

# Enhancing Customer Satisfaction through Efficient Road Transportation in the Granite and Tiles Industry

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## Abstract

*Logistics is a significant part of the business commercial system and is a major international financial activity. The essential for a study lies on the difficulties of road transport in Logistics is crucial for educating efficiency, reducing costs, and enhancing overall operational effectiveness. Road carriage plays a pivotal role in Logistics and supply chains, and any inefficiencies or problems can lead to significant economic consequences, such as delays, increased costs, and reduced productivity. In this study the researcher finds the association with the problems in road transportation in Logistics and demographic characteristics of suppliers of granites, studies the relationship of factors that are associated with the problems in road transportation and Logistics with reference to Granites. In this study detailed descriptive research used with the help of convenience sampling with a sample size of 80 respondents selected from suppliers. The statistical tools used for the study is correlation analysis, and regression analysis. The Spearman's Rho test was used to observe the relationship of the variables that affect the logistics. Significant level used is the confidence level of  $p < 0.05$ . The result show that there was significant relationship of all the variables, specifically External factors influence have strong moderate relationship than other variables. This study was concluded for improving logistics efficiency in road transportation starts with investing in advanced technology, such as GPS tracking and logistics management software, to optimize routes and resource allocation.*

**Keywords:** *Transportation in Logistics, Logistics operations and Logistics costs and efficiency.*

## **Introduction**

Logistics is about moving materials, information and funds from one business to another business or from a business to the consumer. Logistics is an important part of the business economic system and is a major global economic activity. It encompasses activities like freight transportation, warehousing, material handling, protective packaging, inventory control, order processing, marketing, forecasting and customer service.

Fierce competition in today's global market, the introduction of products with short life cycles, the heightened expectations of customer and the cost cutting measures have forced business enterprise to focus attention on Logistics industry. Historically, the Logistics sector was clearly separated and restricted mainly to transportation and warehousing. The Logistics management in today's world however, covers all the aspects of value chain including an efficient integration of transportation, distribution, warehousing, reverse Logistics, value added services such as payment collection, packaging, documentation, customer brokerage facilities, kitting, repair management, reconfiguration etc. The developments of state-of-the-art IT in recent years have further had remarkable implications for the logistics industry.

## **Overview of Good Transportation**

With the economic development of infrastructure in India, the country has progressed at a rapid pace and today there is an availability of wide variety of modes of transport by land, water and air. But, overall, Road Transport is the primary and preferred mode of transport for most of the population and India's Road Transport system is among the most heavily utilized system in the world. It plays a pivotal role in the economic development of a nation by increasing the productivity and competitiveness. Firstly, Road Transportation infrastructure can enter the production process as direct input and in many cases as an unpaid factor of production. Secondly, it may make other existing, inputs more productive. For instance, a well-designed road allows the transportation of goods to market in less time and hence, reducing the transportation cost in the production process. Thirdly, Road Transportation increases regional economic growth by attracting resources from other regions. In this vein one would recall that through-out the growth of civilization, most centres of economic activities flourished along riverbanks and coast lines where water ways the convenient prime carrier of raw materials goods and labor.

## Industry Profile

The granite and tile industry plays a pivotal role in the construction and interior design sectors, offering essential materials for a wide range of applications. Granite, known for its durability and aesthetic appeal, is a natural stone widely used for countertops, flooring, and decorative purposes in residential and commercial buildings. Tiles, made from materials like ceramic, porcelain, and natural stone, serve as versatile surfacing solutions for floors, walls, and exteriors, offering a blend of functionality and design. This industry encompasses mining, processing, manufacturing, distribution, and installation of granite and various types of tiles. It supports employment across different stages, from quarrying and cutting to finishing and selling the final products. The granite and tile sector is influenced by trends in architecture, interior design, and construction, adapting to technological advancements and sustainability practices.

The granite and tiles industry are characterized by a global supply chain, with raw materials sourced from one region, processed in another, and distributed worldwide. This industry is highly competitive, with numerous players ranging from large multinational corporations to small local businesses. Companies in this sector invest in advanced machinery, skilled labor, and innovative design capabilities to maintain a competitive edge. The demand for granite and tiles is driven by infrastructure development, urbanization, and trends towards more sustainable and aesthetically pleasing building materials. As such, the industry continually evolves to meet environmental standards, improve production efficiency, and expand market reach globally. Understanding the dynamics of the granite and tile industry is crucial for stakeholders involved in construction, design, and building materials sectors. Despite its growth, the industry faces challenges such as fluctuating raw material prices, stringent environmental regulations, and the need for sustainable practices. Additionally, the high cost of transportation and the impact of economic downturns on the construction sector can affect market stability.

## Review of Literature

**Elkington (1997)**, a study on “Sustainability and Environmental Impact” which point out the challenges faced by the granite and tiles industry in implementing sustainable transportation practices. suggests that adopting green Logistics strategies, such as optimizing routes and using eco-friendly vehicles, is essential for reducing the environmental impact and

enhancing corporate social responsibility. **Davis, Beth R (2006)**, a study on "Logistics service driven loyalty: an exploratory study". The Journal shows that supply chain relationships can be a stable source of competitive advantage to firms in the supply chain because of their ability to create barriers to existing competition and conclude that improving Logistics customer service is an ongoing focus for firms. Suppliers are trying to become more proactive with their customers and anticipate customer expectations. **Mohitayalamanchi (2009)**, a study on "Logistics and Customer Value", the objective of the study is about the customer value that companies have created through Logistics management, in their quest for new ways to establish a competitive edge. A number of new tools and approaches have emerged as proactive elements of the Logistics response to the task of creative value for the customer viz. emphasis on Logistical customer service, management of the supply chain, the development of strategic alliances. It gives an explanation of various steps taken by different firms for identifying and implementing quality improvement processes in the Logistics areas. **Berrada A. Chakir&Ciro Aida (2009)**, a study on "Bottlenecks in the Freight Forwarding sector in West-coast Africa". The objective of the study about a to identify the bottleneck/s within the freight-forwarding industry in west coast Africa. The Study revealed that the series of interesting findings First, the activity of a Freight Forwarder depends on a series of factors that do not depend on the Freight Forwarder per se. And second, Freight Forwarders in order to accomplish their tasks have access to services that are shared by all providers, and that are beyond their control. To conclude the study identifies infrastructure as a major bottleneck in the Freight Forwarding sector. **McKinnon (2010)**, a study on "Regulatory and Compliance Issues in Logistics" that explain the Regulatory Environment that compliance with transportation regulations, such as weight limits, permits, and safety standards, poses significant challenges. This study points out those varying regulations across regions complicate Logistics planning and execution, leading to inefficiencies and increased administrative costs. **Giannakis and Louis (2016)**, a study on "Handling and Transportation of Heavy and Fragile Goods" points out that the transportation of heavy and fragile goods, such as granite and tiles, requires specialized handling and equipment to prevent damage. The study revealed that inadequate handling can lead to significant financial losses and customer dissatisfaction. **Gwilliam et al. (2013)** and Foster and Briceno-Garmendia (2010), a study on 'Infrastructure Quality and Maintenance' point out the Road Conditions: Poor Road infrastructure, including potholes, inadequate maintenance, and lack of proper signage, significantly affects transportation

efficiency and highlight how substandard roads increase vehicle operating costs and travel times, leading to delays and higher Logistics expenses.

**Rodrigue (2020)**, a study on ‘Infrastructure quality and maintenance’ explain that traffic Congestion in Urbanization and increased vehicle ownership contribute to severe traffic congestion, point out the Congestion leads to unpredictable delivery times, increased fuel consumption, and higher emissions, affecting the overall supply chain performance. **Belman and Monaco (2001)** explain the shortage of qualified drivers is a persistent issue in the road transportation industry. It also highlight the high turnover rates and difficulties in recruiting and retaining drivers, which affect the reliability and capacity of Logistics operations. **Key products.** Granite Slabs and Tiles: Offering a wide range of granite products in various colors, patterns, and finishes, ideal for countertops, flooring, and exterior cladding.

Ceramic Tiles: Durable and stylish ceramic tiles suitable for both interior and exterior applications, including flooring and wall coverings. Porcelain Tiles: High-quality porcelain tiles known for their durability, water resistance, and versatile applications in residential and commercial spaces.

### **Need for the Study**

The need for a study on the problems of road transport in Logistics is crucial for improving efficiency, reducing costs, and enhancing overall operational effectiveness. Road transport plays a pivotal role in Logistics and supply chains, and any inefficiencies or problems can lead to significant economic consequences, such as delays, increased costs, and reduced productivity. Addressing these issues can help businesses streamline their operations, reduce expenses, and enhance competitiveness. Additionally, road transport safety is a major concern, and understanding these problems can lead to better safety protocols, reducing accidents and ensuring the well-being of drivers and other road users. Environmental considerations are also critical, as road transport significantly contributes to pollution; thus, identifying and solving these issues can promote greener Logistics practices. Furthermore, a comprehensive study can aid in regulatory compliance, technological integration, and infrastructure development, providing valuable insights for policymakers and businesses alike. Ultimately, improving road transport in Logistics can lead to higher customer satisfaction through more reliable and timely deliveries, thereby strengthening customer loyalty and enhancing overall service quality.

## Statement of the Problem

The need for a study on the problems of road transport in Logistics is crucial for improving efficiency, reducing costs, and enhancing overall operational effectiveness. Road transport plays a pivotal role in Logistics and supply chains, and any inefficiencies or problems can lead to significant economic consequences, such as delays, increased costs, and reduced productivity. Addressing these issues can help businesses streamline their operations, reduce expenses, and enhance competitiveness. Additionally, road transport safety is a major concern, and understanding these problems can lead to better safety protocols, reducing accidents and ensuring the well-being of drivers and other road users. Environmental considerations are also critical, as road transport significantly contributes to pollution; thus, identifying and solving these issues can promote greener Logistics practices. Furthermore, a comprehensive study can aid in regulatory compliance, technological integration, and infrastructure development, providing valuable insights for policymakers and businesses alike. Ultimately, improving road transport in Logistics can lead to higher customer satisfaction through more reliable and timely deliveries, thereby strengthening customer loyalty and enhancing overall service quality.

The study is being conducted at Granites and Tiles in Tirunelveli, to find out the problems in the road transportation. It is required to find out the problem based on certain aspects (price, workers, fuel, Income, problem faced by the company).

## Research Question

- What are the key challenges faced in road transportation in Logistics within the granite and tiles industry, and how do these challenges impact operational efficiency, cost, and customer satisfaction?
- How do the conditions of roads and highways used for transporting granite and tiles affect delivery times?

## Objectives of the Present Study

- To study the factors that are associated with the problems in road transportation in Logistics with reference to Granites and Tiles.
- To study the demographic characteristics of suppliers of Granites and Tiles.
- To study the relationship of factors that are associated with the problems in road transportation and Logistics with reference to Granites and Tiles.

## Research Methodology

Research Design - Descriptive research

### Research Tools

- EXCEL
- SPSS

### Sampling Techniques

- Non-Probability Sampling
- Convenience Sampling

### Sample Size:

Sample size for the study is 80 respondents selected from suppliers of Granites and Tiles.

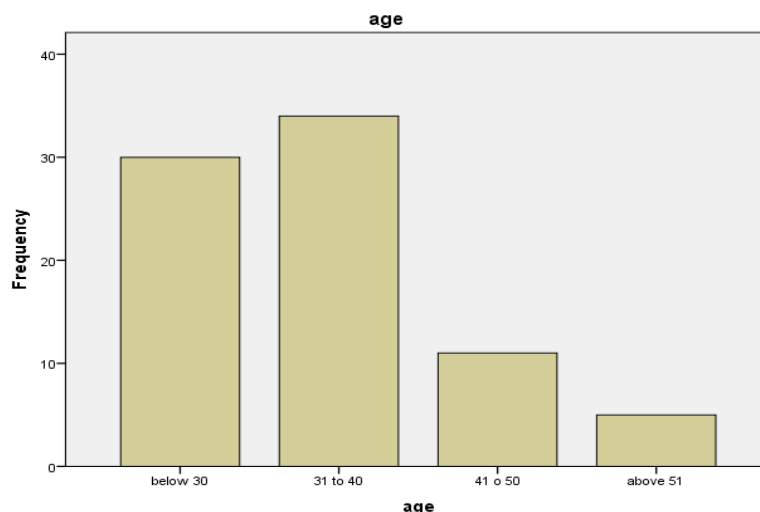
**Data Collection Method** - Questionnaire

**Source of Data** - Primary and Secondary Data

**Tools of Analysis** - Percentage Analysis and Correlation Analysis

## Data Analysis and Interpretation

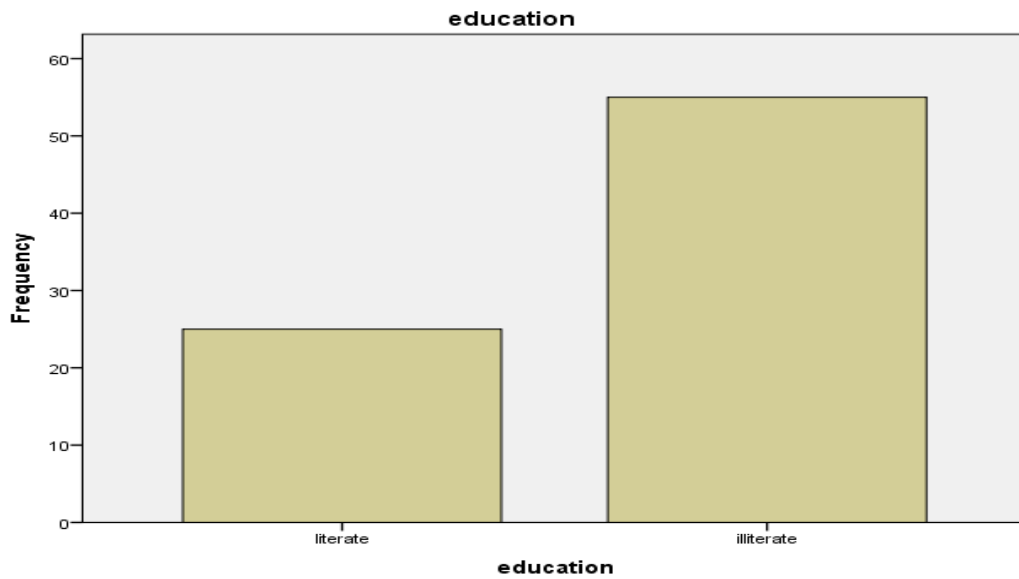
### Based on Age



### Interpretation

From the above table, the majority of respondents fall within the '31 to 40' age range, constituting 42.5% of the sample. The second-largest group is 'below 30' at 37.5%, and the smallest groups are '41 to 50' and 'above 50' at 13.8% and 6.3%.

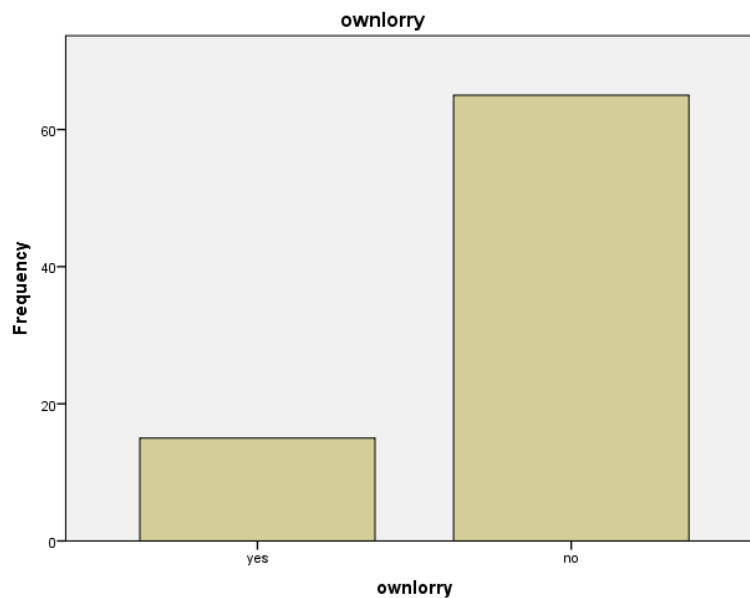
### Based On Education



### Interpretation

From the above table it is evident that majority 68.3% of the respondents are illiterate and only 31.3% of the respondents are literate.

### Based on Ownership



### Interpretation

From the above table it is evident that majority 81.3% of the respondents do not own lorry and 18.8% of the respondent's own lorry.

## Correlation Analysis

H<sub>1</sub>: There is a significant relationship between financial influence and Logistics

H<sub>2</sub>: There is a significant relationship between Manpower influence and Logistics

H<sub>3</sub>: There is a significant relationship between Legal influence and Logistics

H<sub>4</sub>: There is a significant relationship between External influence and Logistics

Relationship	r value	p value	Hypothesis
Financial influence and Logistics	.293	.008	Supported
Manpower influence and Logistics	.240	.032	Supported
Legal influence and Logistics	.432	.000	Supported
External influence and Logistics	.519	.000	Supported

## Interpretation

The Spearman's Correlation test was used to observe the relationship of factors associated with Logistics and other factor at 5% significance level. Since, the  $p < 0.05$  the hypotheses are H<sub>1</sub>, H<sub>2</sub>, H<sub>3</sub>, H<sub>4</sub> are supported. External influence (0.519) has moderate positive relationship on Logistics than other factors. Legal influence, financial influence and Manpower influence factor (0.432, 0.293, 0.240) have weaker positive relationship on Logistics.

## Findings, Suggestions and Conclusion

### Findings

- **Demographics:** A significant majority of respondents fall within the 31-40 age range, indicating a relatively younger workforce engaged in logistics.
- **Education Levels:** A notable proportion of respondents are illiterate, suggesting potential challenges in accessing educational opportunities within the workforce.
- **Ownership:** Most respondents do not own lorries, highlighting a reliance on employment within the logistics industry rather than ownership.
- **Correlation:** The Spearman's Rho test was used to observe the relationship of the variables that affect the logistics. Significant level used is the confidence level of  $p < 0.05$ . The result show that there was significant relationship of all the variables, specifically External factors influence have strong moderate relationship than other variables.

## Suggestions

- **Infrastructure Improvement:** Government initiatives should prioritize enhancing infrastructure to facilitate smoother logistics operations.
- **Driver Compensation:** Organizations should consider increasing compensation for drivers to improve retention and morale.
- **Tax Reduction:** Governmental measures to lower insurance, road tax, quarterly tax, and income tax rates can alleviate financial burdens on logistics operations.

## Conclusion

The study shows that hiring lorries is problematic due to fluctuating availability; while recurring insurance and road tax payments add significant financial burdens. A shortage of qualified drivers and unethical driver practices complicate operations further. Toll gates and sales tax compliance cause financial and time losses, Poor weather conditions and rising fuel prices disrupt logistics, leading to delays and increased costs. Vehicle breakdowns and lack of technology adoption hinder efficiency, as do inadequate road infrastructure and traffic incidents. Unloading heavy goods requires specialized resources, adding complexity and cost, while delivery schedule delays impact customer satisfaction. Therefore for improving logistics efficiency in road transportation starts with investing in advanced technology, such as GPS tracking and logistics management software, to optimize routes and resource allocation.

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