International Journal of Scientific Research in Engineering and Management (IJSREM)
Volume: 08 Issue: 04 | April - 2024 SJIF Rating: 8.448 ISSN: 2582-3930

A STUDY ON 'MATERIAL HANDLING STORAGE AND PACKAGING CHALLENGES IN LOGISTICS IN VRL LOGISTICS'

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ABSTRACT

Efficient material handling, storage, and packaging are critical components of modern supply chain management. This paper explores various strategies and technologies employed in these areas to optimize processes, reduce costs, and enhance customer satisfaction. From automated storage and retrieval systems to advanced packaging designs, a range of solutions are examined to address the challenges faced by businesses in managing inventory, minimizing waste, and ensuring timely delivery. Additionally, the paper discusses the importance of sustainability in material handling, storage, and packaging practices, highlighting environmentally friendly approaches and their impact on both the bottom line and corporate social responsibility. By adopting innovative methods and embracing sustainability principles, organizations can gain a competitive edge in today's dynamic marketplace while also contributing to a more sustainable future.

INTRODUCTION

Material handling, storage, and packaging are fundamental pillars of efficient supply chain management. In today's dynamic business environment, where globalization, e-commerce, and sustainability concerns are shaping consumer demands and market dynamics, optimizing these processes is paramount for businesses to remain competitive. Material handling encompasses the movement, control, and protection of materials throughout various stages of the supply chain, including manufacturing, warehousing, distribution, and transportation. Efficient material handling minimizes production downtime, reduces labor costs, and enhances overall productivity. Storage systems play a crucial role in maintaining inventory accuracy, accessibility, and security. From traditional pallet racks and shelving to advanced automated storage and retrieval systems (AS/RS), the right storage solution can significantly impact operational efficiency and space utilization. Packaging design is essential for protecting products during transit, minimizing damage, and enhancing brand recognition. Innovative packaging solutions not only ensure product integrity but also contribute to sustainability goals by reducing material usage and optimizing package-to-product ratios. In this paper, we will explore the key concepts, strategies, and technologies related to material handling, storage, and packaging. By examining current trends, best practices, and emerging innovations in these areas, businesses can gain valuable insights into optimizing their supply chain operations, reducing costs, and delivering superior customer experiences. Additionally, we will explore the growing importance of sustainability in material handling, storage, and packaging practices, highlighting strategies for minimizing environmental impact while maximizing efficiency and profitability.

OBJECTIVES OF THE STUDY

It must have the ability to determine the appropriate distance to be travelled.
It helps prevent material deterioration in order to improve quality.
It reduces the overall production time by creating an efficient material mobility design.
It improves the management of the material flow.

LITERATURE REVIEWS

"Optimization of Material Handling Operations in VRL Logistics: A Review" by Kumar et al. (2020): This review examines optimization strategies for material handling operations specifically within VRL Logistics, including fleet management, route optimization, and load balancing. It discusses the impact of these strategies on cost reduction, efficiency improvement, and customer satisfaction.

Warehouse Storage Systems in VRL Logistics: A Literature Review by Patel et al. (2019): This paper provides a comprehensive review of warehouse storage systems deployed by VRL Logistics, including pallet racking, shelving, and mezzanine systems. It discusses their design principles, operational advantages, and potential areas for improvement.

Packaging Practices in E-commerce Logistics: A Review of VRL Logistics Strategies by Sharma et al. (2021): This review focuses on packaging practices adopted by VRL Logistics in the context of e-commerce logistics. It examines packaging design, materials selection, and automation technologies to optimize packaging efficiency and reduce transit damage.

Material Handling Automation Technologies in VRL Logistics: A Review" by Reddy et al. (2018): This paper reviews the adoption of material handling automation technologies, such as conveyor systems, robotic palletizers, and automated guided vehicles (AGVs), within VRL Logistics. It discusses their impact on throughput, labor savings, and operational flexibility.

Sustainable Material Handling Practices in VRL Logistics: A Review of Best Practices" by Gupta et al. (2021): This review explores sustainable material handling practices implemented by VRL Logistics, including energy-efficient equipment, waste reduction initiatives, and green procurement strategies. It evaluates their effectiveness in reducing environmental impact and enhancing corporate sustainability.

Research methodology

Methods for data collection

Primary Data and Secondary data

Primary Data Primary source of data was collected by questionnaire.

Secondary Data Secondary source of data was collected from books, journals

Sampling

Convenient sampling is the sample procedure used to collect data. One type of non-probability strategy is the convenience sampling method.

Size of Sampling

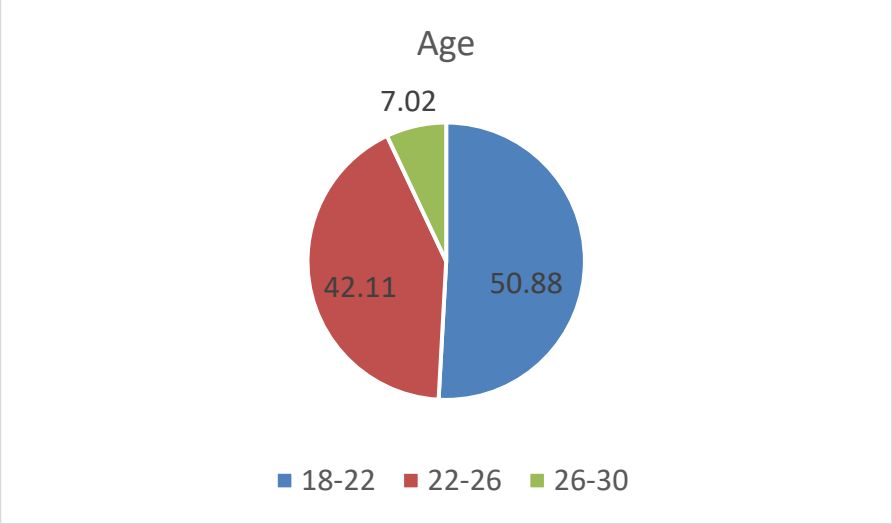
Big data suggests how many people should be questioned. Large samples yield more trustworthy results than small ones, yet due to financial and time constraints,

Analysis plan

Diagrammatic depiction using charts and graphs Big data-capable conclusions will be drawn following the use of the relevant statistical tools.
The study's findings and recommendations will be provided to enhance its utility.

Data analysis and interpretation

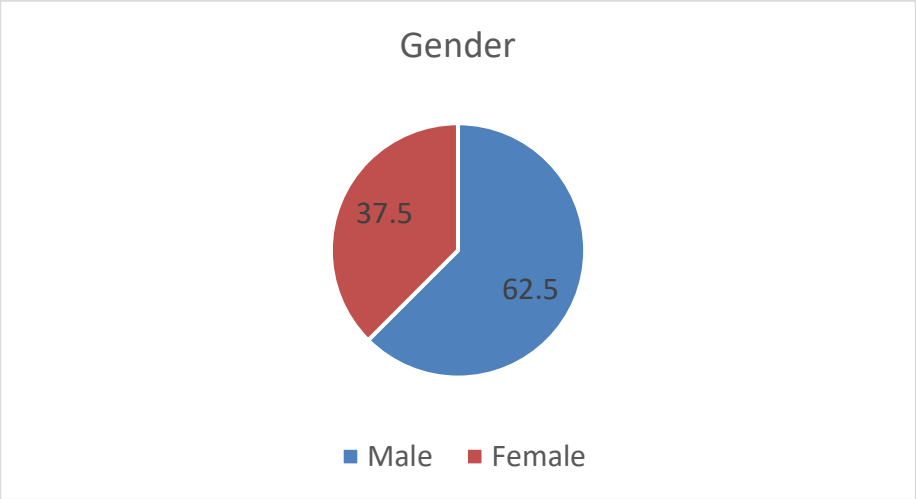
1.Age



INTERPRETATIONS:

From the above table, it is interpreted that the number of respondents between the age of 18-22 is 50.88%, the number of respondents between 22-26 is 42.11% , the number of respondents between 26-30 is 7.02.

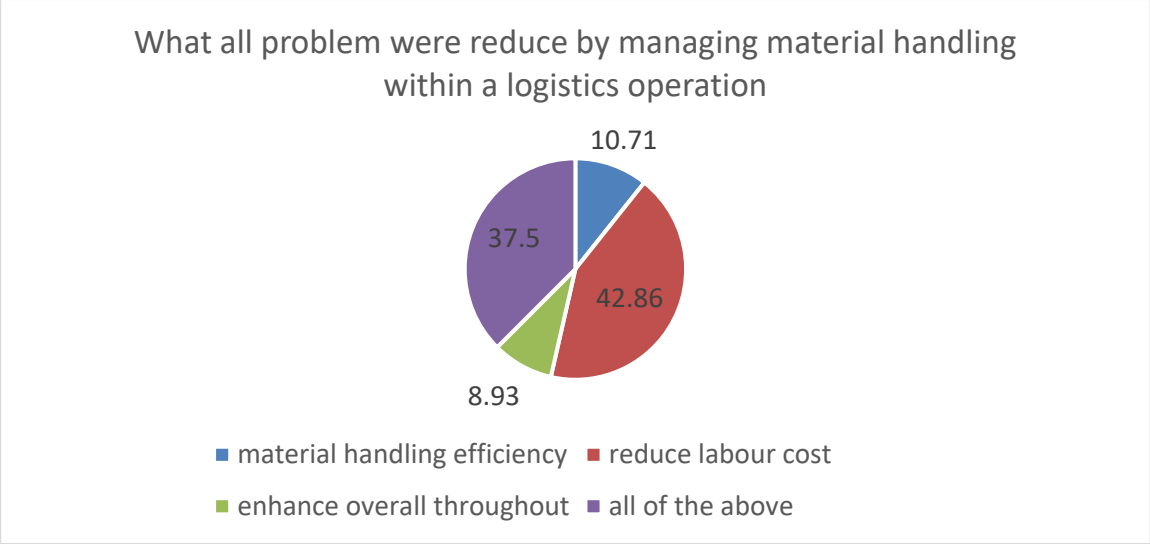
2. Gender



INTERPRETATIONS:

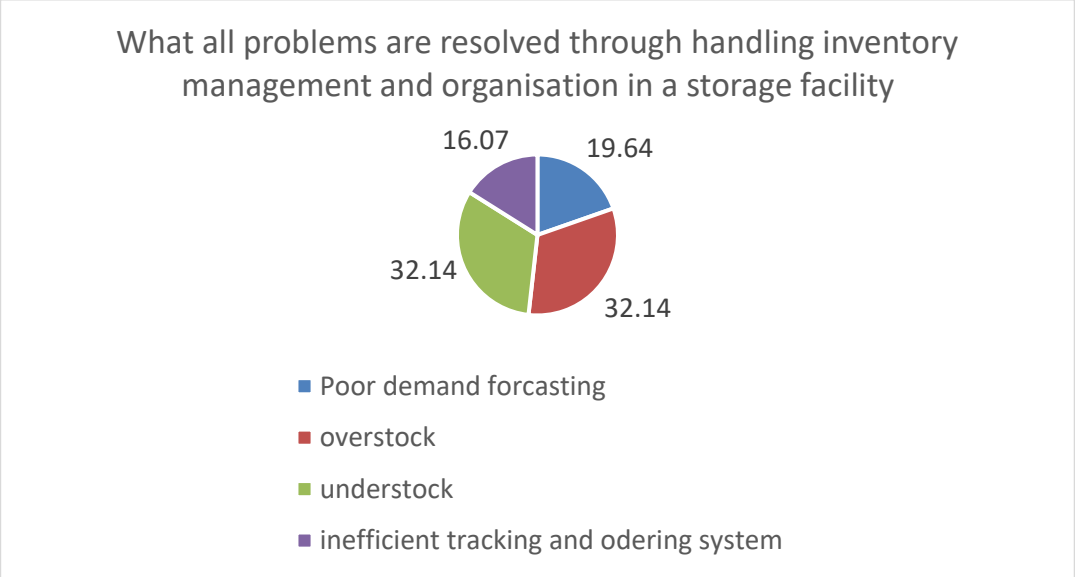
From the above table, it is interpreted that the number of male respondents is 62.5% and the number of female respondents is 37.5%

3. What all problem were reduce by managing material handling within a logistics operation.



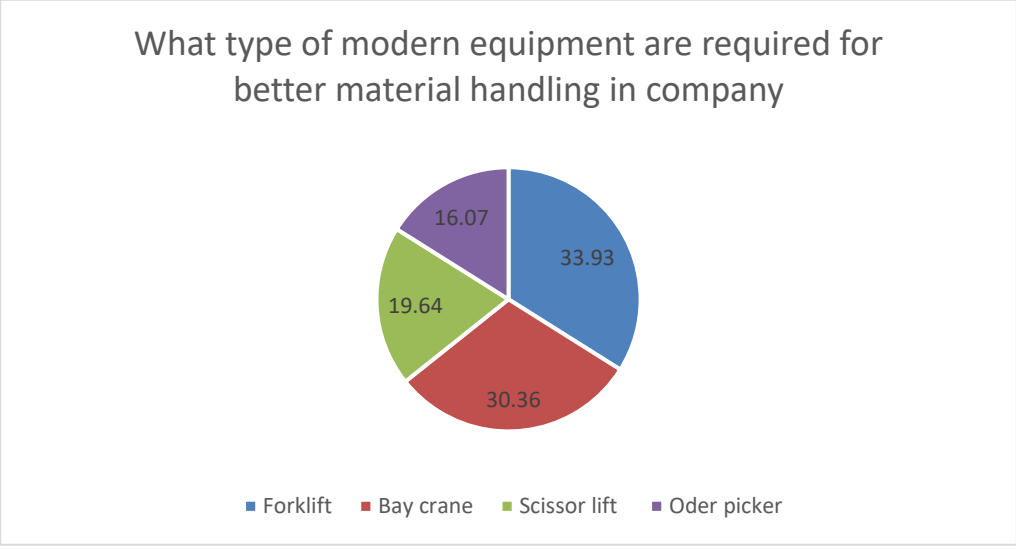
From above data, it is interpreted reducing labor cost was the problem that was eradicated by 42.86% material handling efficiency stands at 10.71% an enhance overall throughout at 8.93%

4. **What all problems are resolved through handling inventory management and organization in a storage facility**



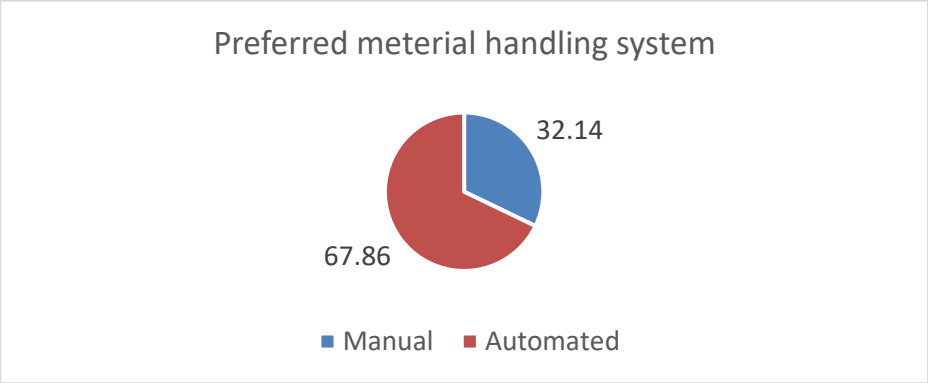
According to respondents overstock and understock problems are resolved through handling inventory management and organization in a storage facility by 32.14% whereas poor demand forcasting stands at 19.64% and inefficient tracking and ordering system at 16.07%

5. **What type of modern equipment are required for better material handling in company**



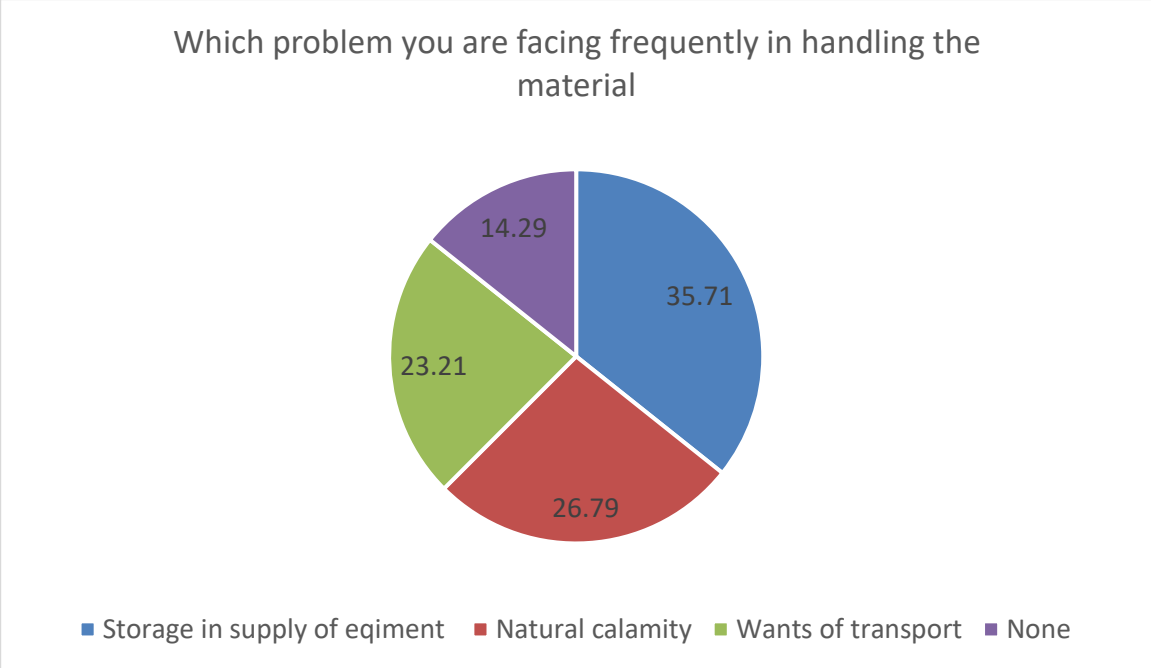
According to above data most of the respondents reponded as forklift and baycrane as modern equipment required for better material handling in company at 33.93% and 30.36% whereas scissor lift 19.64% and oder picker is 16.07%

6. **Preferred meterial handling system**



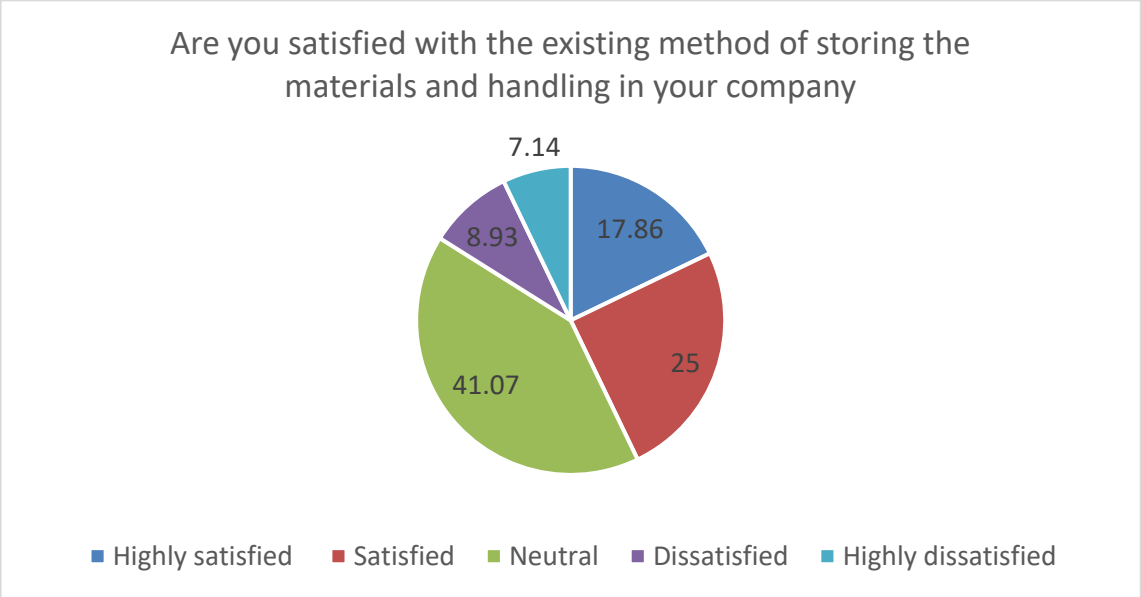
According to data Automated is the most preferred material handling system at 67.86% whereas manual is at 32.14%

7. **Which problem you are facing frequently in handling the material**



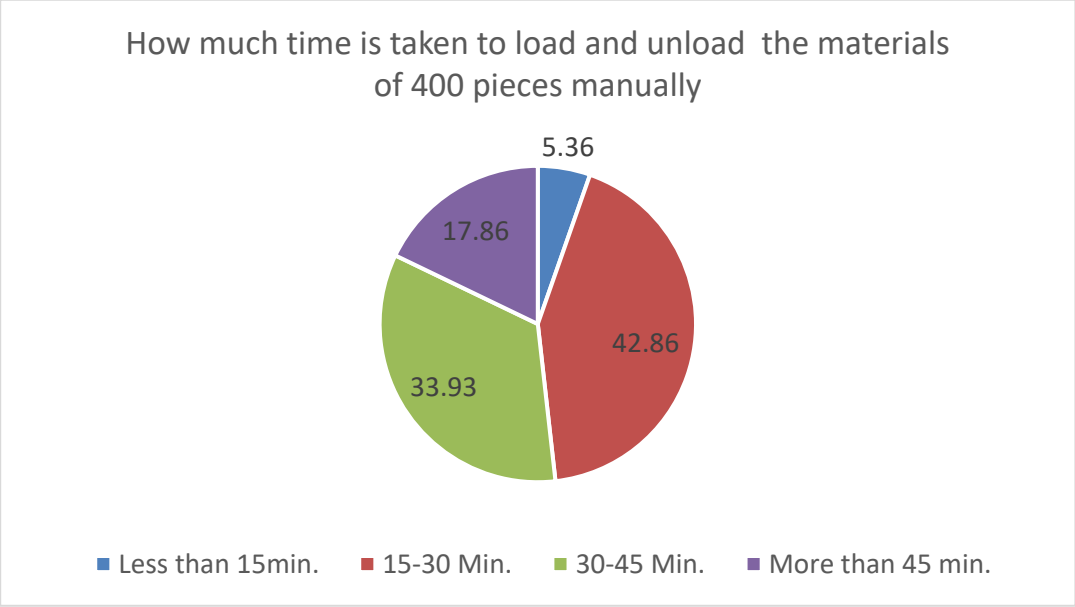
According to above data storage in supply of equipment is the most frequently faced problem by 35.71% , natural calamity at 26.79% and wants of transport at 23.21%

8. **Are you satisfied with the existing method of storing the materials and handling in your company**



From above data about 41.07% are partially satisfied with the existing method of storing the materials and handling , 25% are satisfied , and 17.86% are highly satisfied . about 8.93% and 7.14% are disssatified and higly dissatisfied respectively.

9.**How much time is taken to load and unload the materials of 400 pieces manually.**



From above data about 42.86 % respondents thinks it would take 15 to 30 minutes whereas 33.93% thinks 30 to 45 minutes, 17.86% thinks more than 45 minutes and 5.36% thinks less than 15 minutes.

FINDINGS/ RESULTS

- In the study about 18 to 22 to 26 and 26 to 30 age group were included in the sample size
- Various problems like poor demand forecasting over stock under stock and initian tracking an ordering system where addressed
- Effective ways of eradicating those problems with material handling efficiency producing labour cost enhancing overall throughout were focus and discuss with the respondents and the sample size for the research demographyit was also concluded that Forklift and bakery in where the most preferred modern equipment whereas sizzer lift and order picker could also be used
- When asked to the respondents about the problem frequently faced in handling the material they replied storage in supply of equipment natural calamities and wants of transport could be the problems
- About 41% of respondents where partially satisfied with the existing method of storing the materials handling and at the very least only 17.86 were highly satisfied and 25% were satisfied
- To check customers intellectual ability of understanding the logistic system and management they were asked a question to which 42.86% percent respondents where correct about the time taken whereas the rest had different opinions

CONCLUSION/ SUGGESTIONS

The study on material handling and storage packaging in logistics has provided valuable insights into the current practices and areas for improvement at Good Trans Logistics. The study found that the company's material handling and storage packaging practices are generally satisfactory, but there are some areas for improvement to meet customer preferences and enhance overall efficiency. By understanding the most preferred packages by customers, discovering the most desirable qualities of Good Trans Logistics, and exploring the use of technology, the project identified several recommendations to improve material handling and storage packaging that will ultimately lead to higher customer satisfaction. Based on the findings of the study, it can be concluded that Good Trans Logistics has satisfactory material handling and storage packaging practices that are up to customer standards. Many respondents agreed that the individual packaging, inner packaging, and outer packaging provided by GTL are good and among them, outer packaging has been rated high. Additionally, many respondents strongly agreed that GTL has good experience, strong customer service, and is time-oriented. Regarding measures to improve material handling, the respondents strongly agreed that automated storage, automated guided vehicles, conveyors, and dock equipment are effective measures and among them dock equipment has been rated high. In terms of packaging, the respondents strongly agreed that automation, rightsizing cartons, and proper packaging stations are effective measures to improve packaging and among them, proper packaging stations rated high.

REFERENCES

Apple, J. M. (1972). Material Handling Systems Design. New York, USA: Ronald Press.

Arnold J.R.T., Chapman S.N., & Clive L.M. (2008). Introduction to Materials Management (6th ed.). Englewood Cliffs, NJ, USA: Prentice Hall.

Ballou, R.H. & Srrivastava, S.K. (2007). Business Logistics Management: Planning, Organizing, and Controlling the Supply Chain (5th ed.). New Delhi, India: Prentice Hall

Ballou, R.H. (1992). Business Logistics Management (3rd ed.). Englewood Cliffs, NJ, USA: Prentice Hall.

Bhardawj, M.K. (2002). Glossary of Purchasing and Materials Management. New Delhi, India: Excel Books.

Bowersox, D. J., Closs, D.J. & Helferich, O.K. (1986). Logistical Management (3rd ed.). New York, USA: Macmillan.

Glossary of Procurement Terms, Chartered Institute of Procurement & Supply. Retrieved from www.cips.org/en/knowledge/glossary-of-terms/

Institute of Management and Administration. (2002). IOMA Handbook of Logistics and Inventory Management. New York, USA: John Wiley & Sons.

Jones, J.V. (1998). Integrated Logistics Support Handbook (Special Reprint ed.). New York, USA: McGraw Hill

APPENDICES

1) Age: _____

2) Gender: ____

3). What all problems were reduce by managing material handling within a logistic operation

* Material handling efficiency

* Reduce labour cost

* Enhance overall throughout

* All of the above

4) What all problems are resolved through handling inventory management and organisation in a storage facility

*Poor demand forecasting

* overstock

* understock

* Inefficient tracking and ordering system

5) What type of modern equipment are required for better material handling in company

*Forklift

*Bay crane

*Scissor Lift

*Order picker

6) Prefererred meterial handling system

* Manual

* Automated

7) Which problem you are facing frequently in handling the material

*Storage in supply of equipment

*Natural calamity

*want of transport

*None

8) Are you satisfied with the existing method of storing the materials and handling in your company

* Highly satisfied

* Satisfied

* Neutral

* Dissatisfied

* Highly Dissatisfied

9) How much time is taken to load and unload the materials of 400 pieces manuallys

* Less than 15 min.

* 15-30 min.

* 30-45 min.

* More than 45 min.