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**A COMPARATIVE STUDY OF THIRD-PARTY LOGISTICS PROVIDERS**

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**ABSTRACT**

*With competitive pressures placing an increasing dependence on the ability of organizations to deliver customer-adapted products quickly and on time, logistics has been an area that has been subjected to investigation. While, there is a growing evidence of organizations increasingly seeking to outsource their logistics activities, there have been few comprehensive studies on the outsourcing of logistics in the Middle Eastern region. The purpose of this paper is to examine the usage of third-party logistics (3PL) services. In India the logistics industry is evolving rapidly and it is the interplay of infrastructure, technology and new types of service providers that will define whether the industry is able to help its customers, reduce their logistics costs and provide effective services. Third party logistics (3PL) is drawing attention at government, industrial, academicians and practitioner's levels. This project is an attempt to provide 3PL practices perspective in India. The project focuses on present extent of usage of third-party logistics services based on data collected from the working professionals in 3PL companies. Data analysis is done using SPSS software and descriptive statistics analysis, correlation, regression analysis and reliability test of collected data is performed. This has helped to compare the best third-party logistics provider in Indore and Nasik cities of India. Analysis shows that there are similarities on the use of contract logistics services in Madhya Pradesh and Maharashtra. These include the proportion of firms utilizing contract logistics, the extent of involvement of functional managers, and activities outsourced. Notable differences between the 3PL providers include process, and the benefits to the firms from the use of contract logistics*

**Keywords:** Logistics, 3PL, logistics outsourcing; service providers; India.

**Introduction**

In the today's era supply chain management (SCM) is growing rapidly and the business of supply chain management is increasing every place in the world Supply chain management includes many logistics functions such as transportation, warehousing, distribution management and freight consolidation etc. Supply chain management is the man concern to represent this project and the intention of the research

is to identify the most effective ways of choosing a third-party Logistics (3PL) provider. Third party logistics is defined as when a third party is brought to manage various logistics functions. A 3PL provider is an independent economic entity that creates value for its client. A trucking company, a warehouse operator, and a contract manufacturer can all be considered third parties. The 3PL industry is constantly changing, although its existence is nothing

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*Madan Mohan Malaviya University of Technology*

new. The range of value propositions they offer today has changed dramatically in recent years. Global industry consolidation, technology integration, Third-party logistics (3PL) refers to outsourcing transportation, warehousing and other logistics related activities to a 3PL service provider that were originally performed in-house. More and more corporations across the world are outsourcing their logistics activities due to various reasons, some of which are outlined below.

- Due to globalization, corporations across the world are increasingly sourcing, manufacturing and distributing on a global scale making their supply chains very complex. Hence, they have to outsource their logistics activities to experienced 3PL providers, who have global operations. Today's 3PL providers with their sophisticated IT capabilities and state-of-the-art transportation and material handling equipment and warehousing facilities offer complete supply chain Solutions.
- Logistics outsourcing is used to complement the logistics activities the corporations do not have competency in, and also to increase the geographic reach. When a corporation expands business overseas, it may not be conversant with the customs duties, tax structures, rules and regulations, import/export policies of the government, and culture of the foreign country. A 3PL provider, who has long been operating in that country, will be better able to carry out the logistics operations.
- Logistics may not be one of the core activities of a corporation. So, inefficiency may creep in if it is looked upon as a secondary activity. By outsourcing logistics, corporations may focus on their core competencies.
- Logistics outsourcing may also reduce costs as the 3PL providers can get the advantage of the economies of scale, which is otherwise not available to the corporations.
- By outsourcing logistics, corporations can reduce their asset base, and deploy the capital released for other productive usage.
- Logistics outsourcing improves cycle time and delivery performance, thereby increasing customer satisfaction.
- Since the 3PL providers are now offering a number of value-added services such as customs clearance, freight forwarding, import/export management, distribution, after sales support, reverse logistics and so on, corporations can outsource all these activities, and concentrate on their core business operations.
- Due to an incredible growth in electronic retailing since the late 1990's, many firms around the world with virtually no distribution systems rely heavily on the 3PL providers for delivery of the merchandise at the customer's doorstep. This has resulted in a significant growth in the order fulfillment sector of the 3PL service industry. [11]

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### **Methodology**

The research methodology adopted in this project is based on data collected from the respondent's directly through personal visits and by mail survey. Collection of data is based on questionnaire surveys. The word research is composed of two syllables, re and search, re is a prefix meaning again, A new or over again while search is a verb meaning to examine closely and carefully, to test and try, or to probe. Together they form a noun describing a careful, systematic, patient study and investigation in some field of knowledge, undertaken to establish facts or principles. Research is a structured enquiry that utilizes acceptable scientific methodology to solve problems and create new knowledge that is generally applicable. Scientific methods consist of systematic observations, classification and interpretation of data. Research can be classified from three perspectives:

1. Application of research study.
2. Objectives in undertaking the research.
3. Inquiry mode employed.

From the point of view of application, there are two broad categories of research:

- Descriptive
- Correlational
- Explanatory
- Exploratory
- Unstructured approach

To meet the mentioned objectives of the present study, the proper methodology among the mentioned above is required to be designed. In the present study the focus is on-

(1) Survey to identify the level of satisfaction of a particular service.

(2) Data analysis and interpretation to determine statistical parameters of importance. We have conducted a survey. A total of 30 respondents were strategically selected to conduct the survey in different field. The study has been conducted to identify the factors that mostly satisfy the customer. a structured questionnaire has been constructed on Likert's 5 point scale to conduct the survey. The questionnaire includes questions on each of the 12 variables. In this project, software Statistical Package for Social Sciences 16 (SPSS 16) which provides the descriptive statistics and other statistical analyses is used. The responses obtained from the respondents are entered in SPSS sheet for calculating the descriptive statistics, Pearson correlation, Reliability and Multiple Regression analysis. This Chapter deals with the methods used to calculate a comprehensive index to compare the various 3PL providers. Design of the Questionnaires The questionnaire had 12 variables each variable includes some questions and hence the total questions are 92. In this, the respondents are asked to choose one from the possible alternatives provided. Options in each question particular scale for each answer. The questions asked in each section are given below.

### **Data Collection**

#### *Variables*

#### *V1 Fleet Strength*

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Here the respondent is asked about the Vehicles they have like LMV, HMV, Travelling record per KM, etc.

*V2 Geographical Coverage*

In this section, the respondent asked to define their market range national, international, state, rural area and reason for out sourcing and the reason for not outsourcing.

*V3 Qualities*

In this section, the respondents are asked about the qualities which they are providing moreover it includes system for tracking and identification, percentage of accuracy of order fulfillment, on time delivery, reliable delivery, flexibility in billing payment, operations, availability of sales support, qualified logistic manpower, efficiency for information transformation and taking promptly decision on unexpected unforeseen events.

*V4 Warehousing*

In this section, respondents are asked about the management of receiving and shipment of goods moreover inspect each importing shipment percentage level of physical inspection in shipment etc.

*V5 Service Level*

In this section, respondents are asked about the Export and Import of Industrial machinery & equipment's, metals and mining automotive parts Textile materials. Respondent make Schedule for transport transaction, use bill of delivery for transport transaction, use Gate entry for the detail of transport transaction, use Technical Standard/ Health Certificate for the detail of transport transaction, and use Bill of landing

/ Truck Bill of for the detail of transport transaction.

*V6 Managerial Capabilities*

In this section, respondents are asked about the control on the transportation related activities, management of technical control, custom control, authority for transport, managers responsible to take decision about the transport and management of vehicles, take decision about selection of the place, operating assistant to support in vendor management and asset visibility, vendor quality assurance and quality control, planning and control productivity improvement operations improvement.

*V7 Information Sharing*

In this section, respondents are asked about the availability of software for information transmission. And the organization providing training in fleet management, transport planning budgeting and financial planning, health and safety, and in defensive driving. And how much is the efficiency of information transformation in organization. Management of continuance of agreement and about the emphasis on improvement of service.

*V8 Cost*

In this section, respondents are asked about the receiving of payment form the customers through direct cash payment or NEFT payment, or Net Banking payment, or Cheque payment for the items, and about the cost of service which is similar to the market rate or different.

*V9 Experiences*

In this section, respondents are asked about the experience in different activities like

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experience in analysis of routing and mode of transportation, experience in space booking with carriers, experience in clearing of goods through customs, experience in Import/export insurance, experience in preparation, elaboration and submission of trade documents in compliance with customs.

*V10 Flexibility*

In this section, respondents are asked about the flexibilities which provided to the customers such as flexibility in operation, flexibility in Billing & Payment and make good will to the users.

*V11 Information Communication Transformations*

In this section, respondents are asked about the Information Communication Transformations like track the order through people contact, or through Internet, and the IT capacity which helps in reducing uncertainties, tracking of the goods through an easy process.

*V12 Technical Capabilities*

In this section, respondents are asked about the using of Bar-Coding and RFID as enabling technology, vehicles are equipped with GPS to navigate, Installed tracking system in vehicles and Material handling automation system all these technical control equipments are available and in working condition.

**Results and discussion**

This Chapter presents result obtained from the analysis of data and discussion about obtained results. Mean, Pearson correlation coefficient, and Regression analysis is done

to measure the customer perception in 3PL organizations. Data analysis is done in previous Chapter in which relationship between various factors are explained.

Discussion about result shows percentage variation of mean and suggests how to improve other factors which are ranked low in the analysis.

**Descriptive Result Interpretation**

- The result shows that the statistics mean for the Technical Capability is highest.
- The result shows that the statistics mean for the Cost is Lowest.
- The result shows that the statistics Cronbach's Alpha has highest value for the variable Quality.
- The result shows that the statistics Cronbach's Alpha has lowest value for the variable Experience.
- The result shows that the value of R Square is equal to 0.662 that is 66.2%.
- The overall statistics data reveals that according to the customer's perception among all 12 variables. Under study the Technical capability gets the highest score.
- Result of correlation shows much significant positive correlation between the variables.
- Means of variable technical capability has the higher value it shows that the respective companies are technically strong.
- Mean of twelve factors is 3.86 which is average of overall attributes showing satisfactory results on Likert's five-point scale. Out of 12 factors 4 are identified as most critical factors with mean ranging from more than 4 which is presents in Table 1.2. Four other factors are sub critical

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factors with mean ranging between 3.59 and 3.96. Remaining four factors with mean less than 3.59 are considered less critical. The results of mean with their ranking are showing in Table 1.2.

## Conclusions

(Following major Conclusions are drawn after careful analysis of data and discuss these of):

[1] In the project there are 12 variables each of one contains some questions, among these 12 variables one is dependent and all other are independent variables, from the descriptive statistics, the mean of all the variables is calculated and it shows that the technical capability, quality, warehousing & information and communication transfer variables are highest values so they are critical and important.

[2] For these 12 variables the other analysis is also done that is Cronbach's alpha, Pearson Correlation, and multiple regression analysis and it is found that again the variables technical capability, quality, warehousing, & information and communication transfer are important variables.

[3] On the basis of this important factors or variables a decision matrix for weight identification is prepared and it shows a comprehensive index between these variables.

[4] From this comprehensive index the overall capabilities of each of these 30 3PL providers is prepared and it shows a comparative analysis between them.

[5] Through the scores of these 3PL providers as obtained from comparative analysis, I assign a range that is if the score between (4 to 5) than it is categorized as a good 3PL provider and if score between (3 to 3.5) than it is categorized as average 3PL providers and if score between (2 to 3.5) than it is categorized as poor 3PL providers. And from this analysis it is finally conclude that the 2 companies are good at 3PL capabilities have got highest score while 24 companies are average and 4 companies are poor and got low scores.

[6] The contribution of this study is the identification of factors that determine customer satisfaction with the quality of services provided in 3PL organization. The study is based on empirical research.

## References

- [1] Foster T. A., (2004), "Top 25 third-party logistics providers extend their global reach", Global Logistics and Supply Chain Strategies, Web magazine available at <http://www.glscs.com>.
- [2] Gupta R.C., "A Survey on 3PL Practices in Manufacturing Industries".
- [3] Lynch, C F, (2002), "3PLs: the state of outsourcing", Logistics Management, Vol 41,6, Pp T47-T50.
- [4] Marasco, A. (2006), "Third-party logistics: A literature review".
- [5] Mitra S., (Oct 2005) "A Survey of the Third-Party Logistics (3PL) Service Providers in India by INDIAN INSTITUTE OF MANAGEMENT CALCUTTA".

*National Conference on Futuristics in Mechanical Engineering*  
 Madan Mohan Malaviya University of Technology

[6] Mitra S., (2008) “Key Success Factors, Performance Metrics, and Globalization Issues

[7] in the Third-Party Logistics (3PL) Industry: A Survey of North American service Providers”.

[8] Mitra S., (2009) “The 2008 Survey of Indian Third-Party Logistics (3PL) Service Providers: Comparisons with the 2004 Survey of Indian 3PLs and 2006 Survey of North”.

[9] Sahay, B S, (2004), “Third-party logistics practices: an Indian perspective”, Unpublished.

[10] Sohal S., (2006), “comparative study on the use of third-party logistics services by Singaporean and Malaysian firms”.

[11] 2012, 16th annual THIRD-PARTY LOGISTICS study, The State of Logistics Outsourcing

[12] 11. Wandel S., (1999) “Third-party logistics: Is there a future?”

**List of Tables**

*Table 1.1 shows the connotation used in Likert scale, Connotations used in Likert’s scale*

1	2	3	4	5
Strongly disagree	Disagree	Somewhat agree	Agree	Strongly agree

*Table 1.2: Categorization of Variables*

Most Critical Variables	Critical Variables	Less Critical Variables
1. Quality 2. Warehousing 3. Information & communication transfer 4. Technical Capability	1. Fleet strength 2. Service Level 3. Information Sharing 4. Experience	1. Geographical coverage 2. Managerial capability 3. Cost 4. Flexibility

Table 1.2 indicates the categorization of the variables it contains three category Most critical variable, critical variable and less critical variable. Most critical variable indicates that these variables are highly under observation as compared to the other two.

Result of correlation shows many significant positive correlations between factors which are presented in Table 1.3.

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**Table 1.3: Result of Correlation between Factors**

<b>Factors</b>	<b>Positive Correlation with other Factors</b>
Fleet Strength	Geographical coverage, Quality, Warehousing, Service, Cost, Experience, Flexibility, Information and communication transfer, Technical capability.
Geographical coverage	Quality, Technical capability, Managerial capability,
Quality	Technical capability, Warehousing, Service,
Warehousing	Information and communication transfer, Service, Technical capability, Experience, Flexibility, Information Sharing.
Managerial capability	Cost, Experience, Geographical coverage
Information Sharing	Flexibility, Cost, Experience, Information and communication transfer, Warehousing, Service
Cost	Experience, Flexibility. Information Sharing, Service, Fleet Strength, Managerial capability
Experience	Cost, Information Sharing, Managerial capability, Fleet Strength, Warehousing
Flexibility	Cost, Experience, Information Sharing, Service, Fleet Strength, Warehousing.
Information and communication transfer	Warehousing, Technical capability. Service, Fleet Strength, Information Sharing, Experience, Flexibility
Technical capability	Quality, Geographical coverage, Service, Fleet Strength, Warehousing, Information and communication transfer

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Result of multiple regression analysis showing positive relationship between dependent and independent factors is presented in Table 1.4

**Table 1.4:** *Result of Multiple Regressions between Factors*

<b>Dependent factors</b>	<b>Positive Correlation Relation with Independent Factors</b>
Service	Fleet Strength
	Geographical coverage
	Quality
	Warehousing
	Managerial capability
	Information Sharing
	Cost
	Experience
	Flexibility
	Information and communication transfer
	Technical capability

Result of Decision Matrix for Weight Identification Using decision matrix for identification of weights of the variables it is clearly depicts that the companies which are good at 3PL capabilities have got highest score while average and poor got low scores respectively.

where,  $m_i$  = Initial mass and  $m_f$  =Final mass