A STUDY ON MATERIAL HANDLING AND ITS MAINTENANCE WITH RESPECT TO MARBLE AND GRANITES INDUSTRY

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ABSTRACT:

Material handling and its Maintenance is the combination of all technical and associated administrative actions intended to retain an item in, or restore it to, a state in which it can perform its required function. Many companies are seeking to gain competitive advantage with respect to cost, quality, service and on-time deliveries. The effect of maintenance on these variables has prompted increased attention to the maintenance area as an integral part of productivity improvement. Maintenance is rapidly evolving into a major contributor to the performance and profitability of manufacturing systems.

INTRODUCTION:

The marble and granite industry involves the extraction, processing, and sale of natural stone materials used in construction and design. Marble and granite are both types of natural stone that are highly sought after for their beauty, durability, and versatility. Marble is a metamorphic rock that is formed from limestone that has been subjected to intense heat and pressure over time. It is known for its distinctive veining and range of colours, which can include white, black, grey, pink, green, and more. Marble is commonly used in flooring, countertops, sculptures, and decorative elements. Granite, on the other hand, is an igneous rock that is formed from molten magma deep within the earth's crust. It is known for its durability and resistance to scratches, heat, and stains.

INDUSTRY PROFILE:

The marble and granite industry involves the extraction and distribution of natural stone products, including marble granite limestone, travertine and slate. The industry is characterized by a high degree of vertical integration, with many companies involved in both the extraction and processing of marble and granite. The industry is typically divided into two main sectors: quarrying and processing. Quarrying involves the extraction of raw stone from the earth, often using heavy machinery and explosives. Once the stone is extracted, it is transported to a processing plant where it is cut, polished, and shaped into finished products. The global market size of the marble and granite industry was valued at USD 178.4 billion in 2020 and is expected to grow at a compound annual growth rate (CAGR) of 3.5% from 2021 to 2028.

REVIEW OF LITERATURE:

- **Esa nopanen, Taina piispa, Anita lukka (2005)** Objectives of study is new operation model for maintenance material logistics. New operation models for decreasing fixed costs and transforming into variable costs in the field of marble industry. The report illustrates two cases- a new operation model for material logistics in maintenance and an examination of Forklift truck fleet outsourcing solution.

- **Zakaryasoufi, Pierre david, Zakaria yahouni (2021)** Level of automation plays significant role in the success of a material handling system definition, which influences the manufacturing performance. the proposition of analytic hierarchy process is implemented in a demonstrator software tool and illustrated on simple example.

- **Mohan Jha (2003)** Objectives of the study is maintenance types, procedures and evaluation of performance. the work request format gives the maintenance personnel the basic inputs required for analyzing the breakdowns

and aiming at minimizing them. the work request acts as F.I.R for planning, scheduling, priority fixing, cost controlling and fixing of an objective for the department

- **Selen (Belgium) (2020)** It developed to simultaneously plan preventive maintenance and production in a process industry environment, where maintenance planning is extremely important
- **S Wannawiset, (2018)** FMEA is widely selected tool for the application of machinery breakdown prevention. this research adopted FMEA technique to reduce and prevent breakdown of the important equipment of the large commercial machine that has capacity of 2,00,000 tons per annum, located in north east of Thailand.

OBJECTIVES OF STUDY:

- The objective of this study to analyze the materials handling and maintenance towards the marble and granite industry.
- To examine the problem facing frequently in materials handling and its maintenance with respect to marble and granites manufacturing industry.
- To identify the potential risk in preventive maintenance to reduce wastage in marble and granite manufacturing industry.
- To give suggestions to improve the maintenance in the organization.

NEED FOR STUDY:

An equipment is an important resource which is constantly used for adding value to products.so it must be kept in good operating condition otherwise interruption of production if it is used a mass production line. This project has been undertaken to assess the material handling and its maintenance management at Guntupalli Marble and Granites in order to avoid the breakdown and improve the productivity

SCOPE OF THE STUDY:

- Its helps to analyze the problems of materials handling in marble and granites industry.
- To identify the potential risks reliable to the quality of product and process.
- To enhance the Improves of preventive maintenance system in marble manufacturing industry

DATA ANALYSIS:

1.The Preventive maintenance means the schedule followed at correct time

S.No	Particulars	Respondents	Percentage
1	Strongly agree	22	20.0
2	Agree	18	16.4
3	Neutral	29	26.4
4	Disagree	28	25.5
5	Strongly Disagree	13	11.8

Source: Primary Data
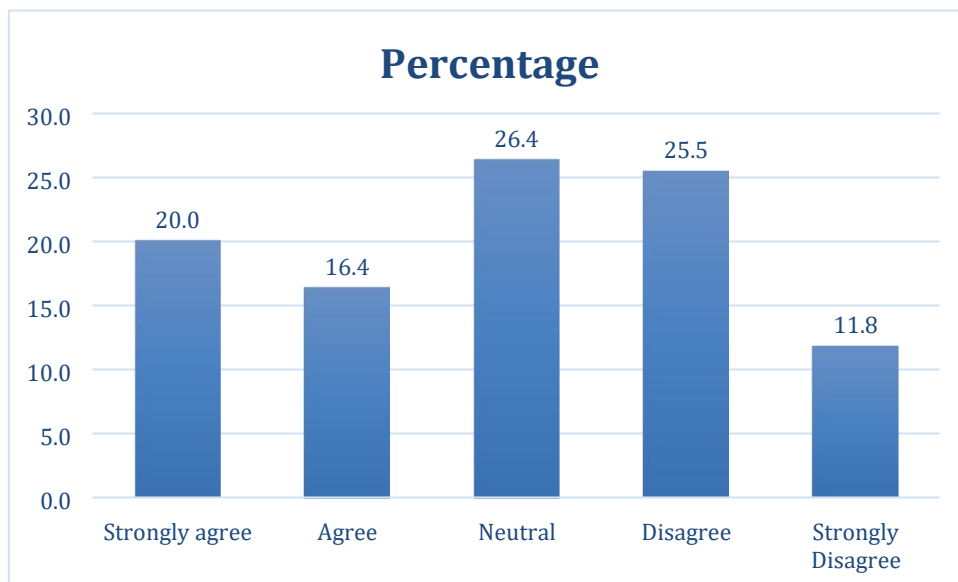
INTERPRETATION:

From the above table it is interpreted that the number of respondents were 20% says Strongly agree, 16.4% says agree, 26.4% says neutral,25.5% says disagree,11.8%says strongly disagree.
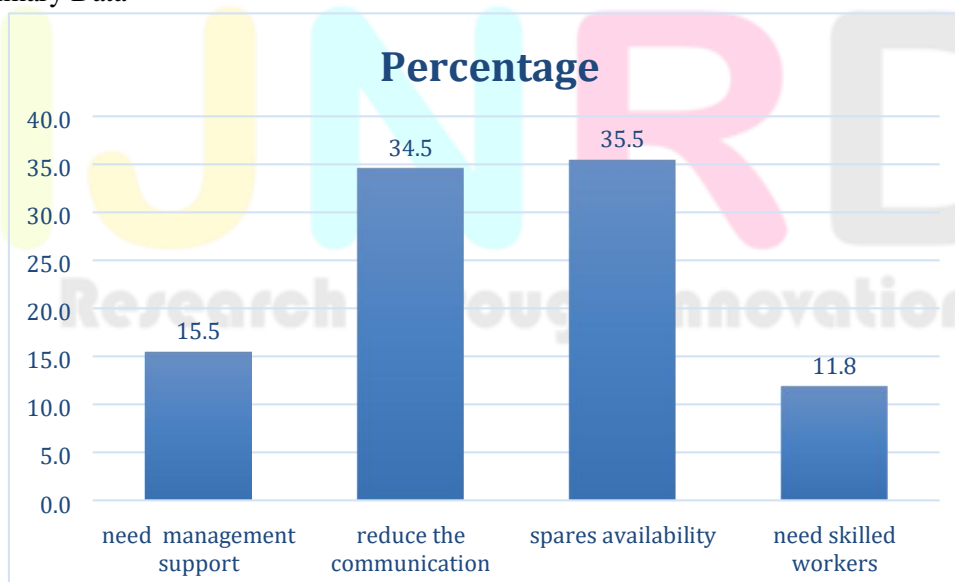
INFERENCE:

Majority (26.4%) of the respondents are in Agree

2.what you suggest to improve the maintenance in the company

S.No	Particulars	Respondents	Percentage
1	need management support	17	15.5
2	reduce the communication	38	34.5
3	spares availability	39	35.5
4	need skilled workers	13	11.8

Source: Primary Data

INTERPRETATION :

From the above table it is interpreted that the number of respondents were 15.5% are need management support, 34.5% are reduce the communication gap, 35.5 are spares availability and 11.8 are need skilled workers.

INFERANCE :

Majority (35.5%) of the respondents to Spares availability.

ONE-WAY ANOVA CLASSIFICATION

Null hypothesis (Ho):

There is a significance difference between the effectiveness of the maintenance team and 24*7 maintenance available.

Alternate hypothesis (H1):

There is no significance difference between the effectiveness of the maintenance team and 24*7 maintenance available.

Descriptives

EFFECTIVENESS OF THE MAINTENANCE TEAM

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimu m	Maximu m
					Lower Bound	Upper Bound		
1	15	1.00	.000	.000	1.00	1.00	1	1
2	43	1.91	.294	.045	1.82	2.00	1	2
3	19	2.74	.452	.104	2.52	2.95	2	3
4	15	3.80	.414	.107	3.57	4.03	3	4
5	18	4.72	.461	.109	4.49	4.95	4	5
Total	110	2.65	1.268	.121	2.41	2.89	1	5

Test of Homogeneity of Variances

EFFECTIVENESS OF THE MAINTENANCE TEAM

Levene Statistic	df1	df2	Sig.
11.253	4	105	.000

ANOVA

EFFECTIVENESS OF THE MAINTENANCE TEAM

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	161.849	4	40.462	318.883	.000
Within Groups	13.323	105	.127		
Total	175.173	109			

INFERENCE:

The calculated value of F is greater than the tabulated value. Hence, we reject the null hypothesis and conclude that there is no significance difference between the effectiveness of the maintenance team and 24*7 maintenance available.

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 the complaint handling system with maintenance cause to low productivity.

Alternate hypothesis (H1):

There is negative relationship between the complaint handling system with maintenance cause to low productivity.

Correlations

		COMPLAINT HANDLING SYSTEM	MAINTENANCE CAUSE TO LOW PRODUCTIVITY
COMPLAINT HANDLING SYSTEM	Pearson Correlation	1	.891**
	Sig. (2-tailed)		.000
	N	110	110
MAINTENANCE CAUSE TO LOW PRODUCTIVITY	Pearson Correlation	.891**	1
	Sig. (2-tailed)	.000	
	N	110	110

**. Correlation is significant at the 0.01 level (2-tailed).

INFERENCE:

Since r is positive, there is positive relationship between the complaint handling system with maintenance cause to low productivity.

SUGGESTION:

➢ The company need to understand the working Requirements and they should appoint the skilled workers.

➢ The management need to monitor the maintenance activities, and fulfil the spares requirements that avoids delay of production.

- ➢ The maintenance department should follow the preventive maintenance schedules that avoids the high level of breakdown maintenance.

- ➢ The company should appoint the skilled workers of each department

CONCLUSION:

The maintenance department of the company needs to follow the maintenance schedules and use the good skilled workers to do the jobs. The management should give good support to maintenance department, and the company need to monitor the maintenance activities, and if the company is reducing the spares availability that will give a good result. The company take a step to reduce the communication gap between the contract and permanent labours. It will give a good result to the maintenance activities

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