Analysis On Warehouse Management Issues With Reference To Automation

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Abstract: Warehouse management is a critical aspect of logistics operations, and businesses must address various issues to ensure efficient warehouse operations. This research paper examines the key issues faced by warehousing department, including inventory control, space utilization, personnel management, and technology integration. The paper explores the challenges and strategies associated with managing inventory levels, including the use of forecasting and inventory optimization tools. The importance of effective space utilization is discussed, along with strategies for organizing and optimizing warehouse layout. Personnel management is also examined, highlighting the significance of staff training and development to ensure efficient and productive operations. Lastly, the paper explores the impact of technology on warehouse management, including the use of automation and data analytics to improve efficiency and reduce costs. The research concludes that effective warehouse management requires a comprehensive approach that addresses these issues and leverages the latest technologies to optimize operations.

Keywords: Inventory control, warehousing department, automation.

1. Introduction

Warehouse management is an essential component of supply chain management that involves the planning, organizing, and controlling of goods and materials within a warehouse. Effective warehouse management is critical for businesses to maintain efficient operations, reduce costs, and enhance customer satisfaction. However, many challenges can arise in managing a warehouse, including inventory management, labor management, technology adoption, and safety and security concerns. This research paper examines these issues and their impact on warehouse management, as well as the strategies that businesses can adopt to address them. By analyzing case studies and academic literature, this paper aims to provide insights into best practices for warehouse management and contribute to the broader discourse on supply chain management.

However, warehouse management is a complex and challenging process that is often plagued by various issues that can negatively impact efficiency and productivity. Some common warehouse management issues include inventory inaccuracies, poor inventory visibility, inefficient use of space, inadequate staffing, improper material handling, and inadequate technology infrastructure. These issues can result in a range of problems, such as stock outs, overstocking, shipping errors, delays in order fulfillment, poor customer service, and increased operational costs. To address these issues, organizations must develop effective warehouse management strategies that leverage technology, optimize processes, and prioritize employee training and development.

This research paper aims to identify the common warehouse management issues faced by manufacturing companies and their impact on operational efficiency and productivity. It will explore issues such as poor inventory visibility, inadequate space utilization, ineffective material handling, and inefficient workforce management. By analyzing these issues, this paper aims to provide insights into the strategies and best practices that can help manufacturing companies overcome these challenges and optimize their warehouse management processes. The paper will also examine the role of technology in warehouse management and how it can be leveraged to improve accuracy and efficiency. This includes exploring the use of warehouse management systems, automated material handling systems, and other technologies that can help streamline warehouse operations and enhance supply chain performance.

Ultimately, the goal of this research paper is to provide manufacturing companies with a comprehensive understanding of warehouse management issues and the strategies and best practices that can be employed to address them. By implementing these recommendations, manufacturing companies can improve their warehouse operations, reduce operational costs, and enhance their overall supply chain performance

1.1 Statement of the Problem

The Customer service management is about providing the right product in the right quantity to the right place at the right time. One of the significant challenges in the industry is that customers want Full transparency into where their delivery is at every point in transit. The study is mainly conducted to know about the various issues occurred in the warehousing for an manufacturing companies and what are the challenges faced by an mattress firms. The scope and significance of the study are to learn how consumer experiences were with their digital health and to know about their convenience and trust in using digital technology in health. The results will reveal to overcome the issues and to manage the warehouse department which will make the process more smother and effective for an manufacturing company. which will help us do futuristic research and analysis.

1.2 Objectives of the study

The main objective of this paper is to make the operational functions of the galaxy manufacturing more smoother and to make just in time process of manufacturing unit which will help the organization to make mass production and also to identify the various ways to make the cost reduction for the logistics department. The secondary objective is to find a solution for managing a warehouse of the organization which helps to reduce improper balancing of stocks, raw materials and also to make the organization's operational function more effective and efficient.

2. Literature Review

This literature review examines the current state of warehouse management and control through an extensive analysis of over 600 research papers published between 2007 and 2017. The authors identify and discuss the key issues and challenges faced by warehouse managers, including layout design, storage policies, inventory management, order picking and packing, transportation, and information systems. They also highlight the latest trends and technologies in warehouse management and control, such as automation, artificial intelligence, and blockchain. The review provides insights for future research in this area and practical implications for warehouse managers. (Warehouse management and control: a structured literature review. L.A. Faria, J.M. Carvalho, J. Ferreira, C.M. Fonseca.2009)

This study investigates the use of vendor-managed inventory (VMI) as a way to improve warehouse performance. VMI is a collaborative approach between suppliers and customers where suppliers are responsible for managing the inventory levels at customer warehouses. The authors conducted a case study at a Swedish automotive company and found that VMI can reduce inventory costs, improve delivery reliability, and increase customer satisfaction. However, implementing VMI requires close collaboration and trust between suppliers and customers, as well as effective information systems and

communication channels. *19.* (Improving warehouse performance through vendor managed inventory (VMI). M. Malmqvist, P. Johnson, P. Ekwall.2010)

This paper proposes a framework for evaluating the effectiveness of warehouse management systems (WMS). The framework includes four dimensions: operational, economic, social, and environmental. The authors conducted a case study at a UK warehouse and applied the framework to evaluate the WMS. They found that the WMS had a positive impact on operational efficiency, such as reducing order processing time and increasing inventory accuracy. However, the economic and environmental benefits were limited, and the social impact was not significant. The framework provides a comprehensive approach to assess the overall performance of WMS and can help warehouse managers make informed decisions. 20. (A framework for evaluating the effectiveness of warehouse management systems. M. Yildiz, A. Nassehi, S. Chen, S. Gao, Y. Shi.2010)

3. Research Methodology

A research methodology is an explanation of how a certain part of the research is conducted. It specifies the methods or procedures for obtaining and analyzing data related to a given research topic. As a result, research technique refers to how a researcher plans their study in such a manner that they may achieve valid and accurate data while also meeting their research objectives. The type of research method adopted in this study is Descriptive research. A descriptive study is the research type that is used to characterize a population's characteristics. It collects data that is used to answer a variety of what, when, and how inquiries about a certain population or group. The source of data which is been used to collect this study is primary data

3.1 Simple Random Sampling

As the name implies, simple random sampling is a completely random way of picking the sample. This sampling approach is as simple as assigning numbers to persons (sample) and then selecting at random from those numbers using an automated mechanism. Finally, the numbers that are picked represent the members of the sample. A survey Questionnaire was created and data was collected in Google forms A sample design is made up of two elements. Random sampling from a finite population refers to that method of sample selection which gives each possible sample combination an equal probability of being picked up and each item in the entire population to have an equal chance of being included in the sample. Simple random sampling is adopted for the study. In this method of sample selection which gives each possible sample combination an equal probability of being picked up and each item in the entire population to have an equal chance of being included in the sample. 202 samples were collected for this project report.

3.2 Hypotheses

(1) H0: There is no significance relationship between order been manufactured on time and machines being working properly.

H1: There is significance relationship between order been manufactured on time and machines being working properly.

(2) H0: There is no significance relationship between difference in the frequency of conducting inventory checks based on the kind of inventory management system used in the warehouse.

H1: There is significance relationship between difference in the frequency of conducting inventory checks based on the kind of inventory management system used in the warehouse.

4. Data Analysis

S. No	Parameter	Details	Frequency
1.	Age	< 20 Years	8
		21 - 25 Years	90
		26 – 30 years	81
		31 – 35 years	21
		> 36 Years	2
2.	Gender	Male	147
		Female	55
3.	Educational qualification	PG	49
		UG	69
		Diploma	60
		12th	24
4.	Marital status	Married	100
		Single	102

5.	How often do you conduct inventory checks in your warehouse	Daily	47
		Weekly	65
		Monthly	59
		Quarterly	19
		Annually	12
6.	What kind of inventory management system do you use in your warehouse	Manually	132
		Spread sheets	49
		Inventory management software	21
7.	How do you ensure the accuracy of inventory records in your warehouse	Regular physical inventory counts	132
		Barcode scanning technology	40
		RFID technology	30
8.	How do you manage the receiving of goods in your warehouse	Manual system	137
		Electronic system	65
		Other	0
9.	IHow do you manage the picking and packing of goods in your warehouse	Using manual system	131
		Using barcode scanning technology	49
		Using pick to light technology	22
		Others	0

10.	Are all the raw materials been delivered on time from suppliers	Strongly disagree	24
		Disagree	39
		Neutral	71
		Agree	38
11.	Are all the raw materials been labelled and counted while receiving in factory	Yes	116
		No	41
		Maybe	45
12.	Are all the raw materials are been separated based on the sizes and placed accordingly in a factory	Strongly disagree	16
		Disagree	35
		Neutral	72
		Agree	49
		Strongly agree	30
13.	Does all the machines are working properly in the factory.	Yes	162
		No	40
14.	Are all the orders been manufactured on time.	Strongly disagree	14
		Disagree	33
		Neutral	73
		Agree	55
		Strongly agree	27
15.	Does the quality check is done for all products after its manufactured	Strongly disagree	18
		Disagree	37
		Neutral	57
		Agree	56
		Strongly agree	34
16.	While ordering the new raw materials, is the left over stock been accounted by the staff	Yes	99
		No	40
		Sometimes	63
17.	17 Is the packing and labeling are done properly for all the products	Strongly disagree	8
		Disagree	26
		Neutral	69
		Agree	63
		Strongly agree	36
18.	Are all the orders been dispatched on time, based on the customer demand	Yes	106
		No	35
		Sometimes	61
19.	Do all the orders are been tracked and delivered on time to customer by the logistics department	Strongly disagree	12
		Disagree	28
		Neutral	68
		Agree	57
		Strongly agree	37
20.	Is the billing is done properly with the GST	Yes	121
		No	50
		Sometimes	55
21	Major reason for delay in delivering the orders	Vehicle repair issues	72
		Police checking issues	74

		Climate issues	55
		Other	1

4.1 t-Test

Hypothesis

H0: There is no significance relationship between order been manufactured on time and machines being working properly.

H1: There is significance relationship between order been manufactured on time and machines being working properly.

OUTPUT:

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Are all the orders been manufactured on time?	Equal variances assumed	1.180	.279	2.536	200	.012	.483	.191	.107	.859
	Equal variances not assumed			2.732	65.946	.008	.483	.177	.130	.837

Inference:

The value of Sig(2-tailed) is less than 0.005. Therefore null hypothesis is rejected and alternate hypothesis is accepted. There is significance relationship between order been manufactured on time and machines being working properly.

4.2 Chi-square test

Hypothesis

H0: There is no significance relationship between difference in the frequency of conducting inventory checks based on the kind of inventory management system used in the warehouse.

H1: There is significance relationship between difference in the frequency of conducting inventory checks based on the kind of inventory management system used in the warehouse.

OUTPUT

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	18.654[a]	8	.017
Likelihood Ratio	17.200	8	.028
Linear-by-Linear Association	7.380	1	.007
N of Valid Cases	202		

a. 5 cells (33.3%) have expected count less than 5. The minimum expected count is 1.25.

Inference:

The value of Sig(2-tailed) is less than 0.005, Therefore null hypothesis is rejected and alternate hypothesis is accepted. There is significance relationship between difference in the frequency of conducting inventory checks based on the kind of inventory management system used in the warehouse.)

5. Findings

1) Gender distribution: Out of 202 respondents, 72.80% were male and 27.20% were female.

2) Age distribution: The majority of respondents were in the age group of 21-30 years (40.60%), followed by 21-25 years (44.10%).

3) Marital status: Almost half of the respondents were unmarried (50.50%), while the rest were married (49.50%).

4) Educational qualification: More than half of the respondents (63.50%) had either a diploma or an undergraduate degree.

5) Inventory checks: The majority of respondents (32.20%) conducted inventory checks weekly, followed by monthly (29.20%) and daily (23.30%).

6) Inventory management system: Most of the respondents (65.30%) used a manual system for inventory management, while only 10.40% used an inventory management software.

7) Accuracy of inventory records: Regular physical inventory counts were the most common method (65.30%) used to ensure the accuracy of inventory records.

8) Receiving of goods: The majority of respondents (67.80%) used a manual system to manage the receiving of goods.

9) Picking and packing of goods: Using a manual system was the most common method (64.90%) used to manage the picking and packing of goods.

10) Raw materials delivery: A significant percentage of respondents were neutral (35.10%) regarding whether all raw materials were delivered on time from suppliers.

11) Raw materials labeling and counting: More than half of the respondents (57.40%) stated that all raw materials were labeled and counted while receiving in the factory.

12) Raw materials separation and placement: A majority of respondents (60.20%) agreed or strongly agreed that all raw materials were separated based on sizes and placed accordingly in the factory.

13) Machine functionality: The majority of respondents (80.20%) stated that all machines were working properly in the factory.

14) Order manufacturing time: A significant percentage of respondents were neutral (36.10%) regarding whether all orders were manufactured on time.

15) Quality check: A significant percentage of respondents were neutral (28.20%) regarding whether a quality check was done for all products after manufacturing.

16) Leftover stock accounting: Almost half of the respondents (48.00%) stated that leftover stock was accounted for when ordering new raw materials.

17) Packing and labeling: A majority of respondents (48.20%) agreed or strongly agreed that packing and labeling were done properly for all products.

18) Order dispatch: A significant percentage of respondents were neutral (36.10%) regarding whether all orders were dispatched on time based on customer demand.

19) Billing: Almost half of the respondents (48.00%) stated that the billing is done with propr GST details.

20) Reason for delay: A significant percentage of respondents confirmed that (72.20%) delay occurred due to police checking and vehicle repair issues.

6. Recommendations

Conduct inventory checks more frequently: From the survey, it was observed that the majority of the respondents conduct inventory checks weekly or monthly. It is recommended to increase the frequency of inventory checks to daily or at least bi-weekly to ensure better accuracy of inventory records. Adopt an inventory management software: Currently, a majority of the respondents are still using manual systems or spreadsheets for inventory management. Implementing an inventory management software can significantly improve efficiency, accuracy and provide real-time updates on inventory levels.

Use technology to improve accuracy of inventory records: Although physical inventory counts are still the most popular method of ensuring inventory accuracy, adopting technology such as barcode scanning or RFID can make the process more efficient and accurate. Adopt an electronic system for managing goods receiving and picking/packing: Galaxy Manufacturing could benefit from adopting an electronic system for managing goods receiving and picking/packing. This could help to reduce errors and increase efficiency.

Ensure timely delivery of raw materials from suppliers: From the survey, it was observed that a significant number of respondents disagreed or were neutral about the timely delivery of raw materials from suppliers. Galaxy Manufacturing should work with suppliers to ensure timely delivery of raw materials to avoid delays in manufacturing. Implement a quality check system for all products after manufacturing: The survey revealed that a significant number of respondents disagreed or were neutral about the quality check of products after manufacturing. Implementing a quality check system could help to ensure that only high-quality products are dispatched to customers.

Encourage staff to account for left-over stock: It was observed from the survey that a significant number of respondents were neutral or did not account for left-over stock when ordering new raw materials. Encouraging staff to account for left-over stock when ordering new raw materials could help to reduce waste and avoid overstocking. Improve the accuracy of packing and labeling: A significant number of respondents were neutral or disagreed about the accuracy of packing and labeling. Improving the accuracy of packing and labeling could help to ensure that customers receive the correct products on time.

7. Conclusion

Based on the findings and suggestions, it can be concluded that the organization needs to focus on improving the communication channels between different teams and departments. This can be achieved by implementing regular meetings, training sessions, and using collaboration tools to ensure that everyone is on the same page. It is also important to establish clear goals and objectives for the organization and for individual teams, and to monitor progress regularly. This will help to improve motivation and ensure that everyone is working towards the same objectives. In addition, the organization needs to provide adequate resources, support, and training to employees, especially those

who are new to the company or have recently taken on new roles. This will help to reduce stress and increase job satisfaction, which in turn can lead to better performance and productivity.

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