

# **MATERIAL CONTROL**

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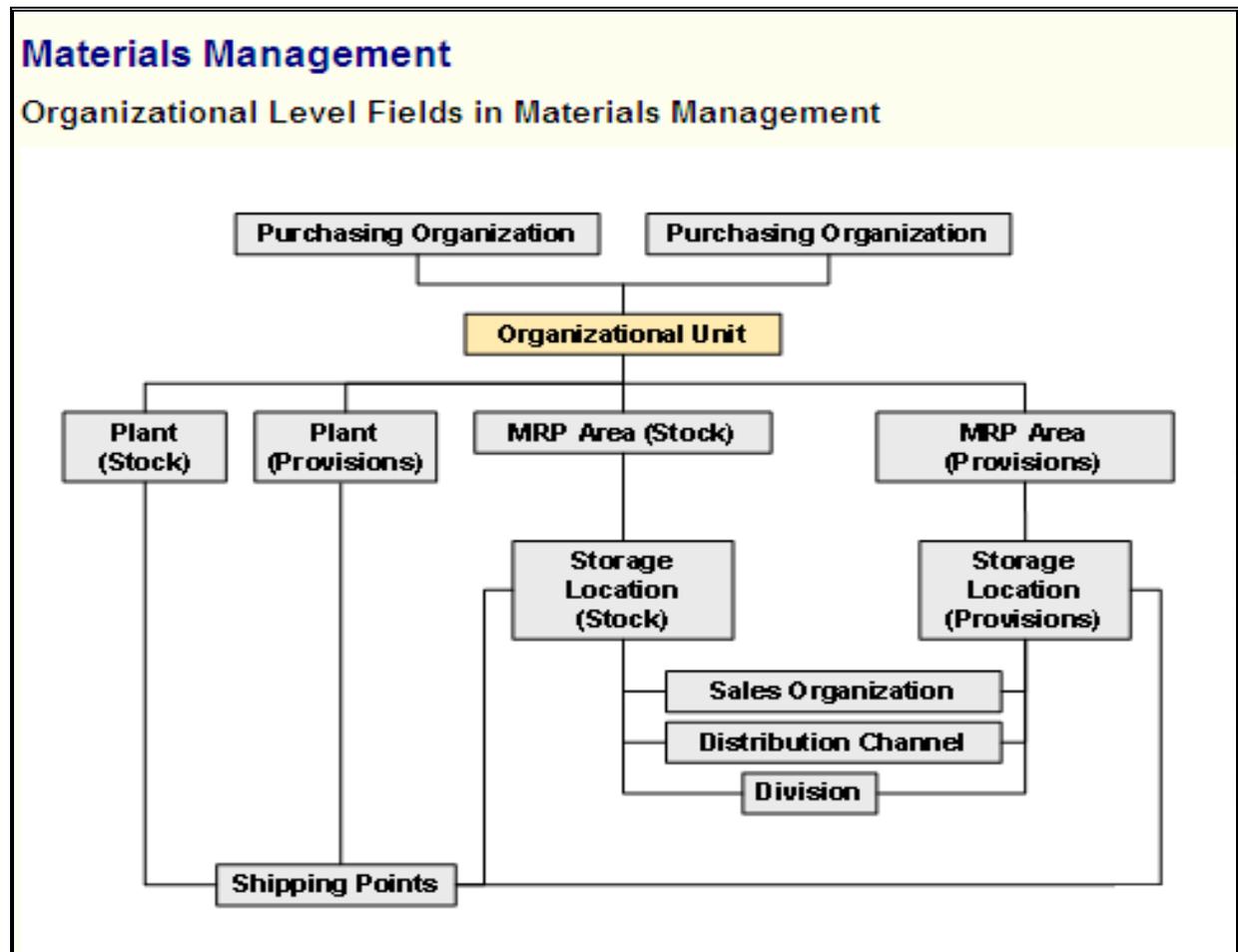
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# [1] INTRODUCTION:

## MANAGEMENT

The classic definition of management is the art and science of planning, organizing, directing and controlling human effort and resources for the general good within the organizational framework and economic environment of the firm.

**Materials management** is the branch of logistics that deals with the tangible components of a [supply chain](#). Specifically, this covers the acquisition of spare parts and replacements, [quality control](#) of purchasing and ordering such parts, and the standards involved in ordering, shipping, and warehousing the said parts.



## [2] AREA OF CONCENTRATION:

### 2.1 Goals

The goal of materials management is to consolidate and efficiently handle core services. It creates truck deliveries and service vehicle routes that reduce conflicts for vehicles and pedestrians. Delivery sites and loading docks are more effective and reduce redundancy. Cost is reduced when it comes to solid and hazardous waste removal, storage, and recycling. Utility infrastructure and service equipment relocation can improve aesthetics. <sup>[1]</sup>

### 2.2 Quality Assurance

A large component of materials management is ensuring that parts and materials used in the supply chain meet minimum requirements by performing [quality assurance](#) (QA). While most of the writing and discussion about materials management is on acquisition and standards, much of the day to day work conducted in materials management deals with QA issues. Parts and material are tested, both before purchase orders are placed and during use, to ensure there are no short or long term issues that would disrupt the supply chain. <sup>[2]</sup> This aspect of material management is most important heavily automated industries, since failure rates due to faulty parts can slow or even stop production lines, throwing off timetables for production goals.

### 2.3 Standards

The other major component of materials management is standards compliance. There are standards that are followed in supply chain management that are critical to a supply chain's function. For example, a supply chain that uses [just-in-time](#) or lean replenishment requires absolute perfection in the shipping of parts and material from purchasing agent to warehouse to place of destination. Systems reliant on vendor-managed inventories must have up-to-date computerized inventories and robust ordering systems for outlying vendors to place orders on. Materials management typically insures that the warehousing and shipping of such components as are needed follows the standards required to avoid problems. This component of materials management is the fastest changing part, due to recent innovations in [SCM](#) and in logistics in general, including

outsourced management of warehousing, [mobile computing](#), and real-time logistical inventories.

## **2.4 Promoting Sustainability**

Many business and institutional campuses have cluttered, noisy, and oftentimes inefficient service environments. Delivery trucks compete with pedestrians, loading docks are in plain sight, trash dumpsters sprout up, and lobbies, hallways, and stairwells are cluttered with unplanned storage. With forethought and creativity, these systems can reduce energy use and carbon emissions, minimize traffic congestion, streamline operational flows, and enhance esthetics.

## **2.5 Improving circulation infrastructure**

Redundancy can be reduced and effectiveness is increased when service points are clustered to reduce the amount of redundancy. An effective materials management program can also resolve “island” approaches to shipping, receiving, and vehicle movement. Solutions can include creating a new central loading location, as well consolidating service areas and docks from separate buildings into one. Developing better campus circulation infrastructure also means re-evaluating truck delivery and service vehicle routes. Vehicle type, size, and schedules are studied to make these more compatible with surrounding neighborhoods. This will reduce truck traffic, creating a safer environment for pedestrians and a more attractive environment for other uses.

## **2.6 Materials Management Week**

Each year, an entire week is dedicated to celebrating resource and materials management professionals for their outstanding contributions to healthcare and the overall success of the supply chain. Sponsored by the Association for Healthcare Resource & Materials Management (AHRMM), National Healthcare Resource & Materials Management Week (MM Week) provides an opportunity to recognize the integral role materials management professionals play in delivering high-quality [patient care](#) throughout the health care industry. In 2009 Material Management Week is [October 4-10 October](#).

## **2.7 Benefits**

An effective materials management plan builds from and enhances an institutional master plan by filling in the gaps and producing an environmentally responsible and efficient outcome. An institutional campus, office, or housing complex can expect a myriad of benefits from an effective materials management plan. For starters, there are long-term cost savings, as consolidating, reconfiguring, and better managing a campus' core infrastructure reduces annual operating costs. An institutional campus, office, or housing complex will also get the highest and best use out of campus real estate.

An effective materials management plan also means a more holistic approach to managing vehicle use and emissions, solid waste, hazardous waste, recycling, and utility services. As a result, this means a "greener," more sustainable environment and a manifestation of the many demands today for institutions to become more environmentally friendly. In fact, thanks to such environmental advantages, creative materials management plans may qualify for LEED Innovation in Design credits.

And finally, an effective materials management plan can improve aesthetics. Removing unsafe and unsightly conditions, placing core services out of sight, and creating a more pedestrian-friendly environment will improve the visual and physical sense of place for those who live and work there.<sup>[1]</sup>

## **2.8 Dredged Material Management**

Three management alternatives may be considered for dredged material: open-water disposal, confined (diked) disposal, and beneficial use. Open-water disposal is the placement of dredged material in rivers, lakes, estuaries, or oceans via pipeline or release from hopper dredges or barges. Confined disposal is placement of dredged material within diked nearshore or upland confined disposal facilities via pipeline or other means.<sup>[3]</sup>

Potential environmental impacts resulting from dredged material disposal may be physical, chemical, or biological in nature. Because many of the waterways are located in industrial and urban areas, sediments often contain contaminants from these sources. Unless properly managed, dredging and disposal of contaminated sediment can adversely affect water quality and aquatic or terrestrial organisms. Sound planning, design, and management of projects are essential if dredged

material disposal is to be accomplished with appropriate environmental protection and in an efficient manner.

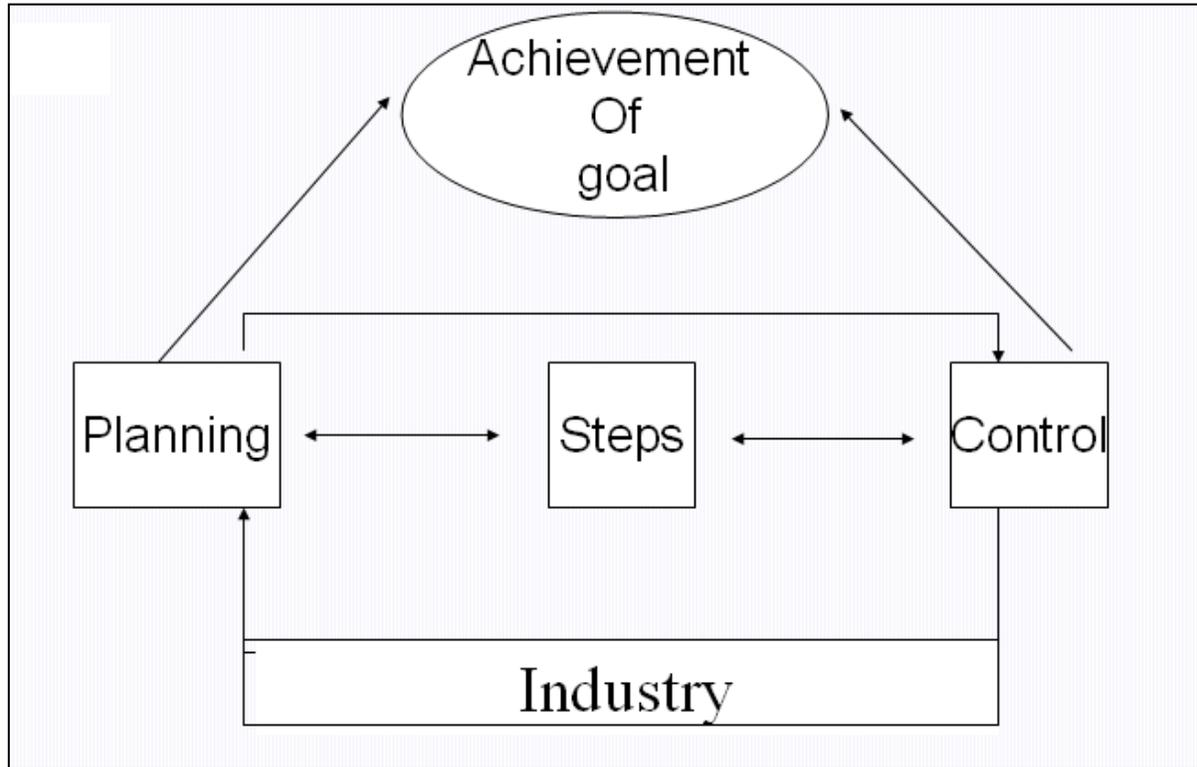
## **2.9 Beneficial Use**

Ten broad categories of beneficial uses have been identified, based on the functional use of the dredged material or site. They are:

- Habitat restoration/enhancement (wetland, upland, island, and aquatic sites including use by waterfowl and other birds).
- Beach nourishment.
- Aquaculture.
- Parks and recreation (commercial and noncommercial).
- Agriculture, forestry, and horticulture.
- Strip mine reclamation and landfill cover for solid waste management.
- Shoreline stabilization and erosion control (fills, artificial reefs, submerged berms, etc.).
- Construction and industrial use (including port development, airports, urban, and residential).
- Material transfer (fill, dikes, levees, parking lots, and roads).
- Multiple purpose

### [3] CONTROL (In General)

Planning ranks first in the sequence of managerial functions, while controlling is the last among them. Yet, controlling is as important as planning.



- Fundamentally, it is any process that guides activity towards some pre-determined goal. The essence of the concept is in determining, whether the activity is achieving the desired results.

#### 3.1 CHARACTERISTICS OF CONTROL

- An end function of the management
- A Continuous activity
- It is exercised at all levels
- Dynamic process
- Constructive activity
- Control is forward-looking
- Control s people-oriented.
- Related to planning
- Control can be informal also
- Internal activity

## **3.2 CLASSIFICATION OF CONTROL**

Classified in various ways:

- 3.2.1 On the basis of standards.
- 3.2.2 On the basis of different uses
- 3.2.3 On the basis of activities

### **3.2.1 On the basis of standards**

A) Physical

i) Quantitative

ii) Qualitative

B) Financial

i) Expenses

ii) Revenue

### **3.2.2 On the basis of different uses**

- A. Controls used to standardize performance
- B. Controls used to safeguard Company's assets
- C. Controls used to standardize quality
- D. Controls used for delegation of authority
- E. Controls used to measure performance.
- F. Controls used to motivate workers
- G. Controls to synchronize all the activities

### **3.2.3 On the basis of activities**

- A. Control over policies
- B. Control over procedure
- C. Control over organization
- D. Control over personnel
- E. Control over inventory
- F. Control over quality
- G. Control of all-over performance, etc.

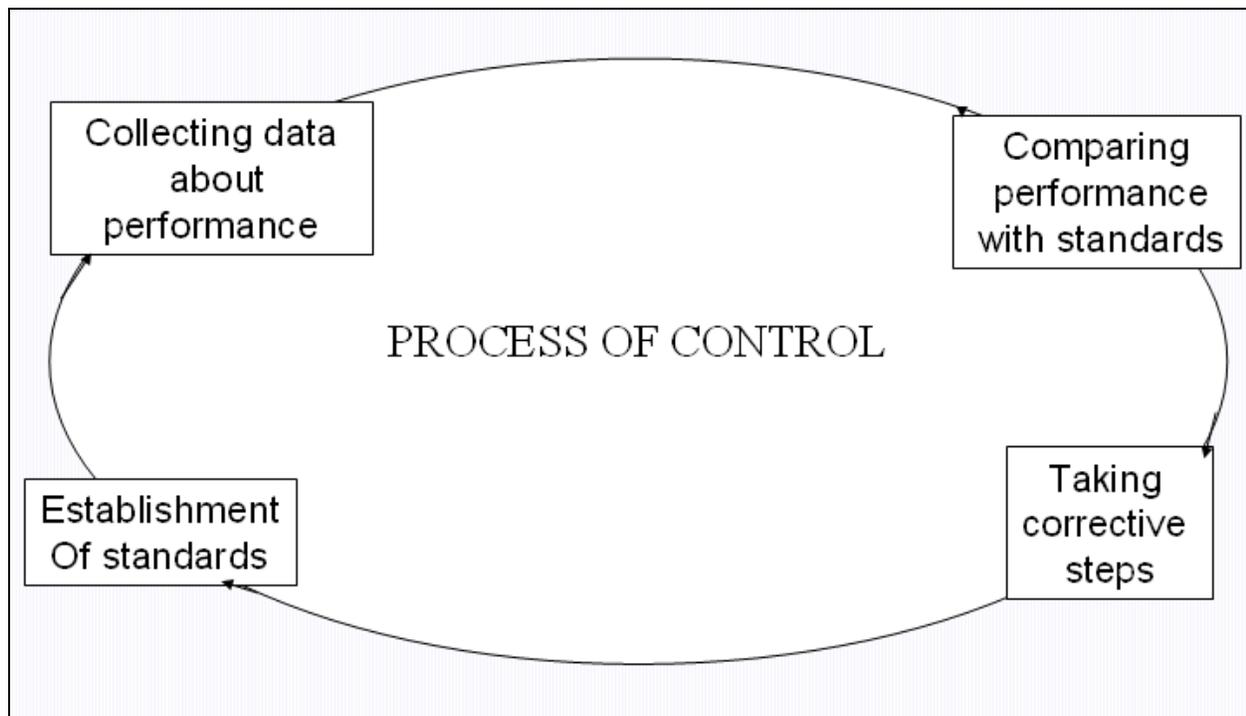
## **3.3 CONTROLLING STEPS**

The basic control process embraces three steps in all situations. They are as follows:

1. Establishment of standards
2. Measurement of performance
3. Taking corrective steps.

In short, controlling consists of a) determining what should be done or what is expected, b) finding out what is being done, c) comparing results with expectations and d) applying corrective measures if results deviate from the expectations.

The steps establishing control procedure may be represented diagrammatically as follows:



### 3.4 CONTROLLING AREAS

The area of control is very wide, as the management has to control all the operational activities of pharmaceutical industry.

- Control over organization structure
- Control over policies
- Control over procedure

- Control over personnel
- Control over production
- Control over production process
- Control over sales
- Control over finance
- Control of Over-all performance

### **3.5 TECHNIQUES USED FOR CONTROL**

3.5.1 Ratio analysis

3.5.2 Break-even analysis

3.5.3 Budgetary Control

3.5.4 Zero-Based Budgeting or ZBB

3.5.5 PERT (Programme Evaluation and Review Technique)

3.5.6 CPM (Critical Path Method)

#### **3.5.1 Ratio Analysis**

Accounting ratio is an important tool in the hands of the management for control purposes.

The relation between two items of financial statements like profit and loss account and balance sheet gives a good account of profitability, liquidity, capital structure and short-term as well as long term solvency of the business.

For example: Profit Ratio =  $\frac{\text{Profit}}{\text{Sales}} \times 100$

#### **3.5.2 Break-even analysis**

Management of every firm or industry is interested in knowing the level of sales at which the cost and revenue will be equal. This helps the management in determining the amount of sales to be achieved for the desired level of profit. Break-even analysis is useful for this purpose.

For the purpose of break-even analysis, all expenses are divided into two parts: Fixed costs and Variable costs

Those expenses which do not vary in proportion to output i.e. which remain fixed whether the output increases or decreases, are called Fixed Expenses or Fixed Costs E.g. manager's salary, rent, rates, etc.

Those expenses which vary with output i.e. which increases when the output increases and decrease when the output is reduced, are called the Variable Expenses or Variable Costs E.g. Raw materials, direct wages, etc.

Now, following terms will give a clear idea of Break-even analysis.

Contribution = Sales – Variable Costs

Profit = Contribution – Fixed Costs

Break even Point (BEP): Contribution = Fixed Costs

### **3.5.3 Budgetary Control**

A budget is a forecast of future activities.

A budget is a comprehensive over-all plan in which management, on the basis of estimated sales volume and receipts, establishes cost and expenses allowances for future operations, in this way effectively integrating and directing activities towards carefully determined goals.

### **3.5.4 Zero-Based Budgeting**

In this technique of control, in contrast to traditional budgeting system, previous years financial accounts are not taken into consideration.

Thus, ZBB does not take any previous allocation as the base. It rather subjects all expenditure current as well as new to fresh scrutiny.

### **3.5.5 PERT and 3.5.6 CPM**

Both the methods are systems of determining the minimum time within which a programme or a project can be completed systematically.

### **3.6 LIMITATIONS OF CONTROL**

- Difficulties of determining standards
- Objective standards not possible
- Difficult to locate responsible factor
- Expensive
- Locating control points
- Impact of External forces

### **[4] MATERIAL MANAGEMET or MATERIAL CONTROL**

- Material management is one of the recent additions to the growing glossary of management.
- It is a concept aimed at company-wide, total integrated approach towards the management of materials.
- In recent years, material management has gained increasing recognition as a management function embracing all aspects of industrial handling, storage warehousing, stock control and transport.
- The Material Management is classified into three basic activities

4.1 Purchasing

4.2 Stores-keeping

4.3 Inventory Control

#### **4.1 PURCHASING**

- Purchasing', is indeed, an art.
- Erroneous buying raises the cost of materials, stores, equipment and finished product.
- It relates to the procurement or purchase of raw materials, intermediate products, components and supplies in case of manufacturing concern.
- Hence, it is essential that the activity of buying should be just as efficiently and effectively performed as any other operation in the organization

- In the words of Gantt, “Two-thirds of all the gain possible through the most efficient management could be realized by having all the material ready *when you want it, where you want it, and in the condition you want it.*”

#### **4.1.1 Functions of the Purchasing department**

- Locating and selecting sources of supply for materials or services required.
- Interviewing suppliers, representatives, arranging conferences and plan visitations.
- Requesting for quotations and conducting negotiations.
- Procuring materials and services when required
- Verifying quality and quantity received.
- Approving invoices and handling rejections and adjustments.
- Maintaining records necessary for proper operation of its function.
- Keeping informed on business trends, assembling and analyzing pertinent data on markets, supply, demands, price trends, etc.
- Disposing of scrap and surplus.

#### **4.2.2 Purchasing responsibility**

- The purchasing function should be under a single head, whether it can be centralized without substantial sacrifice in efficiency due to restriction of the local initiative.
- The purchasing agent should be a big man, capable of consideration and prompt decision having balance judgment and clear foresight.

#### **4.3.3 Methods of Purchasing**

- **Purchasing by requirement:** Purchasing by requirement means that no purchase is made until the need arises.
- **Purchase for a specified future period:** Purchase for a specified future period is standard practice for buying goods regularly used, but not in great quantity, and on which price variations are negligible.

- **Market Purchasing:** 'Market Purchasing' is defined as purchasing according to conditions of the market, to take advantage of price fluctuations.
- **Speculative Purchasing:** It consists in buying when the market is low, more than can be possibly used in manufacturing with the idea of reselling much of the material at a considerable price.
- **Contract Purchasing:** All purchasing by contract, but the term 'contract purchasing' is applied to the special type of contract which calls for differed delivery over a period of time.
- **Group Purchasing of small items:** There are number of small items, so trivial in value that the cost of placing an order often exceeds the value of good purchased. So those items are purchased in large amounts in advance.
- **Scheduled Purchasing:** Essentially, this plan consists of giving suppliers approximate estimates of purchase requirements over a period of time, thus enabling them to anticipate the receipt of orders and be prepared to fulfill them when they arrive.

#### 4.3.4 Summary of Purchasing

According to Chatterjee, Head of Procurement and Transportation, Calcutta, the broad objectives of a purchaser are attained by what are commonly known as the 5-R Principles.

- Right Quality
- Right Quantity
- Right Price
- Right Delivery
- Right Supplier

#### 4.2 STORES-KEEPING

Knowles and Thomson depict the stores department as, "the connecting link between the planning and production department, and the shops. Parts and materials move through it as money moves into and out of the commercial department of a bank."

