

A STUDY ON EFFECTIVENESS OF INBOUND & OUTBOUND WAREHOUSE OPERATIONS AT FREIGHTERIX CARGO SOLUTIONS PVT LTD

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

by

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Register No.41410227



**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**

MAY 2023



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SCHOOL OF MANAGEMENT STUDIES

BONAFIDE CERTIFICATE

This is to certify that this Project Report is the bonafide work of **PRAGADEES RAJA.I 41410227** who carried out the project entitled "**A STUDY ON EFFECTIVENESS OF INBOUND & OUTBOUND WAREHOUSE OPERATIONS AT FREIGHTERIX CARGO SOLUTIONS PVT LTD**" under my supervision from January 2023 to March 2023.

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10/04/2023

TO WHOMSOEVER IT MAY CONCERN

Sub: MBA Project Completion letter

We wish to confirm that **Mr. PRAGADEES RAJA I (Reg. No: 41410227)**, who is pursuing final year MBA in Sathyabama Institute Of Science And Technology, Chennai, has successfully completed the final year Logistics project in our concern titled **“A STUDY ON EFFECTIVENESS OF INBOUND & OUTBOUND WAREHOUSE OPERATIONS AT FREIGHTERIX CARGO SOLUTIONS PVT LTD”** from 03/02/2023 to 10/04/2023.

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

We wish success in all the future endeavors.

For Freighterix Cargo Solutions Pvt Ltd,



Kovendan. N
HR Manager



DECLARATION

I PRAGADEES RAJA.I (41410227) hereby declare that the Project Report entitled “**A STUDY ON EFFECTIVENESS OF INBOUND & OUTBOUND WAREHOUSE OPERATIONS AT FREIGHTERIX CARGO SOLUTIONS PVT LTD**” done by me under the guidance of **DR. M.SUDHA PAULIN MBA, PhD**, is submitted in partial fulfillment of the requirements for the award of Master of Business Administration degree.

DATE: 05.05.2023

PLACE: Chennai



PRAGADEES RAJA.I

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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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PRAGADEES RAJA.I

ABSTRACT

Inbound & outbound logistics warehousing allows for timely delivery and optimized distribution, leading to increased labor productivity and greater customer satisfaction. It also helps reduce errors and damage in the order fulfillment process. Plus, it prevents your goods from getting lost or stolen during handling. The purpose of a warehouse operations management is to help ensure that goods and materials move through warehouses in the most efficient and cost-effective way. A WMS handles many functions that enable these movements, including inventory tracking, picking, receiving and putaway.

Through this study, the researcher tries to identify the key areas to be enhanced to improve the warehouse operations of Freightrix Cargo Solutions Pvt Ltd by engaging suppliers of Freightrix Cargo Solutions Pvt Ltd in evaluating it. This will help the management of Freightrix Cargo Solutions Pvt Ltd to improve the efficiency of warehouse operations management and increase their business efficiency.

Primary objective is to study the effectiveness of inbound & outbound warehouse operations at Freightrix Cargo Solutions Pvt Ltd. Secondary objectives are to study the overall inbound & outbound logistics warehouse operations in Freightrix Cargo Solutions Pvt Ltd and to find out the problems which the warehouse is facing in its inbound & outbound process.

Convenience sampling method has been used in the research work. Multiple choice questions have been chosen to collect the responses from 120 suppliers of Freightrix Cargo Solutions Pvt Ltd. 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 improve the inbound & outbound warehouse operations of Freightrix Cargo Solutions Pvt Ltd.

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CHAPTER 1: INTRODUCTION

1.1 INTRODUCTION

Warehousing is the process of storing physical goods before they are sold or further distributed in a dedicated warehouse or storage facility. Warehouses safely and securely store products in an organized way to track where items are located, when they arrived, how long they have been there, and the quantity on hand.

For small or new businesses, warehousing inventory may be done from home until they outgrow the space. At that point, a business will have to rent storage space, lease a warehouse, or outsource logistics to a third-party and store inventory in their warehousing facilities.

In ecommerce, products are stored until an order is placed online, at which point the order is shipped directly to the consumer from the facility in which it was stored. In traditional retail, inventory may be temporarily stored in a warehouse before it's shipped to a brick and mortar store.

DEFINING 3 KEY PARTS OF WAREHOUSING LOGISTICS

Warehousing logistics is at the core of any business that sells physical goods. A few of the most important elements of warehousing include warehouse management, warehousing services, operations, and warehouse management systems.

1. WAREHOUSE MANAGEMENT

Warehouse management is the strategic day-to-day running of operations in a warehouse to promote, improve, and ensure operational excellence. Managing a

warehouse means overseeing all staff, training, inventory, equipment, safety and security, relationships with shipping carriers, and other moving pieces.

Responsibilities include:

- Forecasting and managing projected volume and labor
- Ensuring the proper safety gear is used and best safety practices are followed at all times
- Obtaining the proper licenses and certifications for anyone operating equipment
- Maintaining compliance and requirements for regulatory agencies
- Continuously planning and managing operations as the business grows and becomes more complex
- Keeping goods secure and accessible and performing warehouse audits as needed
- Providing clear instructions on how to receive, unpack, retrieve, pack, and ship inventory
- Setting up bins and other storage spots in optimal places to minimize the effort required to move between destinations
- Recording all inbound and outbound shipments and collecting the proper documentation

2. WAREHOUSE OPERATIONS

Warehousing operations refers to the processes that take place in a warehouse revolving around the movement of goods and tracking inventory.

Principles of warehousing include functions such as receiving inventory, then placing each SKU into a separate dedicated storage location (e.g., in a shelf, bin, or on a pallet), and sending product to its next destination.

Efficient warehousing operations help keep:

- Costs low
- Inventory received and shipped on time
- Staff productive
- Sufficient quantities of product on hand
- Space below capacity
- Storage optimized and aisles clear
- Equipment used effectively
- Customers happy

3. WAREHOUSE MANAGEMENT SYSTEMS

A warehouse management system (WMS) is a type of software that provides the tools necessary to manage warehouse operations and inventory movement to save time and eliminate manual processes. Warehouse management systems help optimize inventory and tracking, warehousing operations, workload distribution, and shipping.

These types of warehousing solutions give you unprecedented visibility and real-time insight into every action that's happening in the warehouse. A good warehouse management system will even help generate electronic picking lists based on orders that have inventory stored close to one another to decrease inefficiencies.

1.2 COMPANY PROFILE:

A comprehensive range of services and smart solutions

From mining and manufacturing to clothes, cars and food, Freightrix Cargo Solutions Pvt Ltd is all about delivering the right product, to the right place, at the right time, at the right price.

Our combined services equip us to design, implement, operate and manage smart supply chain solutions.

By understanding our clients' businesses inside and out, we deliver integrated and customized solutions to create a competitive advantage.

Operational excellence provides us with a smart process that drives continuous improvement, which makes us better at what we do.

Innovation sits at the heart of smart. Thinking *outside the box* and making better use of resources is the very essence of smart supply chain solutions.

At Freightrix Cargo Solutions Pvt Ltd we believe your supply chain is a key enabler of success. It's why we're driven to make your supply chain work harder for your business.

In addition to optimising individual logistics functions, Freightrix Cargo Solutions Pvt Ltd has led the way in adopting an integrated approach to supply chain management.

By combining strategy, planning and management with excellent operational execution, we analyse, design, implement, manage and operate entire supply chains.

As a result, a new breed of optimized supply chains is being developed. Supply chains that are designed around your business goals. Supply chains that are far more efficient, effective, flexible and responsive to ever changing market needs.

And the bottom line? We create smart supply chain solutions that level the playing field and give your business a competitive advantage.

Combining ingenuity, expertise and real life experience.

At Freighterix Cargo Solutions Pvt Ltd there is nothing ordinary about the way we do business. We're committed to creating extraordinary solutions that exceed expectations and deliver exceptional results.

Our strategy is simple. We link your supply chain to your business strategy. In other words, we ensure you have the right operations, resources and capabilities to implement your strategy and realise your vision.

We do this by thinking out of the box, breaking down barriers and pushing boundaries. We identify hidden problems by knowing what to look for and where to find them. We then transform the right possibilities into profitable opportunities.

It's how we've helped multinational organisations around the world cut costs, grow revenue and improve customer service.

CODE OF CONDUCT

Setting standards in global corporate governance.

The world is continually changing, and so is our business. But one thing that will never change is our commitment to maintaining the highest ethical standards. Our reputation is one of our greatest assets. Each of us has a responsibility to protect and live up to it – every day.

Here is what our code of ETHICS means to and for all of us:

- Obey the LAW
- Be FAIR
- Be HONEST
- RESPECT others
- Protect the ENVIRONMENT

SERVICES

1. Cargo Management
2. Waste Management and Consultancy
3. Warehouse and Distribution
4. Inventory solutions
5. Supply chain consulting
6. Supply chain management
7. Road transportation
8. Transport Management Services
9. Supply chain software planning
10. Freight forwarding

1. CARGO MANAGEMENT

From start to finish, the industrial and project cargo distribution area is well taken care of through our dedicated project management team. Here, Safety is accorded high priority.

Evolving from the need of customized cargo transportation, it also provides the logistics for project cargo handling from shipyard or factory to site and vice versa. From steel coils and beams to heavy-lift cargo, we offer customized solutions that are safe, timely and cost-effective.

2. Waste Management And Consultancy

Accredited with ISO14000:2010, our Hi-Tech Waste Management provides waste management and consultancy for a wide range of industrial and commercial customers including clients.

Realising the crucial need for environment-friendly and cost-effective solutions to waste management, the company offers an extensive range of services that include witness disposal of FMCG products, solid waste minimisation consultancy and industrial tank cleaning.

Other areas of primary expertise include the exploration of the 'wormy culture' in waste management and expanding our services into the transportation of palm oil waste.

3. WAREHOUSE AND DISTRIBUTION

[Taking stock of where your business is and moving it into a new direction.](#)

Adopting an integrated strategic approach and looking at your delivery network holistically, our warehousing and distribution solutions are smart, streamlined and efficient.

When it comes to warehousing we look at whether it will serve your interests to rent, buy or build. We evaluate the benefits of location, size and design, factoring in where your sources of supply and delivery destinations lie.

Our aim is to design and manage or operate customised warehouse solutions that deliver bottom-line benefits by helping you to be more productive, your organisation more efficient, and your business more agile. We implement collaborative techniques, provide tools for measuring success, and advanced analysis, which demonstrates our original thinking.

Designed for today but with the future in mind, our solutions are based on a comprehensive range of bespoke management systems and processes, which include cross-docking, racking, shelving, pick-and-pack, and track and trace capabilities.

Consistent quality, operational excellence and on-going innovation is how we achieve a reduction in inefficiencies, enhanced consumer value, improved cash flow and profits for your business.

4. INVENTORY SOLUTIONS

[Reducing risks and maximizing opportunities.](#)

Inventory sits at the heart of any supply chain strategy. Too little or too much has far reaching implications for your business.

The real opportunity lies in our inventory and supply chain planning solutions that not only optimize inventory, but link it to your business strategy. This in turn allows us to identify where we need to align and redesign key elements of your supply chain so that you deliver more value to your customers at a lower cost.

5. SUPPLY CHAIN CONSULTING

[Measured, managed and aligned with your business goals.](#)

Through supply chain consulting, Freightenix Cargo Solutions Pvt Ltd equips you with the big picture, identifying what's working, what isn't and what can be optimised for operational efficiency.

Regardless of the industry or sector you operate in, our specialised consultants have the experience, knowledge and insight to provide practical supply chain solutions that are innovative and results orientated.

Working together with you, we determine objectives, budget, time constraints, resources, risks, assumptions, and other variables up front. We then measure, analyse and benchmark your logistics operations or entire supply chain against global best practices.

By identifying where you've come from, and where you are, we can help you get to where you want to be.

Using a variety of world-class tried and tested tools and methodologies, including sophisticated modelling and scenario planning, our consultants apply their analytical skills to uncover potential complications and profitable prospects.

6. SUPPLY CHAIN MANAGEMENT

An altogether better supply chain solution

Freighterix Cargo Solutions Pvt Ltd pioneering approach to supply chain management has made us the partner of choice for re-engineering some of the most sophisticated supply chains in the world.

Through our holistic approach and original thinking we're able to create supply chains that are dynamic, adaptable, responsive and visible. Performance-based supply chains that drive costs down and profits up.

We understand no business is the same. Which is why our supply chain management solutions are completely customized? Whether you want to know how a change in manufacturing processes will impact on your distribution, or you need a redesigned distribution network, our scenario planning, modelling and analysis tools combined with our expertise and resourcefulness ensures you get a solution that truly supports your business objectives.

Creating an innovative, customised supply chain solution is just the beginning. We then put a disciplined practical plan in place to ensure successful implementation and continuous improvement.

Our account management teams and consultants see themselves as an extension of your business from design to the on-going management or operation of your supply chain. Commitment and collaboration form the foundation of every partnership.

7. ROAD TRANSPORT

[Driven to deliver sustainable transport solutions.](#)

We have the size, strength and expertise to deliver flexible, optimised and sustainable transport solutions to new and existing clients.

We deliver transport solutions across a wide range of industries. Our variety of services include dedicated, linehaul, cross-border, fuel, chemical and gas, timber, project cargo and abnormal loads, as well as other specialised services.

We have a combined track record of service excellence, innovation, advanced fleet management capabilities and international standards of safety, governance and risk management. It's how we deliver sustainable results that not only reduce risk and costs, but increase service levels, reliability and supply chain flexibility.

For a smart transport solution geared

8. TRANSPORT MANAGEMENT SERVICES

[Creating a competitive advantage.](#)

Our dedicated Transport Management Services (TMS) team provides a service that encompasses far more than transport management. Armed with the experience, expertise, skills and knowledge, the TMS team begins by understanding your holistic business and supply chain needs.

This is followed by designing the optimal network configuration, strategic sourcing, planning, optimising and managing the nationwide distribution of your goods. In addition TMS manages everything from daily administration to analysing trends, providing business intelligence and insight, which in turn enables an environment of continuous improvement.

Ultimately TMS is geared to help you reduce costs and risks but also increase integration, service levels, visibility and supply chain flexibility. The bottom line?

TMS is in the business of developing a competitive advantage for the businesses we work with.

9. FREIGHT FORWARDING

Reliable global capacity guaranteeing you peace of mind.

At Freighterix Cargo Solutions Pvt Ltd , we're passionate about delivering your goods in the most cost-effective and efficient way.

By understanding your needs and wants through intelligent analysis of the best way to move your goods, we provide a customized solution that fits both your financial and delivery needs.

As the Freight Forwarding partner for many blue chip companies, Freighterix Cargo Solutions Pvt Ltd safely transports your cargo around the world, on time, on target and on budget.

Air freight

Fast and efficient.

Our comprehensive range of services in airfreight comprises:

- Consolidation services
- Air charters
- Customs brokerage
- Transshipment services
- Cross port services
- Direct shipments
- Events

Information Technology

Customized and cutting edge.

All of our products and solution offerings are underpinned and enabled by the most sophisticated information technology available.

- Fully-fledged ERP systems
- Online booking and shipment tracking for clients and agents
- Shipment status updates for customers via EDI/Fax/Email
- A sophisticated integration tool allows handshakes between client's systems and ours, ensuring faster response times to customers
- Single communication domain with instant messaging between Barloworld Logistics offices

Distribution

Whatever you need to move, wherever, we're equipped to move it.

Our Freight Forwarding and Clearing division offers a full range of rubber on the road options for your cargo, including:

- Heavy-duty fleet
- Tractor units
- Trailers
- Pick-up units
- Reefer and dry containers
- GPS

1.3 INDUSTRY PROFILE

Logistics is regarded as the backbone of the economy, providing efficient and cost effective flow of goods on which other commercial sectors depend. Logistic industry in India is evolving rapidly, it is the interplay of infrastructure, technology and new types of service providers, which defines whether the logistic industry is able to help its customers reduce their costs in logistic sector and provide effective services.

Despite of the weak economic sentiments, the logistics industry continues to witness growth due to the growth in retail, e-commerce and manufacturing sectors. The Global Logistics sector was expected to grow 10-15% in the period 2021-22. Logistics industry is expected to reach over USD 2 billion by 2025. Rise of e-commerce logistics and increased domestic consumption will lead the way for the industry in the coming years. With a promise of growth and improvements, the service oriented logistics industry is ready to expand beyond the horizons in the latter half of this decade.

Recent scenario

The recent Indian logistics sector comprises of inbound and outbound segments of the manufacturing and service supply chains. Of late, the logistics infrastructure has gained a lot of attention both from business industry as well as policy makers. The role of managing this infrastructure, to effectively compete has been slightly under-emphasized. Inadequate logistics infrastructure has an effect of creating bottlenecks in the growth of an economy. The logistics management regimen has the capability of overcoming the disadvantages of the infrastructure in the short run while providing cutting edge competitiveness in the long term. There exist several challenges and opportunities for logistics sector in the Indian economy.

Challenges faced by the recent logistics industry in India

The most essential challenge faced by the industry today is insufficient integration of transport networks, information technology and warehousing & distribution facilities. Regulations exist at a number of different tiers, is

imposed by national, regional and local authorities. However, the regulations differ from city to city, hindering the creation of national networks.

Trained Manpower is essential both for the third party logistics sector as well as the manufacturing and retailing sectors, which is very weak at a practical level, i.e., IT, driving and warehouse as well as at a higher strategic level. The disorganized nature of the logistics sector in India, its perception as a manpower-heavy industry and lack of adequate training institutions has led to a shortfall in skilled management and client service personnel. There is a lack of IT standard, equipment and poor systems integration.

Popular Read: I have data. I need insights. Where do I start?

Poor facilities and management are the reason for high levels of loss, damage and deterioration of stock, mainly in the perishables sector. Part of the problem is insufficient specialist equipment, i.e. proper refrigerated storage and containers, but it is also partly down to lack of training. The practitioners and the academicians are now aware of the importance of logistics and supply chain; however the field is still under penetrated as far as research is concerned. It is essential to prioritize research and development so that the weaknesses in the industry can be taken care of and improved.

Solutions to some of the challenges

Infrastructure is the backbone of every country's growth and prosperity and for the logistics industry to flourish special emphasis has to be on building world-class road networks, integrated rail corridors, modern cargo facilities at airports and creation of logistics parks which need to be given a status equivalent to Special Economic Zones.

It is necessary to realize that the benefits which can bestly be practiced in logistics industry can be brought about by the companies by establishing training intuitions, so that there is improvement in the overall service quality of the sector. Good storage and Warehousing facilities are important for the

growth of the logistics industry. With the increase in the transportation of perishable products, the logistics agencies need to give a lot of importance to enhancing the Warehousing facilities.

Warehousing is required to go to the next level taking into account the changing dynamics of JIT manufacturing, global procurement and new models of sales and distribution. Emphasis on research and development is potent mainly because it encourages the use of indigenous technology which can make the industry cost competitive and can also bring about improvement in services thereby using better, effective and efficient services. Particular focus has to be on research in process excellence which can help to eliminate inefficiencies and bring Indian logistics on par with global practices.

Popular Read: Factors Influencing the Paradigm Shift in the Logistics Sector in India

Future prospects

The logistics firms are moving from a traditional setup to the integration of IT and technology to their operations to reduce the costs incurred as well as to meet the service demands. The growth of the Indian logistics sector depends upon its soft infrastructure like education, training and policy framework as much as the hard infrastructure.

To support India's fast paced economy growth of logistics industry is very essential. It is estimated that the Indian logistics industry will continue to show robust growth of 10-15% annually, leading the pace of growth of the economy at large.

The global economic outlook, indeed that of India is expected to significantly improve as India Inc begins to tackle the economic downturn. With a new government many policies are expected to be implemented which will give a fresh impetus to India's growth engine particularly in the corporate and SME sector which in turn will expand demand for the logistics sector.

With the implementation of GST, the logistics companies, which are currently forced to set up many small warehouses across multiple cities can set up just

a few, big warehouses region wise and can follow the hub-and-spoke model for freight movement from the warehouses to the different manufacturing plants, wholesale outlets, retail outlets and the various POS. This growth is backed by the boom in the e-commerce sector and expansionary policies of the FMCG firms.

This has increased the service geography of the logistics firms but they also have to meet the demands of quick delivery and tight service level agreements. The industry has moved from being just a service provider to the position which provides end to end supply chain solutions to their customers. Thus, all this has paved the way for further growth of Logistics and Warehousing industry in the coming years.

1.4 NEED FOR THE STUDY

Warehousing allows for timely delivery and optimized distribution, leading to increased labor productivity and greater customer satisfaction. It also helps reduce errors and damage in the order fulfillment process. Plus, it prevents your goods from getting lost or stolen during handling. The purpose of a warehouse operations management is to help ensure that goods and materials move through warehouses in the most efficient and cost-effective way. A WMS handles many functions that enable these movements, including inventory tracking, picking, receiving and putaway.

Through this study, the researcher tries to identify the key areas to be enhanced to improve the warehouse operations of Freighterix Cargo Solutions Pvt Ltd by engaging suppliers of Freighterix Cargo Solutions Pvt Ltd in evaluating it. This will help the management of Freighterix Cargo Solutions Pvt Ltd to improve the efficiency of inbound & outbound warehouse operations management and increase their business efficiency.

1.5 SCOPE OF THE STUDY

- The company can understand the problems which occur in the inbound and outbound process at Freighterix Cargo Solutions Pvt Ltd.
- The study on the inbound and outbound warehouse operations can be useful to increase the efficiency of the warehouse.
- Helps to find out the turnaround time taken in warehouse operations.

1.6 OBJECTIVES

PRIMARY OBJECTIVE

To study the effectiveness of inbound & outbound warehouse operations at Freighterix Cargo Solutions Pvt Ltd.

SECONDARY OBJECTIVES

- To analyze the overall Material Handling Equipment related decisions
- To assess the designing of layout, Process & Material Flow.
- To find out the problems faced in inbound warehouse process.
- To find out the problems faced in outbound warehouse process.
- To provide suitable suggestions to improve their overall warehouse operations.

1.7 LIMITATIONS OF THE STUDY:

The following are the limitations of this study:

1. The information provided by majority of the respondents could also be biased or inaccurate. No independent verification of the data was possible.
2. Non-availability of data collection from all the suppliers of Freighterix Cargo Solutions Pvt Ltd
3. The sample size is only 120 so the sample may not be truly representative of the total population
4. Reliability and accuracy of the analysis depends on the respondents' openness and trueness towards each question in the questionnaire.

CHAPTER 2:

REVIEW OF LITERATURE

CAMELIA BURJA; VASILE BURJA (2019) in the Journal “Annals of the University of Petrosani: Economics” says –“The warehouse represents an essential component for the assets of the enterprise and the economic analysis gives them special importance because their accurate management determines the achievement of the activity object and the financial results. The efficient management of warehouse requires ensuring an optimum level for them, which will guarantee the normal functioning of the activity with minimum warehouse expenses and funds which are immobilized. The paper presents an analysis model for warehouse management based on their rotation speed and the correlation with the sales volume illustrated in an adequate study. The highlighting of the influence factors on the efficient warehouse management ensures the useful information needed to justify managerial decisions, which will lead to a balanced financial position and to increased company performance”.

DILIP ROY ; DEBDIP KHAN (2020) in the Journal “International Journal Of Industrial Engineering Computations” says –“we address the optimization of an integrated line balancing process with workstation warehouse management. While doing so, we have studied the interconnection between line balancing and its conversion process. Almost each and every moderate to large manufacturing industry depends on a long and integrated supply chain, consisting of inbound logistic, conversion process and outbound logistic. In this sense an approach addresses a very general problem of integrated line balancing. Research works reported in the literature so far mainly deals with minimization of cost for inbound and outbound logistic subsystems. In most of the cases conversion process has been ignored. We suggest a generic approach for linking the balancing of the line of production in the conversion area with the customers’ rate of demand in the market and for configuring the related stock chambers. Thus, the main aim of this paper is to translate the underlying problem in the form of mixed nonlinear programming problem and design the optimum supply chain so that the total warehouse cost and the

cost of balancing loss of the conversion process is jointly minimized and ideal cycle time of the production process is determined along with ideal sizes of the stock chambers. A numerical example has been added to demonstrate the suitability of our approach”.

MICHALSKI GRZEGORZ (2018) in the Journal “Medjunarodni Problemi” says - “The basic financial purpose of the firm is maximization of its value. An warehouse management should also contribute to realization of this basic aim. Many current assets management models which we can find in the literature relating to financial management were constructed with the assumption of book profit maximization as basic aim. These models could lack what relates to another aim, i.e., maximization of enterprise value. This article presents the value based warehouse management model modification”.

ALEKSANDRA MARCIKIC ; BORIS RADOVANOV (2019) in the Journal “Perspectives Of Innovations, Economics And Business” says- “In this paper warehouse management is analyzed as an organic part of the supply chain managing process. In today’s competitive economic environment traditional warehouse policies should be improved. Simulation models enable a priori managing and analyzing variety of possible results and implication of selected warehouse policies. The model presented in this paper uses the Monte Carlo simulation method and variables taken as random, in order to depict a harmonization and integration of dynamic quantitative analysis and theoretical, qualitative concepts of warehouse management”.

JIANZHONG CHEN (2019) in the Journal “International Journal of Business and Management” says-“In order to meet the dynamic demand in the reality, recent researches on warehouse management issues have concentrated on the time-varying demand over a finite planning time horizon. In this paper, the genetic algorithm is used to construct a production-warehouse model (EPQ) with time-varying on both demand and production sides with shortages which are completely backlogged. The purpose of this paper is under the consideration of minimizing the average costs of warehouse, to determine the optimal number of production cycles should be planned in a finite planning time horizon and when to produce within each production cycle. Furthermore,

a numerical examination is made and some suggestions for using this algorithm to improve efficiency and effectiveness are also mentioned”

**JOHANNA SMAROS, JUHA-MATTI LEHTONEN, PATRIK APPDAVIST
AND JAN HOLMSTROM (2016)**

Information sharing practices such as vendor managed warehouse (VMI) give manufactures access to more accurate demand information. In this paper discrete-extent simulation is used to examine how a manufacturer can combile traditional order date available from non-customers with sales data available from VMI customers in its production and warehouse control and what impact is has on the manufacturer’s operational efficiency. The simulation models based on a real life. VMI implementation and user actual demand and product data marallo.

BRAGLIA. ANDREA GRASSI AND ROBER TO MONTANARI (2017):

Warehouse constraints, cost of cost production, safety and Environment objectives, strategies of maintenance adopted, logistics aspects of space parts classification is thus defined with respect to multiple attributes on Warehouse policy matrix is defined to link the different classes of spare parts with the possible warehouse management policies so as to identify the “best” control strategies for the spare stock.

BEN-DAYA MAND DUFFUAA.S.O (2017):

The relationship & interaction between maintenance production and Quality have been discussed one approach for linking and modeling the relationship between maintenance & Quality so that they can be jointly optimized. It is been on the idea that maintenance affects the failure pattern of the equipment and that should be modeled using the concept imperfect maintenance.

PETER HINES AND NICK RICH (2017):

This paper has outlined a new typology & decision making, process for the mapping of the value stream or supply chain. This general chose the most appropriate methods for the particular industry, people and type of problem that exist.

ALPERTO DE TONI, GUIDO NASSIM BENI, BTEFANO TONCLIA (2018):

It is a method for evaluating performance and for productive resource management. The soundness of the results depends on the reliability production in contexts where competitive drive from cost, time &Quality performance, performances that are heterogenic and not easily estimated.

GUNASEKARAN A MARRI H.B, YUSUF .YY (2020):

Conceptual model has been developed to provide frame work for the decision concerning the implementation of ABC system, ABC system trace more exactly of the real costs of the products than any other volume based cost systems. Therefore, more accurate overhead cost allocations lead to fewest distortions. However, a trade-off should occur between the economic benefits of an ABC and the costs of implementing it. The management should adopt an activity based management system and achieving their primary target, which is making profit.

Jon DeCesare * World Class Logistics Consulting, Inc. www.wclconsulting.com * has made a research on “problems on place of storehouse” it clearly reports about the 10 things we should know about the storehouse place decisions.

As corporations increasingly use their supply chain strategies to help gain a competitive advantage, we noticed a trend toward more in-depth storehouse place analysis. The traditional features analyzed, including transportation inbound and outbound costs, labor pool profiles, distance to major transportation nodes, proximity to major markets, community pro-commerce

assessments, specialized training, state and local incentives, and highway infrastructure are carefully analyzed in order to select the place that supports a company's commerce model and supply chain strategy. In our experience, labor seems to be one of the most misunderstood features.

Below are 10 things you should know about labor features in storehouse operations and vocational warehousing decisions

1] Labor tops the list

Area enlargement magazine conducts an annual manufacturing and storehouse/distribution operations vocational warehousing survey to determine how the vocational warehousing components rank in level of significance. The 2008 survey confirmed that labor costs and availability of skilled labor are in the top 10 most important vocational features

2] It's not your fathers' storehouse- more associates need of workers inside the "four-walls" of a 250,000-sq-ft storehouse would total 12 to 15 today, storehouse are frequently referred to as "customization-centers" and/or "mini-manufacturing operations." Their focus is to prepare floor-ready merchandise so retail store associate don't have to spend valuable time in back rooms preparing manufactured goods for shelves rather than assisting clients. It is not uncommon today to find a 250,000-sq-ft storehouse operating with 0 to 75 workers performing value-added services.

3] Evolution of Automated, high-tech storehouse operations.

Storehouse tenants continue to focus on improving supply chain velocity and quality of client services while reducing supply chain costs. In many cases, cooperation's to achieve these objectives. For ex. Walgreen's 700,000-square-foot facility in Parries, Calif., has more than \$100 million invested in automation and equipment within the "four walls". A quality trainable work force is essential in order for Walgreen's to achieve a good return on its investment.

4] Mass retailer's vendor [storehouse tenants] compliance rules.

There is good news and some challenging news when mass retailer select vendors. The mass retailer's problems a vendor's compliance books [see example blow] that vendors are expected to know and follow. Violations of a chargeback item can result in costly deductions from a vendor's invoice. If storehouses do not have access to a good, low-turnover, trainable work force in the area, the cost impact can be significant.

5) An Area's specialized training.

Economic enlargement agencies in cooperation with local community colleges have established specialized training programs for storehouse workers so local storehouse operators can find good workers. This can provide a key advantage in one place competing with another.

6) Rooftops can be too close.

We frequently we hear supply chain executives say, "In order to be in my comfort zone I want to be able to see the rooftops of where my potential storehouse labor force lives from my storehouse place." Today, we are seeing increasing situations nationwide where residential enlargements located adjacent to industrial parks are pressuring local politicians to place serious operating moratoriums on storehouse and truck operations.

7) Agricultural Labor Shed Leads To Exceptional Storehouse Workers.

Numerous demographic studies have confirmed that an area with a good size agricultural labor shed provides excellent, loyal, hard-working workers for a storehouse operation. For example, a large retailer's regional distribution center located in the central Valley of California consistently wins the company's storehouse network annual challenges as the most manufactured goodive and highest quality storehouse operations in the U.S

8) Amenities.

We have conducted more than 75 storehouse place operations studies across the U.S. and have found a majority of operations executives are putting a higher level of significance on an area with good amenities (public transportation to/from the places, nearby restaurants, etc.) for storehouse workers.

9) Storehouse Operations Challenges.

As part of WCL Consulting storehouse place studies, we frequently interview current storehouse operations workers in an area. Over the last six to seven years, a consistent pattern has emerged: the most important challenges including labor quality, including skill levels and labor turnover.

10) Enlargeing a More Compelling Storehouse site place story.

Demographic studies range from very detailed or high-level overviews. It is recommended that industrial real estate enlargeers/landlords provide some level of demographic information that will help communicate a more compelling story of why their place is better than competitors. Labor will continue to play a critical role in successful storehouse place selection and operation decisions. It pays to do one's homework. Corporations cannot rest on a "build-it-and-they-will-come" model.

CHAPTER 3:

RESEARCH 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 Research design used in the study is descriptive research design

3.1 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.

3.2 SAMPLE SIZE

It refers to the number of elements of the population to sample. The sample size chosen for the survey is 120 suppliers of Freighterix Cargo Solutions Pvt Ltd.

3.3 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

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.

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.

3.4 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

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.

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.

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.

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.

3.5 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.

1. Non-probability sampling

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

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. Some have suggested the possibility of a shift in the paradigm and traditional approach to statistics. However, data from non-probability sources have a few challenges with respect to data quality, including the potential presence of participation and selection bias.

3.6 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. This can be due to geographical proximity, availability at a given time, or willingness to participate in the research. Sometimes called accidental sampling, convenience sampling is a type of non-random sampling

3.7 SAMPLE FRAME:

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

3.8 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.

3.9 ANALYTICAL TOOLS

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 1900. The quantity χ^2 describes the magnitude of the discrepancy between theory and observation. It is calculated using:

$$\chi^2 = \sum [(O_i - E_i)^2 / E_i] \text{ with } (n - 1) \text{ degrees of freedom.}$$
 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.

ONE WAY ANOVA

The ANOVA tests the null hypothesis that samples in two or more groups are drawn from populations with the same mean values. To do this, two estimates are made of the population variance. The ANOVA produces an F-statistic, the ratio of the variance calculated among the means to the variance within the samples. If the group means are drawn from populations with the same mean values, the variance between the group means should be lower than the variance of the samples, following the central limit theorem. A higher ratio therefore implies that the samples were drawn from populations with different mean values.

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.

$$\text{Percentage} = (\text{no of employees} / \text{total no of employees}) 100$$

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:

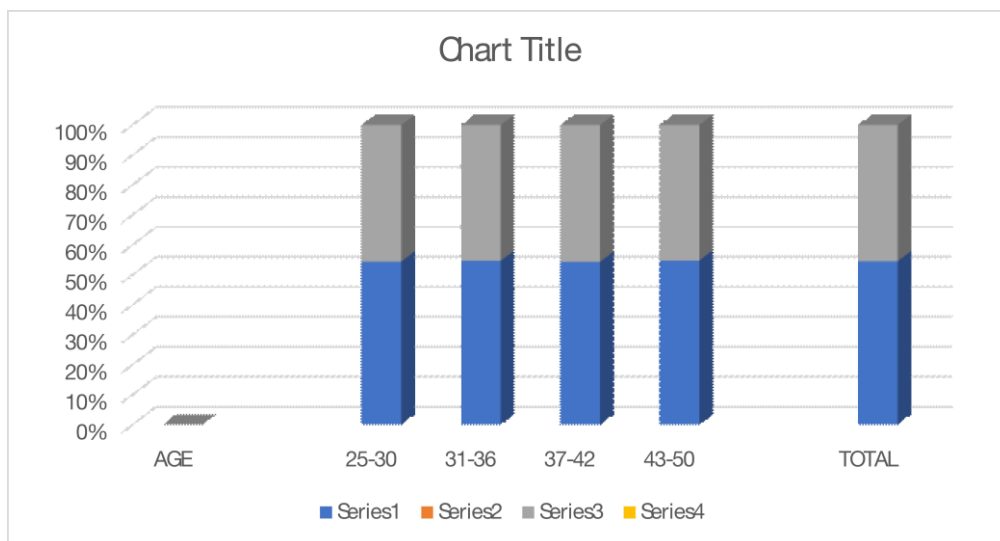
The bar chart is commonly used for presentation of qualitative data. The data can be continuous or discrete data, which are plotted against discrete data intervals. The vertical bar diagram, also called bar chart where the length or height of bars represent the numerical value of the event or measurement.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

CHAPTER 4: DATA ANALYSIS AND INTERPRETATION

TABLE 4.1: TABLE SHOWING THE AGE OF RESPONDENTS

AGE	NO OF RESPONDENT	PERCENTAGE
25-30	37	31
31-36	35	29
37-42	25	21
43-50	23	19
TOTAL	120	100

CHART 4.1: TABLE SHOWING THE AGE OF RESPONDENTS



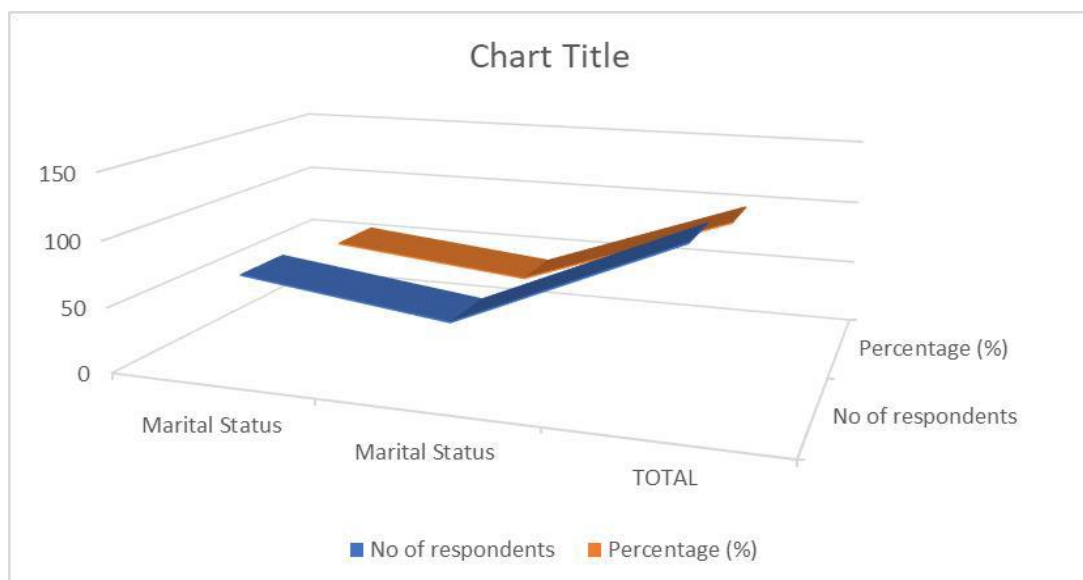
INFERENCE :

From the above chart, it is inferred that out of 120 respondents, 31% of the respondents are between the age of 25 - 30, 29% are between the age of 31 – 36, 21% are between the age of 37 - 42 and the 19% are above 45. Majority of the respondents (i.e.,) 31% of the respondents are between the age of 25 - 30.

TABLE 4.2 SHOWING THE MARITAL STATUS OF RESPONDENTS

Marital Status	No of respondents	Percentage (%)
Marital Status	70	58
Marital Status	50	42
TOTAL	120	100

CHART 4.2: CHART SHOWING THE MARITAL STATUS OF RESPONDENTS.



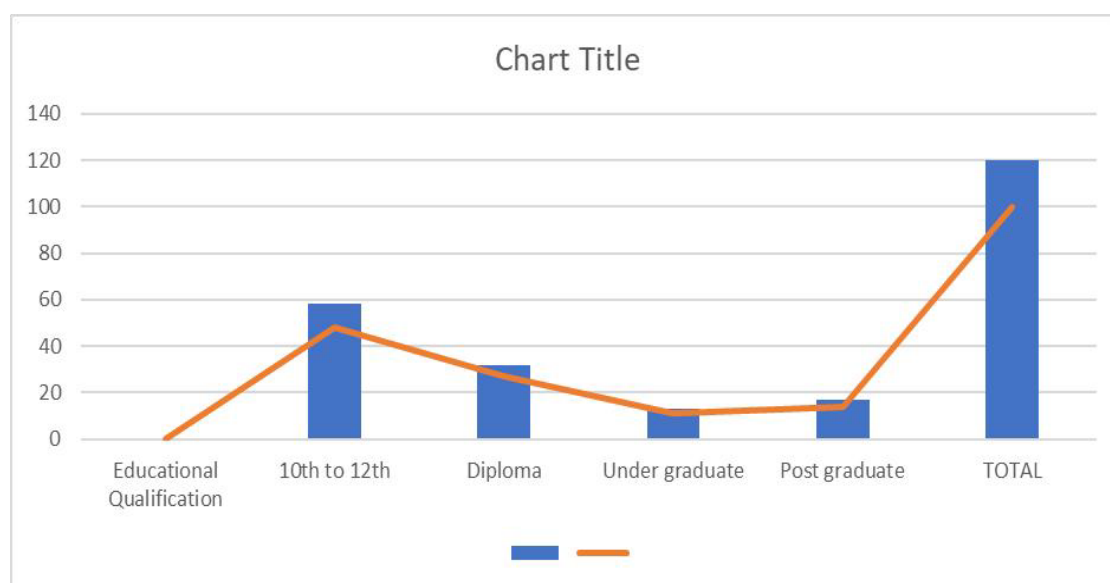
INFERENCE:

From the above chart, it is inferred that out of 120 respondents, 58% of the respondents are married and 42% are unmarried. Majority of the respondents 58% of the respondents are married.

TABLE 4.3: TABLE SHOWING THE EDUCATIONAL QUALIFICATION

Educational Qualification	No of respondents	Percentage (%)
10th to 12th	58	48
Diploma	32	27
Under graduate	13	11
Post graduate	17	14
TOTAL	120	100

CHART 4.3: TABLE SHOWING THE EDUCATIONAL QUALIFICATION



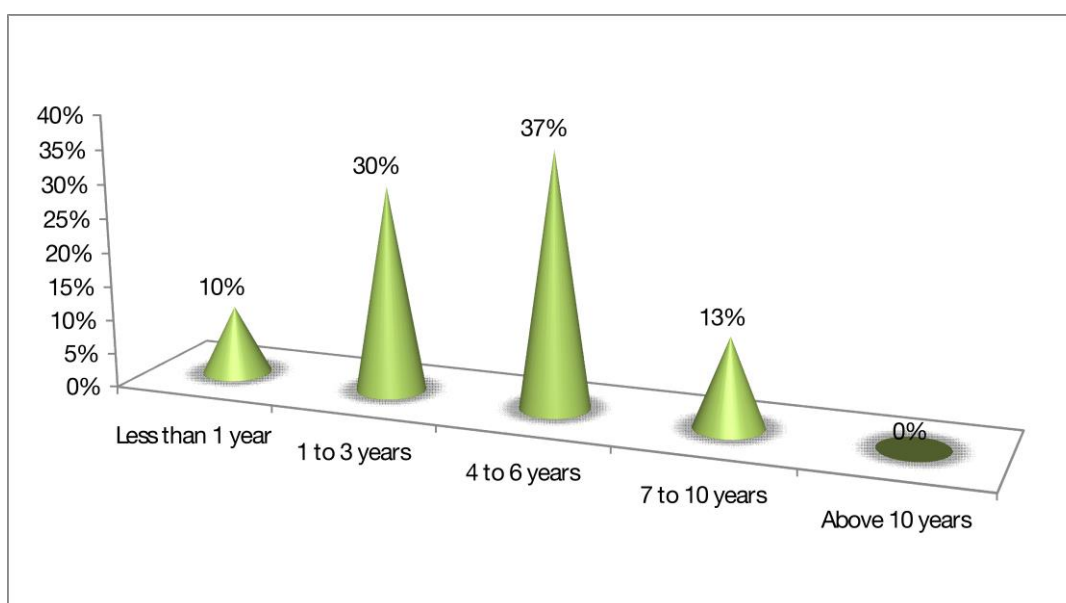
INFERENCE

From the above chart, it is inferred that out of 120 respondents, 48% of the respondents have 10th to 12th, 27% have Diploma, 11% have Under graduate and 14% have Post graduate. Majority of the respondents (48%) of the respondents are of 10th to 12th.

TABLE 4.4: EXPERIENCE IN YOUR ORGANIZATION (IN YEARS)

PARTICULARS	FREQUENCY	PERCENTAGE
Less than 1 year	15	13
1 to 3 years	40	33
4 to 6 years	47	39
7 to 10 years	18	15
Above 10 years	0	0
TOTAL	120	100

CHART 4.4: EXPERIENCE IN YOUR ORGANIZATION (IN YEARS)



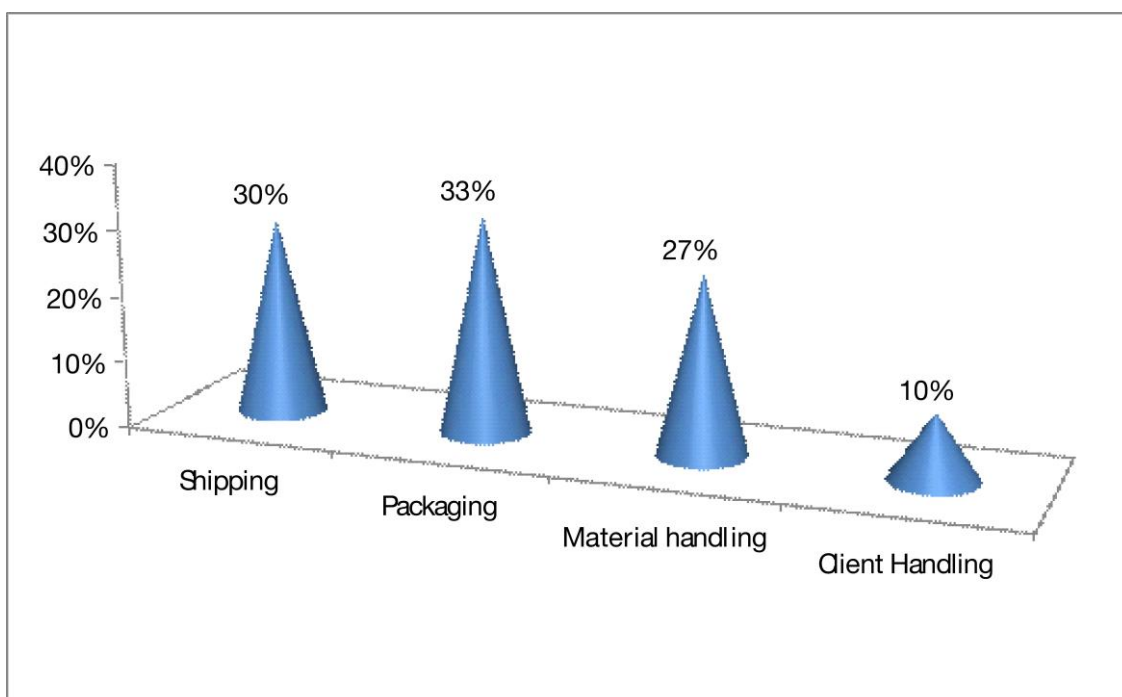
INFERENCE:

From the above table, it can be inferred that 37% of the respondents are working for 4 to 6 years in this organization and 30% of the respondent's organization are working for 1 to 3 years in this organization. Therefore most of the respondents are working for 4 to 6 years in this organization.

TABLE 4.5: WORKING SEGMENT

PARTICULARS	FREQUENCY	PERCENTAGE
Shipping	36	30
Packaging	40	33
Material handling	32	27
Client Handling	12	10
TOTAL	120	100

CHART 4.5: WORKING SEGMENT



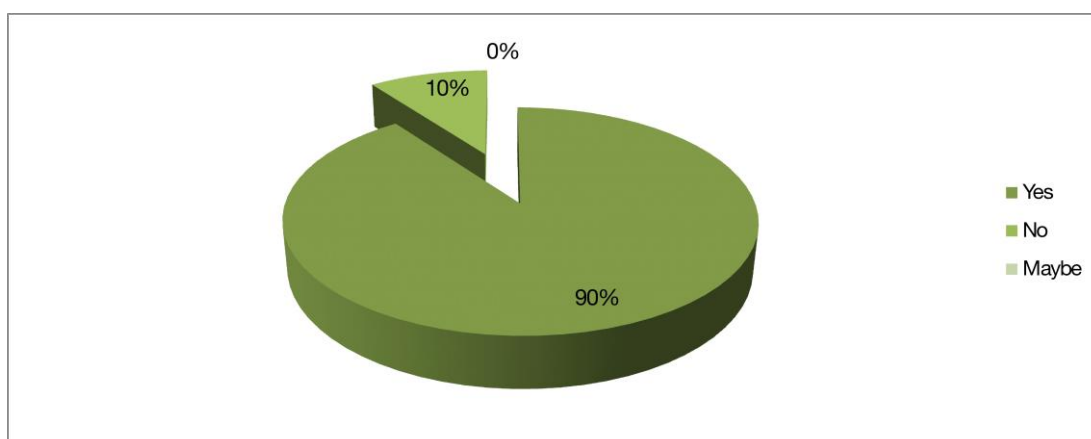
INFERENCE

From the above table, it can be inferred that 33% of the respondents belong to Packaging segment and 30% of the respondents belong to Shipping segment. Therefore most of the respondents belong to Packaging segment.

TABLE 4.6: COMPLETE PHYSICAL INVENTORY (BY COUNT) AT LEAST ANNUALLY

PARTICULARS	FREQUENCY	PERCENTAGE
Yes	108	90
No	12	10
Maybe	0	0
TOTAL	120	100

CHART 4.6: COMPLETE PHYSICAL INVENTORY (BY COUNT) AT LEAST ANNUALLY



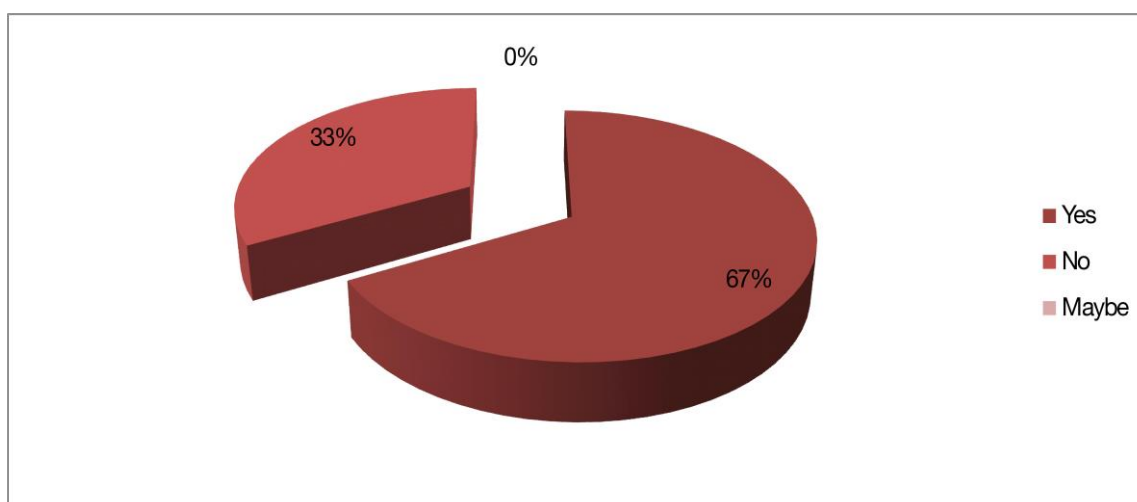
INFERENCE

From the above table, it can be inferred that 90% of the respondents say that their company takes complete physical inventory (by count) at least annually and 10% of the respondents say that their company does not take complete physical inventory (by count) at least annually. Therefore most of the respondents say that their company takes complete physical inventory (by count) at least annually.

TABLE 4.7: FIRM USE ITS OWN TRUCKS TO TRANSPORT GOODS TO AND FROM THE WAREHOUSE

PARTICULARS	FREQUENCY	PERCENTAGE
Yes	80	67
No	40	33
Maybe	0	0
TOTAL	120	100

CHART 4.7: FIRM USE ITS OWN TRUCKS TO TRANSPORT GOODS TO AND FROM THE WAREHOUSE

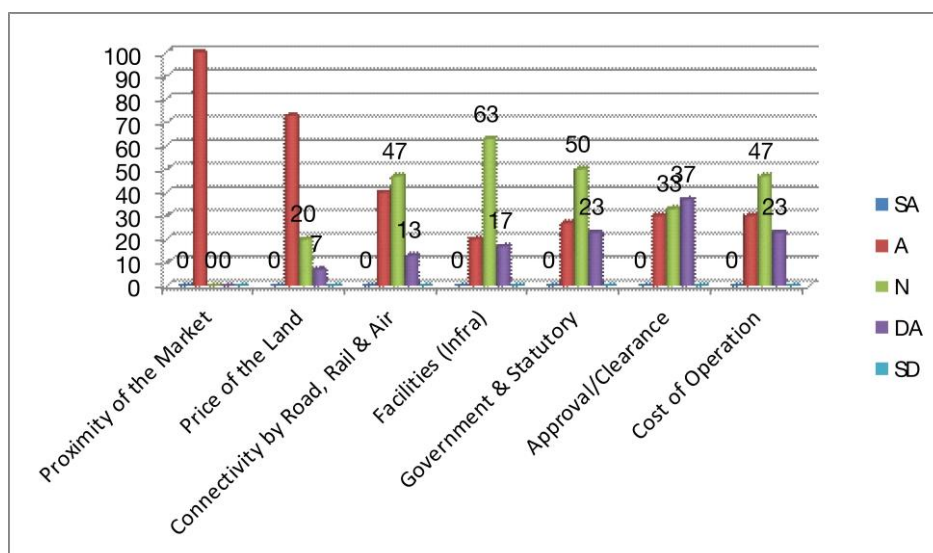


INFERENCE

From the above table, it can be inferred that 67% of the respondents say that their firm uses its own trucks to transport goods to and from the warehouse and 33% of the respondents say that their firm does not use its own trucks to transport goods to and from the warehouse. Therefore most of the respondents say that their firm uses its own trucks to transport goods to and from the warehouse.

TABLE 4.8: RATE THE LOCATION SELECTION FACTOR

S. No.	PARTICULARS	SA	%	A	%	N	%	DA	%	SD	%	TOTAL
1	Proximity of the Market	0	0	120	100	0	0	0	0	0	0	120
2	Price of the Land	0	0	88	73	24	20	8	7	0	0	120
3	Connectivity by Road, Rail & Air	0	0	48	40	56	47	16	13	0	0	120
4	Facilities (Infra)	0	0	24	20	76	63	20	17	0	0	120
5	Government & Statutory	0	0	32	27	60	50	28	23	0	0	120
6	Approval/Clearance	0	0	36	30	40	33	44	37	0	0	120
7	Cost of Operation	0	0	36	30	56	47	28	23	0	0	120

CHART 4.8: RATE THE LOCATION SELECTION FACTOR

INFERENCE

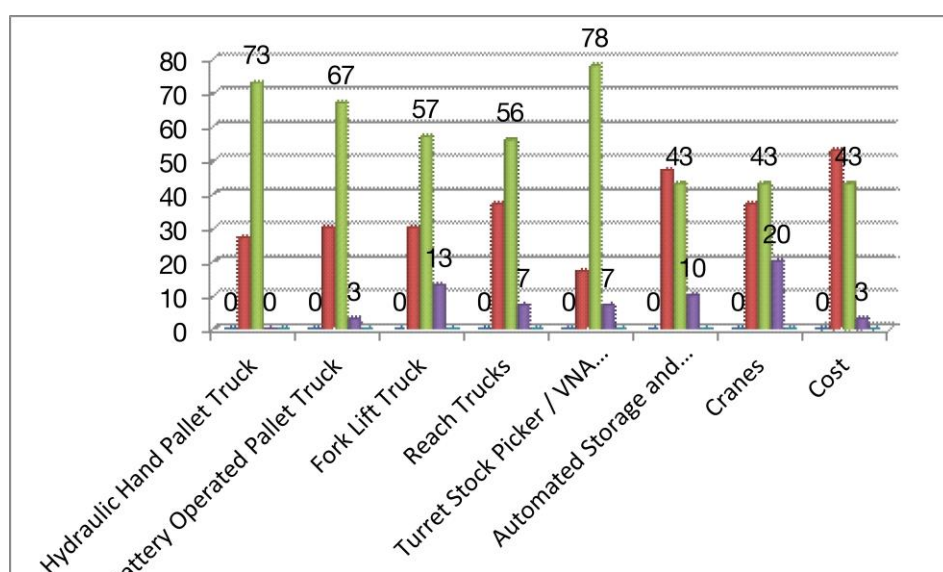
From the above table, it can be inferred that

- 100% of the respondents agree that proximity of the market as the major location selection factor.
- 73% of the respondents agree that price of the land as the major location selection factor.
- 47 % of the respondents neither agree nor disagree that Connectivity by Road, Rail & Air as the major location selection factor.
- 63% of the respondents neither agree nor disagree that Facilities (Infra) as the major location selection factor.
- 50% of the respondents neither agree nor disagree that Government & Statutory as the major location selection factor.
- 37% of the respondents disagree that Approval/Clearance as the major location selection factor.
- 47% of the respondents neither agree nor disagree that Cost of Operation as the major location selection factor.

TABLE 4.9: RATE THE BASIC EQUIPMENT REQUIRED IN DESIGNING THE MATERIAL HANDLING EQUIPMENT

S. No.	PARTICULARS	SA	%	A	%	N	%	DA	%	SD	%	TOTAL
1	Hydraulic Hand Pallet Truck	0	0	32	27	88	73	0	0	0	0	120
2	Battery Operated Pallet Truck	0	0	36	30	80	67	4	3	0	0	120
3	Fork Lift Truck	0	0	36	30	68	57	16	13	0	0	120
4	Reach Trucks	0	0	44	37	68	56	8	7	0	0	120
5	Turret Stock Picker / VNA Reach Truck	0	0	20	17	92	78	8	7	0	0	120
6	Automated Storage and Retrieval System	0	0	56	47	52	43	12	10	0	0	120
7	Cranes	0	0	44	37	52	43	24	20	0	0	120
8	Cost	0	0	64	53	52	43	4	3	0	0	120

CHART 4.9: RATE THE BASIC EQUIPMENT REQUIRED IN DESIGNING THE MATERIAL HANDLING EQUIPMENT



INFERENCE

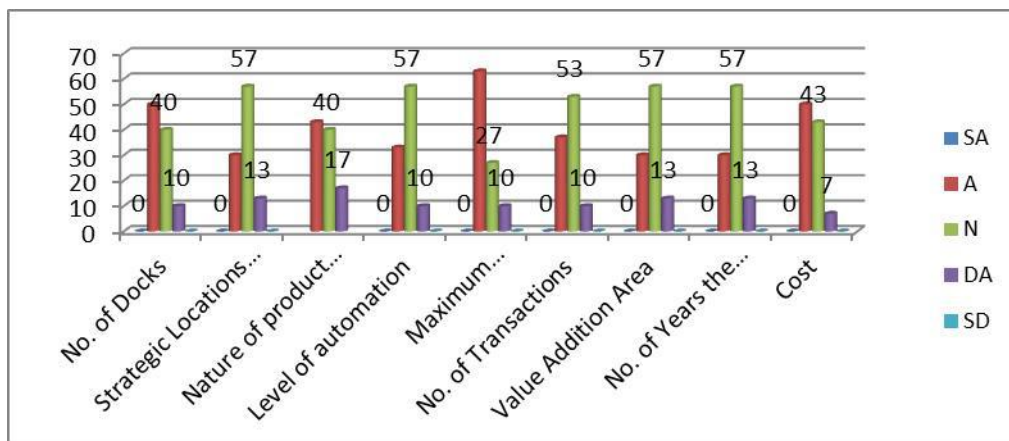
From the above table, it can be inferred that

- 73% of the respondents neither agree nor disagree that Hydraulic Hand Pallet Truck as the basic equipment required in designing the material handling equipment.
- 67% of the respondents neither agree nor disagree that Battery Operated Pallet Truck as the basic equipment required in designing the material handling equipment.
- 57 % of the respondents neither agree nor disagree that Fork Lift Truck as the basic equipment required in designing the material handling equipment.
- 56% of the respondents neither agree nor disagree that Reach Trucks as the basic equipment required in designing the material handling equipment.
- 78% of the respondents neither agree nor disagree that Turret Stock Picker / VNA Reach Truck as the basic equipment required in designing the material handling equipment.
- 47% of the respondents agree that Automated Storage and Retrieval System as the basic equipment required in designing the material handling equipment.
- 43% of the respondents neither agree nor disagree that Cranes as the basic equipment required in designing the material handling equipment.
- 53% of the respondents agree that Cost as the basic equipment required in designing the material handling equipment.

TABLE 4.10: RATE THE PROCESS & MATERIAL FLOW FACTORS WHILE DESIGNING THE LAYOUT

S. No.	PARTICULARS	SA	%	A	%	N	%	DA	%	SD	%	TOTAL
1	No. of Docks	0	0	60	50	48	40	12	10	0	0	120
2	Strategic Locations (ABC - Classification)	0	0	36	30	68	57	16	13	0	0	120
3	Nature of product Stored	0	0	52	43	48	40	20	17	0	0	120
4	Level of automation	0	0	40	33	68	57	12	10	0	0	120
5	Maximum Utilization of the space	0	0	76	63	32	27	12	10	0	0	120
6	No. of Transactions	0	0	44	37	64	53	12	10	0	0	120
7	Value Addition Area	0	0	36	30	68	57	16	13	0	0	120
8	No. of Years the facility is designed for	0	0	36	30	68	57	16	13	0	0	120
9	Cost	0	0	60	50	52	43	8	7	0	0	120

CHART 4.10: RATE THE PROCESS & MATERIAL FLOW FACTORS WHILE DESIGNING THE LAYOUT



INFERENCE

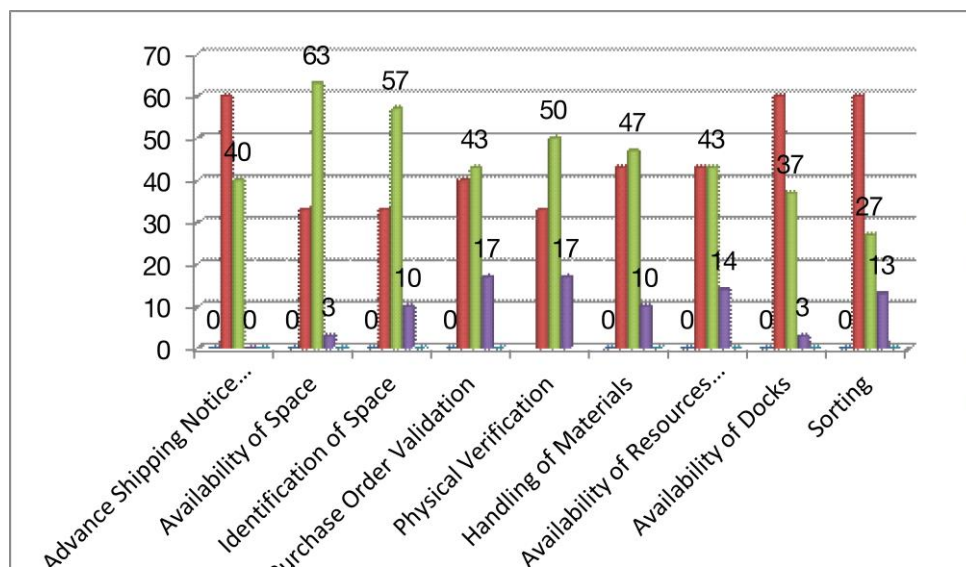
From the above table, it can be inferred that

- 50% of the respondents agree that No. of Docks as the major process & material flow factor while designing the layout.
- 57% of the respondents neither agree nor disagree that Strategic Locations (ABC - Classification) as the major process & material flow factor while designing the layout.
- 43% of the respondents agree that Nature of product Stored as the major process & material flow factor while designing the layout.
- 57% of the respondents neither agree nor disagree that Level of automation as the major process & material flow factor while designing the layout.
- 63% of the respondents agree that Maximum Utilization of the space as the major process & material flow factor while designing the layout.
- 53 % of the respondents neither agree nor disagree that No. of Transactions as the major process & material flow factor while designing the layout.
- 57% of the respondents neither agree nor disagree that Value Addition Area as the major process & material flow factor while designing the layout.
- 57% of the respondents neither agree nor disagree that No. of Years the facility is designed for as the major process & material flow factor while designing the layout.
- 50% of the respondents agree that Cost as the major process & material flow factor while designing the layout.

TABLE 4.11: RATE THE NECESSARY FACILITIES / FACTORS

S. No.	PARTICULARS	SR	%	R	%	N	%	NR	%	SNR	%	TOTAL
1	Advance Shipping Notice (Queuing System)	0	0	72	60	48	40	0	0	0	0	120
2	Availability of Space	0	0	40	33	76	63	4	3	0	0	120
3	Identification of Space	0	0	40	33	68	57	12	10	0	0	120
4	Purchase Order Validation	0	0	48	40	52	43	20	17	0	0	120
5	Physical Verification	0	0	40	33	60	50	20	17	0	0	120
6	Handling of Materials	0	0	52	43	56	47	12	10	0	0	120
7	Availability of Resources (Labor / Material Handling Equipment)	0	0	52	43	52	43	16	14	0	0	120
8	Availability of Docks	0	0	72	60	44	37	4	3	0	0	120
9	Sorting	0	0	72	60	32	27	16	13	0	0	120

TABLE 4.11: RATE THE NECESSARY FACILITIES / FACTORS



INFERENCE

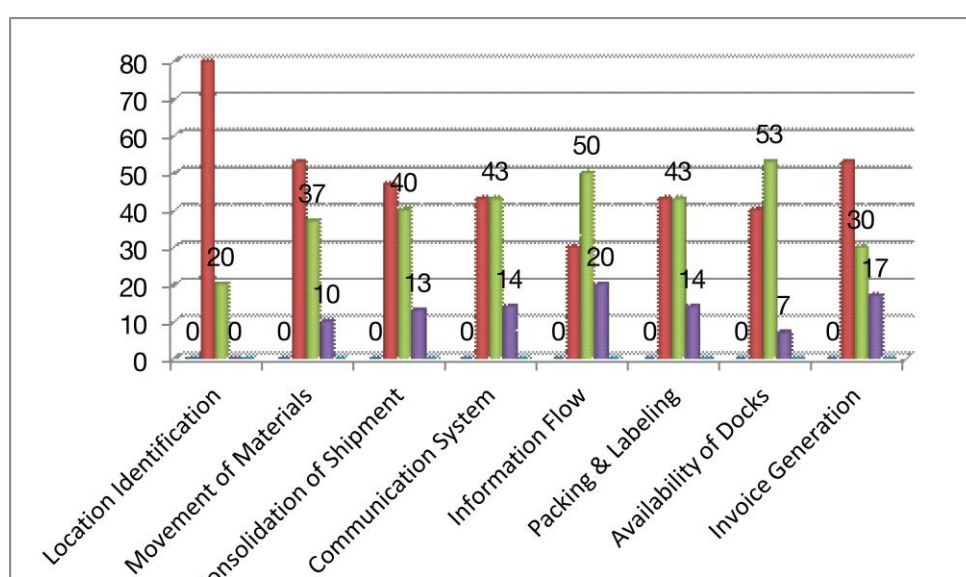
From the above table, it can be inferred that

- 60% of the respondents say that Advance Shipping Notice (Queuing System) is a required facility / factor.
- 63% of the respondents say that Availability of Space is neither required nor not required facility / factor.
- 57% of the respondents say that Identification of Space is neither required nor not required facility / factor.
- 43% of the respondents say that Purchase Order Validation is neither required nor not required facility / factor.
- 50% of the respondents say that Physical Verification is neither required nor not required facility / factor.
- 47% of the respondents say that Handling of Materials is neither required nor not required facility / factor.
- 43% of the respondents say that Availability of Resources (Labor / Material Handling Equipment) is a required facility / factor.
- 60% of the respondents say that Availability of Docks is a required facility / factor.
- 60% of the respondents say that Sorting is a required facility / factor.

TABLE 4.12: RATE THE FACILITIES / FACTORS THAT YOU FEEL ARE NECESSARY IN RETRIEVAL / DESPATCHES

S. No.	PARTICULARS	SR	%	R	%	N	%	NR	%	SNR	%	TOTAL
1	Location Identification	0	0	96	80	24	20	0	0	0	0	120
2	Movement of Materials	0	0	64	53	44	37	12	10	0	0	120
3	Consolidation of Shipment	0	0	56	47	48	40	16	13	0	0	120
4	Communication System	0	0	52	43	52	43	16	14	0	0	120
5	Information Flow	0	0	36	30	60	50	24	20	0	0	120
6	Packing & Labeling	0	0	52	43	52	43	16	14	0	0	120
7	Availability of Docks	0	0	48	40	64	53	8	7	0	0	120
8	Invoice Generation	0	0	64	53	36	30	20	17	0	0	120

CHART 4.12: RATE THE FACILITIES / FACTORS THAT YOU FEEL ARE NECESSARY IN RETRIEVAL / DESPATCHES



INFERENCE

From the above table, it can be inferred that

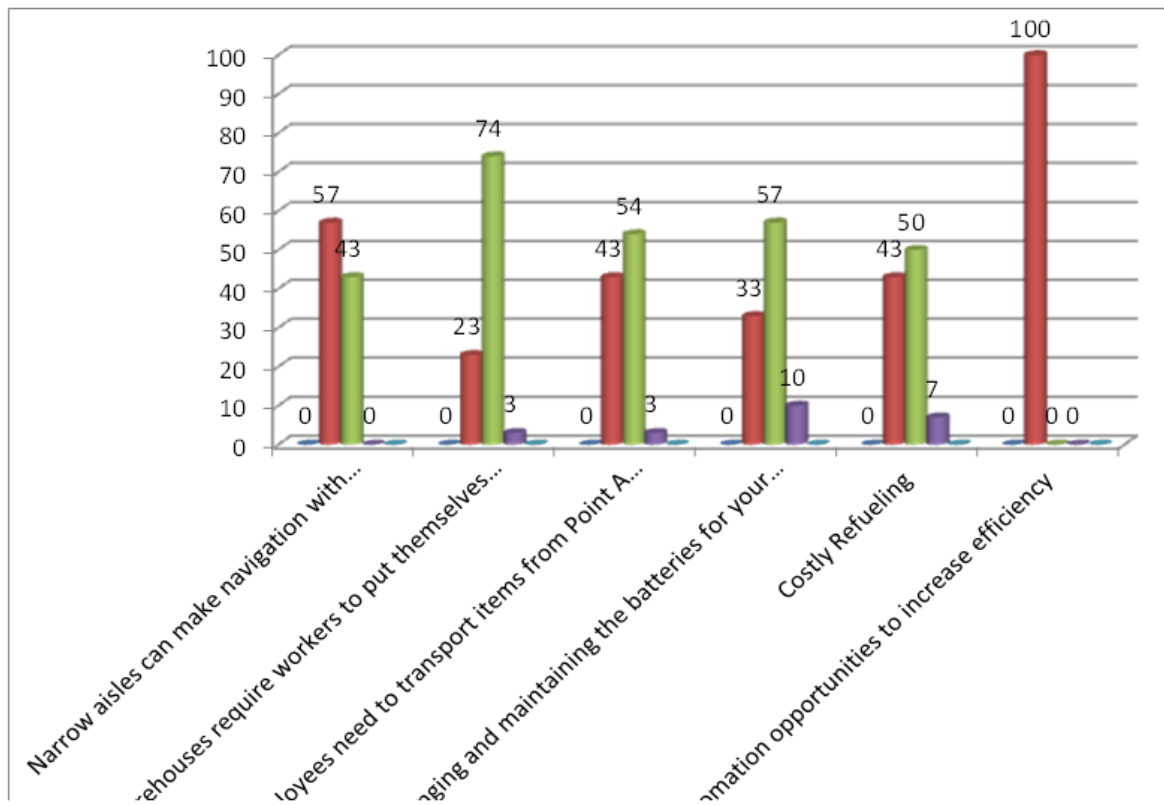
- 80% of the respondents say that Location Identification is required as the necessary facilities / factors in retrieval / despatches.
- 53% of the respondents say that Movement of Materials is required as the necessary facilities / factors in retrieval / despatches.
- 47% of the respondents say that Consolidation of Shipment is required as the necessary facilities / factors in retrieval / despatches.
- 43% of the respondents say that Communication System is required as the necessary facilities / factors in retrieval / despatches.
- 50% of the respondents say that Information Flow is neither required nor not required facility / factor in retrieval / despatches.
- 43% of the respondents say that Packing & Labeling is required as the necessary facilities / factors in retrieval / despatches.
- 53% of the respondents say that Availability of Docks is neither required nor not required facility / factor in retrieval / despatches.
- 53% of the respondents say that Invoice Generation is required as the necessary facilities / factors in retrieval / despatches.

TABLE 4.13: MAJOR WAREHOUSE INBOUND PROBLEMS

S. No.	PARTICULARS	SA	%	A	%	N	%	DA	%	SD	%	TOTAL
1.	Narrow aisles can make navigation with equipment hard, and can potentially slow down operations	0	0	68	57	52	43	0	0	0	0	120
2.	Warehouses require workers to put themselves in high-elevation situations, creating a need for stable, portable work platforms	0	0	28	23	88	74	4	3	0	0	120
3.	Employees need to transport items from Point A to Point B, which takes up valuable time that could be spent on other tasks	0	0	52	43	64	54	4	3	0	0	120
4.	Changing and maintaining the batteries for your electric forklifts and other materials handling	0	0	40	33	68	57	12	10	0	0	120

	equipment is becoming a pain											
5.	Costly Refueling	0	0	52	43	60	50	8	7	0	0	120
6	Automation opportunities to increase efficiency	0	0	12	10					0	0	120
				0	0	0	0	0	0			

CHART 4.13: MAJOR WAREHOUSE INBOUND PROBLEMS



INFERENCE

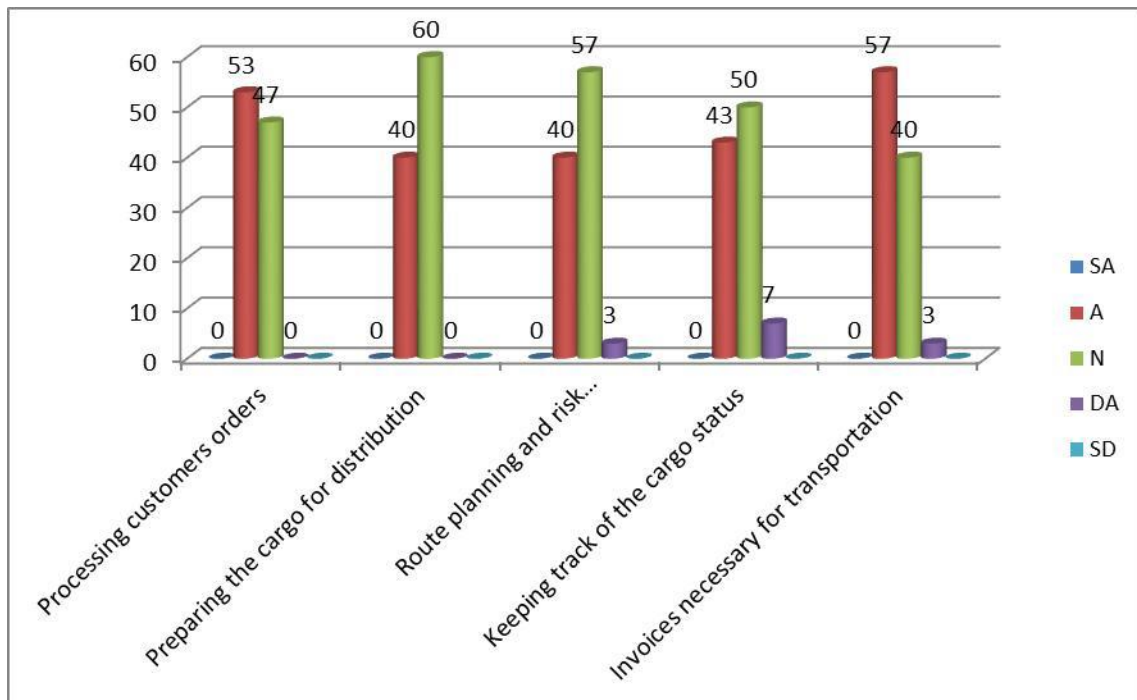
From the above table, it can be inferred that

- 57% of the respondents agree that narrow aisles can make navigation with equipment hard, and can potentially slow down operations as the major warehouse inbound problem.
- 74% of the respondents neither agree nor disagree that Warehouses require workers to put themselves in high-elevation situations, creating a need for stable, portable work platforms as the major warehouse inbound problem.
- 54 % of the respondents neither agree nor disagree that Employees need to transport items from Point A to Point B, which takes up valuable time that could be spent on other tasks as the major warehouse inbound problem.
- 57% of the respondents neither agree nor disagree that Changing and maintaining the batteries for your electric forklifts and other materials handling equipment is becoming a pain as the major warehouse inbound problem.
- 50% of the respondents neither agree nor disagree that Costly Refueling as the major warehouse inbound problem.
- 100% of the respondents agree that Automation opportunities to increase efficiency as the major warehouse inbound problem.

TABLE 4.14: MAJOR WAREHOUSE OUTBOUND PROBLEMS

S. No.	PARTICULARS	SA	%	A	%	N	%	DA	%	SD	%	TOTAL
1.	Processing customers orders	0	0	64	53	56	47	0	0	0	0	120
2.	Preparing the cargo for distribution	0	0	48	40	72	60	0	0	0	0	120
3.	Route planning and risk management strategies	0	0	48	40	68	57	4	3	0	0	120
4.	Keeping track of the cargo status	0	0	52	43	60	50	8	7	0	0	120
5.	Invoices necessary for transportation	0	0	68	57	48	40	4	3	0	0	120

CHART 4.14: MAJOR WAREHOUSE OUTBOUND PROBLEMS



INFERENCE

From the above table, it can be inferred that

- 53% of the respondents agree that processing customers orders as the major warehouse outbound problem.
- 60% of the respondents neither agree nor disagree that Preparing the cargo for distribution as the major warehouse outbound problem.
- 57 % of the respondents neither agree nor disagree that Route planning and risk management strategies as the major warehouse outbound problem.
- 50% of the respondents neither agree nor disagree that Keeping track of the cargo status as the major warehouse outbound problem.
- 57% of the respondents agree that Invoices necessary for transportation as the major warehouse outbound problem.

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 the working segment and Connectivity by Road, Rail & Air as location selection factor.

Alternate hypothesis (H1):

There is relationship between the working segment and Connectivity by Road, Rail & Air as location selection factor.

Case Processing Summary

	Cases					
	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
working segment * Connectivity by Road, Rail & Air as location selection factor	120	100.0%	0	0.0%	120	100.0%

working segment * Connectivity by Road, Rail & Air as location selection factor Crosstabulation

		Connectivity by Road, Rail & Air as location selection factor			Total
		Agree	Neutral	Disagree	
working segment	Count	16	16	4	36
	% within working segment	44.4%	44.4%	11.1%	100.0%
	% within Shipping				
	Connectivity by Road, Rail & Air as location selection factor	33.3%	28.6%	25.0%	30.0%
	% of Total	13.3%	13.3%	3.3%	30.0%
	Count	20	16	4	40
	% within working segment	50.0%	40.0%	10.0%	100.0%
	% within Packaging				
	Connectivity by Road, Rail & Air as location selection factor	41.7%	28.6%	25.0%	33.3%
	% of Total	16.7%	13.3%	3.3%	33.3%
	Count	8	20	4	32
	% within working segment	25.0%	62.5%	12.5%	100.0%
	% within Material handling				

Total	Client Handling	% within Connectivity by Road, Rail & Air as location selection factor	16.7 %	35.7 %	25.0%	26.7%
		% of Total	6.7%	16.7 %	3.3%	26.7%
		Count	4	4	4	12
		% within working segment	33.3 %	33.3 %	33.3%	100.0%
		% within Connectivity by Road, Rail & Air as location selection factor	8.3%	7.1%	25.0%	10.0%
		% of Total	3.3%	3.3%	3.3%	10.0%
		Count	48	56	16	120
		% within working segment	40.0 %	46.7 %	13.3%	100.0%
		% within Connectivity by Road, Rail & Air as location selection factor	100.0 %	100.0 %	100.0%	100.0%
		% of Total	40.0 %	46.7 %	13.3%	100.0%

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	2.447 ^a	6	.874
Likelihood Ratio	2.218	6	.899
Linear-by-Linear Association	.825	1	.364
N of Valid Cases	120		

a. 12 cells (100.0%) have expected count less than 5.

The minimum expected count is .40.

Degree of Freedom= $(4-1) * (5-1)$

$$= 3 * 4 = 12$$

Calculated value = 2.447

Tabulated value = 21.026

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

$$Z = 2.447 < 21.026$$

Hence, the null hypothesis [H₀] is accepted

INFERENCE: Since the calculated value is greater than the tabulated value, we accept the alternate hypothesis and hence there is no relationship between the working segment and Connectivity by Road, Rail & Air as location selection factor.

ONE-WAY ANOVA CLASSIFICATION

Null hypothesis (Ho):

There is a significance difference between age of their organization and Cost as the basic equipment required in designing the material handling equipment.

Alternate hypothesis (H1):

There is no significance difference between age of their organization and Cost as the basic equipment required in designing the material handling

Descriptives

age of their organization

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
Agree	64	2.69	.873	.218	2.22	3.15	1	4
Neutral	52	2.00	.913	.253	1.45	2.55	1	3
Disagree	4	4.00	.	.	.	.	4	4
Total	120	2.43	.971	.177	2.07	2.80	1	4

equipment.

Test of Homogeneity of Variances

age of their organization

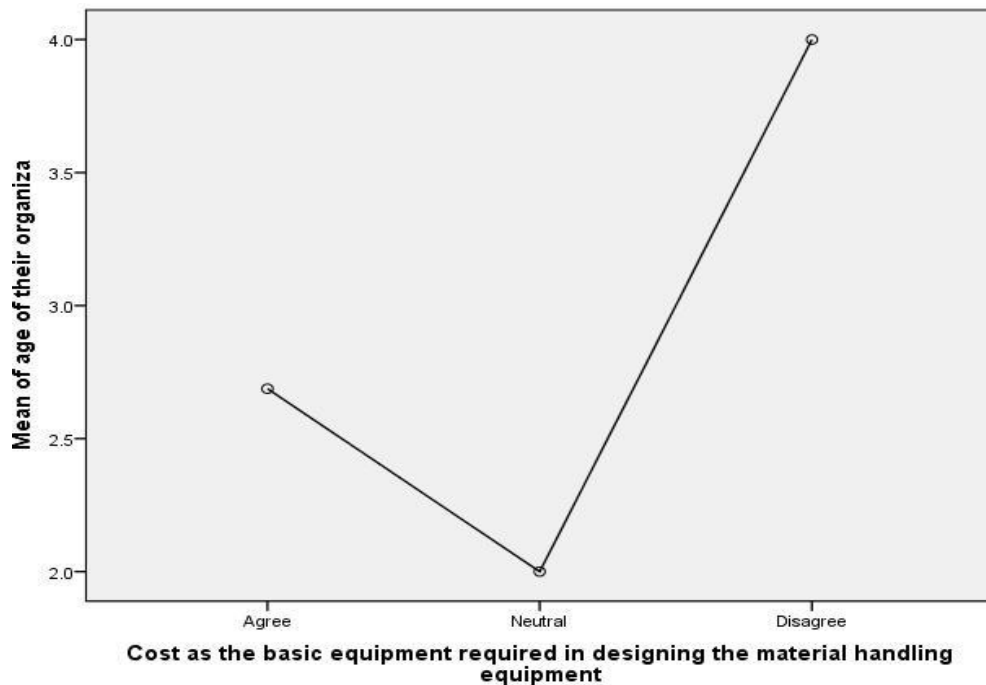
Levene Statistic	df1	df2	Sig.
.067 ^a	2	118	.798

a. Groups with only one case are ignored in computing the test of homogeneity of variance for age of their organization.

ANOVA

age of their organization

	Sum of Squares	Df	Mean Square	F	Sig.
Between Groups	5.929	2	2.965	3.734	.037
Within Groups	21.438	118	.794		
Total	27.367	120			



Calculated value = 3.734

Tabulated value = 3.32

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

$$F = 3.734 > 3.32$$

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 no significance difference between age of their organization and Cost as the basic equipment required in designing the material handling equipment.

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 narrow aisles can make navigation with equipment hard, and can potentially slow down operations as the major warehouse inbound problem and Automation opportunities to increase efficiency as the major warehouse inbound problem.

Alternate hypothesis (H1):

There is negative relationship between narrow aisles can make navigation with equipment hard, and can potentially slow down operations as the major warehouse inbound problem and Automation opportunities to increase efficiency as the major warehouse inbound problem.

Correlations

		overall service experience with the bank is satisfactory and bank employees are competent/professional to cater to all the customer queries.	Bank employees are competent/professional to cater to all the customer queries
overall service experience with the bank is satisfactory and bank employees are competent/professional to cater to all the customer queries.	Pearson Correlation Sig. (2-tailed) N	1 120	.397* .030 120
Bank employees are competent/professional to cater to all the customer queries	Pearson Correlation Sig. (2-tailed) N	.397* .030 120	1 120

*. Correlation is significant at the 0.05 level (2-tailed).

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

$$r = 0.397$$

INFERENCE:

Since r is positive, there is positive relationship between narrow aisles can make navigation with equipment hard, and can potentially slow down operations as the major warehouse inbound problem and Automation opportunities to increase efficiency as the major warehouse inbound problem.

CHAPTER 5

5.1 FINDINGS

- 37% of the respondents are working for 4 to 6 years in this organization.
- 33% of the respondents belong to Packaging segment.
- 90% of the respondents say that their company takes complete physical inventory (by count) at least annually.
- 67% of the respondents say that their firm uses its own trucks to transport goods to and from the warehouse.
- 100% of the respondents agree that proximity of the market as the major location selection factor.
- 73% of the respondents agree that price of the land as the major location selection factor.
- 47 % of the respondents neither agree nor disagree that Connectivity by Road, Rail & Air as the major location selection factor.
- 63% of the respondents neither agree nor disagree that Facilities (Infra) as the major location selection factor.
- 50% of the respondents neither agree nor disagree that Government & Statutory as the major location selection factor.
- 37% of the respondents disagree that Approval/Clearance as the major location selection factor.
- 47% of the respondents neither agree nor disagree that Cost of Operation as the major location selection factor.
- 73% of the respondents neither agree nor disagree that Hydraulic Hand Pallet Truck as the basic equipment required in designing the material handling equipment.

- 67% of the respondents neither agree nor disagree that Battery Operated Pallet Truck as the basic equipment required in designing the material handling equipment.
- 57 % of the respondents neither agree nor disagree that Fork Lift Truck as the basic equipment required in designing the material handling equipment.
- 56% of the respondents neither agree nor disagree that Reach Trucks as the basic equipment required in designing the material handling equipment.
- 78% of the respondents neither agree nor disagree that Turret Stock Picker / VNA Reach Truck as the basic equipment required in designing the material handling equipment.
- 47% of the respondents agree that Automated Storage and Retrieval System as the basic equipment required in designing the material handling equipment.
- 43% of the respondents neither agree nor disagree that Cranes as the basic equipment required in designing the material handling equipment.
- 53% of the respondents agree that Cost as the basic equipment required in designing the material handling equipment.
- 50% of the respondents agree that No. of Docks as the major process & material flow factor while designing the layout.
- 57% of the respondents neither agree nor disagree that Strategic Locations (ABC - Classification) as the major process & material flow factor while designing the layout.
- 43% of the respondents agree that Nature of product Stored as the major process & material flow factor while designing the layout.
- 57% of the respondents neither agree nor disagree that Level of automation as the major process & material flow factor while designing the layout.
- 63% of the respondents agree that Maximum Utilization of the space as the major process & material flow factor while designing the layout.

- 53 % of the respondents neither agree nor disagree that No. of Transactions as the major process & material flow factor while designing the layout.
- 57% of the respondents neither agree nor disagree that Value Addition Area as the major process & material flow factor while designing the layout.
- 57% of the respondents neither agree nor disagree that No. of Years the facility is designed for as the major process & material flow factor while designing the layout.
- 50% of the respondents agree that Cost as the major process & material flow factor while designing the layout.
- 60% of the respondents say that Advance Shipping Notice (Queuing System) is a required facility / factor.
- 63% of the respondents say that Availability of Space is neither required nor not required facility / factor.
- 57% of the respondents say that Identification of Space is neither required nor not required facility / factor.
- 43% of the respondents say that Purchase Order Validation is neither required nor not required facility / factor.
- 50% of the respondents say that Physical Verification is neither required nor not required facility / factor.
- 47% of the respondents say that Handling of Materials is neither required nor not required facility / factor.
- 43% of the respondents say that Availability of Resources (Labor / Material Handling Equipment) is a required facility / factor.
- 60% of the respondents say that Availability of Docks is a required facility / factor.
- 60% of the respondents say that Sorting is a required facility / factor.

- 80% of the respondents say that Location Identification is required as the necessary facilities / factors in retrieval / despatches.
- 53% of the respondents say that Movement of Materials is required as the necessary facilities / factors in retrieval / despatches.
- 47% of the respondents say that Consolidation of Shipment is required as the necessary facilities / factors in retrieval / despatches.
- 43% of the respondents say that Communication System is required as the necessary facilities / factors in retrieval / despatches.
- 50% of the respondents say that Information Flow is neither required nor not required facility / factor in retrieval / despatches.
- 43% of the respondents say that Packing & Labeling is required as the necessary facilities / factors in retrieval / despatches.
- 53% of the respondents say that Availability of Docks is neither required nor not required facility / factor in retrieval / despatches.
- 53% of the respondents say that Invoice Generation is required as the necessary facilities / factors in retrieval / despatches.
- 57% of the respondents agree that narrow aisles can make navigation with equipment hard, and can potentially slow down operations as the major warehouse inbound problem.
- 74% of the respondents neither agree nor disagree that Warehouses require workers to put themselves in high-elevation situations, creating a need for stable, portable work platforms as the major warehouse inbound problem.
- 54 % of the respondents neither agree nor disagree that Employees need to transport items from Point A to Point B, which takes up valuable time that could be spent on other tasks as the major warehouse inbound problem.
- 57% of the respondents neither agree nor disagree that Changing and maintaining the batteries for your electric forklifts and other materials handling equipment is becoming a pain as the major warehouse inbound problem.

- 50% of the respondents neither agree nor disagree that Costly Refueling as the major warehouse inbound problem.
- 100% of the respondents agree that Automation opportunities to increase efficiency as the major warehouse inbound problem.
- 53% of the respondents agree that Processing customers orders as the major warehouse outbound problem.
- 60% of the respondents neither agree nor disagree that Preparing the cargo for distribution as the major warehouse outbound problem.
- 57 % of the respondents neither agree nor disagree that Route planning and risk management strategies as the major warehouse outbound problem.
- 50% of the respondents neither agree nor disagree that Keeping track of the cargo status as the major warehouse outbound problem.
- 57% of the respondents agree that Invoices necessary for transportation as the major warehouse outbound problem.

5.2 SUGGESTIONS

1. Make improvements in inbound & outbound supply chain activities. It includes scheduling inbound purchase orders to manage the receiving dock and yard better.
2. Develop vendor compliance policies, including purchasing terms and conditions, on-time delivery, quality and item specifications, routing guides and importing guides, product packaging and labeling and drop ship vendor standards. Push quality and value-added services up the supply chain to the vendors so the product is ready to be put away or shipped. This reduces labor for rework of mistakes.
3. Implement lean warehouse operations as it opens up a range of areas ripe for significant, long-term and sustainable savings. From reduced handling time and reductions in loading/unloading times of trucks and containers to increased reliability and sharing of information and greater flexibility to adapt

to changing market conditions of customer specifications, lean brings about a sea change in the warehouse mindset.

4. Conduct thorough employee training. Implement new technologies for warehouse operations through training programs that focus on technology and how employees should utilize the tools provided.
5. Advance IT facility helps to storehouse to simplify the works and minimize the damage. If the storehouse can enlarge the IT facility its will help to get a more gain and get a client satisfaction. The company can improve the fleet administration and set the GPS to the transports and use the WMS, RFID to save the manpower and minimize the work of storehouse.
6. Review effectiveness of warehouse operations on a periodical basis. Any inefficiency within the chain will impact negatively throughout the whole process.
7. Strong relationships with supply chain partners are as crucial for efficient outbound logistics as they are for inbound logistics. Reliable partnerships help to keep workflows running smoothly and communication transparent.
8. Transportation management systems (TMS) don't just help automate and streamline delivery processes. The technology collects data over time that can inform ways to improve operational efficiency, cost-effectiveness, and scalability.
9. Prioritizing better partner relationships also opens up opportunities for more flexibility and lower transportation costs.
10. Good supplier relationships form the bedrock of optimized inbound logistics. This starts with identifying those partners that can offer the most competitive pricing and quality. You'll also want to check for things like quality certifications, lead time and on time delivery rates, and a supplier's capacity to support your business's growth.
11. Managing even one freight service without knowing where the truck is, or where the orders are, is hard enough; having visibility and control over logistics services through multiple delivery providers is almost impossible using traditional logistics management systems.

12. Traditional freight companies and post and parcel services are either overwhelmed beyond their capacity right now, or are simply not set up for [meeting customer expectations](#) today.
13. Businesses must place emphasis on supply chain management as part of the last mile process in order to ensure that their customers are receiving the ultimate experience, boosting brand loyalty and giving them a reason to come back again in the future.
14. The best way to optimize your inbound and outbound logistics is by creating smarter, more efficient supply chain logistics that manage the process across every step of a product's journey, including both inbound and outbound logistics.
15. Bringg's delivery and logistics cloud platform offers customized solutions to help businesses rapidly scale up and optimize their last mile logistics operations. [Get in touch with our team](#) to see how you can better manage your inbound and outbound logistics operations for your business's omnichannel needs today — while adapting to new challenges as it grows.
16. By using an end-to-end visibility/tracking tool, you can continually analyse all the movements across your supply chain. They give you access to endless financial and timing data, so you can see what parts of your logistics are flowing smoothly and costing the least.
17. 4PL logistics providers have supply chain experts across a host of sectors and transportation options. They deal with the unique supply chains of so many businesses daily. That means they can take the learnings from multiple supply lines and apply them across all the others.

5.3 CONCLUSION

In general, warehouse activity consists of receiving, put away, storage, packing and shipping. Receiving is an operation that involves the assignment of trucks to dock and the scheduling and execution of unloading Activities. Typical warehouse activities include putting items away, moving items inside or between warehouses, and picking items for assembly, production, or shipment. Assembling items for sale or inventory may also be considered warehouse activities, but these are covered elsewhere.

This study has been undertaken to understand the overall effectiveness of warehouse operations (inbound & outbound) at Freighterix Cargo Solutions Pvt Ltd. For this purpose, responses from the employees have been collected and analyzed. Based upon the findings out of the research, few valuable suggestions have been given to improve the inbound & outbound warehouse operations of Freighterix Cargo Solutions Pvt Ltd

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www.shipingindia.com

www.cargoportalservices.com

<https://www.similarweb.com/website/aftership.com/>

<https://www.similarweb.com/website/correoargentino.com.ar/>

S

QUESTIONNAIRE

1. Age:

25 – 30

31 - 36

37 - 42

43 – 50

2. Marital status:

Married

Unmarried

3. Educational Qualification:

10th – 12th

Diploma

Under graduate

Post graduate

4. How long are you working in this organization? (In Years)

Less than 1 year

1 to 3 years

4 to 6 years

7 to 10 years

Above 10 years

5. Which segment do you work for in Freightenix Cargo Solutions Pvt Ltd ?

Shipping

Packaging

Material handling

Client Handling

6. Is there a complete physical inventory (by count) at least annually?

Yes

No

Maybe

7. Does the firm use its own trucks to transport goods to and from the warehouse?

Yes

No

Maybe

8. If you are involved in the location selection, then rate the following factor

Proximity of the Market

Price of the Land

Connectivity by Road, Rail & Air

Facilities (Infra)

Government & Statutory

Approval/Clearance

Cost of Operation

Strongly agree

Agree

Neutral

Disagree

Strongly Disagree

9. If you are a decision maker in designing the Material Handling Equipment, then rate basic equipment's that would be requiring *

Hydraulic Hand Pallet Truck

Battery Operated Pallet Truck

Fork Lift Truck

Reach Trucks

Turret Stock Picker / VNA Reach Truck

Automated Storage and Retrieval System

Cranes
Cost
Strongly agree
Agree
Neutral
Disagree
Strongly disagree

10. If you are a decision maker in designing the Layout, Process & Material Flow, then are following factors *

No. of Docks
Strategic Locations (ABC - Classification)
Nature of product Stored
Level of automation
Maximum Utilization of the space
No. of Transactions
Value Addition Area
No. of Years the facility is designed for
Cost
Strongly agree
Agree
Neutral
Disagree
Strongly disagree

11. In case if receipt is your concern area then Rate the facilities / factors that you feel are necessary? *

Advance Shipping Notice (Queuing System)
Availability of Space
Identification of Space
Purchase Order Validation
Physical Verification

Handling of Materials

Availability of Resources (Labor / Material Handling Equipment)

Availability of Docks

Sorting

Strongly Required

Required

Neutral

Not Required

Strongly Not Required

12. In case if Retrieval / Despatches is your concern area then Rate the facilities / factors that you feel are necessary? *

Location Identification

Movement of Materials

Consolidation of Shipment

Communication System

Information Flow

Packing & Labeling

Availability of Docks

Invoice Generation

Strongly Required

Required

Neutral

Not Required

Strongly Not Required

13. According to you, what would be the major warehouse inbound problems? *

Narrow aisles can make navigation with equipment hard, and can potentially slow down operations.

Warehouses require workers to put themselves in high-elevation situations, creating a need for stable, portable work platforms.

Employees need to transport items from Point A to Point B, which takes up valuable time that could be spent on other tasks.

Changing and maintaining the batteries for your electric forklifts and other materials handling equipment is becoming a pain.

Costly Refueling Automation opportunities to increase efficiency.

Strongly Agree

Agree

Neutral

Disagree

Strongly Disagree

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14. According to you, what would be the major warehouse outbound problems? *

Processing customers orders

Preparing the cargo for distribution

Route planning and risk management strategies

Keeping track of the cargo status

Invoices necessary for transportation

Strongly Agree

Agree

Neutral

Disagree

Strongly Disagree