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**“ROLE AND IMPORTANCE OF MATERIAL MANAGEMENT AMONG LEADING TRACTOR MANUFACTURING COMPANY IN INDIA”**

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**ABSTRACT**

The organizational approach known as materials management has gained validity in recent years. A major part of the fixed capital in manufacturing firms is in plant and machinery and a substantial part of the working capital is in raw materials, component parts and supplies. All these have been acquired through the purchase function which is one of the functions of materials management. Thus, the significance of material management is paramount in these testing times for all the business firms including tractor manufacturing company.

Every tractor manufacturing company should adopt a very cautious and awakened frame of material management policy and approach. Thus in this backdrop the present research endeavor relates role and importance of materials management in tractor manufacturing company in India.

The researcher utilized a descriptive survey research design as permitted an in- depth investigation of the problem under study (Yount, 2006). The design accurately describes an association between variables minimizing bias and maximizing the reliability of the data (Kothari, 2004). Questionnaires were distributed to the respondents for collecting relevant data to the study. The research study targeted 100 procurement officers in the procurement function of *Force, Sonalika and Eicher tractor manufacturing company in India*. The study used a survey and a sample of 30 procurement officers out of the total

population was obtained using simple random sampling method. The study used simple random sampling method in selecting the respondents. ANOVA and Regression analysis was conducted through SPSS 18.1 on the respondents opinion on selected variables.

The ANOVA result for all variables indicates that there was a highly significant relationship between the variables at  $F = 2.727$  and  $P = 0.000$ . This implies that there is a strong relationship between the four variables and the performance of the procurement function of tractor manufacturing companies. The study found that improving production scheduling can reduce inventory levels using MRP systems. This helps in achieving lean inventory systems to some extent in the tractor manufacturing companies in India and thus improving the performance of the procurement function because it is able to forecast the demand of the raw materials and the consumables.

**Key Words:** - Materials Management, Force, Sonalika, Eicher, SPSS, ANOVA

**1. INTRODUCTION**

Economic Development has become the magic word for all the countries of the world to overcome the age old problems in Agriculture, Industry, Trade, Transport etc. Present age is branded as Development Age to propagate faster economic development through rapid

industrialization for the process of economic growth. India has been no exception to this universal urge. The strategy of growth pursued in our Five Year Plans aimed at building the Indian economy in a self reliant and self sustained manner. Indian industrial sector witnessed a phenomenal expansion and it has started acquiring commanding heights of the economy because of the policy environment created by the Government for the industrial growth. Further the Liberalization, Privatization and Globalization allowed the foreign capital inflow with quality and competence. Thus, the new economy of India is hit on one hand with the old industries and on the other the new industries. The policies adopted by the old industries in India to cope with the change have been a real acid test of survival. All types of industries have undergone this acid test and tractor manufacturing Industry too has under gone the same and taken it not as challenge but for very survival.

The objectives of any industry including tractor manufacturing industry can be realized only with the overall effectiveness in all areas of operation which includes the management of materials. Materials management is concerned with input process of manufacturing and includes the flow of raw materials, piece parts, components and finished goods, to supply the sales and marketing functions with product. The 'input' process is separated from the 'output' process because in a manufacturing concern the functions involved in the input process finally change the physical state of the product. The important aspects of the material management system are **'materials', time, and space, and the operation of the system** aims to overcome the problems of 'supply', distance and time, in order to obtain product for the minimum cost under the constraint of an established customer service level requirement.

The procurement of materials to produce the product is not the sole purpose of tractor manufacturing industry. The material management concept thus includes elements of procurement, movement, sales and profit with all the changes in society and policy.

***Materials Management has been branded as the kingpin of production.*** The task of materials management is integrating external suppliers with internal departments in order to provide a smooth product flow process. Such a task is extremely difficult because of the existence of fundamental conflicts:

- Every supplier aims to maximize his profit
- There may be no overall control of materials within the company because each department wishes to have security of supply without responsibility for either quality or cost.
- There may be no accountability for materials at department level and Costs may not be broken down to product level.
- The poor communication gap between the departments within the company resulting in confusion between the departments.
- Due to the communication gap between the departments the purchase department is given too short notice of time which finally results in poor working relationships with suppliers and the business firm.

Material management is an approach for planning, organizing, and controlling all those activities principally concerned with the flow of materials into an organization. Arnold and Chapman (2004) outlined the basics about material management from initial purchase to destination. It is designed to enhance coordination and control of various materials activities. The main purpose of any organization is to make profit. Material is the central item & activity of

any organization. It is considered as a mean to achieve better productivity, which should be translated into cost reduction.

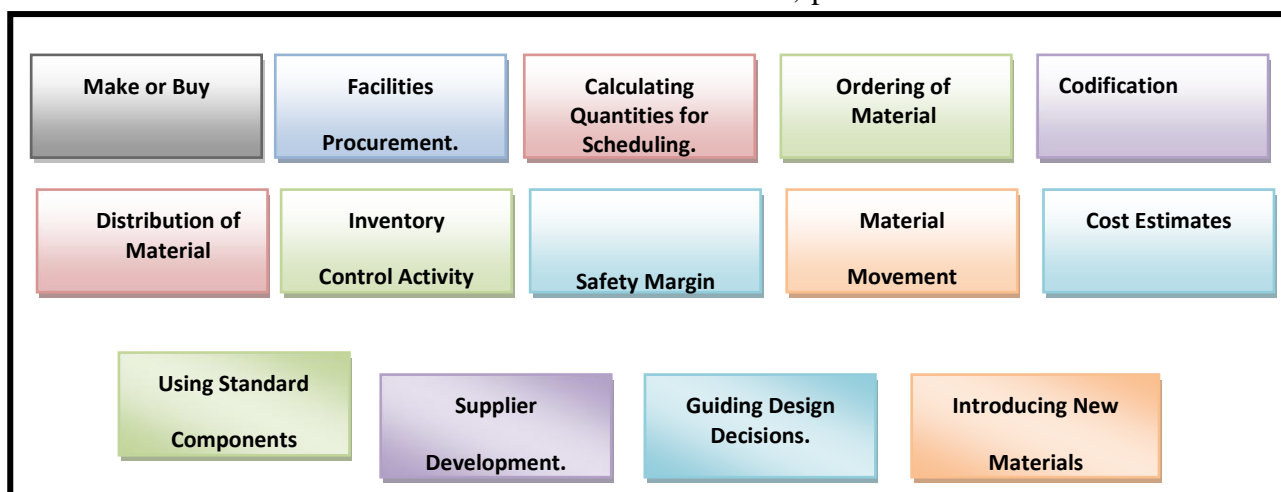
- **Time: Ensuring** timely flow of materials---delay and extra expenses,
- **Cost:** Overall project cost=70% direct cost of building material 30%-labor cost,
- **Quality:** If materials are purchased too early---capital may held up and interest charges incurred on excess inventory of materials,
- **During storage---** it may deteriorate or got stolen unless special care is taken.

Hence, it is necessary to avoid the conflicts and confusion which normally prevails between the internal departments of the tractor manufacturing companies and the suppliers. This will help the firm to avoid a sub optimal type of functioning and

importance of materials management in tractor manufacturing company in India.

**2. Literature Review:**  
**Material Management**

Cost-wise all construction works depend on two factors, namely, cost of materials and cost of labour. According to Khyomesh (2011), 30 to 70 percent of project cost is consumed by material with about 30 to 40 percent of labor. But labour cost is nearly the same for good construction work as well as bad construction; therefore attention should mainly be directed to the cost of materials and management of materials. Most often contractors carry out project with little or no profit which is so due to procurement systems in which the lowest bidder is often awarded the contract. So with good construction material management construction cost overrun can be avoided, profits can be made even with



(Source: Material management function. (Venkatesh, 2016)

**Figure 2: Functions of Material Management 2.1.1. Role of Material Manager**

to attain the stage of effective functioning.

Thus, the significance of material management is paramount in these testing times for all the business firms including tractor manufacturing company. Every tractor manufacturing company should adopt a very cautious and awakened frame of material management policy and approach. Thus in this backdrop the present research endeavor relates role and

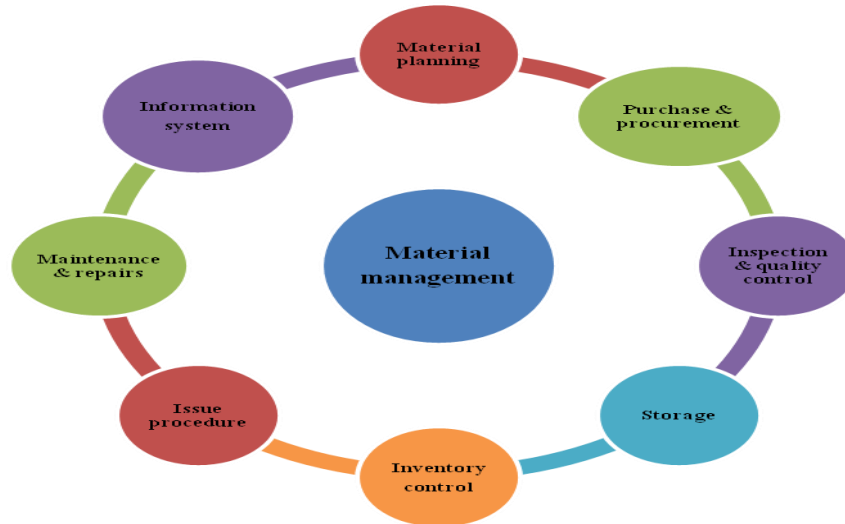
the lowest bid and the various bad practices by contractors can be avoided.

**2.1. Functions of Material Management**

Material manager should be effective in his work; A successful manager should achieve inventory control & supply material for manufacturing, Production control is also important, Must understand the inventory process exerting continuous pressure to keep stocks down, Gets the job

done through a process of evaluation, gradually assuming responsibility for all phases of materials management.

**2.1.2. Three important functions of materials manager:**



communication from top to bottom hence the materials manager is one who is in contact with all the functional areas of the organization. **2.4. Objective -1: To Study the Material**

Purchase of materials, Material movement, Storage of materials.

**2.1.3. In case of complex projects sophisticated tools and techniques are incorporated**

1. Build super fast, 2. ERP (enterprise resource planning). 3. Conventional technique.

**2.2. Functions of Management Planning**

The most important function of management is planning. The planning decides which materials are needed, when they are needed and the quantity of a certain material. One of the tools for materials planning is Materials requirement planning (MRP).

**2.3. Organizing**

In the classical situation, the organization chart forms a pyramidal structure. There is a clear flow of information from top to bottom and vice versa. Directing signifies

**Management in Construction by Highlighting its Importance**

- Reducing the overall costs of materials
- Better handling of materials
- Reduction in duplicated orders
- Improvements in labor productivity
- Improvements in project schedule
- Quality control
- Better field material control
- Better relations with suppliers
- Reduce of materials surplus
- Reduce storage of materials on site
- Labor savings
- Stock reduction
- Purchase savings
- Better cash flow management

(Source: Material management construction handbook, Chudley, 2011)

**Figure 3: Material Management Cycle**

**2.5. Objective- 2: To Derive Proper Material Management Strategy Based On Classifications.**

**2.5.1. Material Planning**

The most commonly used basis for planning things out for the project is the BOQ prepared by the client. Companies may have two major levels in planning-micro and macro level. Bell and Stukhart (1986) say that Time, cost, material and

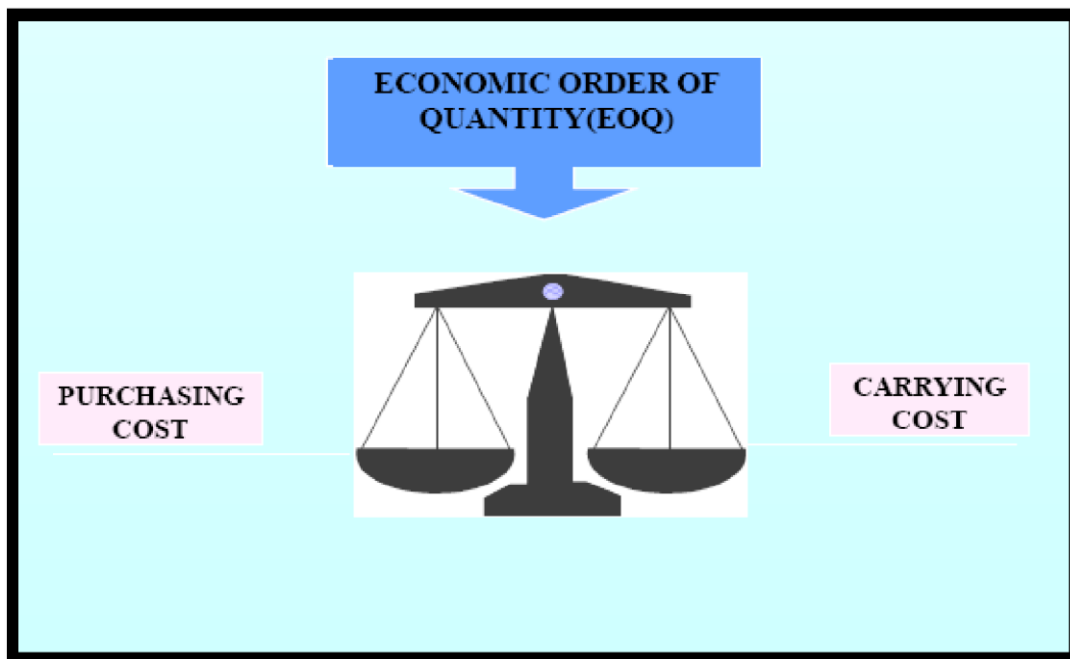
labour are the four major types of planning undertaken on sites. The planning should be revised as frequently as possible in order to monitor whether work is progressing as planned. 2.5.2. Procurement and Purchase

- Step 1 – Material Indent
- Step 2 – Enquiry to Vendors
- Step 3 – Vendor Comparison
- Step 4 – Vendor Selection, Negotiations
- Step 5 – Purchase Order

**2.6. Inventory Control (IC)** Inventory control means stocking adequate number and kind of stores, so that the materials are available whenever required and wherever required (Formosa, et,all,1999).

**2.6.1 Functions of Inventory Control**

To provide maximum supply service, consistent with maximum efficiency and optimum investment. To provide cushion between forecasted and actual demand for a material. (Abdul Rahman, 1994).  
 $EOQ = \text{Average Monthly Consumption} \times \text{Lead Time [in months]} + \text{Buffer Stock} - \text{Stock on hand}$



- Step 6 – Vendor Evaluation

(Source: Inventory control and management)

**Figure 4: Inventory Control**

**2.6.2 Why should we classify materials?**

Kini (1999) outlined that, we deal with hundreds of different types of inventory items, With so many items, complexity of managing the process increases, To manage these inventories effectively, Grouping together of materials of technical affinity is known as classification.

**2.6.3 Classification Can Be Based on Various Attributes:**

By size , By names , By values ,By end use, By product category **2.7. Classification of Materials** Materials can be classified into different categories depending on their fabrication and in the way that they can be handled on site. Construction materials are classified as bulk, bagged, paletted, packaged and loose based on its typology and medium. Based on this the materials are further more classified in detail.

**2.8 Various Analysis Processes Includes:**



**2.8.1. ABC Analysis (ABC = Always Better Control)**

This is based on cost criteria. It helps to exercise selective control when confronted with large number of items it rationalizes

resources, About 70 % of materials consume 10 % of resources.

**2.8.2. VED Analysis: Based On (Subjective Analysis):** Items are classified into:

**Vital:** Shortage cannot be tolerated.,

**Critical Value and Shortage of Cost of an Item**

**Table 1 : ABC-VED Matrix**

	V	E	D	CATEGORY	ITEM	COST
<b>A</b>	AV	AE	AD	CATEGORY 1 (needs close monitoring & control)	10	70%
<b>B</b>	BV	BE	BD	CATEGORY 2 (Moderate control.)	20	20%
<b>C</b>	CV	CE	CD	CATEGORY 3 (no need for control)	70	10%

(Source: Google books - The Complete Book on Construction Material)

the number of orders, number of items & reduce the inventory. About 10 % of materials consume 70 % of resources, About 20 % of materials consume 20 % of

With a combination of ABC AND VED Analysis the ABC-VED Matrix is evolved to define the meaningful control over the material supply. Category I includes all vital and expensive items (AV,BV,CV,AE,AD),Category II includes the remaining items of E and B group (BE,CE,BD),Category III includes all desirable and cheaper group of items (CD),By combining both the consumption value and the criticality is found with 9 different variables. Gupta R (2007).

**2.8.3. SDE Analysis: Based on Availability: Scarce:** Managed by top level management,

Maintain big safety stocks, **Difficult:** Maintain sufficient safety stocks, **Easily available:** Minimum safety stocks

**2.8.4. FSN Analysis: Based on Utilization:** Fast moving, Slow moving, Non-moving.

Non-moving items must be periodically reviewed to prevent expiry & obsolescence.

**2.8.5. HML Analysis: Based On Cost per Unit : Highest, Medium, Low** This is

**Essential:** Shortage can be tolerated for a short period,

**Desirable:** Shortage will not adversely affect, strictly scrutinized and more resources used.

used to keep control over consumption at departmental level for deciding the frequency of physical verification.

**2.8.6. G-O-L-F Classification:** Government-Ordinary-Local-Foreign, Focus: source of material, Useful for: Purchase department

**2.8.7. S-O-S Classification:** Seasonal – Off-Seasonal nature of items., Focus: Seasonal nature of items, Useful for: Purchase department, stores planning for stocking, finance, Working capital –cash flows.

**2.8.8. X-Y-Z Classification** Based on the value of stocks on hand (i.e. investment in inventory), Items whose inventory values are high are – X items, Items whose inventory values are low – Z item, Items whose inventory values are moderate are – Y items. XYZ is used in conjunction with ABC or FSN analysis **2.9. Objective-3: To Estimate and Detail**

### **Out Material Management in One Single Trade to Maximize Its Resource Efficiency in Procurement of Material Criteria**

Through case study from existing township projects analysis is made, Trade to be detailed out: tiles and cladding work and paint.(Packaged material).

**PHASE 1: MATERIALS IDENTIFICATION** (Choice of material/material used)-(BUY)

**PHASE 2: VENDOR SELECTION** (Choose Contractor—supply +apply)-(TRANSFER)

**PHASE 3: PROCUREMENT PROBLEM** (Transit, Breakage, P.O, Inventory)-(STORE)

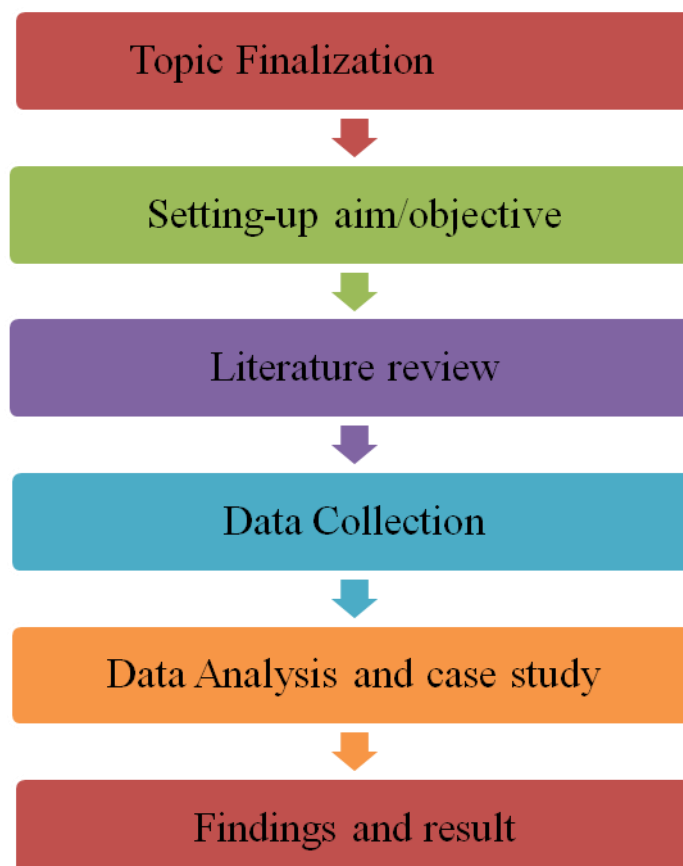
**PHASE 4: CONSTRUCTION PHASE** (Challenges during execution)-(DELIVER)

The study applied simple random sampling procedures to obtain the respondents for the questionnaires in the selected tractor manufacturing companies that are in the northern Indian belt. The sample frame of

### **III RESEARCH METHODOLOGY**

The researcher utilized a descriptive survey research design as permitted an in- depth investigation of the problem under study (Yount, 2006). The design accurately describes an association between variables minimizing bias and maximizing the reliability of the data (Kothari, 2004). Questionnaires were distributed to the respondents for collecting relevant data to the study. The research study targeted all the 100 procurement officers in the procurement function of *Force, Sonalika and Eicher tractor manufacturing company in India*. The study used a survey and a sample of 30 procurement officers out of the total population was obtained using simple random sampling method. The study used simple random sampling method in selecting the respondents.

the study included a representative sample of the individuals working in the procurement function. At least 30% of the total population is a representative (Borg & Gall, 2003). Thus, 30% of the accessible



population is enough for the sample size in this study. Out of the 100 procurement personnel in the four tractor manufacturing companies, the researcher took 30% of the total population which was 30 procurement personnel.

Thus  $30/100 * 100 = 30$

Therefore 30 procurement personnel from the four tractor manufacturing companies were the respondents. 7 respondents from each company were issued with

to understand results. Qualitative data analysis, on the other hand helped the researcher to gain in-depth understanding of the research findings. Quantitative data was analyzed through descriptive statistics in the form of frequencies tallies and percentages. The statistics were generated using statistical package for social sciences (SPSS) and data obtained was communicated through pie charts and tables. Qualitative data was analyzed by

**Table 4.1: Result of the pilot study**

<b>Variables</b>	<b>Cronbach's</b>
Lean inventory system	0.701
Strategic supplier partnerships	0.769
Information technology	0.731
Legal policies	0.720

questionnaires. The study relied on primary data. Structured questionnaires were developed and administered to the respondents who indicated their responses in the spaces provided. Structured questionnaires were used since they are simple to administer and will ease the data analysis process

(Barnes, 2001)

Reliability was tested using Cronbach's alpha scores. Principal factor analysis was used to determine the content validity of the instrument. The tabulated data was subjected to both quantitative and qualitative analysis. Quantitative data analysis was helpful in data evaluation because it provided quantifiable and easy. The findings of the pilot study in table 4.1 showed that the use of lean inventory systems had a Cronbach's reliability value of 0.71. Strategic supplier partnerships had

organizing them in accordance with the research questions and objectives. After the analysis, the data was presented in tables and charts and recommendations and conclusions made.

#### **IV DATA PRESENTATION AND FINDINGS**

The data is presented in form of tables and pie charts where necessary and they are in line with the research design and the objectives of the research. **4.1 Result of the pilot study**

The study involved a random selection of 3 procurement personnel from 3 tractor manufacturing companies each. The findings are recorded below. The findings are recorded in the table below

a reliability alpha value of 0.769.

Information technology had a reliability alpha value of 0.731 and the legal policies had a reliability alpha value of 0.720.



**4.2 Background Information**

**4.2.1 Response rate**

**Table 4.2: Response rate**

Population	Frequency	Percentage	
30	26	87%	100%

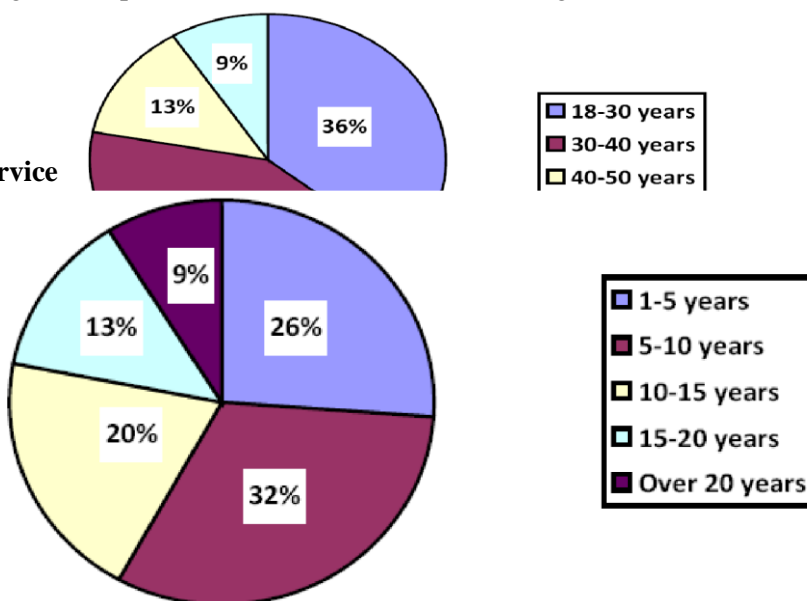
From table 4.2, the response rate was 87%. Mugenda & Mugenda 1999, states that a response rate of 60% is good, and above 70% is perfect. Since the response rate is 87%, it is excellent.

years, 36% were aged between 18-30 years, 13% were aged between 40-50 years, and 9% were aged between 50-60 years.

The study sought to know the length of time the respondents have worked at their

The study sought out the age of the companies. The findings were recorded in respondents who were the procurement figure 4.1. personnel in the tractor manufacturing

**4.2.3 Years of service**



**4.2.2 Age of respondents**

From the findings in figure 4.1, 42% of the respondents were aged between 30-40

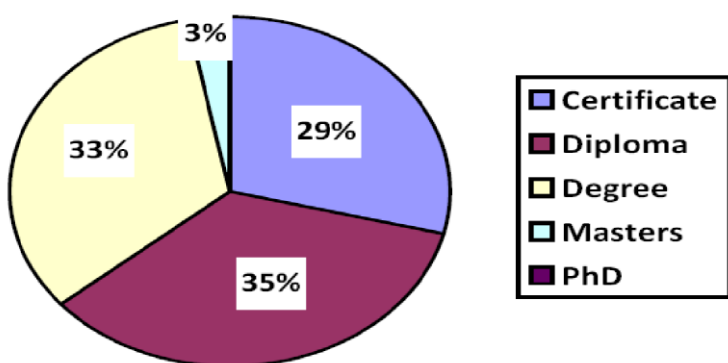
**Figure 4.2: Years one has worked at the tractor manufacturing companies**

From the findings in figure 4.2, 32% of the respondents had worked in their companies for between 5-10 years, 26% had worked for between 1-5 years, 13% had worked for between 15-20 years and 9% had worked

hospitals as this helped in determining their experience and knowledge of the hospital. The findings are indicated in figure 4.2. for over 20 years.

**4.2.4 Highest Level of Education**

From the finding in Figure 4.3, 35% of the respondents were Diploma holders, 33% were Degree holders, 29% were Certificate holders and 3% were Masters holders and none of the respondents was a PhD holder.



**Figure 4.3: Highest level of education**

**Table 4.3: Inventory system in use**

Inventory system in use	Response (%)	
Manual	40%	100%
MRP	47%	100%
Barcode	10%	100%
Others	3%	100%

From table 4.3, it was found out that MRP systems are the most used inventory management systems at the tractor manufacturing companies with a percentage of 47%, manual systems came second with a percentage of 40%, use of barcodes 10% and other systems like the use of spreadsheets had 3%. The findings are in line with the findings of Timothy L, Patrick O and Nebat M (2013) that MRP is

the most widely used system in inventory management because all the tractor manufacturing companies have to prepare master production schedules, with accurate bills of materials which are key elements in the MRP system. This shows that the tractor manufacturing companies have employed lean inventory systems to some extent.

**Table 4.4: Use of lean inventory systems.**

Statement	Yes	No	
Do you support the use of lean inventory system in your company?	87%	13%	100%

From table 4.4, it was found out that 87% findings are in line with the findings of of the respondents support the use of lean Fahey (2004) that the use of lean inventory inventory systems whereas 13% were not systems has a positive receipt among in support of lean inventory systems. The employees of manufacturing companies. **Table 4.5: How inventory levels can be reduced**

Statement	Response	
Improve supply chain management	11%	100%
Re-engineer inventory control processes	28%	100%
Improve production scheduling	33%	100%
Develop flexible manufacturing	7%	100%
Utilize “pull” based on demand	3%	100%

**4.3 Lean Inventory system**

The first objective of the study was to establish the significance of a lean inventory system on the performance of the procurement function of tractor

manufacturing companies manufacturing companies. The results are recorded in the pie chart and the tables.

From the finding in table 4.5, 33% of the respondents suggested that inventory levels can be reduced through production scheduling, 28% through re-engineering of inventory control processes, 11% by improving supply chain management, 7% by developing flexible manufacturing and

3% by utilizing “pull” based on demand. The findings support the findings of Herrmann (2006) that improving production scheduling can help reduce inventory levels in tractor manufacturing companies.

find out how strategic supplier

**Table 4.6: Relationship with suppliers**

Statement	Long term	Short term	
What is the nature of your company's relationship with its suppliers?	36%	64%	100%

From table 4.6, 64% had a short term relationship with their suppliers whereas 36% had a long term relationship with their suppliers. This implies that the tractor manufacturing companies are yet to adopt the new concept of VMI which would ultimately transfer the responsibility of inventory management from the

procurement functions of the companies to the suppliers and hence substantially improve on the performance of the procurement function. This new concept dictates a long term relationship with a supplier which is not the case in the tractor manufacturing companies

**Table 4.7: Supplier appraisal**

Statement	Long term	Short term	
Do you appraise your suppliers?	29%	70%	100%

From table 4.7, 29% of the respondents The findings support the works Alphonse said that their companies appraise (2015) that supplier appraisal has not been suppliers and 71% said that their taken up fully by tractor companies. companies do not appraise their supplies.

**Table 4.8: Communication with suppliers**

Statement	Response (%)	
Monthly	8%	100%
Once in every 3 months	12%	100%
Twice a year	23%	100%
Once a year	57%	100%

#### **4.5 Strategic supplier partnerships**

The second objective of the study was to partnerships in inventory management From table 4.8, it was established that 57% of the respondents communicate with their suppliers once a year, 23% twice a year, 12%once in every 3 months and 8% communicate with their suppliers monthly. This implies that most tractor manufacturing companies are not keen in

affect the performance of the procurement function of tractor manufacturing companies.

communicating with their suppliers frequently. They mostly communicate with their suppliers once a year during their annual general meetings. **4.6 Information Technology**

The third objective of the study was to investigate the effect of information technology in inventory management on the performance of the procurement function of tractor manufacturing

From table 4.11, it was established that 51% of the inventory management activities in the procurement function of tractor manufacturing companies are not

table 4.9.

**Table 4.9: Use of Information Technology**

Statement	Response (%)	
Is inventory management automated in your company?	Yes (31%)	N (79%)
Once in every 3 months	Yes (11%)	No (89%)

The findings in table 4.9, a small percentage of 31% show that inventor management is automated in the tractor manufacturing companies and 79% show that inventory management is not automated in the tractor manufacturing companies. This shows that tractor manufacturing companies have to some small extent adopted the use of Information Technology in inventory management. They have automated some of their inventory management systems. Christopher (2005) asserts that the use of information Technology in inventory

management is more efficient than the use of manual systems.

**4.7 Legal policies**

The fourth objective of the study was to examine the effect of the legal policies on inventory management in the tractor manufacturing companies on the performance of the procurement function of tractor manufacturing companies. The results are recorded in the charts and the tables.

**Table 4.10: L**

Statement	Yes	NO	
Are you familiar with the public procurement policies and the role of the tractor manufacturing companies in the tractor manufacturing companies?	43%	57%	100%

From table 4.10, it was established that 57% of the respondents were not familiar with the legal policies in place and the role of the government and legal policies of Tractor manufacturing companies management. 43% of the respondents were familiar with the legal polices and the role

of the Tractor manufacturing companies Board. The findings imply that a greater percentage of the respondents are not familiar with the laws guiding the procurement procedures and the legal framework of the tractor manufacturing companies in India.

**Table 4.11: Effect of the**

**n inventory management activities**

Statement	Yes	NO	
Are the inventory management activities affected by the legal policies in place?	49%	51%	100%

companies. The findings are recorded in

affected by the legal policies in place and

49% of the inventory management activities are affected by the legal policies in place

**Table 4.12: The role of the Tractor manufacturing companies Union**

Statement	Response (%)	
Coordinates the procurement and inventory management activities of companies in the tractor manufacturing companies	Yes (33%)	No (67%)
Acts as an intermediary between the government and the industry	Yes (47%)	No (53%)
Monitors the domestic market to avoid any distortions	Yes (44%)	No (56%)
Provides advisory services to growers and millers	Yes (46%)	No (54%)

From table 4.12, it was established that of the role of the India Tractor majority of the respondents are not aware manufacturing companies union.

**Table 4.13: Performance of the procurement function**

Statement	Response (%)	
Does inventory management in your company affect the performance of the procurement function?	Yes (77%)	No (33%)
Do you have any performance measurement procedures in your company?	Yes (29%)	No (71%)
Do reduced inventories improve the performance of your procurement function?	Yes (82%)	No (28%)

From table 4.13, 77% of the respondents agreed that inventory management affects the performance of the procurement function of tractor manufacturing companies and 33% did not agree to that. 82% of the respondents also

agreed that reduced inventories affect the performance of the procurement function and 28% did not agree to that. 71% of the respondents said that they had never seen any performance measurement procedures at their companies whereas 29% said that

## Regression

**Table 4.14: Model Summary for all the Variables**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.826 <sup>a</sup>	.684	.789	.386	1.849

Table 4.14 indicates that the value of the 20.7%. It therefore means that the four adjusted r squared R2 amount to 0.789 factors have a big role to play on the which is 78.9%. This shows that the performance of the procurement function factors that are not covered amount only to of tractor manufacturing companies. **Table 4.15: ANOVA for All Variables**

Model	Sum of Square	of df	Mean Square	F	Sig.
Regression	1646.01	4	.410	2.727	.000 <sup>b</sup>
1 Residual	75432.12	5	.149		
Total	77078.13	9			

they had ever seen some performance. The ANOVA result for all variables indicates that there was a highly significant relationship between the variables at  $F = 2.727$  and  $P = 0.000$ . This implies that

## **V. SUMMARY, CONCLUSIONS AND RECOMMENDATIONS**

### **5.1 Summary of Major findings 5.1.1 Significance of a lean inventory system**

The study found that improving production scheduling can reduce inventory levels using MRP systems. This helps in achieving lean inventory systems to some extent in the tractor manufacturing companies in India and thus improving the performance of the procurement function because it is able to forecast the demand of the raw materials and the consumables.

**5.1.2 Strategic supplier partnerships** The study found out that short term relationships with suppliers are adversarial because the procurement function is not keen on frequent communication with the suppliers as well as their appraisal. This poses a challenge to the procurement function of the tractor manufacturing companies when sourcing for suppliers.

**5.1.3 Use of Information Technology** The study found out that the use of information technology applications in inventory management improves the performance of the procurement function of tractor manufacturing companies in India because automation of the inventory system helps in reducing errors and waste in inventory management thus improving the performance of the procurement function.

### **5.1.4 Effect of legal policies**

Legal policies help the procurement function of tractor manufacturing companies to manage its inventory and improve its performance because it provides a legal framework to adhere to and guidelines on how to undertake the various procurement activities.

measurement procedures.

there is a strong relationship between the four variables and the performance of the procurement function of tractor manufacturing companies.

### **5.2 Conclusion of the Study.**

The study found that inventory management affects the performance of the procurement function of tractor manufacturing companies. Use of a lean inventory system improves the performance of the procurement function. A strategic relationship with suppliers in inventory management is important in the performance of the procurement function. Finally legal policies in the tractor manufacturing companies contributed to the performance of the procurement function of the tractor manufacturing companies.

**5.3 Recommendations for the study** The following are recommendations of the study based on the findings.

### **5.3.1 Significance of a lean inventory system**

The tractor manufacturing companies manufacturing should fully adopt lean inventory systems inventory management as this will greatly improve the performance of the procurement function. JIT systems should also be integrated by the tractor manufacturing companies

**5.3.2 Strategic supplier relationships** Long term relationships with suppliers should be sought by the tractor manufacturing companies. The companies should also enhance their communication with suppliers by adopting VMI which will ultimately shift the responsibility of inventory management from the procurement function to the suppliers thus improving the performance of the procurement function. Supplier appraisal by the procurement function should be a key element in inventory management as this will help evaluate the suppliers and choose the best from the many and develop long term round table relationships with them.



### **5.3.3 Use of Information Technology**

Tractor manufacturing companies should adopt information technology in inventory management. Automation can help the procurement function in stock control by setting stock control levels and calculating the amount of stocks to hold and dispatch thus improving the performance of the procurement function. **5.3.4 Effect of legal policies** The procurement function of the tractor manufacturing companies in India should adhere to the legal policies in place as they will help the procurement function to manage its inventory and improve its performance because of the legal

framework that is provided. **5.4 Areas for Further Study** From the recommendations, it is clear that the effect of a lean inventory system, strategic supplier partnerships, information technology and legal policies in inventory management affects the performance of the procurement function of tractor manufacturing companies. Researcher supports and suggest the following areas for further study: lean inventory systems, legal policies in the tractor manufacturing companies, IT in inventory management, and strategic supplier partnerships.

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