

A Study on Challenges Faced by Warehouses in Coimbatore

Dr. S. Mohanraj¹, L. Ranjith Kumar²

¹Head and Associate professor, Department of Commerce with International Business at Dr. N. G. P Arts and Science College, Coimbatore
Email: mohanraj[at]drngpasc.ac.in

²II - M. Com (IB), Student at, Dr. N. G. P Arts and Science College, Coimbatore
Email: 232ib048[at]drngpasc.ac.in

Abstract: Warehousing plays a crucial role in the supply chain, ensuring the smooth storage and movement of goods. The research examines, warehouses in Coimbatore face multiple challenges that affect their efficiency and operations. This study explores key issues such as space constraints, inadequate infrastructure, high operational costs, seasonal fluctuations, labor shortages, and difficulties in adopting modern technology. The research is based on primary data collected from warehouse managers, supervisors and warehouse executives along with secondary data analysis. Findings highlights the need for improvement in warehouse management systems, adoption of technology & automation, workforce training & development and better logistics strategies to enhance operational efficiency. Addressing these challenges is essential for the growth and sustainability of the warehousing sector in Coimbatore.

Keywords: Space utilization, warehouse management system, seasonal fluctuations, labor shortages.

1. Introduction

Warehouse refers to the process of storing goods or products in a designated location, typically a warehouse or distribution centre, until they are ready for distribution or sale. It plays a crucial role in supply chain management, ensuring the smooth storage, handling, and distribution of goods. In recent years, Coimbatore has emerged as a key logistics and warehousing hub due to its strategic location, industrial growth, and increasing trade activities. It helps to manage inventory, reduce transportation costs, and ensure a steady supply of products to meet market demand. Modern warehouses are equipped with advanced technologies such as automated storage and retrieval systems, barcode scanning, and inventory management software to improve efficiency.

Warehouses not only ensures the safe storage of goods but also facilitates activities like sorting, packaging, and order fulfillment. With the growing demand for faster deliveries and efficient supply chain management, It continues to evolve, integrating smart solutions to enhance productivity and cost - effectiveness. The warehouses in Coimbatore face numerous challenges that impact their efficiency and operational effectiveness. The challenges from infrastructure limitations and regulatory compliance to technological adoption and labor management in handling seasonal fluctuations. Gaining insights into these challenges is crucial for enhancing warehouse operations and driving sustainable economic growth in the region.

2. Statement of the Problem

The research is focused on the challenges faced by the warehouses. It plays a crucial role in the supply chain and logistics sector, ensuring efficient storage, inventory management, and timely distribution of goods. In Coimbatore, a rapidly growing industrial and commercial hub, warehouses face several operational and strategic challenges that impact their efficiency and profitability. These

challenges include inadequate infrastructure, inefficient inventory management, high operational costs, Labour shortages, technological gaps, and regulatory compliance issues.

Despite the increasing demand for warehousing facilities due to the rise in e - commerce, manufacturing, and retail sectors, many warehouses in Coimbatore struggling with space constraints, poor supply chain coordination, and outdated technology, leading to delays and increased costs.

This study aims to identify and analyze the key challenges faced by warehouses in Coimbatore, evaluate their impact on operational efficiency to enhance warehouse management. By addressing these issues, businesses can improve logistics performance, reduce costs, and enhance overall supply chain efficiency in the region.

Objectives of the Study

- 1) To identify the major challenges faced by warehouses in Coimbatore.
- 2) To analyse Inflexibility in Handling Seasonal Fluctuations.
- 3) To identify warehouse efficiency by integrating automation in infrastructure.
- 4) To identify the Complexity in Handling returned goods.

Research Methodology

Type Of Research: Descriptive Research

Sample Design: Simple Random Sampling

Sample Size: 90

Area of the Study: Coimbatore

Statistic Tools: Simple Percentage Analysis, correlation, Anova, chi - square

Data: Primary Data and Secondary Data

3. Review of Literature

Arun Kumar Biswal, Mamata Jenamani, Sri Krishna Kumar (2018) ¹ This study explores the ramifications of Radio Frequency Identification (RFID) adoption within a non-profit supply chain context, focusing on its influence on the available rate of ordering and shrinkage recovery rate in warehouse-level costs. By framing the scenario as a Newsvendor problem, we aim to minimize total expected costs and evaluate two scenarios: one with RFID implementation and another without, in managing inventory susceptible to shrinkage and misplacement. The application of this model is demonstrated through the lens of the Indian food security system. Our findings indicate that the decision to deploy RFID hinges on factors such as deprivation costs, error severity, and the effectiveness of shrinkage recovery mechanisms.

Dr. S. Karthikeyan and Ms. R. Priya (2022) ² This study, "Challenges in Warehouse Management in Coimbatore: A Comprehensive Analysis," explores various issues such as inventory management, transportation, and technology integration. Through a comprehensive analysis, the research identifies key operational inefficiencies, including delays in logistics, workforce skill gaps, and hurdles in adopting modern inventory management tools. Additionally, the study on the regulatory and compliance pressures unique to the region, offering insights and recommendations for overcoming these obstacles to enhance operational efficiency and productivity in warehouse management practices.

4. Data Analysis and Interpretation

In this chapter, the analysis and the interpretation of the study on sample size of 90 respondents' and the data collected are classified and tabulated. Further the following statistical measures are employed in fulfilling the objectives of the study.

Simple Percentage Analysis

Simple Percentage Analysis is used for making comparison between two or more series of data. It can also be used to compare the relative terms, the distribution of two or more series of data.

Particulars	No. of Respondents	% of Respondents
Manager	41	45.6
Supervisor	30	33.3
Warehouse Executive	15	16.7
HR Administrator	4	4.4
Total	90	100.0

The table represents the job roles of respondents in the warehouse sector. Managers make up the largest group (45.6%), indicating their significant involvement in warehouse operations. Supervisors account for 33.3%, showing their crucial role in overseeing daily activities. Warehouse Executives represent 16.7%, handling operational tasks, while HR Administrators make up only 4.4%, suggesting limited direct involvement in warehouse management.



Correlation

Correlation is a statistical measure that expresses the strength and direction of the relationship between two variables. It helps determine how changes in one variable are associated with changes in another. The most common correlation measure is Pearson's correlation coefficient (r), which quantifies the linear relationship between two variables, which ranges from -1 to +1:

- $r = +1$: Perfect positive correlation
- $r = -1$: Perfect negative correlation
- $r = 0$: No correlation

Particulars		Warehouse layout	Warehouse returns	Warehouse storage	automation	Warehouse infrastructure
Warehouse layout	Pearson Correlation	1	.624**	.645**	.672**	.421**
	Sig. (2 - tailed)		.000	.000	.000	.000
	N	90	90	90	90	90
Warehouse returns	Pearson Correlation	.624**	1	.541**	.540**	.322**
	Sig. (2 - tailed)	.000		.000	.000	.002
	N	90	90	90	90	90
Warehouse storage	Pearson Correlation	.645**	.541**	1	.566**	.429**
	Sig. (2 - tailed)	.000	.000		.000	.000
	N	90	90	90	90	90
automation	Pearson Correlation	.672**	.540**	.566**	1	.490**
	Sig. (2 - tailed)	.000	.000	.000		.000
	N	90	90	90	90	90
Warehouse infrastructure	Pearson Correlation	.421**	.322**	.429**	.490**	1
	Sig. (2 - tailed)	.000	.002	.000	.000	
	N	90	90	90	90	90

Interpretation:

From the above table automation is highly correlated with Warehouse infrastructure ($r = 0.490$, $p = >0.000$). It signifies automation is increasingly replacing manual processes, leading to high integration and adoption.

From the above table Warehouse storage is highly correlated with Warehouse infrastructure ($r = 0.429$, $p = >0.000$). It signifies warehouse infrastructure plays a crucial role in determining storage capacity and efficiency.

From the above table Warehouse layout is highly correlated with Warehouse infrastructure ($r = 0.421$, $p = >0.000$). It signifies that better warehouse infrastructure leads to a well-structured warehouse layout, improving efficiency and productivity.

ANOVA (Analysis of Variance)

Nature of warehouse	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	9.149	27	.339	1.662	.003
Within Groups	12.640	62	.204		
Total	21.789	89			

Interpretation:

Since the p -value = 0.03 is lesser than 0.05, we reject the null hypothesis (H_0) and accept the alternative hypothesis (H_1). It shows that there is a significant relationship between nature of warehouse and warehouse storage. The significant result suggests that the type of warehouse directly influences storage capacity, efficiency, and utilization based on factors such as infrastructure, automation, and operational requirements.

Warehouse storage	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	290.968	29	10.033	2.966	.000
Within Groups	202.976	60	3.383		
Total	493.945	89			

Interpretation: Since the p -value = 0.00 is lesser than 0.05, we reject the null hypothesis (H_0) and accept the alternative hypothesis (H_1). It shows that there is a significant relationship between warehouse storage and warehouse returns. So, This significance suggests that warehouse storage capacity and management directly impact the handling and processing of returned goods.

Chi - Square Hypothesis

H_0 : There is no significant association between the Nature of warehouse and barriers in adopting new technologies.

H_1 : There is a significant association between the Nature of warehouse and barriers in adopting new technologies.

Nature of Warehouse and Barriers in Adopting New Technologies

Particulars	Value	df	Asymptotic Significance. (2 - sided)
Pearson Chi - Square	6.548 ^a	3	.088
Likelihood Ratio	6.610	3	.085
Linear - by - Linear Association	.648	1	.421
N of Valid Cases	90		

Interpretation:

The above table indicate there is no significant association between the Nature of warehouse and barriers in adopting new technologies. since p -values (.088) greater than 0.05, The relationship is not significant. So, the hypothesis testing, when $p > 0.05$, we reject the alternative hypothesis (H_0) and accept the null hypothesis (H_1). It indicates that the nature of the warehouse does not have a impact on the barriers to adopting new technologies.

5. Findings

- Majority of the respondents are product specific warehouse (58.9%).
- Majority of the respondents are (6 – 10) year of experience (40%).
- Majority of the respondents are Manager on occupation (45.6%).
- It is interpreted that there is a significant relationship between warehouse storage & warehouse infrastructure.
- It is interpreted that there is no significant mean difference between Nature of warehouse and barriers in adopting new technologies

6. Suggestions

To enhance warehouse efficiency in Coimbatore, investing in automation and infrastructure is crucial, as they significantly impact layout and storage efficiency. Managers, who form the majority of respondents, should receive specialized training to optimize decision - making in automation and inventory management. Expanding to multi - product warehousing can improve space utilization and business opportunities. Despite the lack of a significant association between warehouse nature and technology adoption barriers, a structured strategy can ease implementation. Optimizing storage and returns management through real - time tracking and automation will reduce inefficiencies. Strengthening warehouse infrastructure and integrating automated inventory tracking can further improve accuracy and operational performance.

7. Conclusion

Based on the findings and suggestions, it can be concluded that, “**The Study on the Challenges Faced by Warehouses in Coimbatore**” highlights several inefficiencies that continue to hinder the sector's growth. Despite the increasing demand for warehousing solutions, many facilities struggle due to outdated infrastructure, lack of technological integration, and inefficient inventory management. These persistent issues prevent warehouses from operating at their full potential, leading to delays, higher operational costs, and reduced profitability. Without significant improvements, the warehousing sector in Coimbatore will continue to lag behind, struggling to keep up with modern logistics demands. If these challenges are not addressed proactively, warehouses may face declining efficiency, increased costs, and a loss of competitive advantage in the future.

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