



RESEARCH ARTICLE

ADOPTION OF 3PL PRACTICES IN SAURASHTRA REGION: IMPACT AND INFLUENCE OF  
KEY SUCCESS FACTORS ON REVENUE GROWTH

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ABSTRACT

Third party logistics (3PL) is a business dynamic of growing importance all over the world. However, it is at a very nascent stage in India, though some domestic and multinational companies are trying to establish themselves in this sector. This paper is an attempt to provide a 3PL perspective in Saurashtra. The paper focuses on three major issues – present extent of usage of third party logistics services, reasons for outsourcing and impact of usage of third party logistics services on revenue growth. The paper reveals that most 3PL users are satisfied with the current level of services provided by 3PL service providers as it has led to a positive impact on business results.

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INTRODUCTION

Organisations are searching for new practices that can influence financial performance and success. Outsourcing is one of the business practices adopted by the firms that influence growth. Outsourcing of logistics is defined as provision of a single or multiple logistics services by a vendor on contract basis. Providers of these logistics services are generally referred as third party logistics service providers. Outsourcing of logistics function is a business dynamics of growing importance all over the world. A growing awareness that competitive advantage comes from the delivery process as much as from the product has been instrumental in upgrading logistics from its traditional backroom function to a strategic boardroom function (Razzaque and Sheng, 1998). In order to handle its logistics activities effectively and efficiently, a company may consider the following options – it can provide the function in-house by making the service, or it can own logistics subsidiaries through setting up or buying a logistics firm, or it can outsource the function and buy the service. Currently, there has been a growing interest in the third option, i.e. outsourcing of logistics functions to third party logistics service providers.

Third party logistics services are widely prevalent in North America (Lieb, 1992; Lieb and Randall, 1996) and Europe (Lieb, Miller and Wassenhove, 1993) and have been examined in a number of previous studies. Similar studies have focused on logistics issues in Bulgaria (Bloomen and Petrov, 1994), South Africa (Cilliers and Nagel, 1994), Australia (Dapiran,

Lieb, Millen and Sohal, 1996), Korea (Kim, 1996), Asia Pacific (Millen and Sohal, 1996), Singapore (Bhatnagar, Sohal and Millen, 1999), and Indochina (Goh and Ang, 2000). These countries have availed large benefits of 3PL services over the last few years. However to date there has been no comprehensive study reported in the literature that has focused on third party logistics services in India. There are many isolated examples of individual organizations and their respective logistics capabilities. Hence, it was considered important to carry out a comprehensive survey on 3PL practices in India.

The paper has been organized as follows. In the next two sections, we present a brief description of the Indian transport environment followed by a review of the relevant segments of literature. Subsequently, we outline the research methodology which is then followed by the results, based on data analysis, from the survey. Finally, conclusions arising from this research are presented.

LITERATURE REVIEW

Outsourcing, third party logistics services (3PL) and contract logistics generally mean the same thing (Lieb, Millen and Wassenhove, 1993). It involves the use of external companies to perform logistics functions, which have traditionally been performed within an organization. The functions performed by third party logistics service providers can encompass the entire logistics process or select activities within that process.

A key rationale for outsourcing of logistics functions is the intensified globalization of businesses. During the last two

decades, globalization has emerged as a major force of shaping business strategies, leading firms to develop products designed for a global market and to source components globally (Cooper, 1993). This has led to more complex supply chains requiring larger involvement of managers in logistics functions. Lack of specific knowledge of customs, tax regulations and infrastructure of destination countries has forced firms to acquire expertise of third party logistics service providers. As a result firms are concentrating their energies on core activities and leaving the rest to specialist firms (Byrne, 1993; Foster and Muller, 1990; Trunick, 1989).

An equally important development that is impacting the logistics industry is the increased emphasis on supply chain management as a source of competitive advantage. In the last two decades, the quest for time based competence led initially to a rapid adoption of new manufacturing methods like just-in-time, flexible manufacturing systems, computer aided manufacturing and so on by organizations. These methods have brought about significant improvements in supply chain performance through their focus on compressed manufacturing lead times and improved quality. However, further enhancements in supply chain performance will necessitate speeding the flow of information on orders to upstream supply chain partners, and expediting logistics activities like storage and delivery of materials or products through the entire supply chain (Bhatnagar, Sohal and Millen, 1999). A recent research carried out on supply chain management practices in India highlights that the opening of Indian economy and globalization of businesses has been a key factor for the Indian industry to align supply chain strategy with business strategy, streamline processes for supply chain integration and form partnerships for minimizing inventories. Indian organizations are increasingly deploying supply chain strategies for logistics improvements – to increase sales revenue, enhance profits, reduce order to delivery cycle time and minimize inventories. (Sahay and Mohan, 2003).

Logistics is therefore emerging as a key frontier of competition in the future. Good logistics performance requires a trade-off between the need to reduce overall supply chain inventory and lead times, while simultaneously capturing economies of scale and improving customer service for enhanced business performance. Versatility of third party logistics service providers enables them to maintain this trade-off by turning fixed costs into variable costs for companies using their services (Trunick, 1989). The use of third party logistics service providers has gained prominence in this context.

Empirical studies have tested the following factors in defining the extent of usage (Lieb, 1992; Dapiran, Lieb, Millen and Sohal, 1996; Bhatnagar, Sohal and Millen, 1999):

- Length of experience with third party logistics firms
- Level of commitment to the usage of third party logistics services
- Percentage of the total logistics budget allocated to third party logistics service providers
- Specific logistics services outsourced (warehouse management, shipment consolidation, fleet management, order fulfilment, product returns, carrier selection, logistics information systems, rate

negotiation, product assembly, order processing, inventory replenishment, order picking, inbound transportation, outbound transportation, labelling and packaging, distribution, custom clearance and forwarding, import export management, customer service/support).

At the same time, studies indicate that firms outsource logistics functions for a variety of reasons. Watson and Pitt (1989), Sheffi (1990), Foster and Muller (1990), and Bardi and Tracey (1991) have suggested the following reasons for the growth of logistics outsourcing in America: need to focus on core activities, better transportation solutions (e.g., consolidation), cost savings, customized services, reducing inventory, penetrating markets, becoming more active in international shipping, gaining the use of sophisticated technology, need for more professional and better-equipped logistics services. Gooley (1992) added flexibility as another reason for outsourcing based on his experience with European firms. By understanding the reasons for outsourcing of logistics services, 3PL service providers can gain insight into the benefits sought and provide focused services. A third party logistics service provider with experience, focus and expertise is regarded as more competent, compared to those service providers who profess to be "all things to any consumer" (Sink et al., 1996).

The research on supply chain management practices in India has identified that outsourcing of logistics activities is growing in popularity for Indian organizations and there has been an increase in the number of third party logistics providers over the last couple of years (Sahay and Mohan, 2003). The major reasons cited for usage of 3PL services include – cost reduction (27 percent), strategic reasons (26 percent), process effectiveness (24 percent), and lack of internal capability (11 percent).

Usage of third party logistics services is a strategic decision and hence it is necessary to perceive and quantify the impact it has on business performance. The purpose of engaging in third party relations is seldom cost reduction alone, but a combination of service improvements and efficient operations (Larsen, 2000). Studies based on user firms indicate that the decision is worthwhile if it has an impact on one or more factors depicted in Table I.

**Table I** Impact of usage of 3PL services – Literature Review

Factor	Identified by (Year)
Impact on Customer Satisfaction	Gooley (1992); Lieb et al. (1993)
Impact on Logistics system performance	Lieb et al. (1993); Dapiran et al. (1996); Bhatnagar et al. (1999)
Reduction in capital investment in facilities	Foster & Muller (1990); Richardson (1992, 1995)
Reduction in capital investment in equipment	Fantasia (1993); Foster & Muller (1990); Richardson (1992)
Reduction in investment in information technology	Goldberg (1990); Sheffi (1990); Trunick (1992); Fantasia (1993)
Impact on Employee morale	Bowersox (1990); Dapiran et al. (1996)
Reduction in manpower cost	Foster & Muller (1990); Richardson (1992, 1995)
Improvement on specific Logistics function parameters	Minaham (1997); McMullan (1996)
Improvement in inventory turnover rates	Richardson (1990, 1995)
Improvement in on-time delivery	Richardson (1995)
Increasing productivity	Bradley (1995)

Lieb et al. (1993), Dapiran et al. (1996), and Bhatnagar et al. (1999) have observed that the future usage of third party logistics services is a function of the current level of satisfaction of the firm with the logistics services provider. The authors have also explored the changes in the level and the nature of outsourcing of logistics services by the user firms. All the above studies indicate high levels of satisfaction with third party logistics services providers, which will translate into increased outsourcing in the future. Typically, firms start with the outsourcing of few logistics services, moving over to activities which have maximum impact on logistics performance and then increase scope of usage of logistics services with perceived and quantifiable impact on overall business performance.

The above studies provide a robust framework for the research methodology for analyzing the third party logistics practices in India. The input variables to the research framework depict the organization-specific characteristics, such as the extent of usage of third party logistics services, the reasons for outsourcing and the impact of the usage of third party logistics services. The output function of future usage of third party logistics services is influenced by the three input variables.

## RESEARCH METHODOLOGY

To determine the usage of third party logistics practices in India, a mail survey was conducted during 2002-03. The survey questionnaire was designed based on the studies carried out by Lieb et al. (1993), Dapiran et al. (1996), Bhatnagar et al. (1999), Larhoven et al. (2000) and Sahay et al. (2002). The survey instrument focused on the following areas:

1. Importance of various logistics activities to organizations;
2. Extent of usage of services offered by third party logistics service providers for carrying out specific logistics activities;
3. Reasons for outsourcing;
4. The impact of using third party logistics services on logistics performance, customer satisfaction and employee morale;
5. The benefits of using third party logistics services on specific business objectives;
6. The overall satisfaction with third party logistics service providers; and
7. The future plans of current users of third party logistics services.

The respondents were requested to fill out the survey that best captured the current state of logistics issues in the organization with emphasis on outsourcing. In addition to the questionnaire survey and a number of personal visits to various organizations were carried out to get first-hand information related to this field as well as cross-check on the responses received from the survey participants.

The target population for this study was the organizations in Saurashtra involved in 3<sup>rd</sup> party logistics services. The questionnaire together with the cover letter and a post-reply envelope were mailed to these organizations addressed to the above executives. Within a month of sending out the survey questionnaire 86 responses were received. Thereafter

reminder telephone calls were made to the remaining organizations that had not responded. As a result, 45 organizations responded more in the next two weeks. It resulted in the final response rate of 150 or 30 percent of the original sample of 500 organizations.

The response rate is in line with the previous studies conducted on third party logistics services in North America, Europe, Australia and Singapore that were based on 131, 53, 84 and 126 responses respectively (Lieb et al., 1993; Dapiran et al., 1996; Bhatnagar et al., 1999; Larhoven et al., 2000) resulting in response rate of 12.6 percent in Australia and 16.8 percent in Singapore. The response rate also compares well with the previous study conducted on Supply Chain Management Practices in Indian industry that had a response rate of 156 organizations or 9.0 percent (Sahay et al., 2002). Finally, detailed data analysis was performed on the usable sample size of 150 Indian organizations.

## RESULTS

The responding organizations represented a broad cross-section of the industry including Engineering, Chemicals, FMCG, Retail, Automotive, Textiles, Metal, Pharmaceuticals, Trading, and Telecom industries. However, majority of the respondents were from Automotive, Engineering, Chemicals, Metals and FMCG (Table II).

**Table II** Classification of Respondents by Industry

Industry	Respondents	Percentage
Engineering	40	26.67
Automobile	35	23.33
Others	25	16.67
Chemicals	10	6.67
Metals	10	6.67
FMCG	9	6
Textile/Clothing	8	5.33
Services	5	3.33
Telecommunication	5	3.33
Transportation	3	2

### *Present extent of usage of Third Party Logistics*

73 percent respondents indicated that their organizations use third party logistics services, while 27 percent do not currently outsource logistics functions to third party logistics service providers. Of those organizations currently outsourcing logistics services, 79 percent indicated that their firms employed the services of more than one logistics service provider. Furthermore 33 percent of these have been using the services of third party logistics service providers for over 3 years. Another 18 percent have been working with third party logistics service providers for 1-3 years. This indicates a relatively low amount of experience with third party logistics service providers in India as a result of which the concept of outsourcing logistics functions to third party logistics service providers is still in its nascent stage in India. This is in contrast to studies conducted in developed countries like North America, Europe, Australia and Singapore (Lieb et al., 1993; Dapiran et al., 1996; Bhatnagar et al., 1999).

Out of the total no of respondents, more than half the organizations have already outsourced logistics activities such as Outbound Transportation (63.6%), Inbound Transportation (58.1%) and Custom Clearing and Forwarding (55.5%). Other logistics activities that have been outsourced by more than a

fourth of the respondents are Import and Export Management (39.5%), Outbound Warehousing (40.9%), Inbound Warehousing (38.5%), Labelling and Packing (29%), Fleet Management & Consolidation (36.6%), Order Picking (29%) and Inventory Management (30.5%) indicating that these are the more important services that are already being outsourced. The logistics functions that are least outsourced include Marketing sales promotion, Assembly/Installation, Selected Manufacturing and Customer Service/Support. To determine why organizations decide to outsource certain logistics functions, respondents were asked to indicate the importance of the same set of logistics functions on a 5-point Likert scale, with a score of 1 indicating “not important” and a score of 5 indicating “very important”. The responses to importance rating and the extent of outsourcing of all logistics functions are presented in Table III.

**Table III** Importance Rating and Extent of Outsourcing of Logistics Activities

Logistics Activities	Current Outsourced (%)	Importance Rating	
		Outsourcing Organisations	Non-Outsourcing Organisations
Customer Service/Support			
Inventory Management			
Rate Negotiation			
Outbound			
Transportation	15.8	4.54	4.11
Distribution	30.5	4.39	4.36
Custom Clearing & Forwarding	22.6	4.33	4.39
Order Fulfilment	63.6	4.05	3.95
Selected	22.9	3.94	3.86
Manufacturing	55.5	3.85	3.54
Order Picking	20.4	3.73	3.79
Outbound	16.4	3.69	3.36
Warehousing	29.0	3.94	3.42
Labelling& Packaging	40.9	3.56	3.59
Import/Export	29.0	3.49	3.00
Management	39.5	3.59	3.44
Inbound	58.1	3.44	3.55
Transportation	38.5	3.32	2.66
Inbound	36.6	3.42	3.32
Warehousing	8.5	3.36	3.89
Fleet Management & Consolidation	19.4	3.28	3.99
Marketing Sales Promotion	12.7	3.00	2.47
Order Processing	22.2	3.00	2.30
Assembly/Installation			
Reverse Logistics			

(\*\* Importance rating on a 5 point Likert scale: 1 indicating “not important” and 5 indicating “very important”)

Very clearly, outsourcing percentage is higher for organizations with importance ratings between 4.00 and 3.25, i.e. “moderately important”. Organizations are still not open to increased outsourcing of either “very important” or “less important” logistics activities.

46.7 percent of organizations in India use 3PL providers to perform both domestic and international operations. The other 44.4 percent use such services for domestic operations only and 8.9 per cent use these for international operations only.

Besides, the respondents were also asked to quantify the percentage improvement on financial indicators – improvement in sale revenues, working capital improvement, capital asset reduction, production cost reduction, labour cost reduction, return on asset improvement, logistics cost reduction – because of the usage of 3PL services. User organizations have cited substantial financial improvements as shown in Table IV. The financial improvements tie well with the focus on logistics cost reduction as the primary reason for using 3PL services.

**Table IV** Financial Improvements

Financial Indicator	% Improvement
Improvement in sales revenue	23.5
Working capital improvement	12.6
Capital asset reduction	7.2
Production cost reduction	14.5
Labour cost reduction	10.0
Return on Assets improvement	18.0
Logistics cost reduction	15.0

***Influence of Key Success Factors on Financial Performance (revenue growth)***

Inter-firm analysis model uses revenue growth matrices that are associated with key success factors such as breadth of services, industry focus, relationship with 3PLs, investment information systems, skilled logistics professionals and supply chain integration which had been considered by most of the researchers. The objective here is to identify Indian 3PL service provider firm’s key success factors that significantly influence financial performance.

The data collected from the questionnaires is assessed in terms of the responses from 3PL service providers. For the purpose of analysis, the responses are aggregated to reflect overall assessment. It is important to remember that responses are from the provider’s perspective only and any response from the client has not been included. 3PL service provider firms are classified into small and large firms in terms of annual revenue. Multivariate regression analysis is performed to map financial performance metrics with key success factors.

***Key Success Factors and Performance***

Several key success factors have been proposed in the 3PL literature to influence performance. Long term relationships and building a history of favourable experiences is one such example of a key success factor (LaLonde and Cooper, 1989). The benefits of deeper relationships with customers that it helps the 3PL service provider firm to build a broader range of service offerings, gain knowledge, and obtain access to new markets (Cho et al 2008). Another key success factor is the use of information systems to manage inventory and customer order fulfilment (Golop and Reagan, 2001). The use of information systems also helps in monitoring and evaluating the 3PL service provider progress towards a long lasting relationship (Qureshi et al. 2008). IT with respect to logistics function also facilitates activities such as order fulfilment, information systems tracking, fleet planning and asset management (Wu and Chou 2007). Bardhan et al. studied that investments in IT systems would enhance logistics performance. Large-size logistics companies would probably invest in information systems more in order to obtain competitive edge and to take the lead in the global supply chain network (Sauvage 2003). Previous studies

indicate that better information systems have improved profitability of logistics firms (Stank et al. 1999). The previous research on 3PL service providers have selected financial metrics such as revenue growth (Piplani et al. 2004) to be the focus of the influence of the key success factors.

Based on the above discussion, the following hypotheses are developed to relate key success factors and financial performance measure as revenue growth.

- H<sub>1</sub>: The key success factor of breadth of services is positively related to revenue growth.
- H<sub>2</sub>: The key success factor of industry focus is positively related to revenue growth.
- H<sub>3</sub>: The key success factor of relationship with 3PLs is positively related to revenue growth.
- H<sub>4</sub>: The key success factor of investment in information systems is positively related to revenue growth.
- H<sub>5</sub>: The key success factor of skilled logistics professionals is positively related to revenue growth.
- H<sub>6</sub>: The key success factor of supply chain integration is positively related to revenue growth.

**Table V** Summary of results for all respondents

Independent Variables	B Value	t – value	Hypothesis
Revenue Growth as Criteria Variable (H <sub>1</sub> to H <sub>6</sub> ) Adjusted R <sup>2</sup> = 0.14			
Breadth of Services	0.27	1.893**	H <sub>1</sub> is Supported.
Industry Focus	-0.06	-0.23	H <sub>2</sub> is not Supported.
Relation with 3PL	0.18	1.23	H <sub>3</sub> is not Supported.
Investment in Information Systems	0.19	1.645	H <sub>4</sub> is not Supported.
Skilled Logistics Professional	-0.04	-0.33	H <sub>5</sub> is not Supported.
Supply Chain Integration	0.06	0.64	H <sub>6</sub> is not Supported.

The results show that the breadth of services was positively correlated with revenue growth and the hypothesis is supported. For other factors, the analysis showed that there was no positive correlation with revenue growth.

## CONCLUSION

Changing business environment has pushed organizations in India to concentrate on their core activities and offload a host of logistics functions to experts in the field. Globally, the range of effective logistics outsourcing includes, apart from transportation, warehousing and custom clearance a whole range of other activities such as freight bill payments, auditing, contract manufacturing and assembly operations, packaging and labelling, freight consolidation to name a few. The practices in Indian industry reveal that:

- Warehousing, inbound and outbound transportation, custom clearing and forwarding are the most frequently outsourced activities.
- Activities such as packaging, fleet management and consolidation are gaining attention and growing in popularity.
- More and more companies are planning to use 3PL services in the future as an integrated set of services rather than for just movement of material.

- The motivation for doing so comes due to the benefits of logistics cost reduction, ability to focus on the core business, and improving supply chain efficiency.

Though the usage of 3PL services reveals positive and significant impact on business performance, third party logistics practices are still at a nascent stage in Saurashtra. 55% of companies subscribe to 3PL services as compared to 75% globally and these seem to be more of transportation and warehousing related activities. Organizations will increase the usage of 3PL services in traditional logistics activities and increase the scope of outsourcing based on the overall satisfaction and the impact on business objectives – logistics system performance, customer satisfaction and employee morale. These indicators should help the 3PL service providers plan the depth and scope of their service offerings in India. They clearly highlight the importance of delivering results that impact the business objectives in order to increase outsourcing opportunities for Indian organizations.

It is evident that usage of 3PL services can help organization's achieve substantial results, both in terms of customer satisfaction and logistics cost reduction. This will form the cornerstone for increase in outsourcing of logistics functions in the near and long-term future by present and prospective users for improved business results and supply chain efficiencies.

## References

- Bardi, E.J. and Tracey, M. (1991), "Transportation outsourcing: a survey of US practices", *International Journal of Physical Distribution and Logistics Management*, Vol. 21 No. 3, pp. 1521.
- Bhatnagar, R., Sohal, A.S. and Millen, R. (1999), "Third party logistics services: a Singapore perspective", *International Journal of Physical Distribution and Logistics Management*, Vol. 29 No. 9, pp. 569-587.
- Bloomen, D.R.V. and Petrov, I.P. (1994), "Logistics in Bulgaria: Concepts for New market Expansion", *International Journal of Physical Distribution and Logistics Management*, Vol. 24 No. 2, pp. 30-36.
- Bowersox, D. (1990), "The strategic benefit of logistics alliances", *Harvard Business Review*, July-August, pp. 36-45.
- Bradley, P. (1995), "Third parties gain slow, cautious buyer support", *Purchasing*, May, pp. 5152.
- Byrne, P.M. (1993), "A new roadmap for contract logistics", *Transportation and Distribution*, September, pp. 42-48.
- Cilliers, W.W. and Nagel, P.A.J. (1994), "Logistics trends in South Africa", *International Journal of Physical Distribution and Logistics Management*, Vol. 24 No. 7, pp. 4-14.
- Cooper, J.C. (1993), "Logistics strategies for global businesses", *International Journal of Physical Distribution and Logistics Management*, Vol. 23 No. 4, pp. 12-23.
- Dapiran, P., Lieb, R., Millen, R. and Sohal, A. (1996), "Third party logistics services usage by large Australian firms", *International Journal of Physical Distribution and Logistics Management*, Vol. 26 No. 10, pp. 36-45.

- Fantasia, J.J. (1993), "Are you a candidate for third party logistics?" *Transportation and Distribution*, January, pp. 30.
- Foster, T.A. and Muller, E.J. (1990), "Third parties: your passport to profits", *Distribution*, Vol. 89 No. 10, pp. 31-32.
- Goh, M. and Ang, A. (2000), "Some logistics realities in Indochina", *International Journal of Physical Distribution and Logistics Management*, Vol. 30 No. 10, pp. 887-911.
- Goldberg, D. (1990), "JIT's next step: moves cargo and data", *Transportation and Distribution*, December, pp. 26-29.
- Gooley, T.B. (1992), "To outsource or not to outsource", *Traffic Management*, December, pp. 8387.
- Kim, Jae-II (1996), "Logistics in Korea: current state and future directions", *International Journal of Physical Distribution and Logistics Management*, Vol. 26 No. 10, pp. 6-21.
- Korgaonker, M.G. (1990a), "Integrated supply chain management – part I", *MM – The Industry Magazine*, February, pp. 73-82.
- Korgaonker, M.G. (1990b), "Integrated supply chain management – part II", *MM – The Industry Magazine*, March, pp. 73-83.
- Lieb, R.C. (1992), "The use of third party logistics services by large American manufacturers", *Journal of Business Logistics*, Vol. 13 No. 2, pp. 29-42.
- Lieb, R.C. and Randall, H.L. (1996), "A comparison of the use of third party logistics services by large American manufacturers, 1991, 1994 and 1995", *Journal of Business Logistics*, Vol. 17 No. 1, pp. 305-320.
- Lieb, R.C., Miller, R.A. and Wassenhove, L.N.V. (1993), "Third party logistics services: a comparison of experienced American and European manufacturers", *International Journal of Physical Distribution and Logistics Management*, Vol. 23 No. 6, pp. 35-44.
- McMullan, A. (1996), "Supply Chain Management practices in Asia Pacific today", *International Journal of Physical Distribution and Logistics Management*, Vol. 26 No. 10, pp. 79-95.
- Millen, R. and Sohal, A. (1996), "Current logistics practices in the Asia Pacific region", *International Journal of Physical Distribution and Logistics Management*, Vol. 26 No. 10.
- Minaham, T. (1997), "Are buyers grooming up the supply chain", *Purchasing*, January 16, pp. 79-80.
- Razzaque, M.A. and Sheng, C.C. (1998), "Outsourcing of logistics function: a literature survey", *International Journal of Physical Distribution and Logistics Management*, Vol. 28 No. 2, pp. 89107.
- Richardson, H.L. (1990), "Explore outsourcing", *Transportation and Distribution*, July, pp. 1720.
- Richardson, H.L. (1992), "Outsourcing: the power work source", *Transportation and Distribution*, July, pp. 22-24.
- Richardson, H.L. (1995), "Logistics help for the challenged", *Transportation and Distribution*, January, pp. 60-64.
- Sahay, B.S., and Mohan, R. (2003), "Supply chain management practices in Indian industry", *International Journal of Physical Distribution and Logistics Management*, Vol. 33 No. 7, pp. 582-606.
- Sheffi, Y. (1990), "Third party logistics: present and future prospects", *Journal of Business Logistic*, Vol. 11 No. 2, pp. 27-39.
- Sink, H.L., Langley, C.J. Jr. and Gibson, B.J. (1996), "Buyer observations of the U.S. third-party logistics market", *International Journal of Physical Distribution and Logistics Management*, Vol. 26 No. 3, pp. 38-46.
- Trunick, P.A. (1989), "Outsourcing: a single source for many talents", *Transportation and Distribution*, July, pp. 20-23.
- Trunick, P.A. (1990), "Carving a niche in global logistics", *Transportation and Distribution*, February, pp. 57-58.
- Watson, R. and Pitt, L. (1989), "Remarrying marketing and logistics with information systems technology", *Industrial Management and Data Systems*, Vol. 1, pp. 4-12.

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