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## A STUDY ON CHALLENGES FACED IN MATERIAL HANDLING MANAGEMENT AT MANUFACTURING INDUSTRIES CHENNAI

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### Abstract

The highly competitive environment, linked to the globalization phenomena, demands from companies more agility, better performance and the constant search for cost reduction. The present study focused on improvements in internal materials handling management, approaching the case of a large company in the manufacturing industry. Materials handling is intrinsically associated with production flow. Because of this, it has direct influence on transit time, resources usage, and service levels. The objective was to evaluate, in a systematic way, the challenges faced in material handling management at manufacturing industries.

### INTRODUCTION

The wealth of a country is measured by its gross national product the output of goods and services produced by the nation in a given time. Goods are physical objects, something we can touch, feel, or see. Services are the performance of some useful function such as banking, medical care, restaurants, clothing stores, or social services. But what is the source of wealth is measured by the amount of goods and services produced, but where does it come from Although we may have rich natural resources in our economy such as mineral deposits, farmland, and forests, these are only potential sources of wealth.

### OBJECTIVES

- To identify the problems faced in Material handling.
- To find out the critical factors influencing in various stages of material handling.
- To reveal the measures to improve the flow of material handling for effective work condition.

### INDUSTRY PROFILE

Companies in this industry manufacture a wide variety of goods; major product groups include food and beverages, chemicals, machinery, transportation equipment, and computers and electronics. Globalization has opened new markets and opportunities for manufacturers but has also created new challenges, including how to manage far-flung supply chains and distribution channels. Manufacturers have turned to digitalization to improve efficiency across every area of operations, including product development, design, production, distribution, and marketing. Large companies often have large economies of scale in purchasing, production, and marketing. Small companies can compete effectively by producing specialized products.

**REVIEW OF LITERATURE**

1. **Sara Frojd (2021)** Supplier development and how to improve suppliers order to delivery and learn from supplier integration.
2. **Rami Alghalayini (2020)** Improving an internal material handling system. A case study on a swedish company in food industry.
3. **Jonatan gustafsson (2020)** Reverse logistics management in construction. A multiple case study examining the effects of organizational size.
4. **Arjun Balasubramaniam (2020)** Analysis and improvement of material handling in a high customized multi-variant product based production system.

**RESEARCH DESIGN**

Descriptive research is a study designed to depict the participants in an accurate way. More simply put, descriptive research is all about describing people who take part in the study.

**SAMPLING DESIGN**

The sampling technique undergone for this study is Convenience sampling. Convenience sampling is a type of non-probability sampling in which sample being drawn from that part of the population that can be reached.

**DATA COLLECTION**

- **Primary data** was collected by giving questionnaire to the employees. The completed questionnaires in all respects were taken for the study. Questionnaire used which consist of 20 questions.
- **Secondary data** used was the literature given which were reviewed for the purpose of attaining knowledge on the topic.

**TOOLS**

In this study, It has various statistical tools like percentage analysis and statistical test like Correlation, One way Anova & Independent sample T-Test.

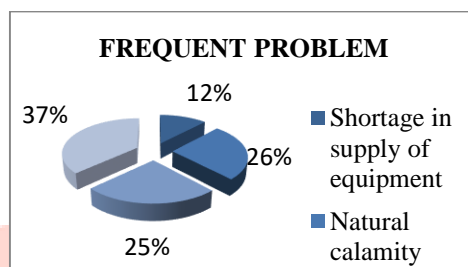
**AREA OF RESEARCH**

SAMPLE SIZE : 126  
 LOCATION : CHENNAI  
 TARGET PEOPLE : EMPLOYEE  
 TYPE OF INDUSTRY : MANUFACTURING

**DATA ANALYSIS & INTERPRETATION**

**TABLE 4.11: PROBLEM FACING FREQUENTLY IN HANDLING MATERIAL**

S.No	Frequent problems	No. of respondents	Percentage
1.	Shortage in supply of equipment	15	12
2.	Natural calamity	33	26
3.	Want of transport	31	25
4.	None	47	37
	<b>TOTAL</b>	<b>126</b>	<b>100</b>

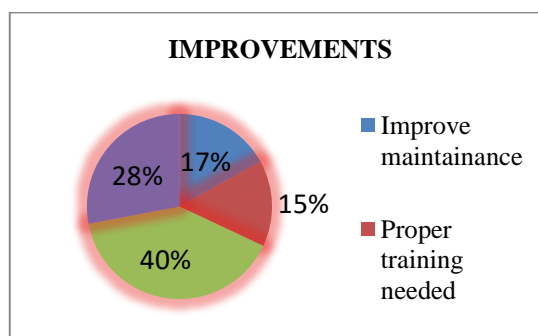


**Interpretation**

From the above table it is interpreted that the problem facing frequently where 12% is shortage in supply of equipment and 26% is Natural calamity and 25% is want of transport and 37% is None.

**TABLE 4.18: IMPROVEMENTS SHOULD BE MADE**

S.No	Improvements	No. of respondents	Percentage
1.	Improve maintainance	21	17
2.	Proper training needed	19	15
3.	More equipment needed	50	40
4.	Everything is good	36	28
	<b>TOTAL</b>	<b>126</b>	<b>100</b>

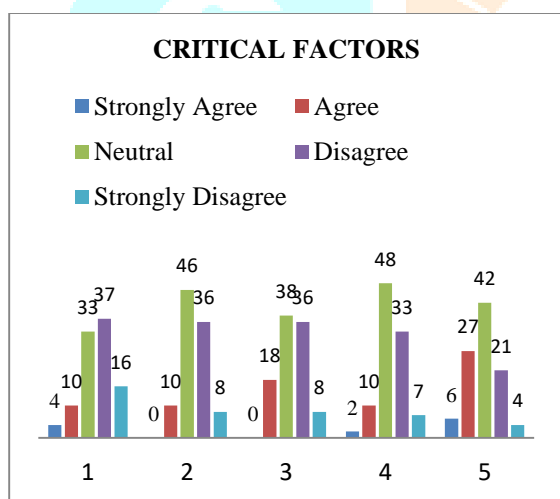


**Interpretation**

From the above table it is interpreted that the improvements should be made for maintainance is 17% and 15% for proper training needed and 40% for more equipment needed and 28% said everything is good.

**TABLE 4.14: CRITICAL FACTOR IN MATERIAL HANDLING**

	Orderin g system	Lack of Inform ation	Trouble in equipme nt	Lack of equipme nt	Route damag e
<b>Strongly Agree</b>	4	0	0	2	6
<b>Agree</b>	10	10	18	10	27
<b>Neutral</b>	33	46	38	48	42
<b>Disagree</b>	37	36	36	33	21
<b>Strongly Disagree</b>	16	8	8	7	4



**Interpretation**

From the above table it is interpreted that

- 4% respondents strongly agree, 10% respondents agree, 33% respondents neutral, 37% respondents disagree, 16% respondents strongly disagree that critical factor as ordering system.
- 0% respondents strongly agree, 10% respondents agree, 46% respondents neutral, 36% respondents disagree, 8% respondents strongly disagree that critical factors as lack of information.
- 0% respondents strongly agree, 18% respondents agree, 38% respondents neutral, 36% respondents disagree, 8% respondents strongly disagree that the trouble in equipment.
- 2% respondents strongly agree, 10% respondents agree, 48% respondents neutral, 33% respondents disagree, 7% respondents strongly disagree that lack of equipments.

- 6% respondents strongly agree, 27% respondents agree, 42% respondents neutral, 21% respondents disagree, 4% respondents strongly disagree the route damage.

**ANALYSIS USING CORRELATION**

Correlations			
		Which problem you are facing frequently while handling the materials	Age
Which problem you are facing frequently while handling the materials	Pearson Correlation	1	-.118
	Sig. (2-tailed)		.187
	N	126	126
Age	Pearson Correlation	-.118	1
	Sig. (2-tailed)	.187	
	N	126	126

Here p value is -.118 Hence there is negative correlation between age and problem facing frequently while handling the materials.

**ANALYSIS USING INDEPENDENT SAMPLE T-TEST**

**Null hypothesis H0:** There is no significance difference between Gender and improvements in material handling

**Alternate Hypothesis H1:** There is significance difference between Gender and improvements in material handling

Group Statistics					
	Gender	N	Mean	Std. Deviation	Std. Error Mean
What are the improvements should be made?	Male	114	2.09	1.102	.103
	Female	12	2.08	1.165	.336

Independent Samples Test										
		t-test for Equality of Means								
		Leven's Test for Equality of Variance	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference		
		F	Sig.					Lower	Upper	
What are the improvements should be made?	Equal variances assumed	.035	.852	.013	124	.990	.004	.336	-.661	.670
	Equal variances not assumed			.012	13.159	.990	.004	.352	-.754	.763

Here p value is 0.852 which is greater than 0.05, so accepting Null Hypothesis. Hence there is no significance difference between Gender and improvements in material handling.

**ANALYSIS USING ONE WAY ANOVA**

**Null hypothesis H0:** There is no significance difference between Educational qualification and Critical factor in material handling

**Alternate Hypothesis H1:** There is significance difference between Educational qualification and Critical factor in material handling

ANOVA						
		Sum of Squares	df	Mean Square	F	Sig.
What do you consider to be the critical factor in material handling [Ordering system]	Between Groups	6.494	3	2.165	2.182	.094
	Within Groups	121.006	122	.992		
	Total	127.500	125			
What do you consider to be the critical factor in material handling [Lack of equipment]	Between Groups	1.669	3	.556	.849	.470
	Within Groups	79.990	122	.656		
	Total	81.659	125			
What do you consider to be the critical factor in material handling [Trouble in equipment]	Between Groups	.312	3	.104	.135	.939
	Within Groups	93.688	122	.768		
	Total	94.000	125			

What do you consider to be the critical factor in material handling [Lack of equipment]		
Duncan's b		
EDUCATIONAL QUALIFICATION	N	Subset for alpha = 0.05
Specified course	3	2.00
Diploma	14	2.57
Under graduate	61	2.69
Post graduate	48	2.73
Sig.		.082
Means for groups in homogeneous subsets are displayed.		
a. Uses Harmonic Mean Sample Size = 9.050.		
b. The group sizes are unequal. The harmonic mean of the group sizes is used. Type I error levels are not guaranteed.		

What do you consider to be the critical factor in material handling [Trouble in equipment]		
Duncan, b		
EDUCATIONAL QUALIFICATION	N	Subset for alpha = 0.05
		1
Under graduate	61	2.62
Diploma	14	2.64
Specified course	3	2.67
Post graduate	48	2.73
Sig.		.818
Means for groups in homogeneous subsets are displayed.		
a. Uses Harmonic Mean Sample Size = 9.050.		
b. The group sizes are unequal. The harmonic mean of the group sizes is used. Type I error levels are not guaranteed.		

What do you consider to be the critical factor in material handling [Ordering system]			
Duncan, b			
EDUCATIONAL QUALIFICATION	N	Subset for alpha = 0.05	
		1	2
Diploma	14	2.21	
Under graduate	61	2.36	2.36
Post graduate	48	2.71	2.71
Specified course	3		3.33
Sig.		.324	.051
Means for groups in homogeneous subsets are displayed.			
a. Uses Harmonic Mean Sample Size = 9.050.			
b. The group sizes are unequal. The harmonic mean of the group sizes is used. Type I error levels are not guaranteed.			

Here p value is 0.094, 0.470 and 0.939 which is greater than 0.05, so accepting Null Hypothesis. Hence there is no significance difference between Educational qualification and Critical factor in material handling

**SUMMARY OF FINDINGS**

- In **correlation test** there is negative correlation between age and problem facing frequently while handling the materials.
- In **Independent sample T – test** it proves that Experience have no impact on improvements in material handling.
- In **one way anova test** it proves that Educational qualification have no impact on Critical factor in material handling.
- Majority (37%) of respondents said none of the problem facing frequently.
- Majority (40%) of respondents agree that improvements has more equipment needed.
- Majority (37%) disagree the critical factor as ordering system.

- Majority (46%) neutral that the factors as lack of information.
- Majority (38%) neutral that the trouble in equipments
- Majority (48%) neutral that lack of equipments
- Majority (42%) neutral about the route damage.

**SUGGESTIONS**

- Make a plan use as a team approach to design the material handling system.
- Standardize the consistent in your choice of storage equipment, including bins, shelves and racks as well as equipment used to transport materials.
- Reduce, combine or eliminate as much movement as possible.
- Wherever possible, move full pallets or containers to improve efficiency and reduce effort.
- Working in an organized space is more efficient than working around clutter.
- Employ automation wherever possible. Think of automated picking and put-away technologies.

**CONCLUSION**

Regarding various theories and empirical review from this term paper I conclude that material handling today are lifeblood of any industry and no government industry or organization or private organizations operates without them. So material handling increases the efficiency and effectiveness of the manufacturing organizations since it have many significant contributions which is finally result the reduction of production costs. By using material handling the organization can save the time, reduce the number of labours, save the space, improving working conditions etc., It is obviously that in order to achieve those objectives and to increase the organization performance the organization should set up the proper principles and guidelines to be followed that will make the organization to increase the production as well as to reduce the cost of production. Not only material handling increase the efficiency and effectiveness that result the reduction of costs in the production process but also have the great impact towards the improvement of industries in the country with leads the government to increase its income from those industries that influence the economic development.

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