

Material Management: Importance of Materials Management, Classification, Codification, Forecasting, Necessity of Inventory.

In the context of business, material management is the process of planning, organising and directing logistical activities involving materials and inventory. The core idea behind this process is to control the movement of materials and equipment by requesting them in advance, purchasing or renting them at a reasonable price and making sure they are available when needed. Material management is a key part of the supply chain process and ensures that professionals efficiently and correctly direct materials required for manufacturing procedures.

There are numerous roles in the domain of this process, like inventory control manager, material manager, inventory analyst, material planner and expeditor, along with roles like buyer and logistics planner. This has become a popular organisation style, as effective teams can help maximise profits by optimising the flow of materials. This can be a challenging goal to accomplish, as there are many factors that can lead to production shortages, including:

- Inventory adjustments
- ✓ • Incorrect bills of materials
- Inaccurate inventory counts
- Unreported errors
- ✓ • Shipping errors
- ✓ • Receiving errors
- ✓ • Reporting inconsistencies

What Are The Core Elements Of Material Management?

There are five core elements of this process. These align together to constitute the management of materials from purchase to utilisation. These are the five elements:

1 Materials requirements planning

This is one of the most important steps in this process, as it accounts for a major portion of the total investment of money. It directly influences the profits of an organisation as the number of materials a company procures is directly proportional to the amount of money it spends. The amount of materials utilised requires careful planning. Nowadays, companies are adopting the JIT (Just in Time) model, which significantly reduces the size of the inventory.

2 Inventory planning and control

Inventory refers to the different types and volumes of goods a company holds at a particular time. It may include finished products and raw materials, items that are ready for the market and materials used in the production process. The optimum practice of this prices aims to reduce the size of the inventory as far as possible. This significantly reduces the costs associated with maintaining an inventory. Professionals in the industry achieve this by purchasing materials right before production or before moving a product into stores.

There are three types of inventories:

- ✓ • Inventory for raw materials 1
- ✓ • Inventory for purchased goods 2
- ✓ • Inventory for finished parts and components 3

Purchasing

Most companies derive their profits from the economical purchase of various materials. Sometimes, a company may invest a large portion of its total capital for purchasing materials. Hence, the primary aim of this process is effective purchasing. This helps in increasing profits by reducing the cost of purchasing.

Flow and supply of materials

Material management plays a crucial role in supply chain management. Material managers try to maintain an uninterrupted supply of materials during the production process. They distribute these materials to various production centres. Poor management or lack of inventory disrupts the production process and the availability of material supplies. Lack of stock can cause financial losses, delays in sourcing replacement materials and disruption of production schedules.

Quality control of materials

Ensuring that the materials used in production are of high quality is very crucial. If the quality of initial raw materials is high, then it reflects in the quality of the finished products. Hence, it is necessary to source the best materials for any form of production. There are multiple factors for which professionals may employ quality control. This may include durability, thermal and weather performance, dimensions, reliability and visual appeal. All of these are important factors that can determine the value of the end product.

IMPORTANCE OF MATERIALS MANAGEMENT

1. The material cost content of total cost is kept at a reasonable level. Scientific purchasing helps in acquiring materials at reasonable prices. Proper storing of materials also helps in reducing their wastages. These factors help in controlling cost content of products.
2. The cost of indirect materials is kept under check. Sometimes cost of indirect materials also increases total cost of production because there is no proper control over such materials.
3. The equipment is properly utilized because there are no break downs due to late supply of materials.
4. The loss of direct labour is avoided.
5. The wastages of materials at the stage of storage as well as their movement is kept under control.
6. The supply of materials is prompt and late delivery instances are only few.
7. The investments on materials are kept under control as under and over stocking is avoided.
8. Congestion in the stores and at different stages of manufacturing is avoided.

Classification of Materials

Classification is the systematic division, grouping, or categorization of materials or items based on some common characteristic. Classification of materials can be performed on different bases (e.g., nature, manufacturing process, value, and purpose). To identify materials that are purchased and stored for commercial purposes, they should be properly classified.

The department in charge of storage should closely study and monitor the materials, ensuring their safe custody, meticulous handling, and protection from damage, fire, pilferage, and spoilage.

A broad classification of materials is shown below, based on their nature, use, and service.

- Raw Materials
- Consumable Stores
- Machinery and Plant
- Factory and Office Equipment

- Inflammable Stores
- Chemicals
- Furniture and Fixtures
- Scrap Materials
- Packaging Materials
- General Stores

Basis for Classification of Materials

The basis for the classification of materials involves several aspects, including nature, manufacturing process, and value.

1 Basis of Nature

Based on their nature, materials can be divided into:

- **Direct Materials:** Direct materials are items that can be identified with a product or a group of products and can be easily measured and charged directly into the product.

These materials are part of the finished product (e.g., timber in furniture).

- **Indirect Materials:** These are materials that cannot be traced to a specific product or be charged directly to various products.

Indirect materials do not form part of the product. Examples include repair and maintenance stores, lubricating oils, and cleaning materials.

2 Basis of Manufacturing Process

Based on the manufacturing process, stores are divided into:

- **Pre-process Stock:** These are items that are yet to be used in the manufacturing process and are obtained prior to the start of production.

They include raw materials, bought-out parts and assemblies, and stock in the pipeline of materials in transit.

- **Intermediate Stock:** Intermediate stock comprises the parts or assemblies that are manufactured within the factory for use in the final product.

- **Finished Goods or Finished Products:** As the name indicates, finished goods are the items that have been duly manufactured in the factory and are ready for shipment or sale to the customers.

3 Basis of Value

Based on value, stores may be divided into:

- **Category A:** Category A consists of materials which constitute 5% to 10% of the total items in the stores and represents 70% to 85% of the total stores value.
- **Category B:** This category consists of materials which constitute 10% to 20% of the total items in the stores and represents 10% to 20% of the total stores value.
- **Category C:** This category consists of cheap materials which constitute 70% to 85% of the total items in the stores and represents 5% to 10% of the total stores value.

Category A items are costly items, calling for a greater level of control to preserve them.

A reasonable degree of care may be taken to control category B items, while a routine type of care may be applied to control C category (or residuary) items.

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Basis of Movement of Stores

Based on the movement of stores (i.e., rate of consumption), stores items may be divided into:

- **Fast Moving Stock:** Fast moving stock is exhausted rapidly due to high demand from production departments.
- **Slow Moving Stock:** This category consists of stores or materials that are consumed or exhausted slowly due to limited demand from the production departments.
- **Dormant Stock:** This category consists of items that are not in demand at present and may regain demand in the future. This category includes seasonal materials, which are only required during specific seasons.

Advantages of Classification of Materials

Classifying the items that a business holds in its stores leads to many advantages. These include:

1. **Helpful in Grouping of Stores Items:** Classification helps to group different items in the store. Items that fall under a particular category can be stored in one location, ensuring optimal use of storage space.
2. **Easy Location:** Proper classification of stores items helps in the easy identification of the various items. Storekeepers can easily find materials whenever they are required in the production departments.
3. **Proper Accounting:** Record-keeping processes are easier when items are properly classified. Furthermore, simplified record-keeping ensures accuracy in posting receipts and issues in the stores records.
4. **Proper Care:** By classifying items based on value, storekeepers can ascertain their relative importance. Accordingly, a suitable degree of supervision and control can be exercised that is proportional to the value of each item.
5. **Avoidance of Duplication:** Proper classification helps to avoid the possibility of duplicate stock items and materials.
6. **Standardization:** Classification helps to standardize various items in the stores. Standardization involves variety reduction using fixed sizes and types, leading to uniform standards for similar items.

Codification of Materials

After classifying and grouping the various items in an organization's stores, it is useful to codify them.

Codification is the process of assigning a number or symbol to each store item, along with a name, in order to make it easy and convenient to identify.

The codification of store items thus leads to time-saving and labor efficiencies.

Different kinds of store codes are used today. Most have been specially designed to suit the requirements of a particular organization.

These codes may be based on the nature of stock items, the purpose for which the items are used, or on any other basis that is viewed as suitable according to the local circumstances.

Also, the accurate identification of the materials may require a lengthy description. This can be complicated and, hence, may add to the confusion.

Codification is necessary because it involves the assignment of logical and systematic numbers or alphabets (or both) to help in the simple but accurate identification of the materials.

Advantages of Codification

The main advantages of codification include:

- Avoidance of long and unwieldy descriptions
- Accurate and logical identification of items
- Avoidance of duplication
- Standardization of purchasing and storage
- Reduction of variety
- Effective planning and high-quality production

The use of codification also leads to efficiencies in the following areas:

- Purchasing
- Recording
- Accounting
- Computerizing pricing
- Costing
- Indexing
- Inspection

Systems of Codification

In materials departments, four main systems of codification are commonly used. An overview of each system is given below.

Alphabetical System

In the alphabetical codification system, alphabetical codes rather than numerical codes are applied to items.

Each item in the storehouse is first classified and grouped based on its nature, use, and other factors. In turn, the items are analyzed to create a unique and descriptive alphabetical identifier.

For example, under an alphabetical codification system, iron ore may be assigned the code IN-O, whereas iron bars may be assigned the code IN-BA.

Numerical System

In a numerical system, the codes assigned to materials are numerical. Numbers are allotted as codes, which is useful for future expansion. For example, iron ore may receive the code of 05—10 and iron bars may have 11—67.

Decimal System

Codes in a decimal system consist of numbers, but instead of dashes in between two numbers, decimals (i.e., periods or full stops) are placed.

This makes the codes more flexible and makes future expansion a straightforward affair. For example, iron may be assigned the code 11.67.02 and iron bars may have 11.67.03.

Combined Alphabetical and Numerical System

Hybrid systems exist that combine all three of the above. Codes in a hybrid system may look like IN-05.10 (e.g., for iron ore) and IN-11.6 (e.g., for iron bars), and so on.

Bins and Racks

A bin is a compartment or a separate portion of a cabinet or pigeonhole used to store a specific material.

A bin card is used to show, at a glance, the quality and quantity of the materials stored inside. It functions as a materials movement record and as a replenishment index.

A bin card is a brief version of the stock ledger pertaining to an item. It serves the purpose of a ready-reckoner for the binned item. As such, it is a kind of mirror for the bin.

A specimen of a bin card is shown below.

Bin Card

Bin No.
Article.
Code No. Identification.
Unit of Issue

Max. Stock
Min. Stock
Order Stock
Danger Stock

Date	Delivery or Issue Note No.	Qty. / Weight		Balance	Date	Delivery or Issue Note No.	Qty. / Weight		Balance
		Receipt	Issue				Receipt	Issue	

Racks

A rack is a fixed or movable frame of either wood or metal bars.

Racks are used to keep materials inside a store. They are just like almirahs, whether open or closed. Racks are mostly used to hold general store items, and they are in common use.

Racks are commonly applied to store tubes, bars, sheets, plates, cables, drums, and other items. Other racks may also be specially designed.

Forecasting

Maximize Gross Margin

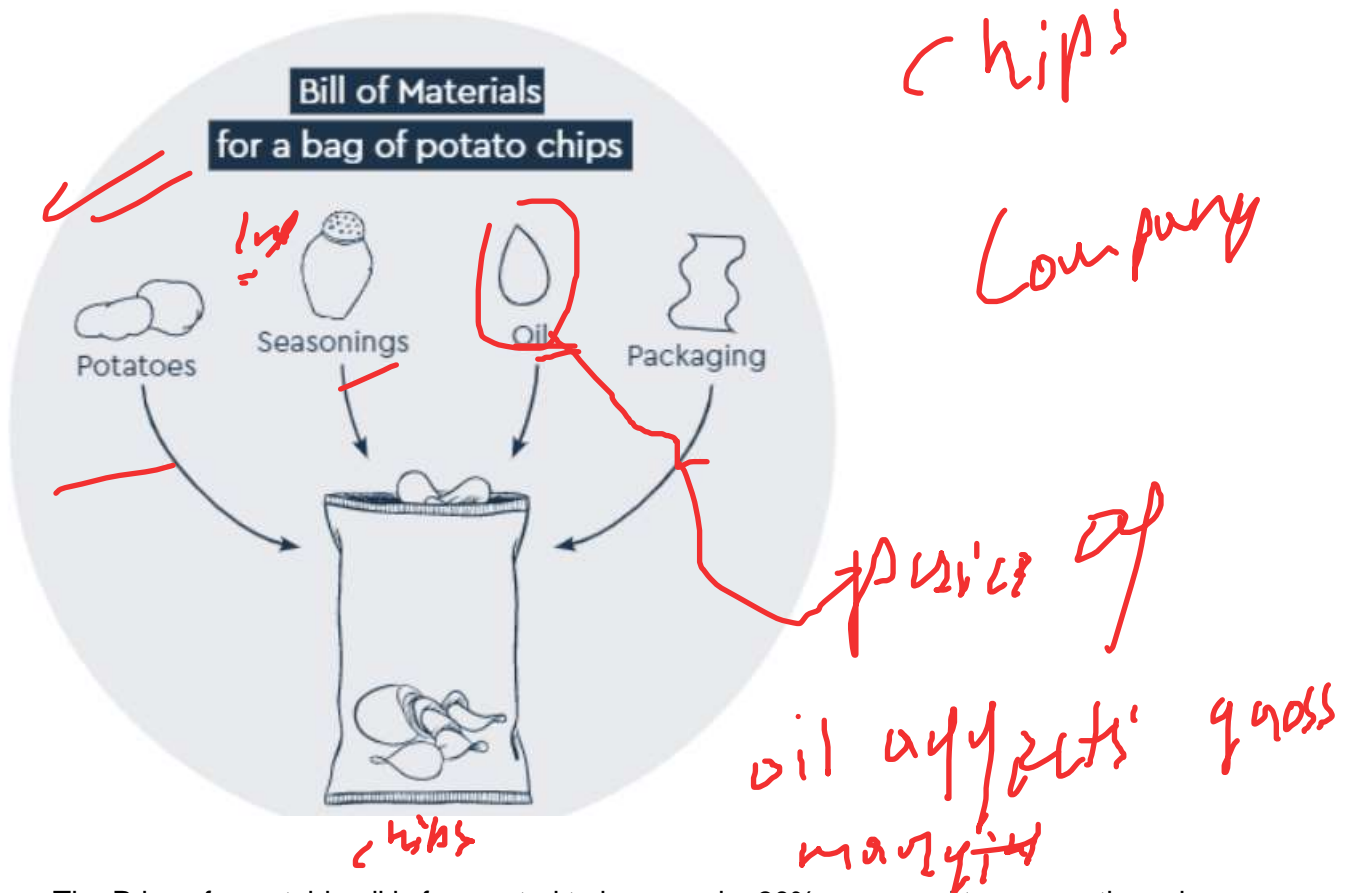
Materials forecasting involves creating direct materials cost budgets and forecasts to help your business better understand and manage its future profitability.

In manufacturing businesses, direct material purchases are the largest cost driver, and it is mandatory to understand how expected material price developments will affect your gross margins. However, building a robust materials forecasting system is far from easy.

Materials Forecasting is a key tool for understanding and managing how direct material costs affect a company's future gross margins and profitability.

- In manufacturing Business direct material costs can account for up to 80% of total cost of goods sold
- Material costs are volatile whether you talk about commodities, raw materials or packaging products
- Changes in material costs present a high risk to future gross margins
- Companies need to have solid systems and processes for Materials Forecasting

Let us use a bag of potato chips as an example. The picture below illustrates how vegetable oil price changes can impact gross margins for a potato chips manufacturer:



- The Price of vegetable oil is forecasted to increase by 30% compared to assumptions done during budgeting
- This will significantly erode gross margins for chips

It is impossible to run a business in a fact-based manner without good visibility of expected material price developments. Unfortunately, creating good direct materials budgets and forecasts is far from easy.

Companies have well-established processes and systems for building revenue-side budgets and forecasts.

Typically, a dedicated Planning team or function is responsible for end-product demand planning and sales and operations planning activities.

These planning teams often use integrated tools and systems to carry out these activities. However, things tend to be much less robust when it comes to direct materials forecasting.

One of the main reasons for this is that while understanding end-product demand is the responsibility of a dedicated planning team, there is no comparison or dedicated entity to carry out materials forecasting activities.

Typically, the responsibility of conducting materials forecasting is on Finance's turf. As Finance is responsible for the overall budgeting and forecasting processes, they also have an inherent interest and need for material cost forecasts.

A company with a dedicated Procurement Finance team is a natural home for the materials forecasting process. Finance responsibility regarding materials forecasting is two-fold:

1. Finance owns the processes and tools used to produce material cost budget and forecast
2. Finance supports business and stakeholders to review and understand the implications and insights revealed by material forecasting

However, Finance has little input into the actual content of the forecast and must rely on other functions to provide the needed data.

And here lies the challenge: even though the ownership of the process is transparent, getting reliable data into the budgets and forecasts is often a painful and resource-consuming process without a clear benefit for the parties involved.

Simple Process in Theory, Difficult in Practice

The premise of creating materials forecasts is simple enough:

First, gather volume forecast data from existing ERP and planning systems.

Then, with this accurate volume forecast data, the Procurement team can give solid predictions on the prices of the future materials.

Finance needs to combine this data, visualize, and review the results with business stakeholders.

However, in large global enterprises creating solid materials forecast is usually a daunting task. Good quality volume forecast data is not readily available from existing systems, and coming up with solid price forecasts for thousands of materials can be a real struggle for procurement organizations with their hands already full of other work.

INVENTORY MANAGEMENT

In simple terms, inventory management is a set of all those processes which you utilize to oversee and organize your goods or materials in your facility.

A component of supply chain management supervises the flow of goods from manufacturers to warehouses and from these facilities to point of sale.

It involves a retailer seeking to acquire and maintain a proper merchandise assortment while managing orders, logistics, returns, and related costs are kept in check.

It is crucial for an organization today to understand its inventory to achieve both efficient and fast operations, that too, at an affordable cost.

Effective management of inventory helps in reducing costs which further keeps accounts and finances in check.

From a customer's point of view, it helps you to provide better customer services through fast delivery and low shipping charges, hence, meeting customer expectations.

Benefits of Inventory Management

1. Tracking Inventory

A good system will help you keep track of your inventory and offer a centralized view of stock across sales channels – how much is in stock, and where. It will also allow allocating inventory to specific sales channels, which is important if you have warehouses and distribution centers at multiple locations, thus, enabling warehouse management.

2. Control your costs

Keeping reports about your inventory helps you understand what stocks are doing well, versus which are just taking up shelf space. Lack of the right inventory at the right time can mean back orders, excess inventory, etc. These drive up costs.

3. Improve your delivery

Late delivery due to stock-outs is bound to give you a bad reputation. For tracking, it is important for you to know when the vendor is shipping inventory and when it will arrive. This helps you manage customer expectations by delivery as, when and where they want.

4. Manage planning and forecasting

The software can help you improve demand forecasting by analyzing data trends from well-performing stocks. This minimizes your holding and handling costs, improves revenues and frees up cash flows. Also, by planning and forecasting – you deliver on customer expectations better.

5. Reduce the time for managing inventory Management

With a good Stock management solution, you can reduce the time taken to keep track of all the products you have on hand and on order. Additionally, you save the time taken up in inventory recounts if your records are in place.