and transport vehicles are a major hindrance. Although freight movement in India is increasing at 10% a year⁸, the infrastructure capacity is not being augmented, or better managed to meet the growing demand. As a result, performance declines and costs rise. In some cases, capacity is inadequate and even the available capacity is in dire need of maintenance.
- Complex tax laws.** The complex tax laws on the implementation of VAT (value added tax) that vary across states are another major concern for 3PLs. In the ideal, a uniform VAT across states will essentially enable consolidation of warehousing which in turn results in far greater efficiencies. However, given that there is still no consensus on VAT, companies are holding back investments in logistics (see Table 3). Another tax issue that is discouraging the 3PLs in India is the service tax on warehousing. Hence, it may be cost effective for a company to keep warehousing as an in-house activity, as outsourcing this activity means factoring in the service tax.

⁸ Indian Logistics Landscape Report, By EFT Research (November 2005)

- **Complexity of international trade documentation process and lack of IT infrastructure.** Another factor contributing to inefficiency is the complexity of the international trade documentation process. While countries such as Singapore and Hong Kong have implemented automated trade systems e.g. TradeNet and Digital Trade Transportation Network to facilitate trade documentation process and custom permit applications, in India, this issue has not been resolved yet.
- **Industry readiness.** Compared with the equipment and technologies used in developed countries, those used in India are not comparable in terms of sophistication. For example, in the warehousing sector, while Automated Storage and Retrieval Systems (ASRS) and Warehouse Management Systems (WMS) are commonly used to control the movement and storage of materials, there is a serious lack of such sophisticated material handling systems in the Indian industry, leading to improper stacking and storage.

Table 3: Issues about VAT in India

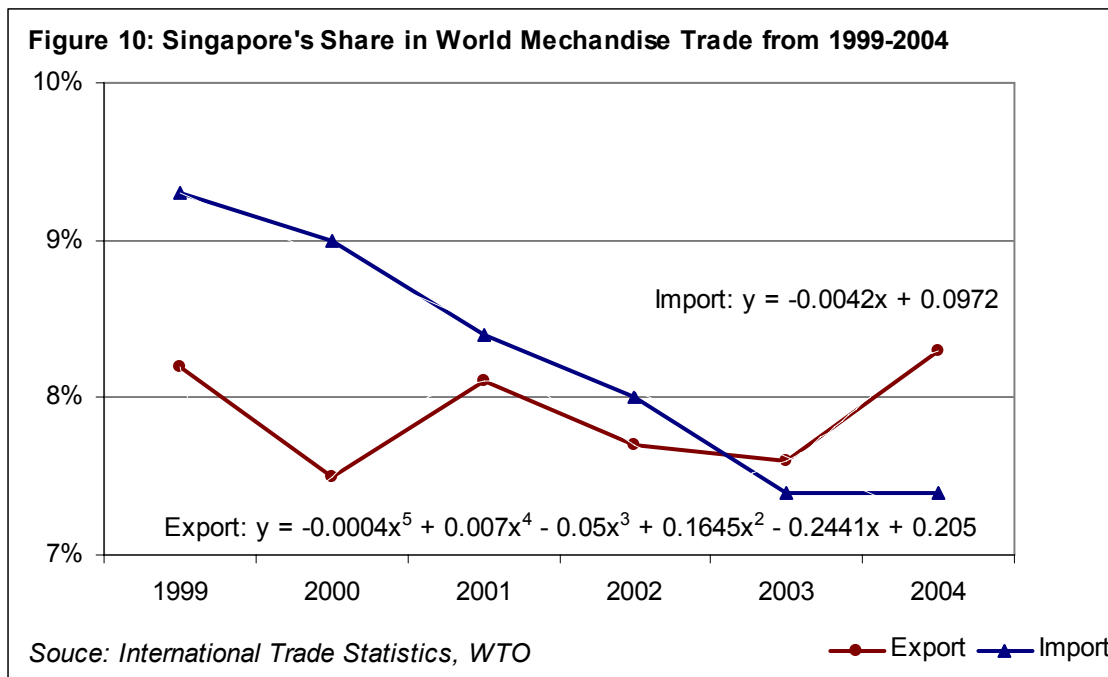
Issues about VAT	Companies' concerns
Homogeneity in Law and procedures	Diverse laws and Procedures <ul style="list-style-type: none"> • Definitions • Threshold Limits • Ancillary Levies • Set off Mechanism • Discretionary Measures • Penal Provisions
Unification of State Consumption/Entry Taxes	Supplementary levies such as Entry Tax are proposed in addition to VAT
Set Off for Inputs	There is interstate disparity regarding set off mechanism and definition of inputs.
Transnational provisions on closing stock on hand	Provision for input credit on closing stock differs from state to state
Documents and Procedures	Interstate disparities exist with respect to basic documents such as invoices.

Overall, the 3PL market in India is quite young, with a high growth potential. While the insufficient infrastructure, bureaucracy and complex tax laws may hinder the development of 3PL services in India, more Indian firms are becoming aware of the benefits of 3PL services and are outsourcing a part or whole of their logistics-related activities to these 3PLs.

Logistics Outsourcing Opportunities and Challenges in Singapore

Logistics has always played a vital role in Singapore’s economy. The supply chain management systems are among the most sophisticated in the world. This has ensured that Singapore maintain her position as a leading logistics hub in Asia (see Figure 4), and continues to attract global traders and manufacturers to base their regional operations here.

With increased outsourcing, the industry is expected to provide a one-stop integrated solution for manufacturing and other services. The logistics industry has shifted from providing transportation and warehousing, to offering total integrated logistics solutions. Manufacturers now outsource their logistics requirements and receive value-added services from 3PLs, who provide shorter time-to-market, a key competitive advantage in an age of shortening product life cycles.



Singapore has her sights set on becoming the leading integrated logistics hub in Asia by the year 2010. With a USD12.5 million IT Action Plan, Singapore is boosting information technology adoption and e-commerce usage in the logistics industry. Meanwhile, the Singapore government is also spearheading training initiatives at institutes, polytechnics and universities. One example is the dual Master of Science degree in Logistics and Supply Chain Management, a joint initiative between the National University of Singapore and the Georgia Institute of Technology. We list some of Singapore’s key strengths in infrastructure and connectivity:

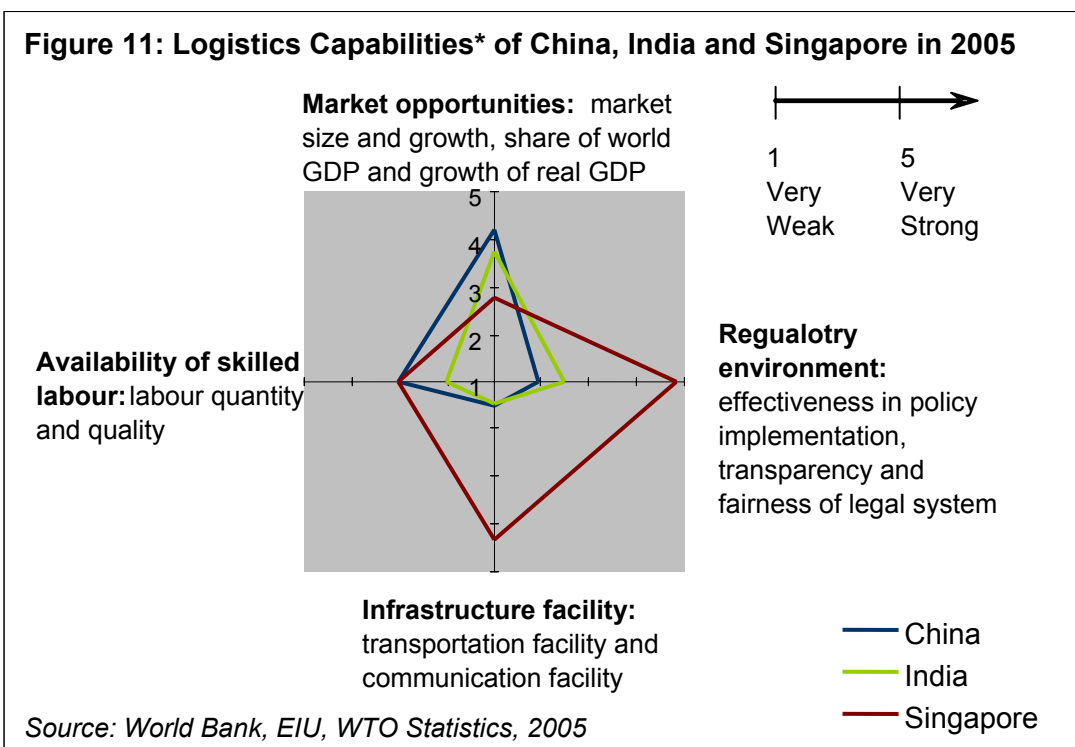
- **Global transport & logistics hub center** – Singapore offers one of the best sea and air connectivity in the world. In 2005, 200 shipping lines called on Singapore, connecting Singapore to 600 ports across 123 countries, making Singapore port the world's largest container port in 2005, handling 23.2 million twenty-foot equivalent units. Also, Singapore was the fourth largest cargo airport in 2005, with 4,000 weekly scheduled flights connecting to over 180 cities globally.
- **High level logistics services.** There are over 8,000 logistics establishments in Singapore, including 17 of the world's top 25 3PLs. Two local companies, APL Logistics and Sembcorp Logistics, were also named among the world's top 25 3PLs in a survey by the Global Logistics & Supply Chain Strategies Magazine in May 2005.
- **Technology savvy manufacturers.** 3PLs in Singapore are savvy adopters of the latest technologies, such as RFID, to increase their service level. Manufacturers, 3PLs and government have all invested heavily in new technology development and implementation to facilitate supply chain management and logistics services.
- **Government support.** The Singapore government continuously improves the local infrastructure to facilitate cargo flow. At the same time, suitable incentive schemes are established to assist foreign 3PLs.

The world-class infrastructure has provided Singapore logistics industry with an excellent base, to hone capabilities and compete in the global environment. Nonetheless, challenges prevail. Quite a few MNCs have moved their manufacturing centres to China, given the relatively lower labour cost there. Singapore 3PLs need to urgently learn to leverage on the existing resources and develop new strengths to meet the needs of high growth markets overseas. The challenges in Singapore logistics outsourcing industry include:

- **Partnership with MNCs.** Located at the crossroads of major trading routes in the heart of fast-growing Asia, Singapore is a key distribution centre and strategic launch pad for MNCs to reach out to Asian markets. Nearly 180 global traders base their procurement and marketing activities in Singapore. With the economic development in China and India, the MNCs based in Singapore will need to partner reliable and experienced 3PLs who have a good understanding of the region. Thus, the requirements for 3PLs will not only be reliable services but also comprehensive distribution networks, excellent track record in terms of quality, speed and flexibility, and advanced IT capabilities to support the growth and expansion of the MNCs.
- **Consolidation in the logistics industry.** In January 2006, Kuehne & Nagel's acquisition of ACR Logistics led to an exponential increase of their network in Eastern Europe and Asia. This is the latest wave of consolidation in the logistics industry. The creation of such mega 3PLs, with global networks and one-stop

integrated services, point to an increasingly competitive global market. Singapore's 3PLs will face the challenges of being nudged out of the competition unless they are able to rise up and build similar strategic alliance with other 3PLs.

- Market opportunities.** Comparing China, India and Singapore, clearly there are more market opportunities in China and India. Considering their high GDP growth and huge labour market, more foreign 3PLs are keen to invest in these two countries. However, Singapore continues to attract many global 3PLs by its stable regulatory environment and good infrastructure. Thus, despite the small domestic logistics market, Singapore is a logistics hub in the Asia-Pacific (see Figure 11 and Table 4).



*Logistics capabilities include the market conditions, regulatory environment, transportation infrastructure and labour skills.

Table 4: Comparison of Logistics Outsourcing Opportunities and Challenges in China, India and Singapore

	Logistics Outsourcing Opportunities	Logistics Outsourcing Challenges
China	<p>Global trade power house – In 2005, China’s exports reached USD 760 billion, making it the fourth largest exporter globally. China has also gone from a net exporter to net importer, becoming the second largest world importer for crude oil. Economic superlatives – In 2004, rail freight traffic in China increased 6% and inland water ways tonnage was up 8% y-o-y. Port traffic increased by 18%.</p> <p>Cheap labor cost – China’s huge availability of cheap labor for manufacturing has driven the country’s growth of exported goods.</p> <p>Logistics Market – It is estimated that by 2010, the Chinese logistics market will be worth more than USD120 billion.</p>	<p>Infrastructure limitations – China has begun building an interstate highway network. Road handling capacity accounts for only 10% of the container traffic received at ports. Rail systems are old, and poorly coordinated.</p> <p>Regulatory restrictions – In China, licenses are required for many activities that foreign 3PLs often take for granted. 3PLs need to negotiate with local government for service permits.</p> <p>Domestic competitions – There are many domestic 3PLs who have not only a rich customer base, but also a good relationship with municipal, regional and national governments.</p>
India	<p>IT enabled logistics – India is a globally acknowledged IT powerhouse. This strength must be exploited to develop capabilities in IT-enabled logistics, such as the development of logistics planning systems.</p> <p>Agricultural logistics – Although the Indian economy is driven by the agricultural sector, less attention has been paid to agricultural logistics.</p> <p>Large infrastructure projects – The economic development has led to several infrastructure projects. Through proper logistics management and coordination of various activities, projects overruns can be reined.</p>	<p>Poor infrastructure and transport vehicles – Poor infrastructure and transport vehicles are major hindrances in offering logistics services.</p> <p>Complex tax laws – Complex tax laws on implementation of VAT that varies across states is another major concern for 3PLs in India.</p> <p>Complexity of international trade documentation process & lack of IT infrastructure – India lacks modern technologies to process complex international trade documentations automatically.</p> <p>Industry readiness - Compared with those equipment and technologies used in developed countries, those used in India are not comparable in terms of sophistication.</p>
Singapore	<p>Global transport center – Singapore offers one of the best sea and air connectivity in the world. In 2005, 200 shipping lines called on Singapore, connecting Singapore to 600 ports across 123 countries.</p> <p>High level logistics services – There are over 8,000 logistics companies in Singapore, including 17 of the world’s top 25 3PLs.</p> <p>Technology savvy manufacturers – 3PLs are inclined to use the latest technologies, such as RFID to increase their service level.</p> <p>Government support – Singapore government continuously improves the local infrastructure to facilitate the provision of local logistics services.</p>	<p>Partnership with MNC – As a key distribution center for MNCs, the requirement of 3PL services in Singapore will include comprehensive distribution networks, excellent track record and advanced IT capabilities to support the growth and expansion of MNCs.</p> <p>Consolidation - Singapore 3PLs, risk being nudged out of the competition unless they are able to rise up and build strategic alliance with other players.</p> <p>Market opportunities – Singapore does not have as many market opportunities as those in China and India. However, Singapore continues to attract many global 3PLs by its stable regulatory environment and good infrastructure.</p>

Cluster View for Logistics Outsourcing in Asia-Pacific

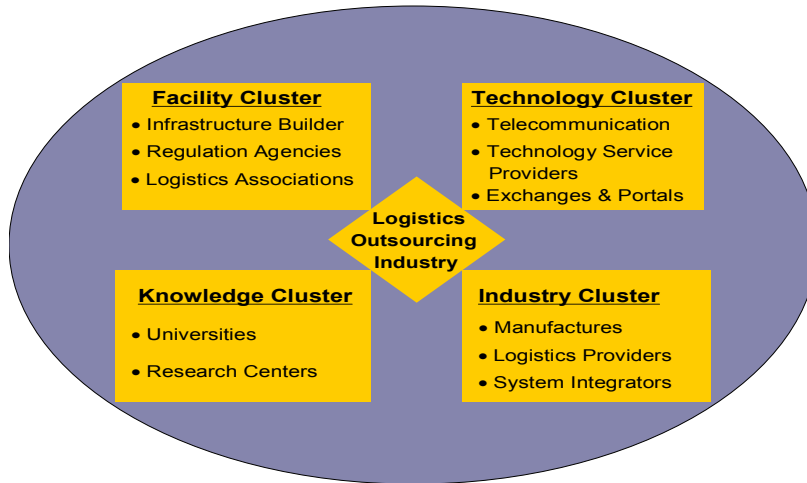
Compared with the logistics outsourcing industry in more developed economies, the logistics sectors in most Asian countries are relatively weak. To benefit from the ever-growing and fast-changing global opportunities, it is important for Asian 3PLs to develop a systematic methodology and strategy to enhance their competitiveness. As suggested by Porter (1990), we propose a cluster-based framework to integrate the various players in this industry and benefit from the interactions.

Cluster theory has developed over the past ten years as a tool for better describing economic activity in service or knowledge-based regional economies. The essence of a cluster is that the value of the whole exceeds the sum of its parts. A cluster is defined as a geographic concentration of interconnected companies, specialized suppliers, service providers, firms in related industries, and associated institutions in particular fields that compete but also cooperate (Porter, 1998). A logistics cluster is defined as a geographically concentrated, self-flourishing ecosystem comprising shippers, 3PLs, IT vendors, infrastructure providers, regulatory agencies, research institutions, consultants and other logistics-related organizations that leverage on the interdependencies between them to provide highly efficient and effective logistics solutions and create innovative new solutions (Viswanadham & Gaonkar, 2003). Based on the logistics activities and necessary support, a logistics cluster incorporates four interdependent sub-clusters: Facility, Technology, Knowledge, and Industry (see Figure 5).

Facility Cluster: A good transportation infrastructure is the basis for a world-class logistics industry. Given the nature of global trade today, developing infrastructure for intra-country and international movement of goods is very important. The development of a world-class infrastructure requires not only a relatively long period of time to gestate, but also interaction between various players. The players in the facility cluster include:

- Infrastructure builder – These companies build transportation infrastructures, such as roads, airports, warehouses, etc. They need to have access to large capital to build such a physical network.
- Regulation Agencies – These agencies, regulate and issue permits for all logistics related activities. In making these regulations, they need to balance the needs of various players in the network (e.g. manufacturers and 3PLs).

Figure 11: Clustering in Logistics Outsourcing Industry



- Logistics Associations – These organizations provide manpower and training to 3PLs and to companies that build and manage logistics infrastructure.

Technology Cluster: In a global trading environment, information technology becomes important. It is even possible that some limitations in the physical logistics infrastructure can be overcome by superior information infrastructure. Similar to the investment strategy in physical infrastructure, investments in information technology infrastructure need to be undertaken. The players in the technology cluster could include:

- Telecommunication service provider - A strong and competitive telecommunications infrastructure is necessary to provide global high-quality connectivity across the country.
- Technology service provider – Technology service providers, such as SCM software developers or wireless technology builders can exploit the telecommunications infrastructure to develop solutions, which address the information needs of the logistics industry.
- Exchange & Portals – These companies provide tools and solutions of delivering information in a cost-effective manner on an industry-wide level through the telecommunications infrastructure.

Knowledge Cluster: Although the investment in infrastructure will drive the competitiveness of the logistics industry, the true potential of these investments will only be realized by

competent manpower and breakthrough ideas. Educational institutions and research centers play a vital role in identifying the right direction for the industry. The players in the knowledge cluster include:

- Universities - The universities need to provide professional, competent manpower who will be the agents of transformation in industry. They will power the growth of research centers which shall be the primary knowledge creators within the industry.
- Research centers – Research centers need to provide industrial operation reports, policy guidelines and academic research papers. The outputs will be used to create appropriate strategies for the logistics industry.

Industry Cluster: The knowledge created by the knowledge creation cluster has to be transferred to industry and deployed in the business world to utilize the superior infrastructure and ultimately bring about the improved industry performance that is desired. The players in industry cluster include:

- Suppliers, manufacturers, distributors & retailers – These are the companies requiring for logistics services. They need to adopt operations best practices to make their supply chain competitive.
- Logistics & transportation providers – These companies provides the automation and integration steps in the material flow. Their solutions need to be customized to the needs of the customers.
- System integrators – These companies will be responsible for linking up entire supply chains and industries electronically and implementing information based solutions.

Future Trends in Logistics Outsourcing

Recent years have been witnessing continuous growth in the logistics outsourcing area. Globalization, development of information technologies, as well as the need for supply chain optimization is reshaping the physical trade flows. Some trends have emerged in this industry. First, governments have increased involvement in supporting the logistics business and their players. In India and China, governments have initiated several programs in upgrading infrastructure, allowing more private sector participation in improving

infrastructure and developing new technologies. The Singapore government has launched several research centers and programs to develop new technology and other clusters, which can facilitate future logistics services.

The second trend is the changing identities and service portfolios of many 3PL. Companies serving the express logistics sector such as GATI are now becoming full-fledged 3PLs. Some of them are even growing to be logistics solution providers. Moreover, more 3PLs will be gearing up to meet the growth demand and improve their services offerings by incorporating value-added services and customize their supply chain management solutions.

Third, 3PLs are increasingly using state-of-the-art technologies in logistics activities. For example, the GPS system has been widely used to track the movement of goods on a real time basis. Besides this, RFID technology which uses tags or transponders to transmit Electronic Product Codes and communicate wirelessly to readers over radio frequency waves benefits customers through improved accuracy and distribution efficiencies, shorter order cycle times, elimination of unnecessary handling and expenses and enhanced customer satisfaction, for an overall competitive advantage.

Fourth, manufactures are increasingly emphasizing transparency, efficiency and traceability in logistics outsourcing. For example, though manufacturers outsource their logistics activities to 3PLs, they expect 3PLs to provide on-line access to internal databases and processes. Consolidation is another trend in the logistics outsourcing industry. For 3PLs, consolidation is a strategy to expand its scope and gain more customers. It is expected that industry consolidation will result in a few large 3PLs, who can offer a wider range of logistics services and with high quality.

The other trend in logistics outsourcing industry includes the Fourth-Party Logistics (4PL), the asset light players. These 4PLs are more evident in the developed economies, such as in Europe, North-America and Singapore. As the logistics sector becomes more developed in the Asia-Pacific, 4PLs will have a greater influence on logistics activities in the future.

Trend in Asian Logistics Outsourcing

- **Increased government involvement** – Governments in developing countries such as India and China have initiated many projects to improve local logistics infrastructure. Governments in more developed economies have invested in research centers to develop new technologies, which will benefit future logistics activities
- **3PL expansion** – Previously express logistics companies are now becoming full-fledged 3PLs.

Some of them are even growing to be logistics solution providers. On the other hand, existing 3PLs will improve their services by incorporating value-added services and customize their supply chain management solutions.

- **Technology integration & IT support** – 3PLs are increasingly using state-of-the-art technologies in logistics activities. Both manufacturers and 3PLs demand for more sophisticated, integrated and shared IT system, such as RFID and GPS. Moreover, technologies are needed for speeding custom clearance, invoicing, and automated packing.
- **Transparency, efficiency and traceability** – Although manufacturers outsource their logistics activities to 3PLs, they expect 3PLs to provide on-line access to internal database and processes.
- **Consolidation** – Consolidation is a strategy to expand its scope and gain customers. It is expected that industry consolidation will result in few large 3PLs, which can offer a whole range of logistics services with high quality
- **Fourth-Party Logistics (4PL), reverse, lean and agile logistics** – Future trends which are already evident in more developed economies

Conclusion

Outsourcing logistics activities to a 3PL has been a means of leveraging economies of scale and tapping into a logistics infrastructure, which includes IT systems, human resources and knowledge base that delivers increased robustness to a company's logistics and supply chain operations. Logistics outsourcing has improved productivity and significantly reduced costs in many instances. In the future, the logistics outsourcing industry will be more global and better segmented around customer requirements. Although there are plenty of opportunities in the Asia-Pacific, 3PLs still have to consider the influence of infrastructure and government regulations on their business in this area.

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A Collaboration Between



The Logistics Institute – Asia Pacific

National University of Singapore
AS6, Level 5, 11 Law Link, Singapore 117570

Tel: (65) 6516 4842 · Fax: (65) 6775 3391

Email: tlihead@nus.edu.sg · URL: www.tliap.nus.edu.sg