

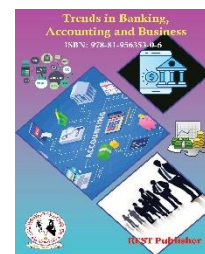


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# A Study on current Material Management Practices and Development with respect to WEG Industries

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**Abstract.** The current material management practices save time in overall process flow of material handling comparing with the traditional method. By the usage of modern technologies a buyer can easily track the supply status of material, maintain a controlled material flow, order and procure the material on time, optimizes the inventory and controls storage of material. It develops the material management processes using several technologies and software's like SAP (System Application and Products), JIT (Just in Time), MRP (Material Requirement Planning) Warehouse Management System (WMS), ERP (Enterprise Resource Planning) etc. Though these software's the buyer can order the required raw materials, and other materials through online and schedule a delivery date to supply the order. Here the buyer can track the status of the material whereas the supplier will update the order standard and the material will be delivered on the fixed scheduled date or time with the help of logistics. The Quality of the material will be inspected through proper inspections and stored in the warehouse after the quality control validation, materials quantity will be records and updated in the racking system accordingly, this guides to track the availability and usage of materials and help to forecast the future requirements of materials.

## 1. INTRODUCTION

Materials management is the process of planning and controlling material flows. An organization is supplied with the goods and services which it requires to achieve the objectives of buying, storage and movement of materials. Materials can be raw materials, components, sub-assemblies, parts, tools, consumables, services, or any other type of item. The main aim of material management is to supply materials at the right quality, quantity at the right cost and deliver it in the right time in order to improve the process of production activity.

## 2. OBJECTIVES

**Cost Reduction** of materials and use them in optimized way. **Improved Productivity** via avoiding delays and downtime, and enables businesses to maintain high levels of productivity. **Better Quality Control** by ensure that the quality of the materials used in production is consistent and of a high standard through proper inspection, testing, and certification of materials. **Enhanced Supply Chain Visibility** helps to identify potential risks and disruptions, and enables businesses to respond quickly to changing market conditions and customer demand. **Improved Customer Satisfaction** to build customer loyalty and enhances the reputation of the business in the market.

## 3. NEED/SCOPE

The scope of current material management practices of an organization is used for demand forecasting techniques to predict the future demand for their products and services. This helps them to optimize their inventory levels and avoid stockouts and ensures the availability of materials, and avoiding overstocking or stockouts. This includes optimizing

inventory levels, tracking inventory movements, procuring the necessary materials and resources needed to produce products or deliver services. This includes selecting suppliers, negotiating contracts, and managing supplier relationships. Logistics involves the movement of materials and products from suppliers to customers. This includes managing transportation, tracking shipments, and ensuring that products are delivered on time. Material handling involves the movement of materials within the warehouse or production facility. This includes managing material flow, selecting the right handling equipment, and ensuring that materials are handled safely. Quality control of the materials meet the required quality standards. This includes monitoring quality levels, conducting inspections, and ensuring that suppliers meet quality standards.

#### 4. LITERATURE REVIEW

**PatilHarshal M., Prof. Sarode G.C. (2017)**, Reported that as compared to other industries in the world, the construction industry now a day is very progressive and creative industry. Every construction industry focuses on financial benefit, people's needs, and different fast track techniques to complete the job. The correlation coefficient between project costs and material management costs for 15 locations was analyzed. The findings showed that overall project costs and project material management costs are perfect and optimistic. **Anton Saukkonen. (2017)**, The purpose of his research was to improve the materials management system of the organization, which included the inventory control and costing model. Concerning the optimum values of the decision variables, the optimization of the overall inventory cost was introduced. The author defined the most suitable inventory management approach on the basis of the collected information and built a model. In addition, the built model contained a costing model where, on a common or different basis, the elements of the overall inventory cost could be shown, evaluated and measured. As a result, the built model may be used as a guide for inventory operations in the decision-making process. Regarding the minimum objective value of the total cost, the model will determine the optimal order quantity and reorder point decision variables. **DagimWoldie. (2018)**, The main objective of the thesis is to define the role of material management in organizational success. The outcome of the thesis shows the study found that planning and use practice exists, but federal proclamation is not well obeyed. It concluded that the dedication to material procurement is not accompanied by sufficient law-based procedure. In addition, inventory management systems are only used on average because they lack accuracy and depth. Annual inventory practice, however, means a lingering year to collect information on materials acquired and used. **Dr. Cross Ogohi Daniel. (2019)**, Objective is to find out how an organization can fix the issues and determine how effective material management can improve an organization's profitability. The analysis revealed that the organization's inventory management contributes to the company's profitability, and that adequate storage facilities, among other items, avoid interruptions in the production process.

#### 5. RESEARCH METHODOLOGY

A methodology for planning, organizing and controlling the activities that are related to the flow of materials in a company. This can lead to the control of the location, movement and time of those materials from their introduction, production, manufacturing process and final delivery. The statistical methods of collection, analysis, interpretation, presentation, and organization of data. Statistics provides numerous tools and techniques to analyze the data and interpret the results of the analysis through questionnaires, interviews, rating and attitude scales, and tests, are the major data-gathering research tools. In the following sections and sub- sections, we shall discuss these research tools. SPSS supports nonparametric tests such as chi-square, Wilcoxon's, and binomial tests. More advanced tests such as resampling or permutation can be conducted using SPSS syntax. SPSS can also calculate a variety of parametric analyses. The tools we used here is Chi-Square test;

#### 6. DATA ANALYSIS

**AIM:** To find out whether there is a significant difference between age and performance of material handling.

| Age      | Performance of material handling |        |     | Total |
|----------|----------------------------------|--------|-----|-------|
|          | High                             | Medium | Low |       |
| Below 20 | 8                                | 12     | 16  | 36    |
| 21-40    | 30                               | 15     | 9   | 54    |
| 41-50    | 35                               | 17     | 12  | 64    |
| Above 50 | 10                               | 6      | 3   | 19    |
| Total    | 83                               | 50     | 40  | 173   |

**Null Hypothesis (Ho):** There is no significant relationship between age and performance of material handling.

**Alternative Hypothesis (H1):** There is significant relationship between age and performance of material handling.

### CHI-SQUARE CALCULATION

$$\text{Chi-square} = (O_{ij} - E_{ij})^2 / E_{ij}$$

$$E = \text{Row total} \times \text{Column total} / \text{Grand total}$$

$O_{ij}$  = Observed Frequency

$E_{ij}$  = Expected frequency

| $O_i$ | $E_i$ | $O_i - E_i$ | $(O_i - E_i)^2$ | $(O_i - E_i)^2 / E_i$ |
|-------|-------|-------------|-----------------|-----------------------|
| 8     | 17.27 | -9.27       | 85.93           | 4.97                  |
| 12    | 10.4  | 1.6         | 2.56            | 0.25                  |
| 16    | 8.32  | 7.68        | 58.98           | 7.08                  |
| 30    | 25.9  | 4.1         | 16.81           | 0.64                  |
| 15    | 15.6  | -0.6        | 0.36            | 0.02                  |
| 9     | 12.48 | -3.48       | 12.11           | 0.97                  |
| 35    | 30.7  | 4.3         | 18.49           | 0.6                   |
| 17    | 18.49 | -1.49       | 2.22            | 0.12                  |
| 12    | 14.79 | -2.79       | 7.78            | 0.52                  |
| 10    | 9.11  | 0.89        | 0.79            | 0.08                  |
| 6     | 5.49  | 0.51        | 0.26            | 0.04                  |
| 3     | 4.39  | -1.39       | 1.93            | 0.43                  |
|       |       |             |                 | 15.72                 |

Hence calculated value is 15.72

### Result

$$\text{Degree of Freedom} = (r-1) \times (c-1)$$

$r$  = No. of rows

$c$  = No. Of columns

$$\text{Degree of Freedom} (4-1) \times (3-1) = 3 \times 2 = 6$$

Table Value 12.59f

Calculated Value = 15.72

### Inference

From the calculated chi-square value (15.72) is greater than the table value (12.59), so the null hypothesis is rejected. Hence it shows there is a significant relationship between age and performance of material handling.

## 7. FINDINGS

1. The maximum (74.0%) of respondent's opinion on Material Handling is Good in the firm.

2. The maximum (72.0%) of respondent's choice of modern material management technique would give better output is using SAP (System Application and Products) software.
3. The maximum (76.0%) of respondent's is satisfied with the current material handling practices comparing to the traditional methods.
4. The maximum (98.0%) of respondent's is interested in adopting new material management technology.

### **Suggestions**

1. The firm have good infrastructure with the safety measures in the materials. The firm should be handling without any damages for the materials and maintain the stock.
2. The study also revealed that Materials Management tool ensures that the right items are bought and made available to the manufacturing operations at the right time it has to be followed in overall process.
3. Materials procurement process ensures that raw materials are availed at the right place and sourced at the lowest possible cost and the firm can reduce plant schedule through integration with design and cost systems.

## **8. CONCLUSION**

The study concludes that implementation of current materials procurement tool positively influenced the performance of WEG Industries India, Hosur. Manufacturing industries had implemented Material Management tool to a great extent. These tools helped to optimize performance through customer service and that the firm had achieved significant cost saving, improvement in production efficiency that ensured the right items are bought and made available to the manufacturing operations at the right time. The study concluded that implementation of current tools, software's and technologies can make the material flow of the industry more effective and efficient.

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