PalArch's Journal of Archaeology of Egypt / Egyptology

"The Impact Of 3PL Services on TQM in Automobile Industry with Special Reference to State of Maharashtra"

Dr. Kiran S. Kale
MBA, Dr. D. Y. Patil Institute of Technology, Pimpri, Pune- India
Email: kiranskale@gmail.com

Dr. Kiran S. Kale, The Impact Of 3PL Services on TQM in Automobile Industry with Special Reference to State of Maharashtra, -- Palarch's Journal Of Archaeology Of Egypt/Egyptology 18(7). ISSN 1567-214x

Keywords: Logistic Services, Supply Chain Management, 3PL Services, TQM

ABSTRACT

The outsourcing of Third Party Logistic (3PL) services has become very significant in various industries. In Modern times supply chain and logistics management have important role to perform to bring in the quality with minimum cost. Third Party Logistic services help in effective transportation, warehousing and value added service. The concept of Third Party Logistic works very effective and efficient in Automobile industry. The implementation of 3PL has reduced the cost of maintaining of the inventory, delays in the channel of distribution. The present research examines the impact of 3PL services on TQM of automobile industry in Maharashtra. The contribution of 3PL services towards Total Quality Management with customer focus, continuous improvement, communication efficiency and discipline in quality is remarkable. Maharashtra is known as hub of Automobile industry in India. Researcher attempted to investigate most of the dimensions of 3PL in context with the Total Quality Management.

1. INTRODUCTION:

Logistic and supply chain management[1] players play vital roles in almost all the manufacturing industries. It impacts in terms of cost and customer satisfaction. It makes companies to generate effective balance sheet and build strong position in the market. Logistic[2] and supply chain management imparts the companies to increase competitiveness of an organization.

Supply change management[3] became popular in the year of 80s and 90s. During

[1]Buurman, J. (2002). *Supply chain logistics management*. McGraw-Hill.

[2]Márquez, F. P. G., Pardo, I. P. G., & Nieto, M. R. M. (2015). Competitiveness based on logistic management: a real case study. *Annals of Operations Research*, *233*(1), 157-169.

[3]Miri-Lavassani, K., Movahedi, B., & Kumar, V. D. (2009). Developments in theories of supply chain management: The case of B2B electronic marketplace adoption. *International Journal of Knowledge, Culture and Change Management*, *9*(6), 85-97.

this period companies are focusing to find innovative ways for reduction of cost and increasing the effectiveness of quality and design aspects. In this background third party Logistics[4] (3PL) became very effective to attain these objectives of Industries. It helps companies at lowering their cost with improving their qualities which ultimately help to increase their financial strength of companies. It gives companies to expend more on innovation and competencies building of companies. There are various arguments related with 3PL which talk about – Which type of elements should be outsourced and which type of products or services should not be out sourced.

Generally outsourcing[5]of logistics refers towards inventory management, warehousing, transportation, physical distribution. The objectives behind 3PL are to free the burden of logistic activities so that companies can focus on core activities which help them to strengthen the innovative practices and quality goods at competitive price. It helps in total quality management [6]aspect and helps industry to become competitive one

In recent years, many companies of automotive industries are striving for strategic advantages in logistic operation[7] to curtail cost of manufacturing automotive product. The companies are struggling for reducing inventory, supply chain cost at each and every transaction for their customers for their existence.

Consumer demand[8] is increasing year by year globally. Effective logistics are a crucial to fulfil this demand generated globally. It ensures that various operations run smoothly and risks associated with these are reduced. This is the reason why the result of, manufacturers of automobile industry should choose to partner with a specialist third party logistics provider (3PL) to enhance their global operations and competitive advantage.

2. LITERATURE REVIEW:

Cooper,(1993)[9] describe about a main factor for rationale for outsourcing of logistics functions is the intensified globalization of businesses. During the last two decades, It has been observed that globalization has come out as a major factor of shaping business strategies for leading firms to develop products designed for a global market and to source components globally. It has made to more complex supply chains for requiring larger involvement and participant 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.

[4]Skjoett-Larsen, T. (2000). Third party logistics–from an inter organizational point of view. *International journal of physical distribution & logistics management*.

[5]Lynch, C. F. (2000). *Logistics outsourcing: a management guide*.

[6]Evans, J. R. (2002). Total quality management. *INFOR*, *40*(4), 364.

[7]Sathish, T., &Jayaprakash, J. (2017). Multi period disassembly-to-order of end-of-life product based on scheduling to maximise the profit in reverse logistic operation. *International Journal of Logistics Systems and Management*, *26*(3), 402-419.

[8]Barve, A., Kanda, A., & Shankar, R. (2008). Making 3PL effective in agile supply chains. *International Journal of Logistics Systems and Management*, *4*(1), 40-60.

[9]*Cooper, J. C. (1993). Logistics strategies for global businesses. International journal of physical distribution & logistics management*

Byrne[10], (1993) Foster and Muller[11], (1990) Trunick (1989) describe about the firms are concentrating their energies on core activities and leaving the rest to specialist firms. So, it is equally important to development of logistic development which impact on the logistics industry. Logistic Management helps to increase 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 , Total Quality Management 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.

Foster[12] (1994) reveals about the shift of selection model .He describes outsourcing as a strategic process which is focused relatively more on management skills, technology and operational skills rather than on cost consideration in their selection process. There are ten steps-: Establishing company's strategy, Centrally control system, assessing and validating operational excellence, leveraging New technology for effectiveness, Ensuring to work with likeminded, Researching bench strength, Establishing a trust threshold, Establishing cultural similarities, In quest of support for uninterrupted improvement, and making cost a lower priority.

Bhatnagar, Sohal and Millen[13], (1999), describes the improvement of the level of supply chain performance which helps in speeding the flow of information. They also describe the importance of expediting the various types of logistics activities such as storage and delivery of materials through the medium of Supply chain Management. Now a day's research is being carried on the basis of supply chain management

Meade and Sarkis[14] (2002) explain the various factors which impart significant role in assessing a third party reverse logistics provider and model decision support framework for selection .Researchers make a point to distinguish between the features of a forward and reverse 3PL provider. The decision support system is multilayer characteristics of utility theory which is based on analytic network process (ANP). Decision Support system incorporates interdependencies and feedbacks receive among clusters of selection of 3PL factors. The ANP model was designed to frame quantities and qualitative strategy and operational elements which help in decision framework .The important part of Third party logistic system is that it offer an integrated fashion. It does not work in isolation.

Shi, Y., Arthanari, T., & Wood, L. C[15].(2016) describe about managerial model

[10]*Byrne, P. (1993). A New Map for Contract Logistics. Transportation & Distribution.*

[11]*Foster, T. A., & Muller, E. J. (1990). Third parties: your passport to profits. Distribution, 89(10), 30-32.*

[12]Chipman, H., George, E. I., McCulloch, R. E., Clyde, M., Foster, D. P., & Stine, R. A. (2001). The practical implementation of Bayesian model selection. *Lecture Notes-Monograph Series*, 65-134.

[13]*Bhatnagar, R., Sohal, A. S., & Millen, R. (1999). Third party logistics services: a Singapore perspective. International Journal of Physical Distribution & Logistics Management*

[14]*Meade, L., &Sarkis, J. (2002). A conceptual model for selecting and evaluating third-party reverse logistics providers. Supply Chain Management: An International Journal*

[15]Shi, Y., Arthanari, T., & Wood, L. C. (2016). An empirical study of third-party purchase: New Zealand users' perspective. *Applied Economics*, *48*(56), 5448-5461.

for attaining of 3PL services. The process of theoretical model presented by them for 3PL buying process is necessary to identify the significance of outsource logistics in companies. Third Party logistic helps of feasible and doable Assessment of supplier and running operational assessment services. Under the evaluation and selection step of third party logistics, the various things must be kept in mind such as-: depth of management, cultural compatibility, financial strength, cost capacity, delivery effectiveness.

3. OBJECTIVES OF THE STUDY:

1. To understand the existing Role of 3PL in automobile sector in Maharashtra.
2. To establish the relationship between Total Quality Management and third Party Logistics in automobile Sector
3. To Study the impact of 3PL on automobile Sector

4. HYPOTHESES OF THE STUDY:

1. There is Relation between Management of third Party logistics and Total Quality Management.
2. There is Relation between 3PL and productiveness of Automobile Sector.
3. There is impact between Total Quality Management and automobile Sector

5. RESEARCH METHODOLOGY:

Researcher used present study in descriptive [16]type of research in which researcher used questionnaire method[17] to prove or disprove the hypotheses and attain objectives. Questionnaire and hypotheses were drafted on the basis of literature review. Questionnaire was responded by three type of Private, public and public limited industry for the present study. The respondents were asked to fill out the survey on issues of outsourcing, logistics, and automobile sector in Maharashtra. Researcher approached to 210 organization of Maharashtra. Among 210 Organizations 150 organization responded researcher's questions.

6. DATA ANALYSIS:

Table: 1 Industry wise responses recorded in numbers and percentages:

Industry Type	Number of Respondents	% of Respondents
Public	30	20
Private	65	43
public limited	55	37

Researcher used for present study three types of companies such as Public, Private and public limited .In Survey 150students are given their responses in which 30 respondents come from public sector, 65 respondents are responded from private sector and 55 respondents responded from public limited. It refers that 20%, 43%,

[16]Nassaji, H. (2015). Qualitative and descriptive research: Data type versus data analysis.
[17]Dunn, K. E., Barrett, F. S., Yepez-Laubach, C., Meyer, A. C., Hruska, B. J., Sigmon, S. C., ... & Bigelow, G. E. (2016). Brief Opioid Overdose Knowledge (BOOK): a questionnaire to assess overdose knowledge in individuals who use illicit or prescribed opioids. *Journal of addiction medicine*, *10*(5), 314.

55% respondents from public, private and private limited respectively.

Table: 2 Allocation of Total Logistics Budget for 3PL services based on usage in Automobile Industry for enhancing quality:

Logistics Budget for 3PL				
3 PL services usage& Quality (Respondents)	**Extensive**	**Moderate**	**Limited**	**Very Limited**
0% - 25%	8	25	21	7
25% - 45%	6	2	5	7
45% - 65%	0	2	6	7
More than 65% to	2	1	1	0

Above table shows that the allocation of total logistics budget for 3PL services based and quality. The Usage of 3PL services are to be ranged 0 to 25%, 25 to 45 %, 45to 65 % and more than 65% among the budget expenditures-. Extensive, Moderate, Limited Very Limited. The varying degree of commitment is reflected in total percentage allocated to 3PL provided as proportion of total cost. Among all the respondents. Less than 25 % industries are just spending on the basis of usage and quality. These Industry expend 61%their budget for these aspects..Table exhibit that the respondents of 25 to 45% respondents responded that 20%of their budget on the basis of usage Quality .The respondents above 65% responded that 4% budget they expend on these aspects. It means automobile industry must focus more on these aspects which help to competitive one. This is the only way through resource can be optimal utilized.

Table: 3 Impact of 3PL services on Financial Growth:

Indicator of Financial Growth of various Financial factors due to 3PL	**% Growth**
sales revenue	14
Working capital	13
Capital asset reduction	10
Reduction Production cost	11
cost reduction of Labor	10
Return on Assets	10
cost reduction in Logistics	14

Above table shows about financial growth of various financial factors in terms of 3PL assistance. The companies which are using 3PL services significantly impact various financial factors. Respondents are asked about various financial factors which impact 3PL such as – improvement in sale revenues, working capital improvement, capital asset reduction, production cost reduction, labor cost reduction, return on asset improvement, logistics cost reduction – because of the usage of 3PL services

Table: 4 Various elements of outsourcing practiced by organization on the basis of Significance (Used Likert's Scale)

Elements of outsourcing in Organization for Logistic Activities for building Total	**Current outsourced**	**Importance of Rating (Likert Scale on basis of significance)**

Quality Management			
Logistic Activities		**Outsourcing Organization**	**Non Outsourcing Organization**
Customer Service/Support	16.23	4.6	4.23
Inventory Management	23.45	4.2	4.29
Rate Negotiation	21.5	3.5	4.2
Outbound Transportation	52.3	3.4	4.6
Distribution	22.65	3.3	4.2
Custom Clearing & Forwarding	50.32	3.2	3.9
Order Fulfillment	20.12	4	3.6
Selected Manufacturing	21.22	3	3.2
Order Picking	27.33	4.1	3.33
Outbound Warehousing	33.4	3.6	3.4
Labeling & Packaging	23.22	3.3	3.3
Import/Export Management	21.2	3.0	3.4
Inbound Transportation	51.56	3.0	3.3
Inbound Warehousing	23.33	3.2	2.9
Fleet Management & Consolidation	30.1	3.1	2.6
Marketing Sales Promotion	9.2	3.2	2.8
Order Processing	11.56	3.3	2.5
Assembly/Installation	12.33	3.0	2.3
Reverse Logistics	23.33	3.0	2.2

*(** Importance rating on a 5 point Likert scale: 1 indicating "not Significant" and 5 indicating "very significant")*

Above table exhibits the importance of outsource particular logistics support function on the basis of 5 points Likert Scale. In this scale 1 refers not significant and 5 refers very significant. Respondents were asked to tick the level of significance on the basis of 5 point likert scale from the range of not significant to most significance**.** Table exhibits that the all the activities of the third party logistics for building Total Quality Management is significant for outsourcing organization for the effectiveness because the ratings of all the organizations falls between 4.6 to 3 which clearly give the importance of third party logistics. More than half of the organization used logistic activities such as Outbound Transportation, Custom Clearing, Forwarding, and Inbound Transportation remaining activities of logistics are less than 50% but more than 20% are -: Rate Negotiation, Order Fulfillment, Selected Manufacturing, Labeling & Packaging, Inbound Warehousing, Fleet Management & Consolidation, Reverse Logistics. The least used outsourcing activities which are less 20% are -: Marketing Sales Promotion, Marketing Sales Promotion, Order Processing, Assembly/ Installation, Assembly/Installation, and Customer Service/Support.

Table: 5 The impact of Outsourcing in Logistics Activities in Automobile Organizations

Factors		**% of Respondents Status of Impact on the basis of likert Scale**

	Very optimistic	Optimistic	Total Optimistic	Average	Pessimistic	Very Pessimistic	Pessimistic
Performance of Logistics activities System	14.2	51.4	65.6	27.3	4.1	3	7.1
satisfaction level of Customer	24.3	40.3	64.6	31.1	2.2	2.1	4.3
Morality level of Employees	5.4	42.2	47.6	48.2	2.7	1.5	4.2

Researcher asked the users of third party logistics providers about the impact of Outsourcing in Logistics Activities and quality aspects in Organizations. Respondents were asked to classify the rate of impact under the heading of Performance of Logistics activities System, satisfaction level of Customer, Morality level of Employees on the basis of Likert Scale. In this Scale 5 refers very optimistic, 1 indicates very pessimistic about third party logistics. The above table depicts and summarize about the level of % impact in optimistic way of logistic activities, satisfaction of customer and morality of employeeare-65.6, 64.6 and 47.6 respectively. At the Same time % respondents not enthusiastic towards Logistics activities System, satisfaction level of Customer, and Morality level of Employees are 7.1%, 4.3%, 4.2% respectively. Percentage of respondents whose response were mixed towards optimistic and pessimistic about Performance of Logistics activities System, satisfaction level of Customer, Morality level of Employees - 27.3, 31.1, 48.2 respectively . It means Performance of Logistics activities System, satisfaction level of Customer and Morality level of Employees play very crucial role to building qualitative work and third party logistic framework which help for competitiveness and growth of automobile sector

7. CONCLUSION:

Business Environment changed drastically in India particularly in Maharashtra in the field of automobile Industry due focus on their core activities rather than focusing on subsidiary things. In this regard the significance of outsourcing besides transportation, warehousing and custom clearance , other activities such as freight bill payments, auditing, contract manufacturing and assembly operations, packaging and labeling, freight . The practices which are implemented in automobile Industry in Maharashtra reveal that Industries are giving More priorities to Warehousing, inbound and outbound transportation, custom clearing and forwarding are the most frequently outsourced activities. In Future more companies are planning to use 3PL in automobile sector in greater extent as an integrated set of services rather than Just movement of material. It all happens due to the benefits of logistics cost, priority given to focus on the core business, and supply chain efficiency. Still India in nascent stage in terms of implementation of 3PL services for total quality management. Still, lot to be done on the ground to make this sector effectiveness. Peace mill manner to tackle this industry cannot give guarantee of

productivity, quality aspects. So, it is necessary to work on holistic way to make this Industry competitiveness. Industry should increase the frequency of usage of 3PL services in traditional logistics and to be strengthened the scope of outsourcing base which impact on business, business activities objectives.

REFERENCE:

1. Buurman, J. (2002). Supply chain logistics management. McGraw-Hill.
2. Márquez, F. P. G., Pardo, I. P. G., & Nieto, M. R. M. (2015). Competitiveness based on logistic management: a real case study. Annals of Operations Research, 233(1), 157-16
3. Miri-Lavassani, K., Movahedi, B., & Kumar, V. D. (2009). Developments in theories of supply chain management: The case of B2B electronic marketplace adoption. International Journal of Knowledge, Culture and Change Management, 9(6), 85-97.
4. Skjoett-Larsen, T. (2000). Third party logistics–from an inter organizational point of view. International journal of physical distribution & logistics management.
5. Lynch, C. F. (2000). Logistics outsourcing: a management guide.
6. Evans, J. R. (2002). Total quality management. INFOR, 40(4), 364.
7. Sathish, T., & Jayaprakash, J. (2017). Multi period disassembly-to-order of end-of-life product based on scheduling to maximize the profit in reverse logistic operation. International Journal of Logistics Systems and Management, 26(3), 402-419.
8. Barve, A., Kanda, A., & Shankar, R. (2008). Making 3PL effective in agile supply chains. International Journal of Logistics Systems and Management, 4(1), 40-60
9. Cooper, J. C. (1993). Logistics strategies for global businesses. International journal of physical distribution & logistics management
10. Byrne, P. (1993). A NEW MAP FOR CONTRACT LOGISTICS. Transportation & Distribution.
11. Foster, T. A., & Muller, E. J. (1990). Third parties: your passport to profits. Distribution, 89(10), 30-32.
12. Chipman, H., George, E. I., McCulloch, R. E., Clyde, M., Foster, D. P., & Stine, R. A. (2001). The practical implementation of Bayesian model selection. Lecture Notes-Monograph Series, 65-134.
13. Bhatnagar, R., Sohal, A. S., & Millen, R. (1999). Third party logistics services: a Singapore perspective. International Journal of Physical Distribution & Logistics Management
14. Meade, L., &Sarkis, J. (2002). A conceptual model for selecting and evaluating third-party reverse logistics providers. Supply Chain Management: An International Journal
15. Shi, Y., Arthanari, T., & Wood, L. C. (2016). An empirical study of third-party purchase: New Zealand users' perspective. Applied Economics, 48(56), 5448-5461.
16. Nassaji, H. (2015). Qualitative and descriptive research: Data type versus data analysis.

17. Dunn, K. E., Barrett, F. S., Yepez-Laubach, C., Meyer, A. C., Hruska, B. J., Sigmon, S. C., ... & Bigelow, G. E. (2016). Brief Opioid Overdose Knowledge (BOOK): a questionnaire to assess overdose knowledge in individuals who use illicit or prescribed opioids. Journal of addiction medicine, 10(5), 314.
18. Monteverde, K., &Teece, D. J. (1982). Supplier switching costs and vertical integration in the automobile industry. The Bell Journal of Economics, 206-213
19. Stainer, A. (1997). Logistics-a productivity and performance perspective. Supply Chain Management: An International Journal.
20. Razzaque, M. A., & Sheng, C. C. (1998). Outsourcing of logistics functions: a literature survey. International Journal of Physical Distribution & Logistics Management.
21. Muller-Landau, H. C., Dalling, J. W., Harms, K. E., Wright, S. J., Condit, R., Hubbell, S. P., ... & Muller-Landau, H. (2003). Seed dispersal and density-dependent seed and seedling survival in Trichiliatuberculata and Miconiaargentea.
22. Kumar, P. (2007). Global logistics outsourcing: latest trends in selecting 3PL. Asia Pacific Business Review, 3(2),[i] 84-91.
23. Langley, A., Riddoch, A., Wilk, A., Vicente, A., Krasic, C., Zhang, D., ...& Bailey, J. (2017, August). The quic transport protocol: Design and internet-scale deployment. In Proceedings of the Conference of the ACM Special Interest Group on Data Communication (pp. 183-196).
24. Cakmakci, M. (2009). Process improvement: performance analysis of the setup time reduction-SMED in the automobile industry. The International Journal of Advanced Manufacturing Technology, 41(1-2), 168-179.