

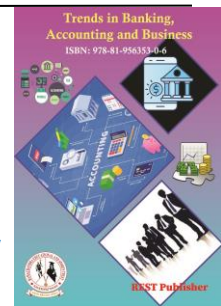


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A Study on Current Material Management Practices And Development at Weg Industry (India) Pvt ltd at Hosur

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Abstract: A study on current material management practices and development, 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.

Keywords: Inventory control, supply chain management, procurement, resource allocation, cost control and quality control.

1. INTRODUCTION

Materials management is simply the process by which 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. It is concerned with the flow of materials from suppliers to the organizational stores and to the user in the production department. It includes activities of purchase of various types of materials, management and control of their storage, and flow and supply of these materials to various places. Almost all the organizations, regardless of their nature, have the requirement of proper and efficient management of materials. Furthermore, both real and contrived shortage of materials make materials management an important and difficult organizational function.

The reason is that material, especially components and sub-assemblies, have specific uses and have low flexibility and they need more care in procurement, storage handling, and distribution. Materials are the physical items that are needed for producing goods and services. Materials are one of the main inputs to a process, and typically account for a major portion of the costs. The significance of materials to the efficient operation of organizations is increasing more than ever. Shortages of raw materials, components, and products have been experienced on a global scale. With demand exceeding supply, the price of many materials has increased significantly. Every organization requires raw materials and other materials for its operation that must be acquired, stored, and handled, and there is always a necessity for enough stocks of materials and equipment to be maintained for immediate consumption and for short- and long-term requirements in a modern way. These stocks or inventory are cash in kind that need at most care. Therefore, the safe custody, upkeep and maintenance, handling and proper supply of the materials are of great

importance in current material management.

2. OBJECTIVES OF THE STUDY

1. Low Prices: If materials department succeeds in reducing the price of items it buys, it contributes in not only reducing the operating cost but also in enhancing the profits.
2. Lower Inventories: By keeping inventories low in relation to sales, it ensures that less capital is tied up in inventories. This increases the efficiency with which the capital of the company is utilized resulting in higher return on investment. Storage and carrying costs are also lower.
3. Reduction in Real Cost: Efficient and economical handling of materials and storage lowers the acquisition and possession cost resulting in the reduction in the real cost.
4. Regular Supply: Continuity of supply of materials is essential for eliminating the disruption in the production process. In the absence of regular supply of materials, production costs go up.
5. Procurement of Quality Materials: Materials department is responsible for ensuring quality of materials from outside suppliers. Therefore, quality becomes the single most objective in procurement of materials.
6. Efficient handling of Materials: The effective material control techniques help the efficient handling of materials resulting in the lowering of production cost.
7. Enhancement of firm's goodwill: good relations with the suppliers of materials enhance the company's standing in the society as well as in the business community.
8. Locating and developing future Executives: Materials manager must devote special effort to locate men at lower position who can take up the executive posts in future. It helps in developing talented personnel who are ready to undertake future responsibilities of the business relating to materials management.

3. SCOPE OF THE STUDY

Materials management is one of the significant activities of business. There is no broad Understanding about exactly what activities. It is a business work for planning, purchasing, moving, putting away material in an ideal way which assists association with limiting the different costs like inventory, purchasing, material taking care of and distribution costs. Materials Management is concerned about administration capacities supporting the complete cycle of material flow, from the purchase and internal control of creation materials to planning and control of work in process, to warehousing, distribution and shipping of the finished item. A viable materials management cycle guarantees that the perfect sorts of materials are at the ideal spot at whatever point required. In general, the goal of material management is to ensure that the right materials are available, At the right time In the right quantities, and At the right cost, To meet the needs of the organization. This involves balancing the costs of holding inventory against the costs of stock outs or delays in production, while also managing risks such as supply chain disruptions, quality issues, and environmental concerns. In recent years, the scope of material management has expanded to include more complex and strategic activities, such as supplier relationship management, sustainability and circularity initiatives, and digital transformation of supply chain operations. These trends are driven by increasing competition, changing customer demands, and the need for greater efficiency, agility, and resilience in supply chain operations.

4. LITERATURE REVIEW

Caldas Carlos H. described the results of their study which was aimed to identify materials management systems that reflect current and emerging capital projects industries. This research was done by surveys, interviews and case studies that involved 54 different organizations. Set of different practices, concepts and issues related to materials management was formed collectively and the responses given by organizations are given in form of percentage. With the help of the extensive data collected with this research, different aspects and stages of the materials management system are addressed in detail. The research paper concludes by highlighting the importance of proper materials management system and also one of the main points explained here is use and up gradation of modern IT systems for materials management in construction related industries.

Dale.B.G. (1983) On the materials management system for a complex organisation, it was found that there was no

single concept of what materials management really was and had many interpretations. Research and experience suggested that many managers in large organisations had a relative lack of appreciation of company-wide developments that could affect them. Materials management might work better in smaller to medium-sized organisations. Improvements could be made through coordination of meetings and regular presentations of new company developments by the people involved to groups of executives or managers.

Bernold and Treseler (1991) Stated that the performance of suppliers is related to the success of the material management system, thus selection of vendors is a very important aspect. They introduced the Concept of Best Buy. Best Buy assumes a certain level of suitability, but considers cost and procure ability, transportation and disposal. Best Buy does not necessarily mean best price, procurement and technical specifications should also be considered. In addition, other factors such as specifications, price, delivery time, etc. should be considered.

Leenders M.R., Fearon H. E. and Wilbur B. E. Described in purchasing and Material Management universal Book stall, (New Delhi 1989-90 P. 610) that their major challenges in setting supply objective and strategies: The effective interpretation of corporate objective and supply objective, The choice of the appropriate action plan or strategy to achieve the desired objective, The identification and feedback of supply issues to be integrated into organization objectives and strategies.

Thomas and Sanvido (2004) Started that although fabricators are a critical component for the material management process, their role has not been considered in previous research. Furthermore, they pointed out that they didn't find quantitative research studies that studied the impacts in a project due to the fabricator's performance. They analysed three case studies to demonstrate the quantitative effect of the fabricator in labour productivity.

Khyomesh V. Patel and Chetna M. Vyas. (2011), Stated that a void created by the absence of proper materials management on companies. Research has shown that materials and equipment may constitute more than 70% of the total cost for a typical project. One of the major problems in delaying projects is poor materials and equipment management. They concluded that there should be a centralised material management team co-ordination between the site and the organization, Proper control, tracking and monitoring of the system is required, Awareness and accountability should be created within the organization.

James Monday Unam. (2012), The purpose of this study was to investigate the relationship between the management of materials and success of manufacturing companies. The findings provided the proof of a positive significant relationship between efficient material management and performance in the business. The study also found inter-departmental cooperation, successful inventory management, good relationship with suppliers were significant success factors of material management. This study showed that priority must be given to Materials Management as a total concept for manufacturing industries to achieve remarkable success in their results.

S.Sindhu, K.Nirmalkumar and V.Krishnamoorthy. (2014), Stated that inventory management system includes methods of procurement, storage, identification, recovery, and transport and construction. The first part is focused on questionnaire surveys carried out in different businesses. In the second part, the results were analysed by using Statistical Package for Social Sciences SPSS. One of the conventionally used methods to define inventories is ABC analysis, and a firm's case study is collected.

Ibegbulem Andreas Brutus and OkorieChiyem. (2015), Aims at finding out how an organization can tackle the problems and identified how effective material management can increase the profitability of an organization. The study revealed that material management used by the organization contributes to the profitability of the company, adequate storage facilities prevent interruption on production process among other things.

5. RESEARCH METHODOLOGY

Research methodology refers to the systematic process of collecting and analyzing data to answer research questions or test hypotheses. It involves a series of steps that researchers undertake to conduct scientific investigations and discover new knowledge or validate existing theories.

6. DATA ANALYSIS AND INTERPRETATION

CHI SQUARE TEST:

Gender - Your opinion on Material Handling in the firm.

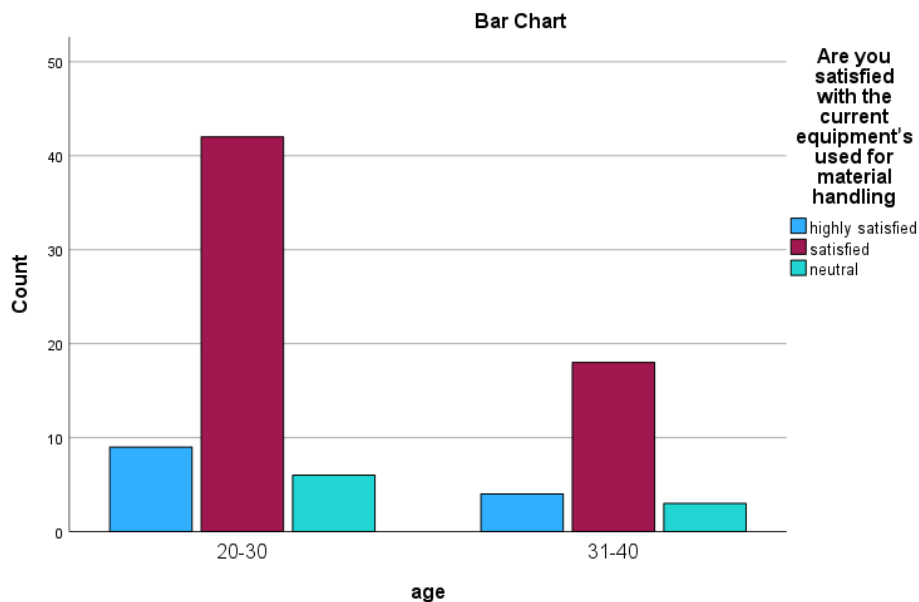
Hypothesis:

- Null Hypothesis (HO): There is a significance difference between Gender and the opinion on Material Handling in the firm.
- Alternative Hypothesis (H1): There is no significance difference between Age compensation payment system you prefer.

Gender		Your opinion on Material Handling in the firm			Total	chi square		
		Excellent	good	moderate		e value	p value	
male	n	19	36	8	63	8.147a	0.017014373	
	%	23	44	10				
Female	n	0	17	2				19
	%	0	21	2				
Total	n	19	53	10				82
	%	23.17073	64.63414634	12.19512195				

INTERPRETATION:

Since the P value is lesser than 0.05, accept the by null hypothesis, reject alternative hypothesis 0.017014373, level of significance 5%. Hence there is no significant association between gender of the opinion on Material Handling in the firm. Based on overall percentage, 77% of male respondents, 23% of respondents are chosen excellent, 44% of respondents good, 10% of respondents are Moderate for opinion on Material Handling in the firm from 82% of female respondents, 19% of respondents are chosen excellent, 53% of respondents good, 10% of respondents are Moderate for opinion on Material Handling in the firm



Age - Are you satisfied with the current equipment's used for material handling.

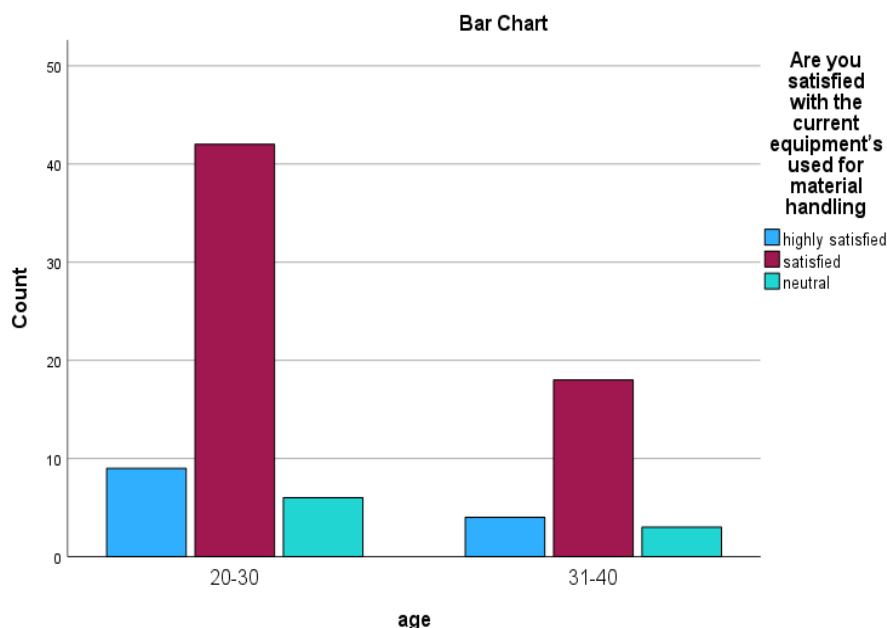
Hypothesis:

- Null Hypothesis (HO): There is no significance difference between Age and Satisfied with the current equipment's used for material handling.
- Alternative Hypothesis (H1): There is a significance difference between Age and Satisfied with the current equipment's used for material handling.

Age		Are you satisfied with the current equipment's used for material handling			Total	chi square	
		highly satisfied	Satisfied	Neutral		e value	p value
20-30	n	9	42	6	57	.042a	0.979410598
	%	11	51	7	70		
31-40	n	4	18	3	25		
	%	5	22	4	30		
Total	n	13	60	9	82		
	%	16	73	11	100		

INTERPRETATION:

Since the P value is greater than 0.05, reject the by null hypothesis, accept alternative hypothesis 0.979410598, level of significance 5%. Hence there is significant association between Age and Satisfied with the current equipment's used for material handling. Based on overall percentage, 70% of 20 – 30 aged respondents, 11% of respondents are highly satisfied, 51% of respondents are satisfied and 7% of respondents are Neutral with the current equipment's used for material handling. From 30% of 31 – 40 aged respondents, 5% of respondents are highly satisfied, 22% of respondents are satisfied and 4% of respondents are Neutral with the current equipment's used for material handling.



Education qualification - Your opinion on material cost control techniques followed by the firm.

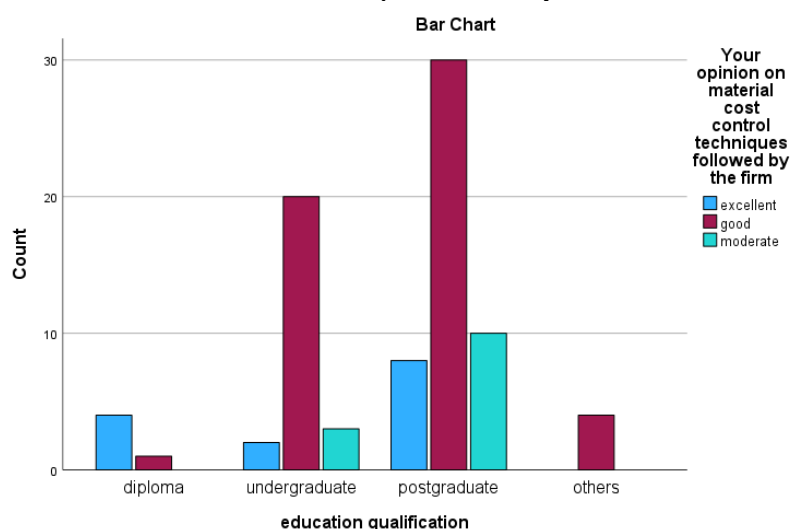
Hypothesis:

- Null Hypothesis (HO): There is a significance difference between Education qualification and opinion on material cost control techniques followed by the firm.
- Alternative Hypothesis (H1): There is no significance difference between Education qualification and opinion on material cost control techniques followed by the firm.

Education qualification		Your opinion on material cost control techniques followed by the firm			Total	chi square	
		excellent	Good	Moderate		e value	p value
Diploma	n	4	1	0	5	18.972a	0.004
	%	4.87804878	1.2195122	0	6.09756098		
undergraduate	n	2	20	3	25		
	%	2.43902439	24.3902439	3.65853659	30.4878049		
postgraduate	n	8	30	10	48		
	%	9.75609756	36.5853659	12.195122	58.5365854		
Others	n	0	4	0	4		
	%	0	4.87804878	0	4.87804878		
Total	n	14	55	13	82		
	%	17.0731707	67.0731707	15.8536585	100		

INTERPRETATION:

Since the P value is lesser than 0.05, accept the by null hypothesis, reject alternative hypothesis 0.004, level of significance 5%. Hence there is no significant association between Education qualification of respondent and opinion on material cost control techniques followed by the firm. Based on overall percentage, 6.09% of Diploma respondents, 4.87% of respondents are chosen excellent, 1.21% of respondents are chosen good, 0% of respondents are moderate for opinion on material cost control techniques followed by the firm. From 30% of undergraduate respondents, 2.4% of respondents are chosen excellent, 24.3% of respondents are chosen good, 3.6% of respondents are moderate for opinion on material cost control techniques followed by the firm. From 58.5% of postgraduate respondents, 9.7% of respondents are chosen excellent, 36.5% of respondents are chosen good, 12.19% of respondents are moderate for opinion on material cost control techniques followed by the firm. From 4.8% of other respondents, 0% of respondents are chosen excellent, 4.8% of respondents are chosen good, 0% of respondents are moderate for opinion on material cost control techniques followed by the firm.

**Years of experience in the field - Frequency of problems faced during material handling.**

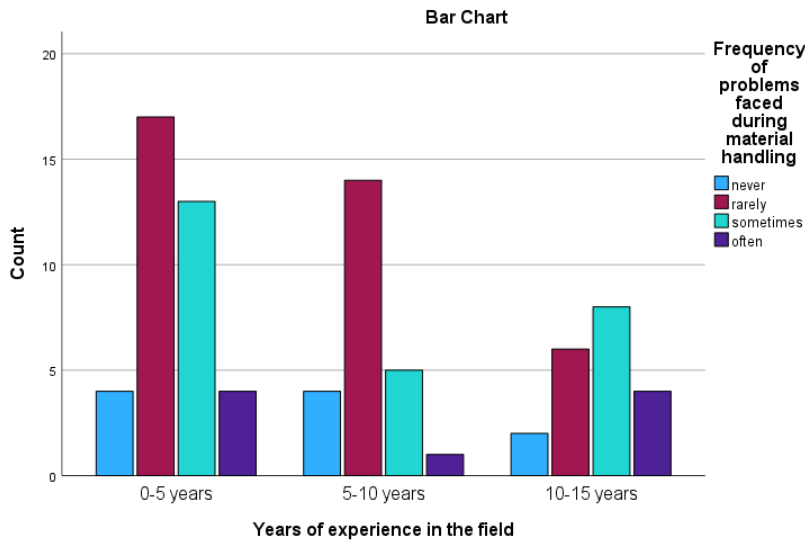
Hypothesis:

- Null Hypothesis (HO): There is no significance difference between experience in the field and Frequency of problems faced during material handling.
- Alternative Hypothesis (H1): There is a significance difference between experience in the field and Frequency of problems faced during material handling.

Years of experience in the field	Frequency of problems faced during material handling				Total	chi square		
	Never	Rarely	sometimes	often		e value	p value	
0-5 years	n	4	17	13	4	38	6.411a	0.379
	%	4.87804878	20.7317073	15.8536585	4.87804878	46.3414634		
5-10 years	n	4	14	5	1	24		
	%	4.87804878	17.0731707	6.09756098	1.2195122	29.2682927		
10-15 years	n	2	6	8	4	20		
	%	2.43902439	7.31707317	9.75609756	4.87804878	24.3902439		
Total	n	10	37	26	9	82		
	%	12.195122	45.1219512	31.7073171	10.9756098	100		

INTERPRETATION:

Since the P value is greater than 0.05, reject the by null hypothesis, accept alternative hypothesis 0.379, level of significance 5%. Hence there is significant association between experience in the field and Frequency of problems faced during material handling. Based on overall percentage, 46.3% of 0 – 5 years experienced respondents, 4.8% of respondents are chosen never, 20.7% of respondents are chosen rarely, 15.8% of respondents are chosen sometimes and 4.8% of respondents are chosen often with the current equipment’s used for material handling. From 29.4% of 5 – 10 years experienced respondents, 4.8% of respondents are chosen never, 17.0% of respondents are chosen rarely, 6.0% of respondents are chosen sometimes and 1.2% of respondents are chosen often with the current equipment’s used for material handling. From 24.3% of 10 – 15 years experienced respondents, 2.4% of respondents are chosen never, 7.3% of respondents are chosen rarely, 9.7% of respondents are chosen sometimes and 4.8% of respondents are chosen often with the current equipment’s used for material handling.



Position in the company - Are you satisfied with the current racking system of the firm.

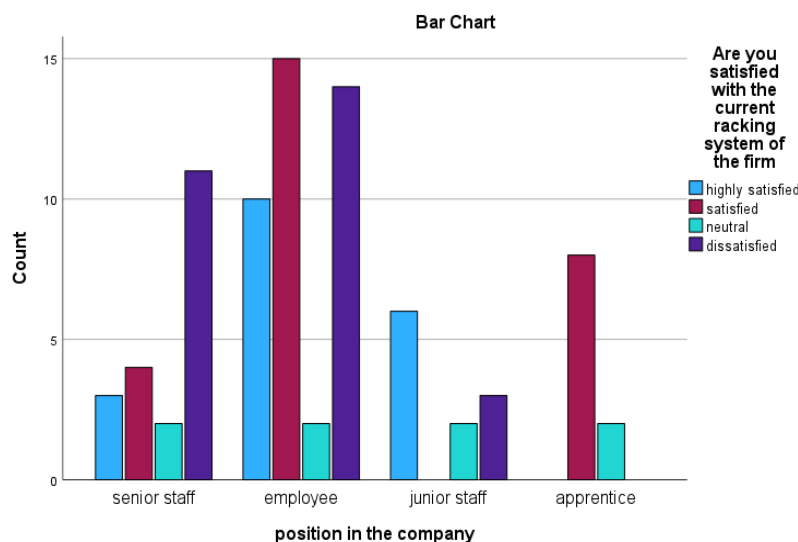
Hypothesis:

- Null Hypothesis (H₀): There is a significance difference between Position in the company and satisfied with the current racking system of the firm.
- Alternative Hypothesis (H₁): There is no significance difference between Position in the company and satisfied with the current racking system of the firm.

position in the company		Are you satisfied with the current racking system of the firm				Total	chi square	
		highly satisfied	Satisfied	neutral	Dissatisfied		e value	p value
senior staff	n	3	4	2	11	20	28.117 a	0.001
	%	3.65853659	4.87804878	2.43902439	13.4146341	24.3902439		
Employee	n	10	15	2	14	41		
	%	12.195122	18.2926829	2.43902439	17.0731707	50		
junior staff	n	6	0	2	3	11		
	%	7.31707317	0	2.43902439	3.65853659	13.4146341		
Apprentice	%	0	8	2	0	10		
	n	0	9.75609756	2.43902439	0	12.195122		
Total	%	19	27	8	28	82		
	n	23.1707317	32.9268293	9.75609756	34.1463415	100		

INTERPRETATION:

Since the P value is less than 0.05, accepted by null hypothesis, rejected alternative hypothesis 0.001, level of significance 5%. Hence there is significant association between Position in the company and satisfied with the current racking system of the firm. Based on overall percentage, 24.3% of senior staff respondents, 3.6% of respondents are highly satisfied, 4.8% of respondents are satisfied, 2.4% of respondents are neutral and 13.4% of respondents are dissatisfied with the current racking system of the firm. From 50% of Employee respondents, 12.1% of respondents are highly satisfied, 18.2% of respondents are satisfied and 2.4% of respondents are neutral and 17% of respondents are dissatisfied with the current racking system of the firm. From 13.4% of junior staff respondents, 7.3% of respondents are highly satisfied, 0% of respondents are satisfied and 2.4% of respondents are neutral and 3.6% of respondents are dissatisfied with the current racking system of the firm. From 12.1% of junior staff respondents, 0% of respondents are highly satisfied, 9.7% of respondents are satisfied and 2.4% of respondents are neutral and 0% of respondents are dissatisfied with the current racking system of the firm.



7. FINDINGS

1. Accept the null hypothesis, reject alternative hypothesis 0.017014373, level of significance 5%. Hence there is no significant association between gender of the opinion on Material Handling in the firm.
2. 77% of male respondents, 23% of respondents are chosen excellent, 44% of respondents good, 10% of respondents are Moderate, 82% of female respondents, 19% of respondents are chosen excellent, 53% of respondents good, 10% of respondents are Moderate for opinion on Material Handling in the firm.
3. Accept the by null hypothesis, reject alternative hypothesis 0.004, level of significance 5%. Hence there is no significant association between Education qualification of respondent and opinion on material cost control techniques followed by the firm.
4. 6.09% of Diploma respondents, 4.87% of respondents are chosen excellent, 1.21% of respondents are chosen good, 0% of respondents are moderate, From 30% of undergraduate respondents, 2.4% of respondents are chosen excellent, 24.3% of respondents are chosen good, 3.6% of respondents are moderate, From 58.5% of postgraduate respondents, 9.7% of respondents are chosen excellent, 36.5% of respondents are chosen good, 12.19% of respondents are moderate, and From 4.8% of other respondents, 0% of respondents are chosen excellent, 4.8% of respondents are chosen good, 0% of respondents are moderate for opinion on material cost control techniques followed by the firm.
5. Accepted by null hypothesis, rejected alternative hypothesis 0.001, level of significance 5%. Hence there is significant association between Position in the company and satisfied with the current racking system of the firm.
6. Based on overall percentage, 24.3% of senior staff respondents, 3.6% of respondents are highly satisfied, 4.8% of respondents are satisfied, 2.4% of respondents are neutral and 13.4% of respondents are dissatisfied, From 50% of Employee respondents, 12.1% of respondents are highly satisfied, 18.2% of respondents are satisfied and 2.4% of respondents are neutral and 17% of respondents are dissatisfied, From 13.4% of junior staff respondents, 7.3% of respondents are highly satisfied, 0% of respondents are satisfied and 2.4% of respondents are neutral and 3.6% of respondents, From 12.1% of junior staff respondents, 0% of respondents are highly satisfied, 9.7% of respondents are satisfied and 2.4% of respondents are neutral and 0% of respondents are dissatisfied with the current racking system of the firm.

8. SUGGESTIONS

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. 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. 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.

9. 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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