

# The Influence on the Consumer Purchasing Price of Manufacturing Goods Through Optimized Transportation Modeling

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## Abstract

This paper highlights the critical challenges that cause the rise in the rate of transportation. In this paper, several literature reviews are discussed to clarify the techniques and strategies which can be helpful in the reduction of the logistics cost of transportation. The activities of the supply chain can be handled separately so that it can reduce the cost of transportation. Transportation cost reduction is one of the most challenging jobs to do; to be successful, it requires a variety of management and strategy implementations. One of the primary difficulties in today's society is the rising expense of transportation, which is the main topic of this paper. In order to make the difficulties and concerns of the article more precise and understandable, this paper presents a wide range of literature studies on the subject.

The literature reviews on this topic highlight the area of concern and also discuss the solution which could be taken for the reduction of the transportation cost. This paper mainly highlights the activities of the supply chain which can help in lessening the logistic cost of transportation. Using automated techniques can hype the transportation cost but it can also reduce the labor cost which is a plus point for the reduction of transport cost. The increasing expenses of the daily essentials are the major reason for increasing transportation costs.

**Keywords:** the increasing cost of transportation, activities of the supply chain, changes in the economy, etc.

## Article History

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## 1.0 Introduction

In this paper, the whole discussion is based on optimizing the model of transportation. As nowadays the cost of transportation is increasing with each passing day and it causes very issues in the daily life of people. It can be said that the increasing cost of the transportation is one of the biggest and most crucial problems that occur in daily life. This is happening because of the increasing price of the daily essentials of life. This paper mainly focuses on the increasing cost of transportation which is one of the major issues nowadays. This paper provides a wide range of literature reviews on the selected topic so that it will become more accurate and easy to understand the problems and concerns of the paper. The cost reduction of transportation is one of the difficult tasks to do, it needs several management and strategies to follow both internally and externally as well to make it happen.

An increase in the costs of the transportation is the biggest issue of daily life and most importantly when it comes to the delivery of the goods to their destination then the most crucial part of it is the growing rate of the transportation. In paper analysis, the best techniques and

strategies to lower the cost of transportation so will be helpful for the consumers as well as the manufacturers.

## 2.0 Review of literature

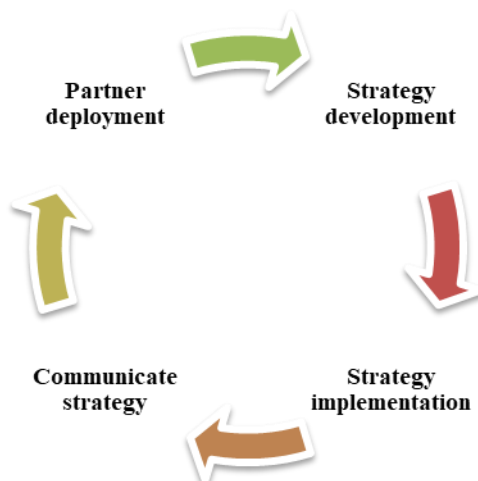
According to the author Pasha, 2020, the planning of transportation can directly depends on the facilities of the location and the warehouse. The location and utilization of warehouses can become the solution to the high rate of transportation. It can reduce the delivery cost of the product as well as it will make the supply of the delivery easy [11]. The activities of the supply chain are one of the very essential logistics activities which can improve the optimization and efficiency of the organization. It also opens a lot of opportunities for the researchers those who want to carry forward the development of the idea of the optimization of the logistics modeling and activities of the supply chain. The changes in the economy of the world can also lead to the overall usefulness of transportation, which also allows continuous actions in the supply chain [7]. Optimizing the cost of the supply chain from the viewpoint of creating low-cost logistics that can help increase the profitability of the organization. The main purpose of applying these changes in the activities of the supply chain is to lower the rate of logistics and provide a better service to the customers [Referred to Appendix 1].

According to the author Soleimani, 2019 reducing the transportation cost of logistics should be one of the most important priorities of the companies [10]. There are so many techniques by which the cost of transportation can be optimized, improving the procedures of the supply chain which permits the business in money saving. The strategies for reducing the expenses of logistics can vary from the level of inventory, a smart network of shipping, providing an enhanced and better procedure, and improving the connections between the third parties and the suppliers so that it would not hamper the manufacturing in any way.

## 3.0 Materials and Methodology

This report is mainly based on the research that has been done before, after collecting all the information about the increasing cost of transportation the paper discussed several factors that are helpful for the reduction of cost [9]. A good and balanced business is mainly concerned with maximizing the cost of production as well as transportation, it is very important to overlook the strategies that use in the overall business to help in increasing their profitability and lessen transportation expenses [3]. It becomes very difficult to manage the logistics of the company if not understood properly.

Reducing the costs of logistics is one of the main priorities of the companies while finalizing the budget and thinking about future progress and profitability. Optimizing the activities of the supply chain can reduce the high amount of transportation costs and it can also help the consumers in their satisfaction and needs [5]. Creative thinking and ideas can be very helpful, such as freight shipping by the mode of sea is way more affordable as compared to air shipping, by following several changes in shipping techniques can be very helpful in lessening the transportation cost [Referred to Appendix 2].



**Figure 1: Optimization of supply chain**

(Source: Self-made in Ms. Word)

#### **4.0 Results and Discussion**

It can be concluded that focusing on the automatic system of loading containers and the activities of the supply chain can be very helpful in optimizing the higher rate of transportation [12]. It is very crucial to understand the techniques to reduce the labor cost for the operations of the warehouse as it can help in bringing down the all-over cost of logistics [4]. The management of labor needs to understand and handle it very well so that they can work in a procedure that brings high earnings for the company most importantly every single project should focus on reducing the labor cost so it will impact lessening the transportation cost as well. It can be seen that increases in the daily essentials are highly affecting the cost of transportation and it needs to be managed by handling the organization systematically and finalizing each expense carefully.

Creating motivation programs for the workers and employees can also become helpful and proven a good solution for the organization. Following these types of programs can help in motivating employees which also increases the allover productivity and lessen the need for extra equipment [6]. It results in a low cost of production and high profitability.

#### **5.0 Conclusion & future scope**

This paper concludes that following the right techniques can be beneficial in reducing the cost of transportation. This paper also highlights the relevant and accurate techniques or strategies for solving the issues of increasing transportation costs. All information that is provided in this paper is collected from the mentioned journals and also discussed in the literature reviews [13]. A peer review has been given in this paper for a clear understanding of the concerns of the paper which is the increasing rate of transportation. It can assume that following these techniques can help in earning future benefits and also reduce the logistics cost. The strategies related to the optimization of the activities of the supply chain can be proven very helpful for the growth as well as the earnings of the business if applied properly [8].

## 6.0 Recommendations

It can be recommended that becoming more flexible and adapting to the variety of transport can help offset the losses that have been done because of the high cost of transportation [15]. Using the system of automated containers can also save the cost of labor and also helps in avoiding damage to the products as it is an automated loading container [14]. The labor cost is one of the major affecting costs of each project which can be reduced by applying these strategies and techniques in the transportation and manufacturing procedures.

## Reference List

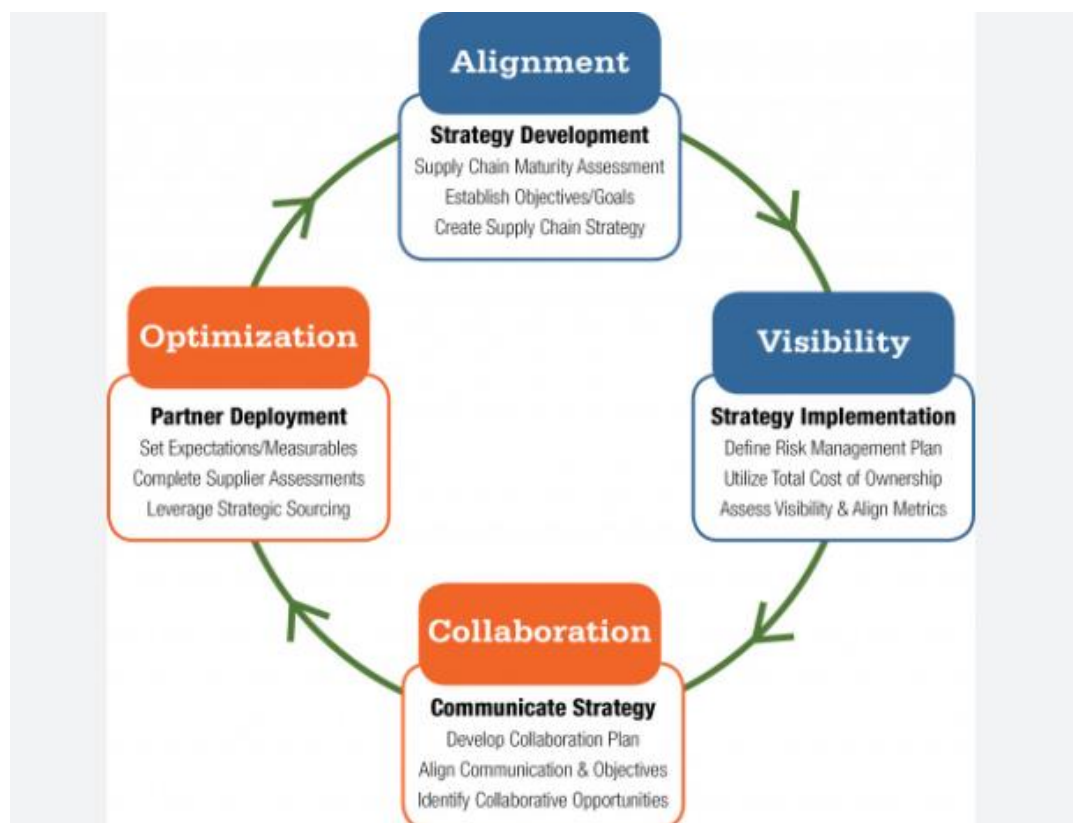
### Journals

1. J. Pasha, M. A. Dulebenets, M. Kavousi, O. F. Abioye, H. Wang, and W. Guo, "An optimization model and solution algorithms for the vehicle routing problem with a 'factory-in-a-box,'" *IEEE Access*, vol. 8, pp. 134743–134763, 2020.
2. Y. Li, H. Soleimani, and M. Zohal, "An improved ant colony optimization algorithm for the multi-depot green vehicle routing problem with multiple objectives," *Journal of Cleaner Production*, vol. 227, pp. 1161–1172, 2019.
3. P. Lacomme, A. Moukrim, A. Quilliot, and M. Vinot, "Supply chain optimisation with both production and Transportation Integration: Multiple vehicles for a single perishable product," *International Journal of Production Research*, vol. 56, no. 12, pp. 4313–4336, 2018.
4. R. Moghdani, K. Salimifard, E. Demir, and A. Benyettou, "The Green Vehicle Routing Problem: A Systematic Literature Review," *Journal of Cleaner Production*, vol. 279, p. 123691, 2021.
5. J. T. Margolis, K. M. Sullivan, S. J. Mason, and M. Magagnotti, "A multi-objective optimization model for designing Resilient Supply Chain Networks," *International Journal of Production Economics*, vol. 204, pp. 174–185, 2018.
6. J. Ghahremani Nahr, S. H. Pasandideh, and S. T. Niaki, "A robust optimization approach for multi-objective, multi-product, multi-period, closed-loop green supply chain network designs under uncertainty and discount," *Journal of Industrial and Production Engineering*, vol. 37, no. 1, pp. 1–22, 2020.
7. P. K. Maddikunta, Q.-V. Pham, P. B. N. Deepa, K. Dev, T. R. Gadekallu, R. Ruby, and M. Liyanage, "Industry 5.0: A survey on enabling technologies and potential applications," *Journal of Industrial Information Integration*, vol. 26, p. 100257, 2022.
8. H. Gholizadeh and H. Fazlollahtabar, "Robust optimization and modified genetic algorithm for a closed loop green supply chain under uncertainty: Case study in melting industry," *Computers & Industrial Engineering*, vol. 147, p. 106653, 2020.
9. S. F. Moosavian, D. Borzuei, R. Zahedi, and A. Ahmadi, "Evaluation of research and development subsidies and fossil energy tax for sustainable development using Computable General Equilibrium Model," *Energy Science & Engineering*, vol. 10, no. 9, pp. 3267–3280, 2022.

10. S. N. Emenike and G. Falcone, "A review on energy supply chain resilience through optimization," *Renewable and Sustainable Energy Reviews*, vol. 134, p. 110088, 2020.
11. X. Gao and C. Cao, "A novel multi-objective scenario-based optimization model for Sustainable Reverse Logistics Supply Chain Network redesign considering facility reconstruction," *Journal of Cleaner Production*, vol. 270, p. 122405, 2020.
12. Z. Mohtashami, A. Aghsami, and F. Jolai, "A green closed loop supply chain design using queuing system for reducing environmental impact and energy consumption," *Journal of Cleaner Production*, vol. 242, p. 118452, 2020.
13. A. Salehi-Amiri, A. Zahedi, N. Akbapour, and M. Hajiaghahi-Keshteli, "Designing a sustainable closed-loop supply chain network for Walnut Industry," *Renewable and Sustainable Energy Reviews*, vol. 141, p. 110821, 2021.
14. J. Dongxu, W. Zhongbao, J. Pou, S. Mazzoni, S. Rajoo, and A. Romagnoli, "Geometry optimization of thermoelectric modules: Simulation and Experimental Study," *Energy Conversion and Management*, vol. 195, pp. 236–243, 2019.
15. P. K. Maddikunta, Q.-V. Pham, P. B. N. Deepa, K. Dev, T. R. Gadekallu, R. Ruby, and M. Liyanage, "Industry 5.0: A survey on enabling technologies and potential applications," *Journal of Industrial Information Integration*, vol. 26, p. 100257, 2022.

## Appendices

### Appendix 1: Optimization of supply chain management



(Source: heavy.ai)

**Appendix 2: Logistic cost reduction****6. Focus On Logistics Cost Reduction**

The simple best logistics cost reduction of supply chain tip is this: work together with suppliers to reduce costs. Sometimes suppliers can cover some direct logistics costs. Try to create a consortium of buyers (a buyer and their suppliers) to purchase the necessary logistics supplies (i.e., Transportation fuel) at a lower cost due to buying in larger quantities.

Start inviting suppliers with a structured agenda at your facility. One topic would be to analyze your goods and present logistics cost reduction ideas. The supplier is perhaps the expert in their field of expertise.

Suppliers can surely help by continuing to work with you in a win-win cost savings programme. Keep a part's function, but drastically reduce component costs, never jeopardize quality.

(Source: <https://www.smartteh.eu/en/blogs/reduce-transportation-cost>)