

A STUDY ON MULTI-MODAL TRANSPORTATION AT ZENILINE GLOBAL LOGISTICS PRIVATE LIMITED

Submitted in partial fulfillment of the requirements for the award of
MASTER OF BUSINESS ADMINISTRATION

by

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**DEPARTMENT OF BUSINESS ADMINISTRATION
SCHOOL OF MANAGEMENT STUDIES**

SATHYABAMA

**INSTITUTE OF SCIENCE AND TECHNOLOGY
(DEEMED TO BE UNIVERSITY)**

**Accredited with Grade "A" by NAAC | 12B Status by UGC | Approved by AICTE
JEPPIAAR NAGAR, RAJIV GANDHI SALAI, CHENNAI - 600 119**

APRIL 2023



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BONAFIDE CERTIFICATE

This is to certify that this Project Report is the bonafide work of **INFANT RINO S (41410127)** who carried out the project entitled "**A STUDY ON MULTI-MODAL TRANSPORTATION**" under my supervision from January 2023 to April 2023.

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DECLARATION

I INFANT RINO S (41410127) hereby declare that the Project Report entitled “**A STUDY ON MULTI-MODAL TRANSPORTATION AT ZENILINE GLOBAL LOGISTICS PRIVATE LIMITED**” done by me under the guidance of **Dr. SEETHAL K** is submitted in partial fulfillment of the requirements for the award of Master of Business Administration degree.

DATE:05/05/2023

PLACE:Chennai

A handwritten signature in blue ink, appearing to read 'infant', with a small 'R' above the 'i'.

ACKNOWLEDGEMENT

I am pleased to acknowledge my sincere thanks to Board of Management of **SATHYABAMA** for their kind encouragement in doing this project and for completing it successfully. I am grateful to them.

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I wish to express my thanks to all Teaching and Non-teaching staff members of the **School of Management Studies** who were helpful in many ways for the completion of the project.

INFANT RINO S



30/03/2023

TO WHOMSOEVER IT MAY CONCERN

Sub: MBA Project Completion

We hereby confirm the below student pursuing the final year MBA in Sathyabama Institute Of Science And Technology, Chennai, has successfully completed the Logistics project in our concern titled "A STUDY ON MULTI-MODAL TRANSPORTATION" from 09/01/2023 to 30/03/2023.

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During the tenure with us, his conduct & behavior was observed to be good.

We wish success in all the future endeavors.

For Zeniline Global Logistics Pvt Ltd,


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ABSTRACT

The chain that interconnects different links or modes of transport – air, sea, and land – into one complete process that ensures an efficient and cost-effective door-to-door movement of goods under the responsibility of a single transport operator, known as a Multimodal Transport.

This study aims at assessing the effectiveness of their multi modal transportation. The secondary objectives include identifying their strengths in Multimodal transport service and the most preferred multi modal transportation among the freight forwarders. Also to understand the factors considered in transporting a product through multimodal transport service.

Multiple choice questions have been chosen to collect the responses from 130 customers. Convenience sampling method has used in the research work. The data collected has been analyzed through various statistical tools like Karl Pearson's Correlation, Chi- square test and One-way Anova test. Numerous new findings has been derived from this research has helped to provide few suggestions to the company to strengthen its position in the multimodal transportation service. This study will help them to attract more clients and be upbeat in the market for a long run.

Based on the research, the researcher wants to assess the effectiveness of the multi-modal transportation across Chennai. This will enable the management to understand the overall functioning of their Multimodal transport service. Few value additions can be made to improve their customer service in the multimodal transport service.

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LIST OF ABBREVIATIONS

CEN	-	European Committee for Standardisation
ECMT	-	European Conference of Ministers of Transport
EDI	-	Electronic Data Interchange
MTO	-	Multimodal Transport Operator
SOCs	-	Shipper's Own Containers

CHAPTER 1

INTRODUCTION

1.1 INTRODUCTION

Multimodal transport (also known as combined transport) is the transportation of goods under a single contract, but performed with at least two different means of transport; the carrier is liable (in a legal sense) for the entire carriage, even though it is performed by several different modes of transport (by rail, sea and road, for example). The carrier does not have to possess all the means of transport, and in practice usually does not; the carriage is often performed by sub-carriers (referred to in legal language as "actual carriers"). The carrier responsible for the entire carriage is referred to as a multimodal transport operator, or MTO.

The terms 'Through Transport Combined Transport', 'Intermodal Transport' and 'Multimodal Transport' are all used in the context of cargo movement, from origin to destination. These four terms have very similar meanings, i.e. the transportation of goods by more than one mode of transport and a through freight rate. However, the United Nations made a distinction between each term and introduced definitions of transportation terminology in their Multimodal Transport Handbook (1995):

- **Modes of Transport:** The method of transport used for the movement of goods, e.g. by rail, road, sea or air.
- **Means of Transport:** The vehicle used for transport, e.g. ship, truck, or aircraft.

- **Types of Means of Transport:** The type of vehicle used in the transport process, e.g. wide-body, tank truck, passenger vessel, etc.
- **Unimodal Transport :** The transport by one mode of transport only, where each carrier issues his own transport document (B/L3, airwaybill, consignment note, etc.).
- **Combined Transport:** The transportation of goods in one and the same loading unit or vehicle by a combination of road, rail, and inland waterway modes.
- **Intermodal Transport:** The transportation of goods by several modes of transport where one carrier organises the whole transport from one point or port of origin via one or more interface points to a final port or point. Depending on how responsibility for the entire transport is shared, different types of documents are used. There are also different definitions for intermodal transport. The ECMT (European Conference of Ministers of Transport) and the European Committee for standardisation (CEN) use the following definition for intermodal transport: “the movement of goods in one and the same loading unit or vehicle which uses successively several modes of transport without handling of the goods themselves in changing mode”. The EC definition goes beyond the ECMT/CEN definition, and corresponds with the ECMT/CEN definition of multimodal transport: “the movement of goods whereby at least two different modes are used in a door-to-door transport chain”. For Mahoney (1986), “Intermodality” means the movement of freight via two or more dissimilar means of modes of transportation while for Hayuth (1987), “Intermodality” means the movement of cargo from shipper to consignee by at least two different modes of transport under a single rate, through-billing, and through liability. The term “intermodality” has been widely adopted by European Union policy-makers.

- **Multimodal Transport:** Where the carrier organising the transport takes responsibility for the entire door-to-door transport and issues a multimodal transport document.

Multimodal transport is therefore a concept which places the responsibility for transport activities under one operator, who then manages and coordinates the total task from the shipper's door to the consignee's door (see Table below), ensuring the continuous movement of the goods along the best route, by the most efficient and, cost-effective means, to meet the shippers requirements of delivery. This means simplified documentation, and increasingly by electronic means such as electronic data interchange (EDI).

A multimodal transport operator (MTO) acts as a principal and therefore as a "carrier", because the MTO contracts with the shipper to carry goods by one or more modes of transport as may be necessary. The MTO has accepted total responsibility and liability to perform the transport contract; he has become the sole interface point for the shipper's transport function.

Typical steps in the transport chain

1. Acceptance by MTO of cargo at shipper's door
2. Inland Transport
3. Customs Clearance/handling (export)
4. Main Transport Leg (ocean/rail/road/air)
5. Terminal Activities (import)
6. Customs clearance/handling
7. Inland Transport
8. Delivery to consignee

1.2 INDUSTRY PROFILE

The scope and influence of logistics has evolved in the late 1940s. In the 1950s, and 60s, military was the only organization which used logistics. The scope of logistics has been extended beyond the army, as it has been recognized as one of the important tools for developing competitiveness. Competitive advantage means the company has the ability to differentiate itself, in the customer's eyes, and also is operating at a lower cost and greater profit.

Logistics facilitates in getting products and services as and when they are needed and desired to the customer. It also helps in economic transactions, serving as a major enabler of growth of trade and commerce in an economy.

Logistics has come to be recognized as a distinct function with the rise of mass production systems. Production and distribution were earlier viewed as a sequential chain of extremely specialized activities. The role of logistics is to ensure availability of all the required materials before every step in this chain. Obviously inventory of raw materials, semi-finished and finished goods is a must across this chain to ensure its smooth functioning.

The concept of logistics has its base upon the systems approach. There is a single chain, with flow of materials starting from the supplier, then to the plant and finally to the end customer, and also these activities are done sequentially in order to achieve customer satisfaction at low cost. For this to be successful there has to be co-ordination in the activities of the department.

With reference to an organization, an organization gets a concrete shape due to its structure. In the earlier times, the suppliers in distribution activities were spread across the entire structure, thus resulting in an overlapping of activities and finally in unaccountable authority and responsibility. In today's process driven organization, where the focus has shifted from functions to process, logistics has become an essential part of the process.

1.2.1 *Definitions of Logistics*

The American Council of Logistics Management defines logistics as “the process of planning, implementing and controlling the efficient, cost effective flow and storage of raw materials, in-process inventory, finished goods and related information from point of origin to point of consumption for the purpose of conforming to customers’ requirements”.

Philip Kotler defines logistics as “planning, implementing, and controlling the physical flows of materials and finished goods from point of origin to point of use to meet the customer’s need at a profit”.

1.2.2 *Objectives of Logistics*

Logistics has the following objectives:

Reduction of inventory: Inventory is one of the key factors, which can affect the profit of an enterprise to a great extent. In the traditional system, firms had to carry lot of inventory for satisfying the customer and to ensure excellent customer service. But, when funds are blocked in inventory, they cannot be used for other productive purposes. These costs will drain the enterprise’s profit. Logistics helps in maintaining inventory at the lowest level, and thus achieving the customer goal. This is done through small, but frequent supplies.

Economy of freight: Freight is a major source of cost in logistics. This can be reduced by following measures like selecting the proper mode of transport, consolidation of freight, route planning, long distance shipments etc.

Reliability and consistency in delivery performance: Material required by the customer must be delivered on time, not ahead of the schedule or behind the schedule. Proper planning of the transportation modes, with availability of inventory will ensure this.

Minimum damage to products: Sometimes products may be damaged due to improper packing, frequent handling of consignment, and other reasons.

This damage adds to the logistics cost. The use of proper logistical packaging, mechanized material handling equipment, etc will reduce this damage.

Quicker and faster response: A firm must have the capability to extend service to the customer in the shortest time frame. By utilizing the latest technologies in processing information and communication will improve the decision making, and thus enable the enterprise to be flexible enough so that the firm can fulfill customer requirements, in the shortest possible time frame.

The various functions of logistics are as follows:

1. *Order Processing:* Processing the orders received from the customers is an activity, which is very important by itself and also consumes a lot of time and paperwork. It involves steps like checking the order for any deviations in the agreed or negotiated terms, price, payment and delivery terms, checking if the materials is available in stock, producing and scheduling the material for shortages, and also giving acknowledgement to the owner, by indicating any deviations.
2. *Inventory Planning and management:* Planning the inventory can help an organization in maintaining an optimal level of inventory which will also help in satisfying the customer. Activities like inventory forecasting, engineering the order quantity, optimization the level of service, proper deployment of inventory etc. are involved in this.
3. *Warehousing:* This serves as the place where the finished goods are stored before they are sold to the customers finally. This is a major cost center and improper warehouse management will create a host of problems.
4. *Transportation:* Helps in physical movement of the goods to the customers place. This is done through various modes like rail, road, air, sea etc.

5. *Packaging*: A critical element in the physical distribution of the product, which also influences the efficiency of the logistical system.

1.2.3 *Logistics Delivers Value to the Customer through Three Main Phases*

- a. Inbound logistics: These are the operations, which precede manufacturing. These include the movement of raw materials, and components for processing from suppliers.
- b. Process logistics: These are the operations, which are directly related to processing. These include activities like storage and movement of raw materials, components within the manufacturing premises.
- c. Outbound logistics: These are the operations, which follow the production process. These include activities like warehousing, transportation, and inventory management of finished goods.

1.2.4 *Logistics Solution*

Generally, the in-house logistics departments in manufacturing organizations take care of all aspects of logistics. But this is not an area of core competency of manufacturing or trading organizations. Today, a lot of successful business corporations across the world are outsourcing logistics to the third party logistics providers, who are having the necessary infrastructure and expertise to do the job in a better manner. Complete logistics solutions to manufacturers and traders is provided by the third party logistics providers, and they help in integrating various logistics operations, thus ensuring speedy and uniform movement of materials across the supply chain.

Logistics is nowadays widely used in virtually every area. The success of a logistics service providing company depends on how they conceptualize and implement the logistics solution, and also tune to the requirements of the customer.

1.2.5 *Future of Logistics*

Nowadays corporations look only for sustainable competitive advantage, not only for growth, but also to survive. There is so much killing competition that corporations are compelled to review their business process while they deliver the products and services to customers, who are looking for more and more value for the money that they are spending. The focus of competition has shifted from the product to the supply chain.

Today, logistics management is based on the system concept and cost approach. Transportation, warehousing, handling of material, inventory management and order processing are the major logistics activities, which impact the customer cost and operation. Integrated logistics helps in taking the cost out of the supply chain and also enhance the customer service level.

When looking at the macro level, a growth of a country's economy depends on the availability of excellent logistics infrastructure. The speed of the movement of goods depends to a great extent on the various modes of transportation like rail, road, air, and sea.

Logistics has a bright future, especially in India, but certain pressing issues like abolition of octroi levy, rationalization of customs formalities, improvement in road and rail infrastructure, creation of modern warehouse facilities etc, have to be taken care of. The geographical position of India also is well positioned to emerge as an excellent hub for a variety of products.

1.3 COMPANY PROFILE

Zeniline Global Logistics Private Limited planned on venturing into the world of logistics with an aim to spread the knowledge in ways that would benefit all our customers. The reigns of the company lie in the strong hands of a team of professionals, who possess over 15 years' worth of experience in the shipping and logistics sector. With a collective goal in mind of providing superlative freight forwarding and logistics solutions, we wish to improve and expand our service solutions in order to gain an edge over our competitors. The primary objective of

our highly motivated and experienced team of individuals is to establish our organization as a service-oriented one, where customer satisfaction is the key.

Our core strength lies in our talented team of professionals, whose commitment and precision with regard to work, along with keeping systems and processes in place allows us to offer customised solutions that cater to each customer differently. Our highly skilled and efficient network of agents and partners around the globe enable us to stay in sync with the ever-growing demands of trade and commerce.

1.3.1 Vision

Become a globally renowned logistics company, which comprises of a strong network of agents and a loyal customer base.

1.3.2 Mission

- We aim to provide our customers with excellent value-added services and fulfill all our commitments.
- We intend to set a benchmark with respect to quality, integrity, consistency when it comes to our business.
- We strive to build a strong and loyal relationship with our agents and customers through honesty, dependability and meeting our deliverables on time, every time.
- We wish to inspire our employees, nurture them to be successful leaders as well as encourage and reward innovation and reinforce flexibility at work.

1.3.3 Air Freight

If you're on the lookout for a prompt, efficient and safe delivery of your shipment, then Zeniline Global Logistics Private Limited air freight provides you with all this and more! We are veterans in the field of air freight operations and handle regular as well as charter shipments with great aplomb. With regards to air

cargo, we swiftly deliver sea-air, air-sea cargo shipments to all important global destinations. Apart from paying special attention to urgent and time sensitive cargo shipments, we also customize our services as per individual requirements, within a stipulated budget.

Our Air Freight solutions include:-

- Freight booking for Inbound and Outbound cargoes to and from locations all across the globe.
- Cross country freight booking from each and every airport
- Shipments under all Incoterms viz. DDP, DDU, EX. Works, etc. to worldwide destinations
- Buyer Consolidations and POP Program for major buyers and buying houses in Europe and USA
- Shipments for Exhibitions and Trade Fairs
- Air Chartering and Project Handlings
- Sea-Air activities via. Dubai airport, especially for cargoes into Africa, CIS destinations and Afghanistan
- Allied services of Packing, Strapping, Labelling, Warehousing, Transportation, Customs Broking, etc. as per customers' requirements
- Cargo Insurance, Consulate Legalisations, Chamber of Commerce endorsements, etc.
- Cross Trade bookings

1.3.4 *Sea Freight*

We also offer a 'sea' of superior sea freight solutions as we believe that it is one of our core competencies. The services that we provide extend from various global origins to global destinations. Our diversified network and excellent

tracking capabilities coupled with pre-bookings, demand-driven dispatches and competitive pricing makes us a force to be reckoned in the logistics business. The safe delivery of cargoes across destinations is our prime focus and our team of experienced professionals and agents ensure the safe passage of your cargoes.

Our Sea Freight solutions include:-

- Inbound and Outbound freight booking to and from all worldwide destinations/ports.
- Cross country freight booking to and from all ports across the world.
- Shipments under all Incoterms viz. DDP, DDU, Ex. Works, etc. to destinations across the world and on a door-to-door delivery basis.
- Buyer consolidations and POP Program for major buyers and buying houses in Europe and USA.
- Shipments for Exhibitions and Trade Fairs
- Vessel Chartering
- Handling of Projects, Special Equipment and Break-bulk Cargoes
- Allied services of Packing, Strapping, Labelling, Warehousing, Transportation, Customs Broking, etc. as per customers' requirements
- Cargo Insurance, Consulate Legalisations, Chamber of Commerce endorsements, etc.

1.3.5 Multi-Modal Transportation

Our multi-modal transportation assimilates our expertise and great networking to make sure that your cargo deliveries happen on-time and in the most cost-effective way possible. With our team of dedicated professionals, who work seamlessly to provide you with the best transportation mode and route, we guarantee that your cargo reaches its desired location on time, every time.

Features of our Multimodal Service include:-

- Thorough knowledge of the procedures and documentation requirements in different countries and for different routes and modes.
- Consult with our clients regarding the fastest and the most economical routes considering the nature and weight of the cargo.
- Solutions for Containerised Cargo on Special Equipment and Projects Cargoes.
- Regular tracking and status reports given to our customers regarding the status of their cargoes.

With our chain of networks, offices and agents, we provide services catering to niche markets in coordination with partners and network agents using various methods of transportation viz. Air, Sea, Rail and Road to:-

- CIS, Russia and Central Asian destinations via. Ports of Riga, Klaipeda, Novorossiysk, Poti, Mersin, Bandar Abbas, Qingdao or Vladivostok.
- Ukraine and Moldova via. Odessa and Illychvesk.
- Mongolia via. Xingang
- Iraq via. Umm Qasr, Jordan, Mersin
- Afghanistan via. Karachi and Bandar Abbas
- East African destinations via. Mombasa, Dar es Salaam, Beira and Durban.
- Eastern European destination in Czech Republic, Slovakia, Slovenia, Croatia, Hungary, Bosnia and Herzegovina via. various routing in Europe and East Mediterranean

1.3.6 Project Cargo

We are experts when it comes to handling over dimensional consignments, which require planning and shipping of cargoes from one destination to the other. Since these over-sized cargoes include huge machineries, plants and other equipment, we devise a strategy that includes planning, deciding the suitable ports, routes, trade and traffic forecasts, etc. Our network of cargo specialists make sure that your consignment is transported from one point to the other in the set time-frame and is budget-friendly.

Our Project Cargo solutions include:-

- Freight booking for special cargoes, over dimensional consignments in open tops and flat racks/flat beds.
- Freight booking via. Break- bulk cargoes.
- Transportation of heavy lifts and over-sized shipments from customer warehouses to the port and vice versa.
- Customs broking for special cargoes, heavy lifts and break- bulk cargoes.
- Stuffing, lashing and choking of cargoes as per requirement of the port, shipping liner and the customer.
- Door to door deliveries from shipper's warehouse to consignee's warehouse at destination through our network of offices

1.3.7 SOC Containers & NVOCC

We are well-equipped to handle Shipper's Own Containers (SOCs), as we have managed to form a healthy rapport with liners as well as leasing companies from whom we purchase well- maintained cargo worthy containers, which make it convenient for our customers to ship the cargo where terms are

SOC movements. Our cordial relation with liners allows us to buy good freight for shipment of these SOC's from around the world.

We, at Zeniline Global Logistics Private Limited, use our own fleet of containers for cargo movement in the form of a Non Vessel Operating Container Carriers or NVOCCs. These services offered by us are mainly targetted to and from our niche market sectors in CIS and East Africa.

1.3.8 *Warehousing & Distribution*

We've recently ventured into the world of Warehousing and Distribution for the convenience of our customers and in order to offer services all under one roof. Apart from providing warehousing of normal warehouses as well as Customs Bonded Warehouses, we also undertake temperature-controlled warehousing for our Customs dealing in Wine and Liquors, which require temperature control. Zeniline Global Logistics Private Limited extends these services to various overseas locations with the help and assistance from our partners.

1.4 OBJECTIVES OF THE STUDY

1.4.1 *Primary Objective*

The main objective of this study is to assess the effectiveness of the multi modal transportation followed by Logistics companies in Chennai.

1.4.2 *Secondary Objectives*

- To understand the factors considered in transporting a product through multimodal transport service
- To assess the perspective of freight forwarders on the multimodal transportation
- To study the fleet management systems used in multimodal transportation

- To identify the strengths of each Logistics companies in Multimodal transport service
- To identify the most preferred multi modal transportation among the freight forwarders.

1.5 NEED FOR THE STUDY

Multimodal transport (also known as combined transport) is the transportation of goods under a single contract, but performed with at least two different means of transport; the carrier is liable (in a legal sense) for the entire carriage, even though it is performed by several different modes of transport (by rail, sea and road, for example).

Based on the research, the researcher wants to assess the need for the multi-modal transportation in Chennai. This will enable the management to understand the overall functioning of the Multimodal transport service. Few value additions can be made to improve their customer service in the multimodal transport service.

1.6 SCOPE OF THE STUDY

In India, majority of the transportation is done by road (about 60 to 65 per cent), followed by rail (about 30 per cent). The role of waterways is very negligible as they are not spread over the entire country and instead are concentrated in a few regions. The potential for multimodal transportation (including long and short hauls) is immense. The manufacturing hubs in India are located deep in the hinterland and faraway from the gateway ports.

Based on this study, the company wants to strengthen its position in the multimodal transportation service. This will help them to attract more clients and be upbeat in the market for a long run.

CHAPTER 2

REVIEW OF LITERATURE

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.

Konstantinos Selviaridis (2007), Purpose – To provide taxonomy of third party logistics (3PL) research and, based on that, to develop a research agenda for this field of study. Design/methodology/approach – The proposed 3PL research classification framework is based on a comprehensive literature review, which concentrates on peer-reviewed journal papers published within the period 1990-2005. A total of 114 academic sources have been retrieved and analysed in terms of research purpose and nature, method employed, theoretical approach and level of analysis. *Findings* – The review reveals that 3PL research is empirical-descriptive in nature and that it generally lacks a theoretical foundation. Survey research is the dominant method employed, reflecting the positivist research tradition within logistics. It identifies certain knowledge gaps and develops five propositions for future research. It suggests that focus should be directed towards more normative, theory-driven and qualitative method-based studies. It also argues that further empirical research in relation to 3PL design/implementation and fourth party logistics services is needed. *Originality/value* – This paper fulfills an identified need for a comprehensive classification framework of 3PL studies. It essentially provides both academics and practitioners with a conceptual map of existing 3PL research and also points out opportunities for future research.

Rohit Bhatnagar (1999), Focusses on three constructs that we believe are the primary determinants of the future usage of third party logistics services. These constructs are: extent of use of the third party logistics services; decision making process for choosing contract logistics services provider; and impact of the usage of contract logistics services on the organization. An empirical research was carried out in Singapore to study the impact of these three factors on the future usage of third party logistics services in Singapore. Results based on an analysis of data relating to 126 Singapore-based firms indicate that most users of these services are satisfied with their providers and believe that this has led to positive developments within the organization. With a high current level of satisfaction, a large number of these firms are likely to increase their usage of contract logistics services moderately or substantially. Third party logistics services: a Singapore perspective.



Multimode Transportation

- Intuitively, multimode transportation refers to companies using several means of transport to fulfill their freighting needs. Apart from minimizing the total cost spent on the different transport modes, requests should be fulfilled as far as possible, since there are often huge contractual penalties in delaying cargo.
- Various other operational issues must be taken into account when planning multimode transportation. For one, some delay will always occur in transferring freights from one transport mode to another. Furthermore, economies of scale can often be exploited for any high volume transportation. For example, were the carrier to lease space on commercial flights, bulk discounts will often be offered. Fuel for a large fleet of trucks can probably be negotiated to be obtained at a lower price. In reality, one would expect these discounts to vary non-linearly with shipping volume too.

CHAPTER 3

RESEARCH METHODOLOGY

3.1 METHODOLOGY

Fundamental to the success of any formal marketing research project is a sound research design. A good research design has the characteristics of problem definition, specific methods of data collection and analysis, time required for research project and estimate of expenses to be incurred. The function of a research design is to ensure that the required data are collected accurately and economically. A research design is purely and simply the framework or plan for an analysis of data. It is a blue print that is followed in completing a study. It resembles the architect's blue-print (map) for constructing a house. It may be worthwhile to mention here that a research design is nothing more than the framework for the study ensures that the study will be relevant to the problem and the study will employ economical procedures.

Claire Seltiz et al. defines Research Design as "Research design is a catalogue of the phases and facts relating to the formulation of a research effort. It is the arrangement of collection and analysis of data in a manner that aims to combine relevant to the research purpose with economy in procedure".

Three important about research design are

1. The design of investigation should stem from the problem
2. Whether the designs are productive in a given problem setting depends on how imaginatively they are applied. An understanding of the basic design is needed so that they can be modified to suit specific purpose

3. The three basic design are as follows

- i. Exploratory Research design
- ii. Descriptive Research design
- iii. Casual Research design

The Research design used in the study is descriptive research design

3.2 RESEARCH DESIGN

Descriptive research design is also called explanatory design. This is the one that simply describes something such as demographic characteristics. The descriptive study is typically concerned with determining frequency with which something occurs or how two variables vary together.

3.3 AREA OF STUDY

Area of study is marketing management; The sample size is 130.

3.4 DATA SOURCES

After identifying and defining the research problem and determining specific information required to solve the problem, the researcher's task is to look the type and sources of data which may yield the desired results. Data sources are of two types through which data is collected.

Data sources may be classified as

1. Primary data
2. Secondary data

3.4.1 Primary Data

Primary data is the original data collected by the researcher first hand. It is collected for the first time through field survey. These are those that are gathered specifically, for the problem at hand. The various sources for collecting

primary data are questionnaire, observation, interview etc. The primary source used for the study is questionnaire.

3.4.2 Secondary Data

Secondary data is the information which is already available in published or unpublished form. When the needed information is collected from the census of population available in a library means then it is a secondary data. It is also used for collecting historical data. The various sources of secondary data are books, periodicals, journals, directories, magazines, statistical data sources etc. The secondary source used for this study is company profile, scope, need, review of literature.

3.5 RESEARCH INSTRUMENTS

Research instrument are the instruments which is used for gathering or collecting information. The instruments used in the study are

1. Direct questions
2. Close end questions
3. Dichotomous questions
4. Multiple choice questions

3.5.1 *Direct Questions*

Direct questions are just what their names indicate. They explicitly ask for the desired data. However the directness of the question also relates to the way a response is interpreted.

3.5.2 *Close End Questions*

Such questions are also called fixed alternative questions they refer to those questions in which the respondent is given a limited number of alternative response frame which he/she is to select one that most closely matches his/her opinion or attitude.

3.5.3 *Dichotomous Questions*

A dichotomous question refers to one which offers the respondent a choice between only two alternatives and reduces the issue to its simple terms. The fixed alternatives are of the type, yes/no, agree/disagree, true/false etc.

3.5.4 *Multiple Choice Questions*

A multiple choice question refers to one which provides several set alternatives for its answers. Thus, it is a middle ground between free answers and dichotomous question.

3.6 SAMPLING

Collecting data about each and every unit of the population is called census method. The approach, where only a few units of population under study are considered for analysis is called sampling method. There are two main categories under which various sampling method can be put.

The two categories are

1. Probability sampling
2. Non-probability sampling

The sampling method adopted for the study is convenience sampling under non-probability sampling.

3.6.1 *Non-Probability Sampling*

In non-probability sampling, the chance of any particular unit in the population being selected is unknown, since randomness is not involved in the selection process. But this does not mean that the findings obtained from non-probability sampling are of questionable value. If properly conducted their findings can be accurate as those obtained from probability sampling. The three frequencies used non-probability designs are

1. Judgment sampling
2. Convenience sampling
3. Quota sampling

3.6.2 Convenience Sampling

In this method, the sample units are chosen primarily on the basis of the convenience to the investigator. The units selected may be each person who comes across the investigator.

3.6.3 Sample Frame

A Sample frame may be defined as the listing of the general components of the individual units that comprise the defined population.

3.6.4 Sample Design

Sample design is the theoretical basis and the practice means by generalizing from characteristics of relatively few of the comprising population. It is the method by which the sample is chosen.

3.6.5 Sample Size

It refers to the number of elements of the population to sample. The sample size chosen for the survey is 130 freight forwarders.

CHAPTER 4

ANALYTICAL TOOLS

4.1 ANALYSIS USING KARL PEARSON'S CORRELATION

Correlation analysis is the statistical tool used to measure the degree to which two variables are linearly related to each other. Correlation measures the degree of association between two variables. The Pearson product-moment correlation coefficient is a measure of the strength and direction of association that exists between two variables measured on at least an interval scale. It is denoted by the symbol r .

$$r = \frac{N\sum XY - \sum X \sum Y}{\sqrt{N\sum X^2 - (\sum X)^2} \sqrt{N\sum Y^2 - (\sum Y)^2}}$$

Chi- Square Test I – (χ^2)

A chi-squared test, also referred to as chi-square test or χ^2 test, is any statistical hypothesis test in which the sampling distribution of the test statistic is a chi-squared distribution when the null hypothesis is true, or any in which this is asymptotically true, meaning that the sampling distribution (if the null hypothesis is true) can be made to approximate a chi- squared distribution as closely as desired by making the sample size large enough.

The χ^2 test was first used by Karl Pearson in the year 1980. The quantity χ^2 describes the magnitude of the discrepancy between theory and observation.

It is calculated using:

$\chi^2 = \sum [(O_i - E_i)^2 / E_i]$ with (n - 1) **degrees of freedom**. Where, O_i refers to the observed frequency & E_i to the expected frequencies. χ^2 was used as a test of independence and goodness of fit.

Percentages

Percentages refer to a special kind of ratio. Percentages are used in making comparison between two or more series of data. Percentages are used to describe relationships, it is expressed as.

Percentage = (no of employees/total no of employees) 100

Charts

Charts are graphic displays of data for easy understanding of relative positions that is not always possible with descriptive words or numbers. Types of charts commonly used in business data presentation are: Bar and pie.

Bar Charts

The bar chart is commonly used for presentation of qualitative data. The data can be continuous or discrete data, which are plotted against discrete data intervals. The vertical bar diagram, also called bar chart where the length or height of bars represent the numerical value of the event or measurement. Width or gap between the bars is of no significance to the bar chart data, but they are uniform in a diagram.

4.2 DATA ANALYSIS AND INTERPRETATION

Table 4.1. Experience

Particulars	Respondents	Percentage %
Less than 1 year	21	16
1-3Years	26	20
3-5 Years	39	30
5-10 years	31	24
Above 10 years	13	10
Total	130	100

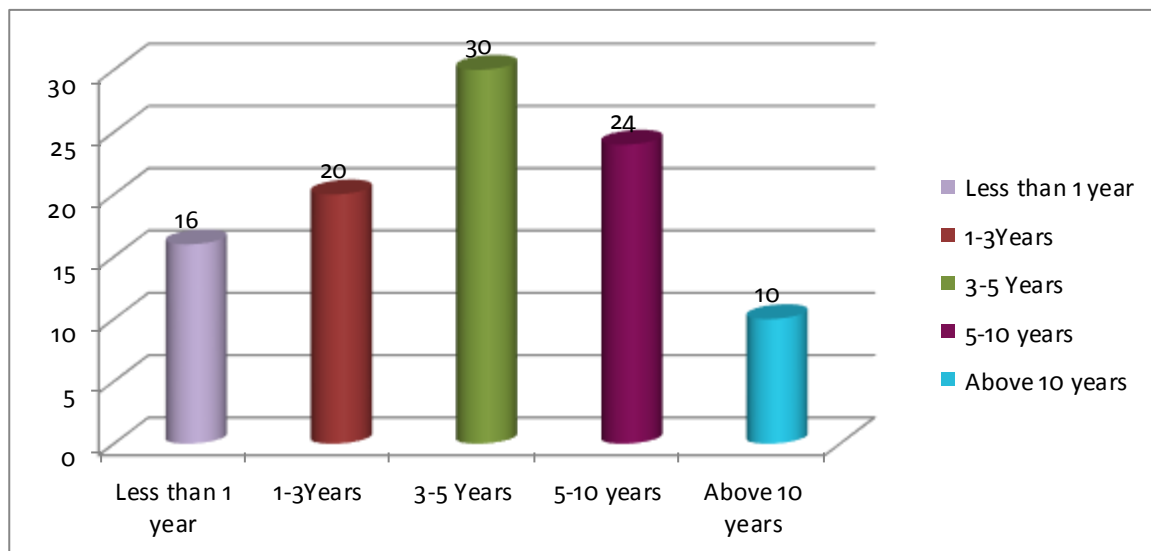


Chart 4.1: Experience

Inference

From the table it can be inferred that, 30% of the respondents have an experience of less than a year, 24% of the respondents have an experience of 5-10 years and 20% of the respondents have an experience of 1-3 years.

Table 4.2. Type of Vehicle

Particulars	Respondents	Percentage %
Contracted vehicle	52	40
Owned vehicle	47	36
Both	31	24
Total	130	100

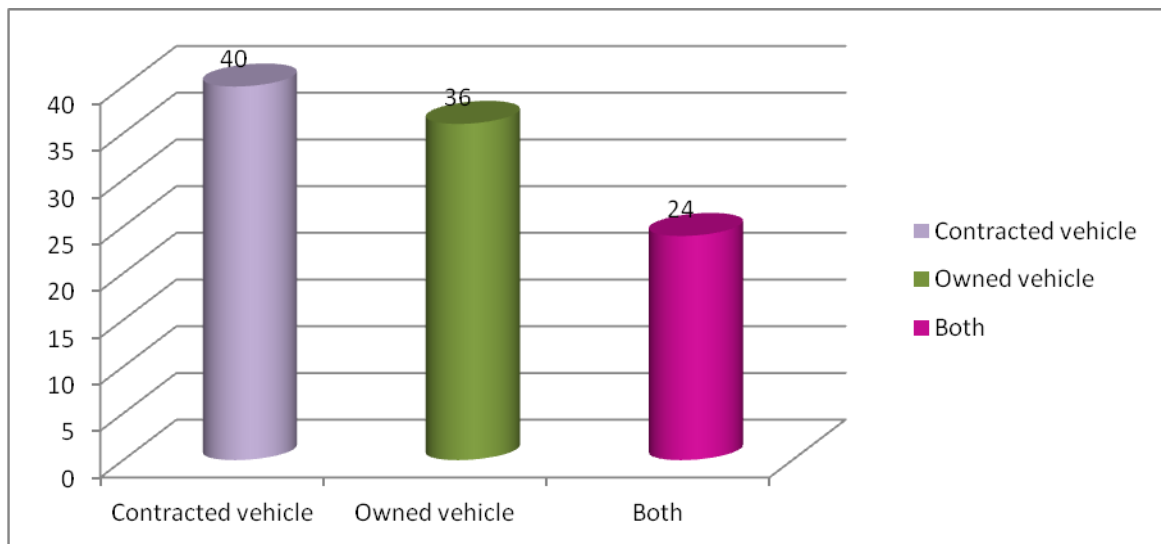


Chart 4.2: Type of Vehicle

Inference

From the table it can be inferred that, 40% of the respondents are having Contracted vehicle, 36% of the respondents are having Owned vehicle and 24% of the respondents are having both.

Table 4.3. Factors Considering

Particulars	Respondents	Percentage %
Distance	34	26
Volume of cargo	23	18
Terrain	16	12
Safety of cargo	31	24
All	26	20
Total	130	100

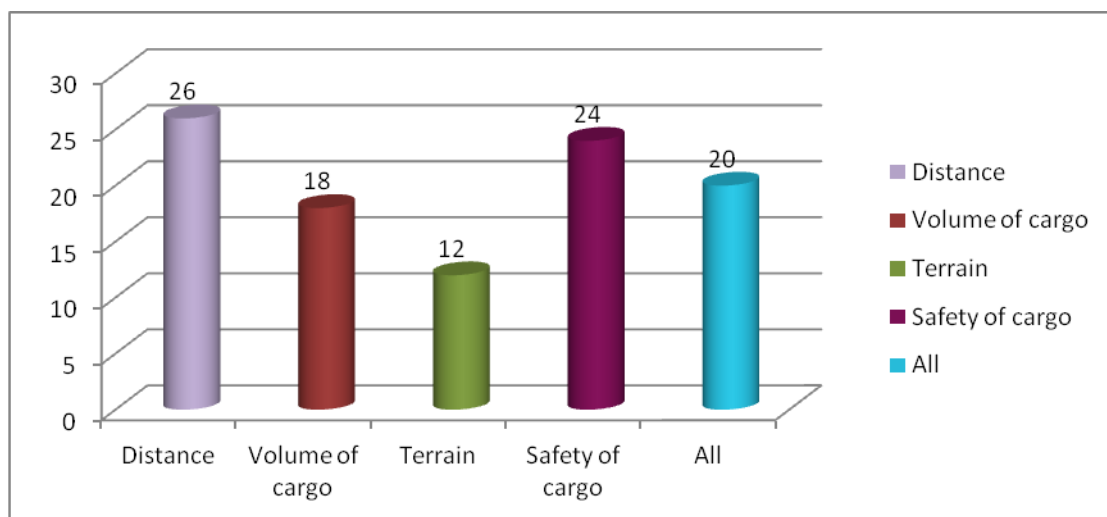


Chart 4.3: Factors Considering

Inference

From the table it can be inferred that, 26% of the respondents say Distance is the factor considered while transporting a product, 24% of the respondents say Safety of cargo is the factor considered while transporting a product and 20% of the respondents say all factors considered are while transporting a product.

Table 4.4. Fixing Freight Charges

Particulars	Respondents	Percentage %
Based on quantity	39	30
Quality of the product	13	10
Distance of transportation	47	36
Vehicle/truck used	31	24
Total	130	100

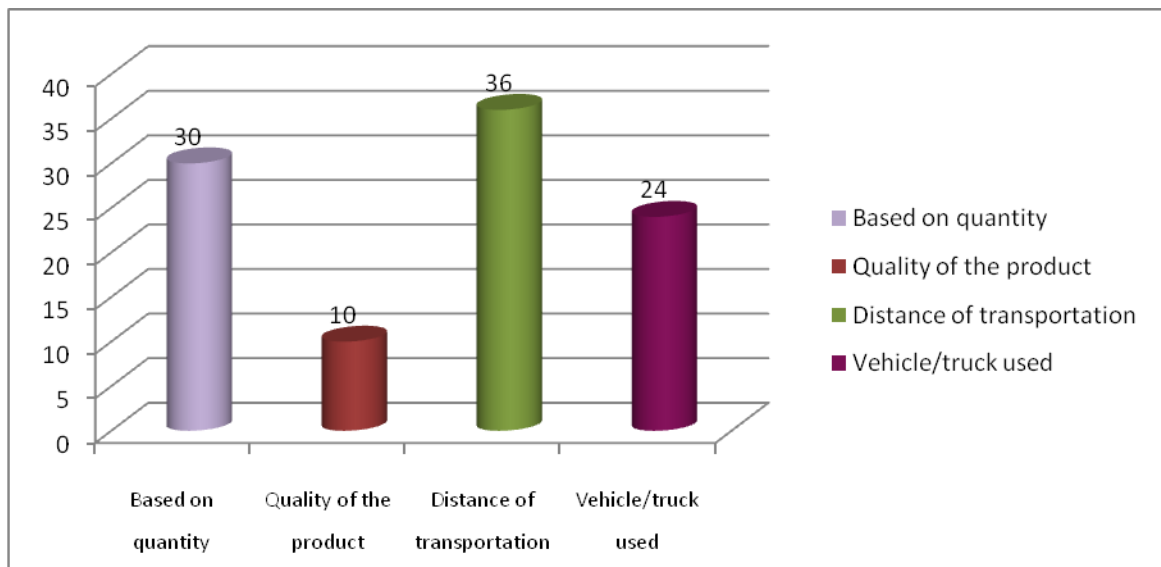


Chart 4.4: Fixing Freight Charges

Inference

From the table it can be inferred that, 36% of the respondents are fixing freight charges based on the Distance of transportation, 30 % of the respondents are fixing freight charges Based on the quantity and 24% of the respondents are fixing freight charges based on the Vehicle/truck used.

Table 4.5. Customers

Particulars	Respondents	Percentage %
Regular	57	44
Occasional	47	36
Both	26	20
Total	130	100

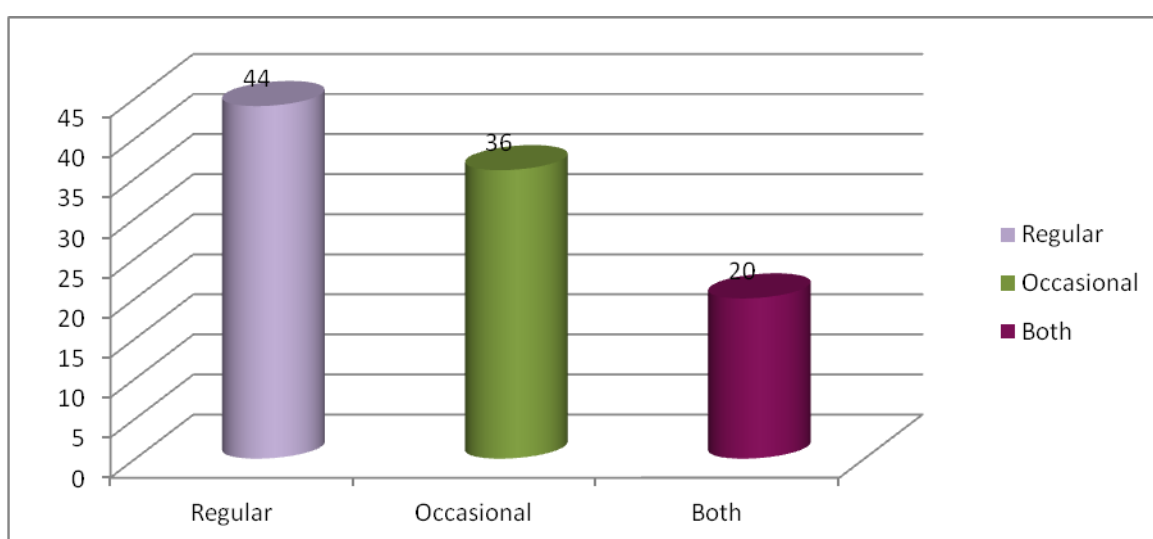


Chart 4.5: Customers

Inference

From the table it can be inferred that, 44% of the respondents say that they have regular customers, 36% of the respondents say that they have occasional customers and 20 % of the respondents say that they have both customers.

Table 4.6. Strength in Multimodal Transport Service

Particulars	Respondents	Percentage %
On time	31	24
Quantity transportation	18	14
Safety	26	20
Insurance	16	12
Less freight charges	39	30
Total	130	100

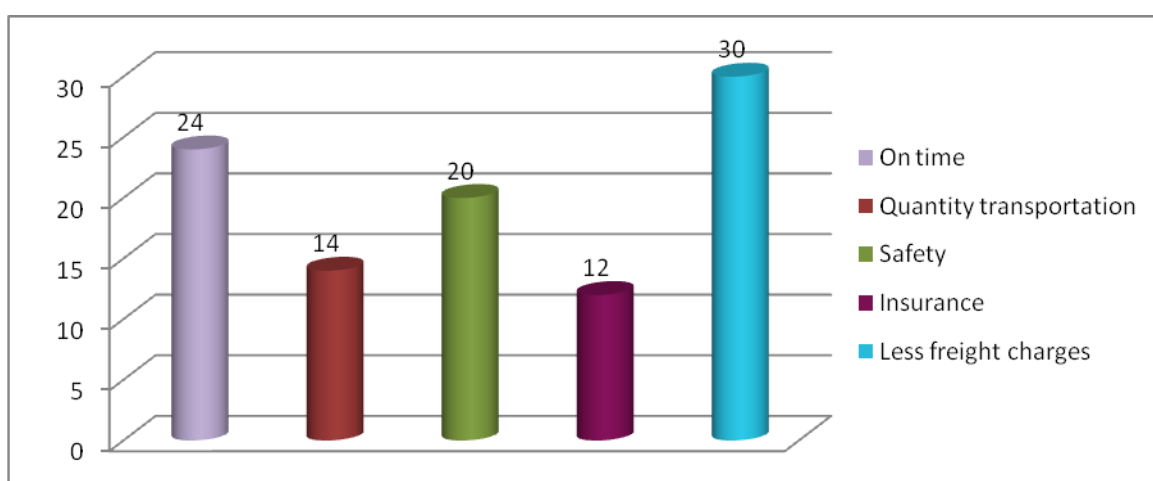


Chart 4.6: Strength in Multimodal Transport Service

Inference

From the table it can be inferred that, 30% of the respondents say that Less freight charges is their strength in Multimodal transport service, 24% of the respondents say that On time service is their strength in Multimodal transport service and 20 % of the respondents say that Safety is their strength in Multimodal transport service.

Table 4.7. Present Roadways System

Particulars	Respondents	Percentage %
Highly Satisfied	16	12
Satisfied	21	16
Neutral	29	22
Dissatisfied	39	30
Highly Dissatisfied	25	20
Total	130	100

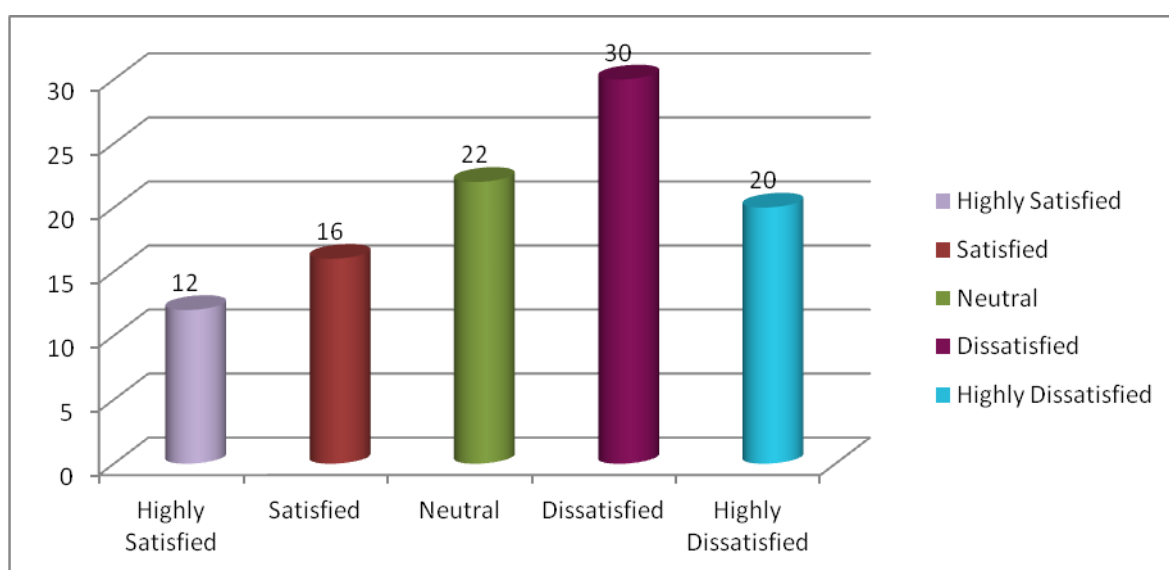


Chart 4.7: Present Roadways System

Inference

From the table it can be inferred that, 30% of the respondents say that they are Dissatisfied with the present roadways system in Chennai, 22% of the respondents' opinion about the present roadways system in Chennai is neutral and 20% of the respondents say that they are Highly Dissatisfied with the present roadways system in Chennai.

Table 4.8. Influences Logistics

Particulars	Respondents	Percentage %
Yes	68	52
No	62	48
Total	130	100

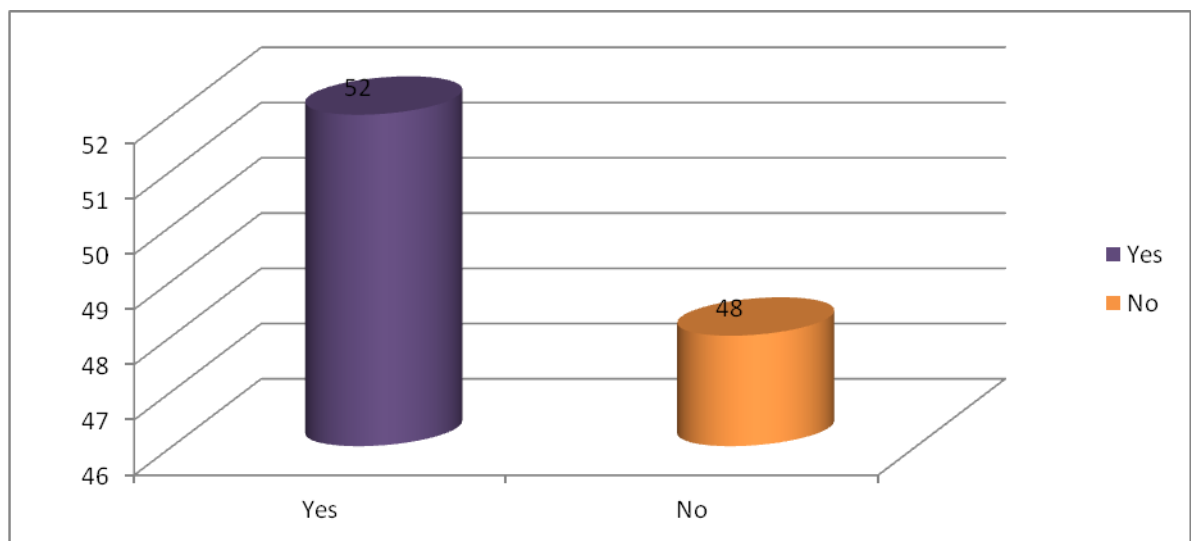


Chart 4.8: Influences Logistics

Inference

From the table it can be inferred that, 52% of the respondents think that multimodal transportation influences logistics and 48 % of the respondents do not think that multimodal transportation influences logistics.

Table 4.9. Cost Effective

Particulars	Respondents	Percentage %
Agree	60	46
Disagree	47	36
No opinion	23	18
Total	130	100

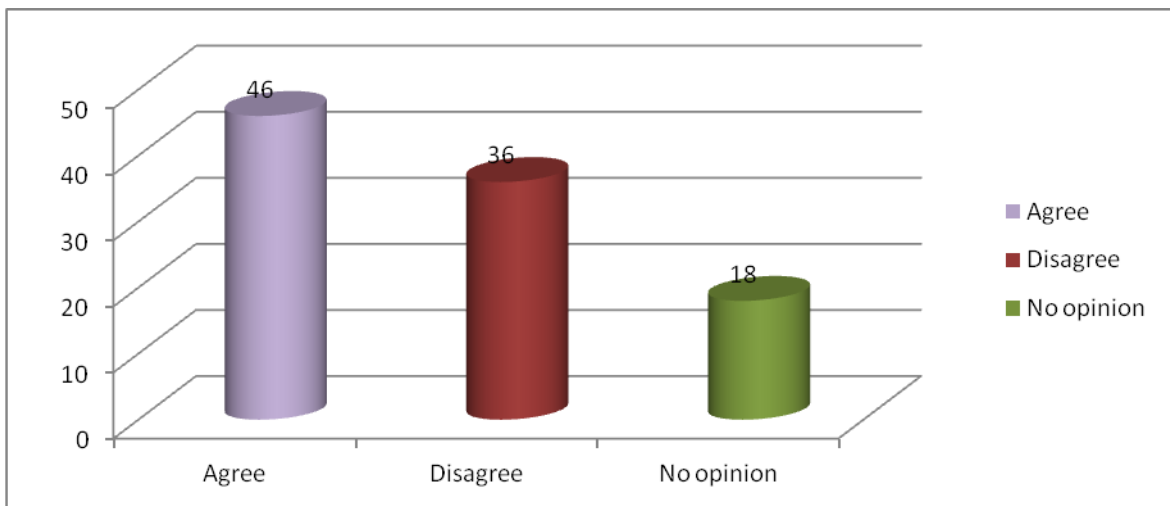


Chart 4.9: Cost Effective

Inference

From the table it can be inferred that, 46% of the respondents agree that Multimodal transportation is cost effective, 36% of the respondents disagree that Multimodal transportation is cost effective and 18% of the respondents do not have an opinion about Multimodal transportation being cost effective.

Table 4.10. Fleet Management Systems

Particulars	Respondents	Percentage %
GPS	31	24
ITMS	26	20
AVL System	34	26
AFMS	23	18
Others	16	12
Total	130	100

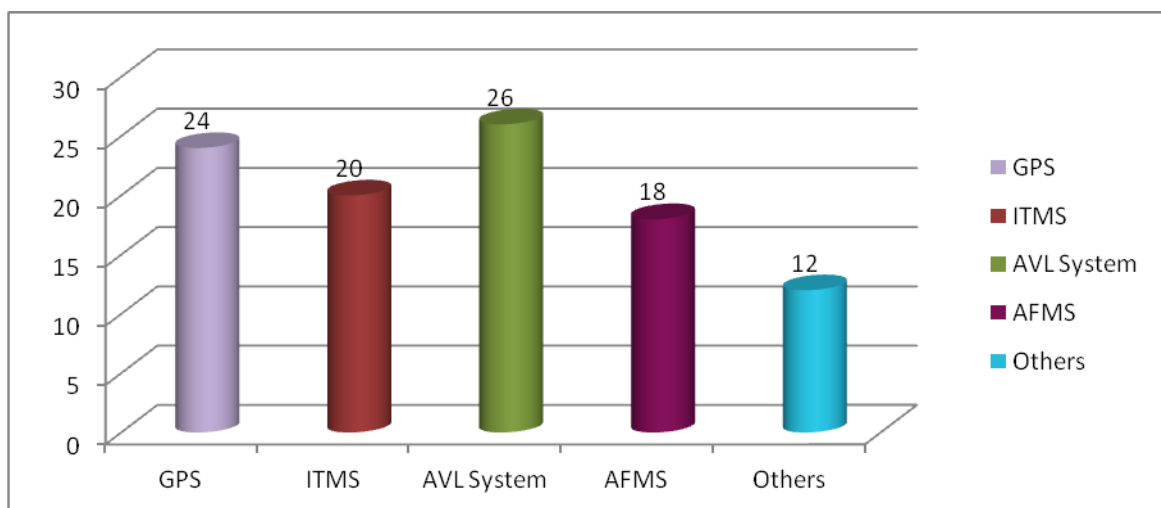


Chart 4.10: Fleet Management Systems

Inference

From the table it can be inferred that, 26% of the respondents say AVL fleet management systems is used in multimodal transportation, 24% of the respondents say GPS fleet management systems is used in multimodal transportation and 20% of the respondents say ITMS fleet management systems is used in multimodal transportation

Table 4.11. Technological Updating

Particulars	Respondents	Percentage %
Yes	62	48
No	68	52
Total	130	100

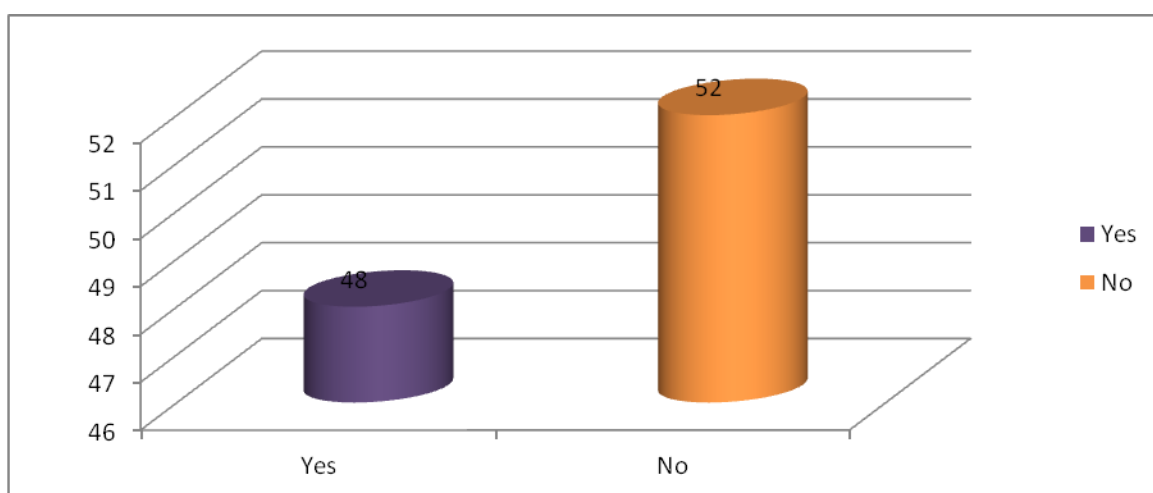


Chart 4.11: Technological Updating

Inference

From the table it can be inferred that, 52 % of the respondents say that technological updating is not a relevant factor in multimodal transportation and 48% of the respondents say technological updating is a relevant factor in multimodal transportation.

Table 4.12. Factors Directly Affecting Multimodal Transportation

Particulars	Respondents	Percentage %
Traffic	36	28
Fleet Availability	42	32
Cost	21	16
Transit Time	31	24
Total	130	100

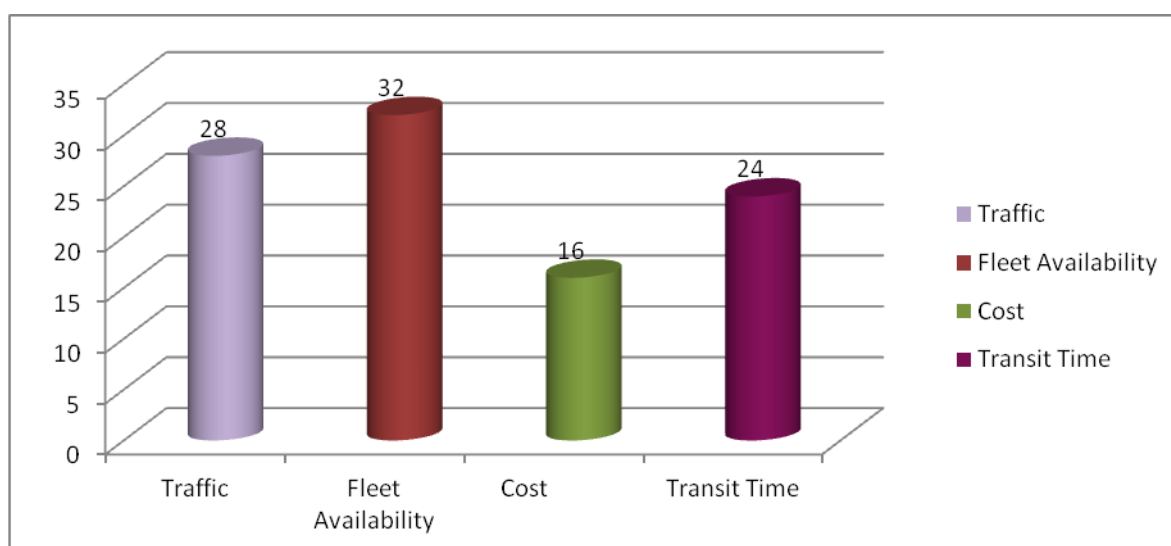


Chart 4.12: Factors Directly Affecting Multimodal Transportation

Inference

From the table it can be inferred that, 32% of the respondents say fleet availability is a factor directly affecting multimodal transportation, 28% of the respondents say traffic is a factor directly affecting multimodal transportation and 24% of the respondents say transit time is a factor directly affecting multimodal transportation.

Table 4.13. Form of Multi Modal Transportation

Particulars	Respondents	Percentage %
Road/Sea/Road	23	18
Road/Rail/Sea	26	20
Road/Air/Road	52	40
Sea/Air/Sea	16	12
Other	13	10
Total	130	100

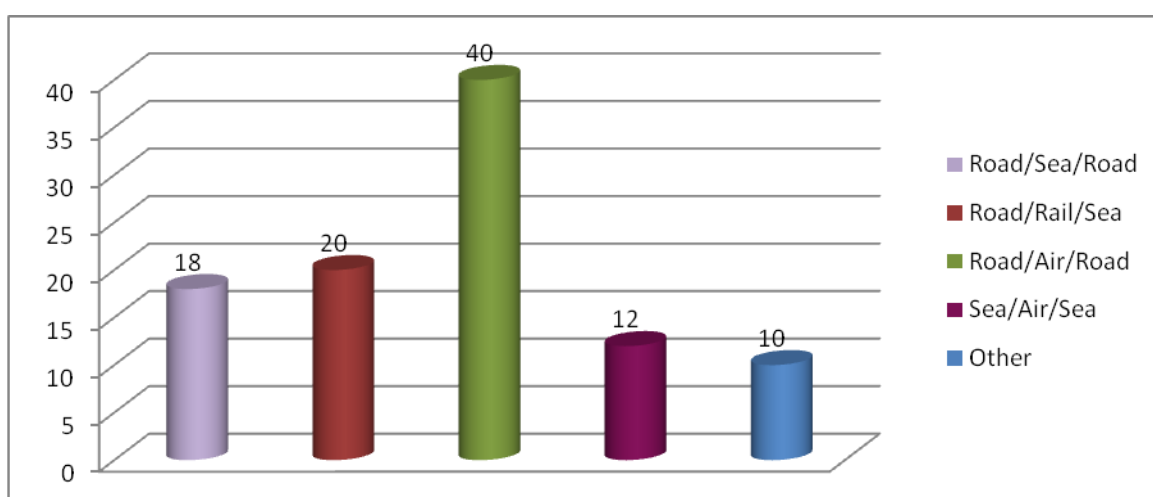


Chart 4.13: Form of Multi Modal Transportation

Inference

From the table it can be inferred that, 40% of the respondents prefer Road/Air/Road form of multi modal transportation, 20% of the respondents prefer Road/Rail/Sea form of multi modal transportation and 18% of the respondents prefer Road/Sea/Road form of multi modal transportation.

Table 4.14. Duration taken for Clearance of Goods

Particulars	Respondents	Percentage %
Less than 24 hrs	29	22
1to 3 days	42	32
a week	39	30
More than a week	20	16
Total	130	100

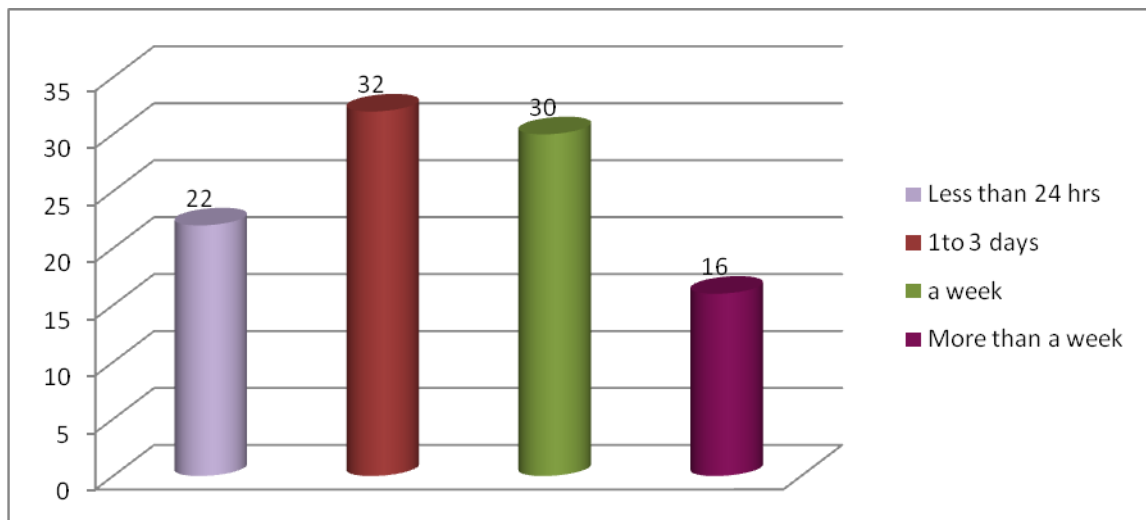


Chart 4.14: Duration taken for Clearance of Goods

Inference

From the table it can be inferred that, 32% of the respondents say that the duration of time taken for clearance of goods from government authorities is 1to 3 days, 30% of the respondents say that the duration of time taken for clearance of goods from government authorities is a week and 22% of the respondents say that the duration of time taken for clearance of goods from government authorities is Less than 24 hours.

Table 4.15. Indian Environment Favoring Multi Modal Transportation

Particulars	Respondents	Percentage %
Yes	83	64
No	47	36
Total	130	100

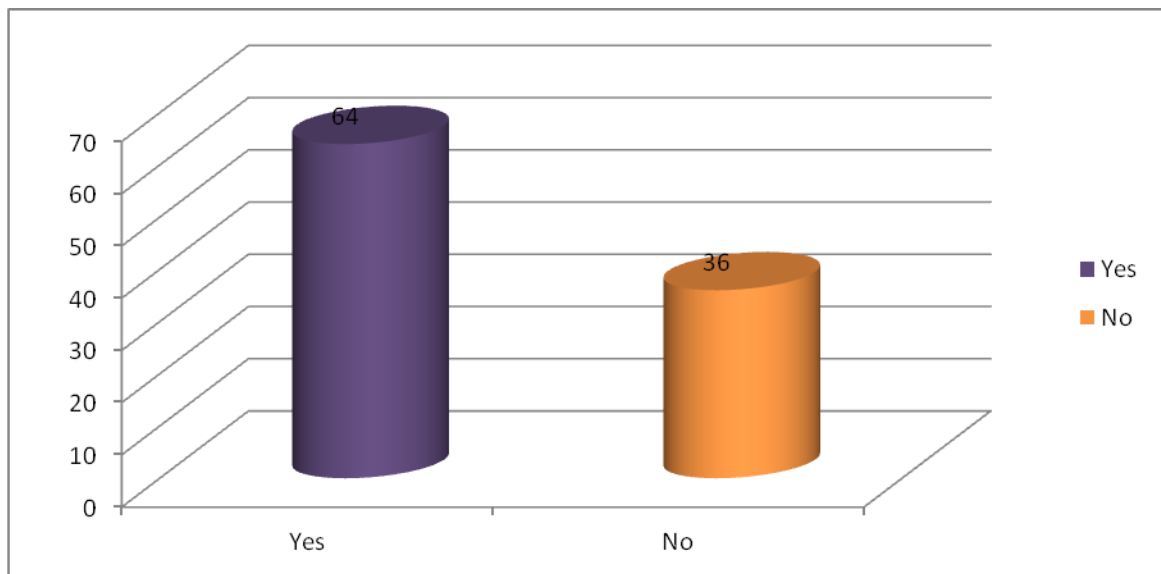


Chart 4.15: Indian Environment Favoring Multi Modal Transportation

Inference

From the table it can be inferred that, 64% of the respondents say that Indian environment is favoring multi modal transportation and 36% of the respondents say that Indian environment is not favoring multi modal transportation.

Table 4.16. Documentation Process

Particulars	Respondents	Percentage %
Yes	26	20
No	104	80
Total	130	100

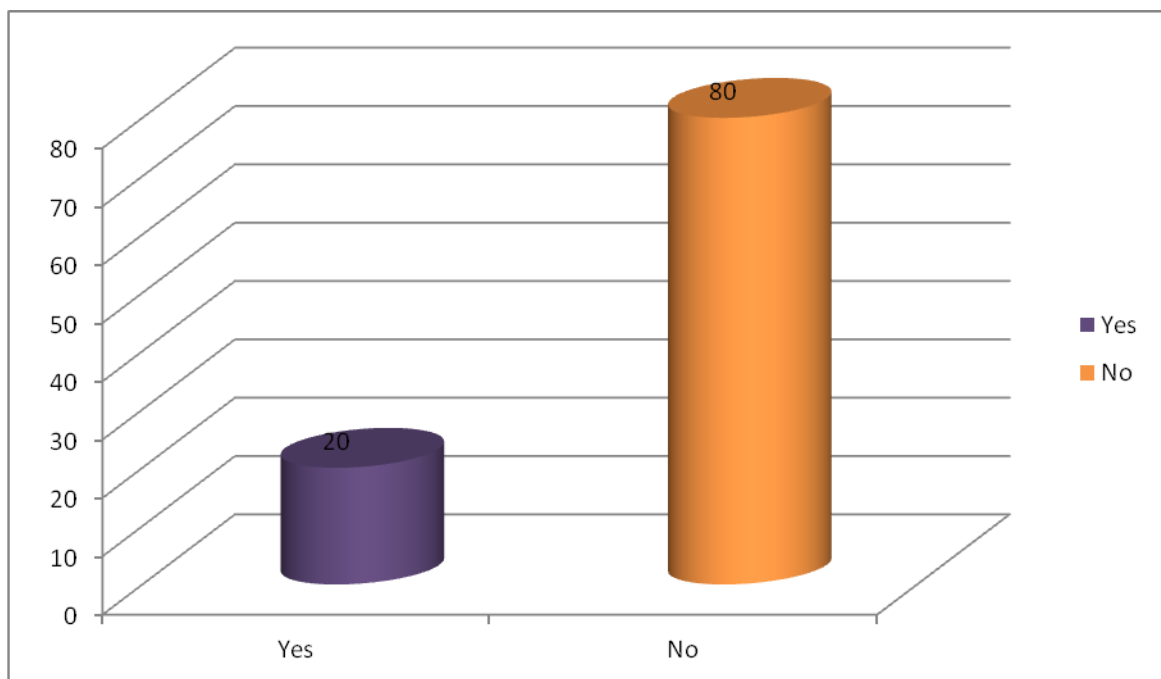


Chart 4.16: Documentation Process

Inference

From the table it can be inferred that, 80% of the respondents say that the documentation process does not affect multi modal transportation and 20% of the respondents say that the documentation process affects multi modal transportation.

4.3 STATISTICAL TOOLS AND ANALYSIS

Chi- Square Test I – (ψ^2)

Chi-square is the sum of the squared difference observed (*o*) and the expected (*e*) data (or the deviation, *d*), divided by the expected data in all possible categories.

Null hypothesis (Ho)

There is no relationship between fixing freight charges and customers.

Alternate hypothesis (H1)

There is relationship between fixing freight charges and customers.

Table 4.17. Case Processing Summary

	Cases					
	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
FIXING FREIGHT CHARGES * CUSTOMERS	130	100.0%	0	0.0%	130	100.0%

Table 4.18. Fixing Freight Charges * Customers Crosstabulation

			CUSTOMERS			Total
			Regular	Occasional	Both	
Fixing Freight Charges	Based on quantity	Count	39	0	0	39
		% within Fixing Freight Charges	100.0%	0.0%	0.0%	100.0%
		% within Customers	68.4%	0.0%	0.0%	30.0%
	Quality of the product	Count	13	0	0	13
		% within Fixing Freight Charges	100.0%	0.0%	0.0%	100.0%
		% within Customers	22.8%	0.0%	0.0%	10.0%
	Distance of transportation	Count	5	42	0	47
		% within Fixing Freight Charges	10.6%	89.4%	0.0%	100.0%
		% within Customers	8.8%	89.4%	0.0%	36.2%
	Vehicle / truck used	Count	0	5	26	31
		% within Fixing Freight Charges	0.0%	16.1%	83.9%	100.0%
		% within Customers	0.0%	10.6%	100.0%	23.8%
Total		Count	57	47	26	130
		% within Fixing Freight Charges	43.8%	36.2%	20.0%	100.0%
		% within Customers	100.0%	100.0%	100.0%	100.0%

Table 4.19. Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	204.884 ^a	6	.000
Likelihood Ratio	214.069	6	.000
Linear-by-Linear Association	104.423	1	.000
N of Valid Cases	130		
a. 2 cells (16.7%) have expected count less than 5. The minimum expected count is 2.60.			

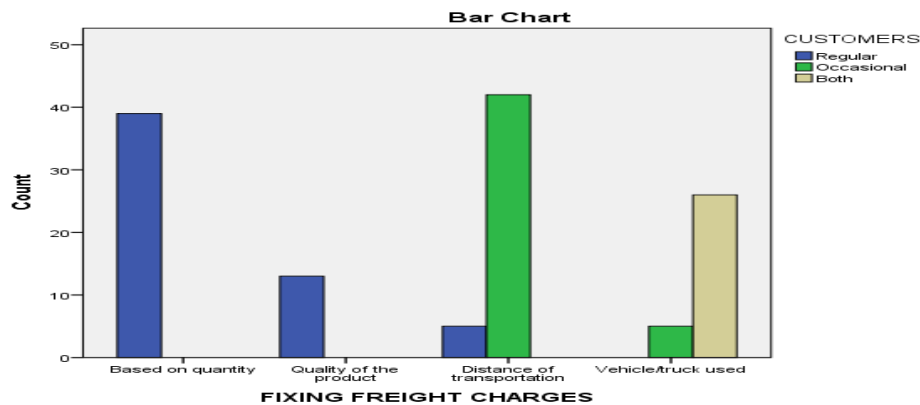


Chart 4.17: Fixing Freight Charges

Degree of Freedom = $(r-1) * (c-1)$

= $3 * 2 = 06$

Calculated value = 204.884

Tabulated value = 12.592

$Z = Z_{cal} > Z_{tab}$

$Z = 204.884 > 12.592$

Hence, the Alternate hypothesis [H1] is accepted

Inference

Since the calculated value is greater than the tabulated value, we accept the alternate hypothesis and hence there is a relationship between fixing freight charges and customers.

4.4 ONE-WAY ANOVA CLASSIFICATION

Null hypothesis (Ho)

There is a significance difference between fleet management systems and factors directly affecting multimodal transportation.

Alternate hypothesis (H1)

There is no significance difference between fleet management systems and factors directly affecting multimodal transportation.

Table 4.20. Fleet Management Systems (Descriptives)

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
Traffic	36	1.14	.351	.058	1.02	1.26	1	2
Fleet Availability	42	2.50	.506	.078	2.34	2.66	2	3
Cost	21	3.38	.498	.109	3.15	3.61	3	4
Transit Time	31	4.52	.508	.091	4.33	4.70	4	5
Total	130	2.75	1.331	.117	2.52	2.98	1	5

Table 4.21. Test of Homogeneity of Variances

FLEET MANAGEMENT SYSTEMS			
Levene Statistic	df1	df2	Sig.
28.108	3	126	.000

Table 4.22. ANOVA

FLEET MANAGEMENT SYSTEMS					
	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	201.123	3	67.041	307.171	.000
Within Groups	27.500	126	.218		
Total	228.623	129			

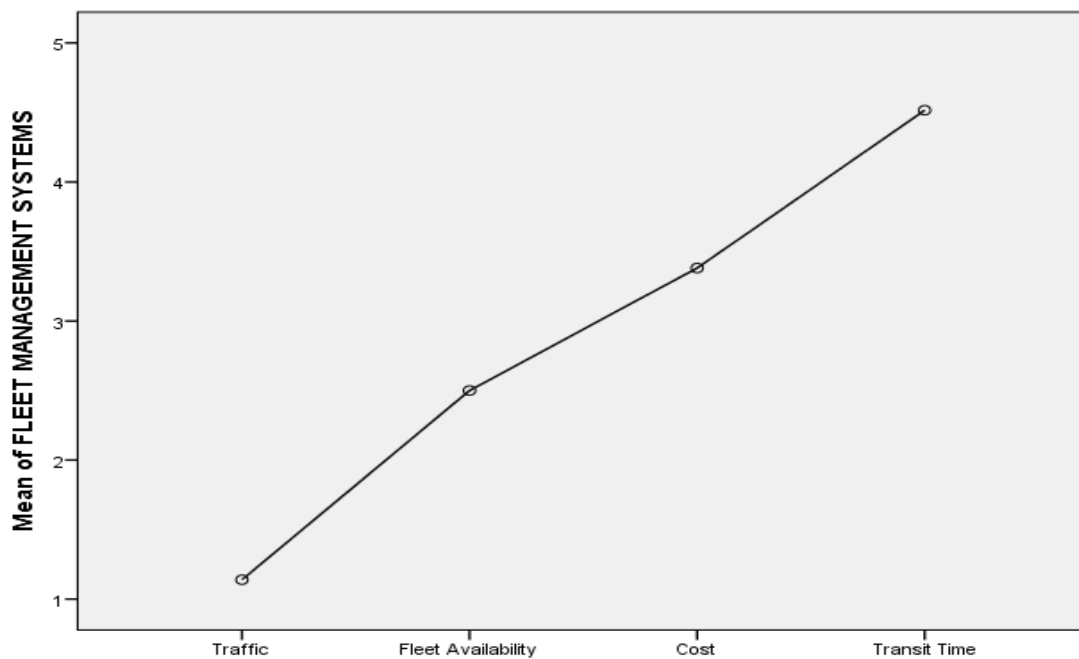


Chart 4.18: Factors Directly affecting Multimodal Transportation

Tabulated value = 2.70

Calculated value = 307.171

$F = F_{cal} > F_{tab}$ $F = 307.171 > 2.70$

Hence, the alternative hypothesis [H1] is accepted.

Inference

Since the calculated value is greater than the tabulated value, we accept the alternate hypothesis and hence there is a relationship between fleet management systems and factors directly affecting multimodal transportation.

4.5 ANALYSIS USING KARL PEARSON'S CORRELATION

Correlation analysis is the statistical tool used to measure the degree to which two variables are linearly related to each other. Correlation measures the degree of association between two variables.

Null hypothesis (H0)

There is positive relationship between factors considering and strength in multimodal transport service.

Alternate hypothesis (H1)

There is negative relationship between factors considering and strength in multimodal transport service.

Table 4.23. Correlations

		Factors Considering	Strength In Multimodal Transport Service
Factors Considering	Pearson Correlation	1	.964**
	Sig. (2-tailed)		.000
	N	130	130
Strength In Multimodal Transport Service	Pearson Correlation	.964**	1
	Sig. (2-tailed)	.000	
	N	130	130
**. Correlation is significant at the 0.01 level (2-tailed).			

$$r = \frac{N\sum XY - \sum X \sum Y}{\sqrt{N\sum X^2 - (\sum X)^2} \sqrt{N\sum Y^2 - (\sum Y)^2}}$$

$$r = .964$$

Inference

Since r is positive, there is positive relationship between factors considering and strength in multimodal transport service.

4.6 T-TEST

Null hypothesis (Ho)

There is a significance difference between duration taken for clearance of goods and documentation process.

Alternate hypothesis (H1)

There is no significance difference between duration taken for clearance of goods and documentation process.

Table 4.24. Group Statistics

	Documentation Process	N	Mean	Std. Deviation	Std. Error Mean
Duration Taken for Clearance of Goods	Yes	26	1.00	.000	.000
	No	104	2.73	.803	.079

Table 4.25. Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
Duration Taken for Clearance of Goods	Equal variances assumed	74.871	.000	-10.954	128	.000	-1.731	.158	-2.043	-1.418
	Equal variances not assumed			-21.973	103.000	.000	-1.731	.079	-1.887	-1.575

Inference

In Levene's Test for Equality of Variances significance value is 0.000 which is lesser than 0.05. it means that the variability in the two conditions is about the same

Sig (2-tailed) value

Table value = 0.000

$$0.000 < 0.05$$

H0 is accepted, so there is no statistically significant difference between two conditions.

4.7 RELIABILITY TEST

Cronbach's alpha is the most common measure of internal consistency ("reliability"). It is most commonly used when you have multiple Likert questions in a survey/questionnaire that form a scale and you wish to determine if the scale is reliable. If you are concerned with inter-rater reliability, we also have a guide on using Cohen's (κ) kappa that you might find useful.

Table 4.26. Case Processing Summary

		N	%
Cases	Valid	130	100.0
	Excluded ^a	0	.0
	Total	130	100.0
a. Listwise deletion based on all variables in the procedure.			

Table 4.27. Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.982	.989	16

Inference

We can see that Cronbach's alpha is 0.989, which indicates a high level of internal consistency for our scale with this specific sample.

CHAPTER 5

FINDINGS, SUGGESTIONS AND CONCLUSION

5.1 FINDINGS

- 30% of the respondents have an experience of less than a year, 24% of the respondents have an experience of 5-10 years and 20% of the respondents have an experience of 1-3 years.
- 40% of the respondents are having Contracted vehicle, 36% of the respondents are having Owned vehicle and 24% of the respondents are having both.
- 24% of the respondents say Safety of cargo is the factor considered while transporting a product and 20% of the respondents say all factors considered are while transporting a product.
- 36% of the respondents are fixing freight charges based on the Distance of transportation, 30 % of the respondents are fixing freight charges based on the quantity
- 44% of the respondents say that they have regular customers, 36% of the respondents say that they have occasional customers and 20 % of the respondents say that they have both customers.
- 30% of the respondents say that less freight charges is their strength in Multimodal transport service, 24% of the respondents say that On time service is their strength in Multimodal transport service.

- 30% of the respondents say that they are Dissatisfied with the present roadways system in Chennai, 22% of the respondents' opinion about the present roadways system in Chennai is neutral.
- 52% of the respondents think that multimodal transportation influences logistics and 48 % of the respondents do not think that multimodal transportation influences logistics.
- 46% of the respondents agree that Multimodal transportation is cost effective, 36% of the respondents disagree that Multimodal transportation is cost effective.
- 26% of the respondents say AVL fleet management systems is used in multimodal transportation, 24% of the respondents say GPS fleet management systems is used in multimodal transportation.
- 52 % of the respondents say that technological updating is not a relevant factor in multimodal transportation and 48% of the respondents say technological updating is a relevant factor in multimodal transportation.
- 32% of the respondents say fleet availability is a factor directly affecting multimodal transportation, 28% of the respondents say traffic is a factor directly affecting multimodal transportation.
- 40% of the respondents prefer Road/Air/Road form of multi modal transportation, 20% of the respondents prefer Road/Rail/Sea form of multi modal transportation.
- 32% of the respondents say that the duration of time taken for clearance of goods from government authorities is 1 to 3 days, 30% of the respondents say that the duration of time taken for clearance of goods from government authorities is a week.

- 64% of the respondents say that Indian environment is favoring multi modal transportation and 36% of the respondents say that Indian environment is not favoring multi modal transportation.
- 80% of the respondents say that the documentation process does not affect multi modal transportation and 20% of the respondents say that the documentation process affects multi modal transportation.

5.2 SUGGESTIONS AND RECOMMENDATIONS

- As most of the Logistics companies are focusing on the technological improvement, Zeniline Global Logistics Private Limited can also upgrade their technical facilities to improve their infrastructure in the multimodal transport system. This will improve their communication across the system.
- As most of the freight forwarders in Chennai feel that Road/Air/Road form of multi modal transportation is the most preferred by the clients. Zeniline Global Logistics Private Limited can also increase their focus on the Road/Air/Road
- Most of the competitors are shrinking their freight charges to attract more customers. The freight charges in Zeniline Global Logistics Private Limited can also be reduced to improve their position in the multimodal transport system

5.3 LIMITATIONS OF THE STUDY

- Time is one major constraint, which limits the effective data collection.
- Reliability and accuracy of the analysis depends on the respondents' openness and trueness towards each question in the questionnaire.
- Respondents would have hidden some facts due to the fear of management.

- The study is based on the data collected from respondents and a journal hence the reliability of the data is not probed into. Utmost care has to be taken while extending the results to the other areas.

5.4 CONCLUSION

A multimodal transport system integrates different geographical scales from the global to the local. With the development of new modal and intermodal infrastructure, urban regions have a growing accessibility to the international market; several parameters of regional transportation are transformed, or at least significantly modified.

This study highlights the key factors in multimodal transport system followed in Logistics companies. With the responses given by the freight forwarders working in Logistics companies in Chennai, a thorough knowledge of the multimodal transport has been acquired to provide suitable suggestions for the management.

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APPENDIX

Copy of Questionnaire

1. Name of the company
2. How many years of Experience?
a) Less than 1 year ☐ b) 1-3Years ☐ c) 3-5 Years ☐
d) 5-10 years ☐ e) Above 10 years ☐
3. Which type of vehicle you are having?
a) Contracted vehicle ☐ b) Owned vehicle ☐ c) Both ☐
4. While you are transporting a product what are the factors considering?
a) Distance ☐ b) Volume of cargo ☐ c) Terrain ☐
d) Safety of cargo ☐ e) All ☐
5. How you fixing freight charges?
a) Based on quantity ☐ b) Quality of the product ☐
c) Distance of transportation ☐ d) Vehicle/truck used ☐
6. Your customers are?
a) Regular ☐ b) Occasional ☐
c) Both
7. What is your strength in Multimodal transport service?
a) On time ☐ b) Quantity transportation ☐
c) Safety ☐ d) Insurance ☐
e) Less freight charges ☐

8. Are you satisfied with present roadways system in Chennai?
- a) Highly Satisfied ☐ b) Satisfied ☐ c) Neutral ☐
d) Dissatisfied ☐ e) Highly Dissatisfied ☐
9. Do you think that multimodal transportation influences logistics?
- a) Yes ☐ b) No ☐
10. Multimodal transportation is cost effective?
- a) Agree ☐ b) Disagree ☐ c) No opinion ☐
11. Which are fleet management systems used in multimodal transportation?
- a) GPS ☐ b) ITMS ☐ c) AVL System ☐
d) AFMS ☐ e) Other
12. Is technological updating a relevant factor in multimodal transportation?
- Yes ☐ b) No ☐
13. Is your company updated with latest technologies in multimodal transportation? If yes please specify
- a)
b)
c)
14. Which factors are directly affecting multimodal transportation?
- a) Traffic ☐ b) Fleet Availability ☐
b) Cost ☐ d) Transit Time ☐
15. Which form of multi modal transportation do you prefer?
- a) Road/Sea/Road ☐ b) Road/Rail/Sea ☐ c) Road/Air/Road ☐
d) Sea/Air/Sea ☐ e) Other

16. What is the duration of time taken for clearance of goods from government authorities (Customs, Port Authority)?
 a) Less than 24 hrs ☐ b) 1to 3 days ☐ c) a week ☐
 d) More than a week ☐
17. Please specify the goods which you do import?
 a)
 b).....
 c).....
18. Please specify the goods which you do export?
 a)
 b)
 c)
19. Is Indian environment favoring multi modal transportation? (Specify reasons)
 Yes ☐ b) No ☐

20. Will the documentation process affects multi modal transportation?
 Yes ☐ b) No ☐