



Nakhon Pathom Rajabhat University



Chapter 5

Material Management

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Nakhon Pathom Rajabhat University



Outlines

- Definition of material management
 - Scopes of material management
 - Relationship of material management with production
 - Master Production Schedule
 - Material Requirements Planning
 - Capacity Planning
-



Outlines (con't)

- Just in Time
 - Manufacturing Resource Planning
 - Enterprise Resource Planning
 - Exercises
-

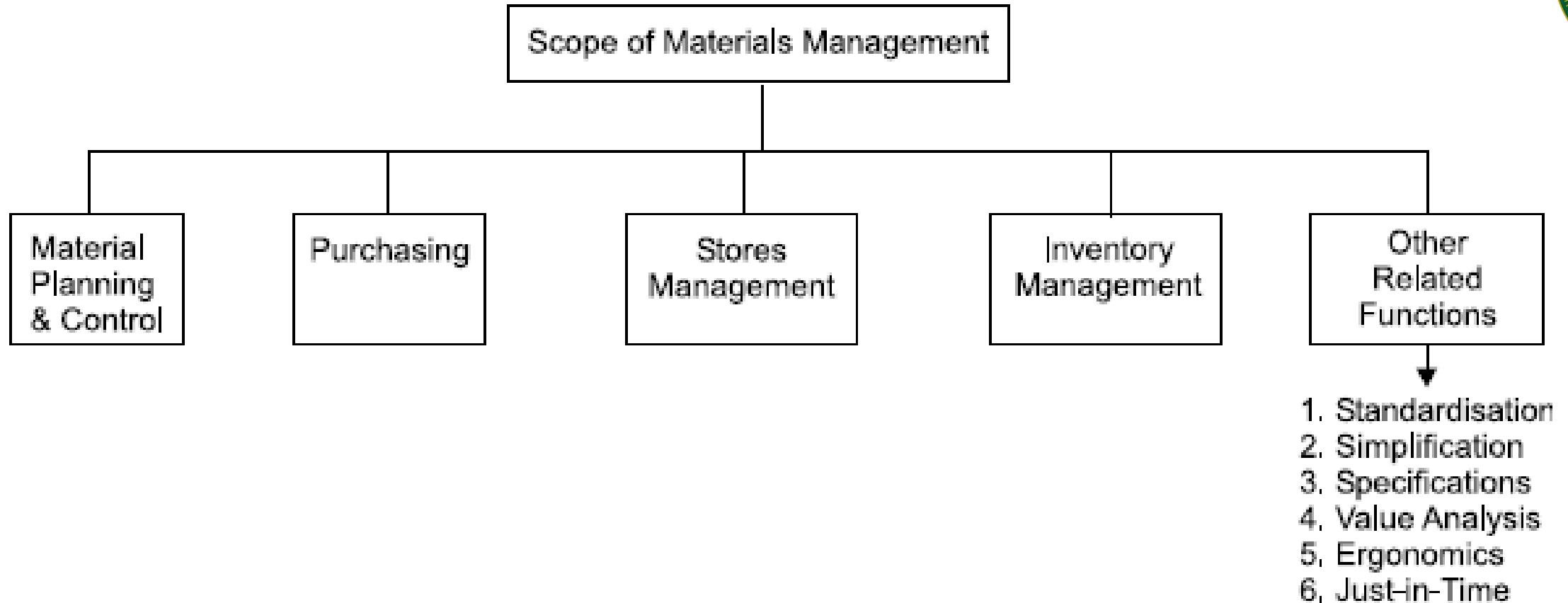


Definition of material management

Material management is “a set of practices related to sourcing, procurement, storage and use of materials used in a manufacturing process.”



Scopes of material management





✌️ **Materials planning and control**

Based on the sales forecast and production plans, materials planning and control are done. This involves estimating the individual requirements of parts, preparing the materials budget, forecasting the levels of inventories, scheduling the orders, and monitoring the performance of production and sales.





Purchasing

This includes the selection of sources of supply finalization in terms of purchase, placement of purchase orders, follow-up, maintenance of smooth relations with suppliers, approval of payments to suppliers, and evaluating and rating suppliers.





Stores management

This involves physical control of materials, preservation of stores, minimization of obsolescence and damage through timely disposal and efficient handling, maintenance of store records, proper location, and stocking. A store is also responsible for the physical verification of stocks and reconciling them with book figures. A store plays a vital role in the operations of a company.



Inventory management

Inventory generally refers to the materials in stock. It is also called the idle resource of an enterprise. Inventories represent those items, which are either stocked for sale or they are in the process of manufacturing or they are in the form of materials, which are yet to be utilized. The interval between receiving the purchased parts and transforming them into final products varies from industry to industry depending upon the cycle time of manufacture.





✌ Other related functions

The rest of the functions include Standardization, Simplification, Specifications, Value analysis, Ergonomics, and Just-in-Time.





Relationship of material management with production

Keeps inventory accurate : The problems and consequences of a poorly managed inventory are far-reaching and expensive. Lost, stolen, misplaced, and mislabeled inventory all impact production, and anything that impacts production creates waste and adds cost. Materials management starts with good inventory management practices and accurate tracking of all the materials in a company's inventory.



Enables Just-in-Time (JIT) for inventory management :

The main tenant of Lean production, JIT Inventory management is a strategy in which the materials and parts needed for production are delivered "Just-in-Time" before they are used at the factory. The cost savings realized by JIT are significant and understanding why good materials management is vital for successfully implementing JIT should be pretty clear.



Freight costs are optimization : Fine-tuned materials planning helps to optimize freight costs. This occurs because expensive overnight and expedited deliveries are reduced. When quality suppliers know what is needed and when they can account for lead times and the necessary transit times for the lowest-cost shipping option.





Quality control goes up : A major part of materials management is ensuring materials going into production are correct and of high value. This helps to keep production running smoothly and improves overall finished goods quality.





Definition of Master Production Schedule

Master Production Schedule (MPS) is the overall plan to assess the production of your finished goods, detailing what you need to produce, how much you need to produce, and when you need to produce it.





Master Production Schedule Example

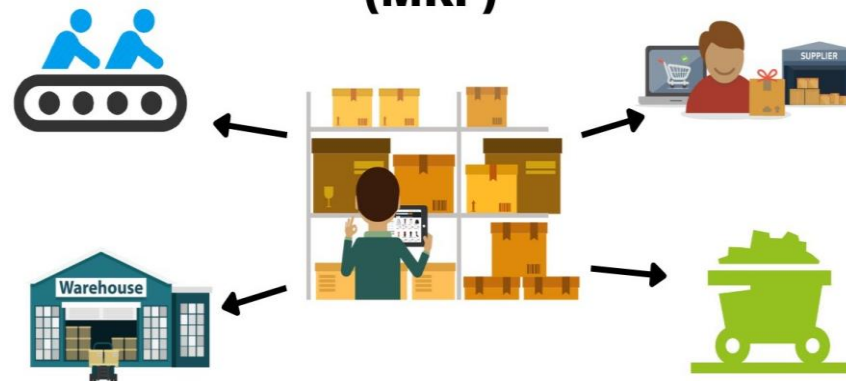
Week	January				February			
	1	2	3	4	1	2	3	4
Blue Pen	-	-	100	-	-	50	-	50
Black Pen	-	100	-	50	-	50	-	50
Red Pen	100	-	-	-	100	-	100	-
Total Production	100	100	100	100	100	100	100	100
Capacity, Aggregate Plan	100	100	100	100	100	100	100	100



Definition of Material Requirements Planning

Material Requirements Planning (MRP) is a system for calculating the materials and components needed to manufacture a product.

Material Requirement Planning (MRP)



Material Requirements Planning Example



Sample Material Requirements Plan Description: Jean's						Lot Size: 50 units Lead Time: 2 Weeks		
Week	1	2	3	4	5	6	7	8
Gross Requirements	75			50		60		75
Scheduled Receipts	100							
Projected on-hand Inventory	75			50	100	40	100	
Planned Receipts								
Planned Order Releases								



Definition of Capacity Planning

Capacity Planning (CP) is a process that balances the available resources to meet customer demand or the project capacity requirements.



Capacity Planning Example



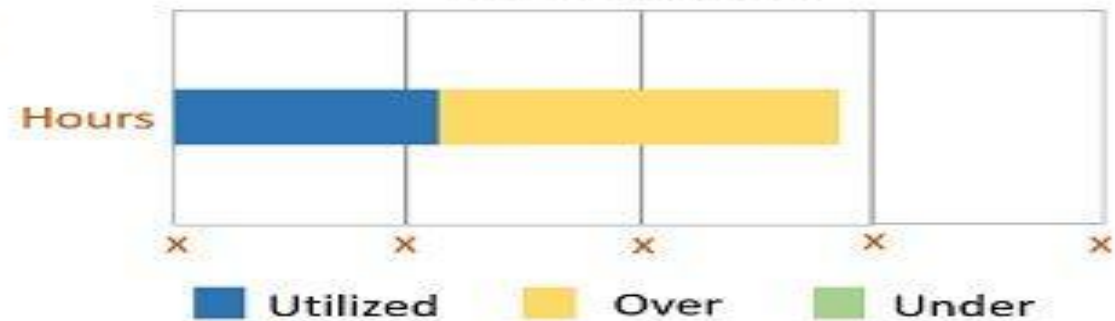
Capacity Planning for Product

	Unit of Measure	Product Family				Total Load	Capacity Available	Load %
		A	B	C	D			
Production Plan	-	-	-	-	-	-	-	-
Machine Time	-	-	-	-	-	-	-	-
Packaging	-	-	-	-	-	-	-	-
Labour	-	-	-	-	-	-	-	-

Team Capacity

Totals	Hours
Remaining Work	-
Remaining Capacity	-
Utilized	-
Over	-
Under	-

Team Capacity



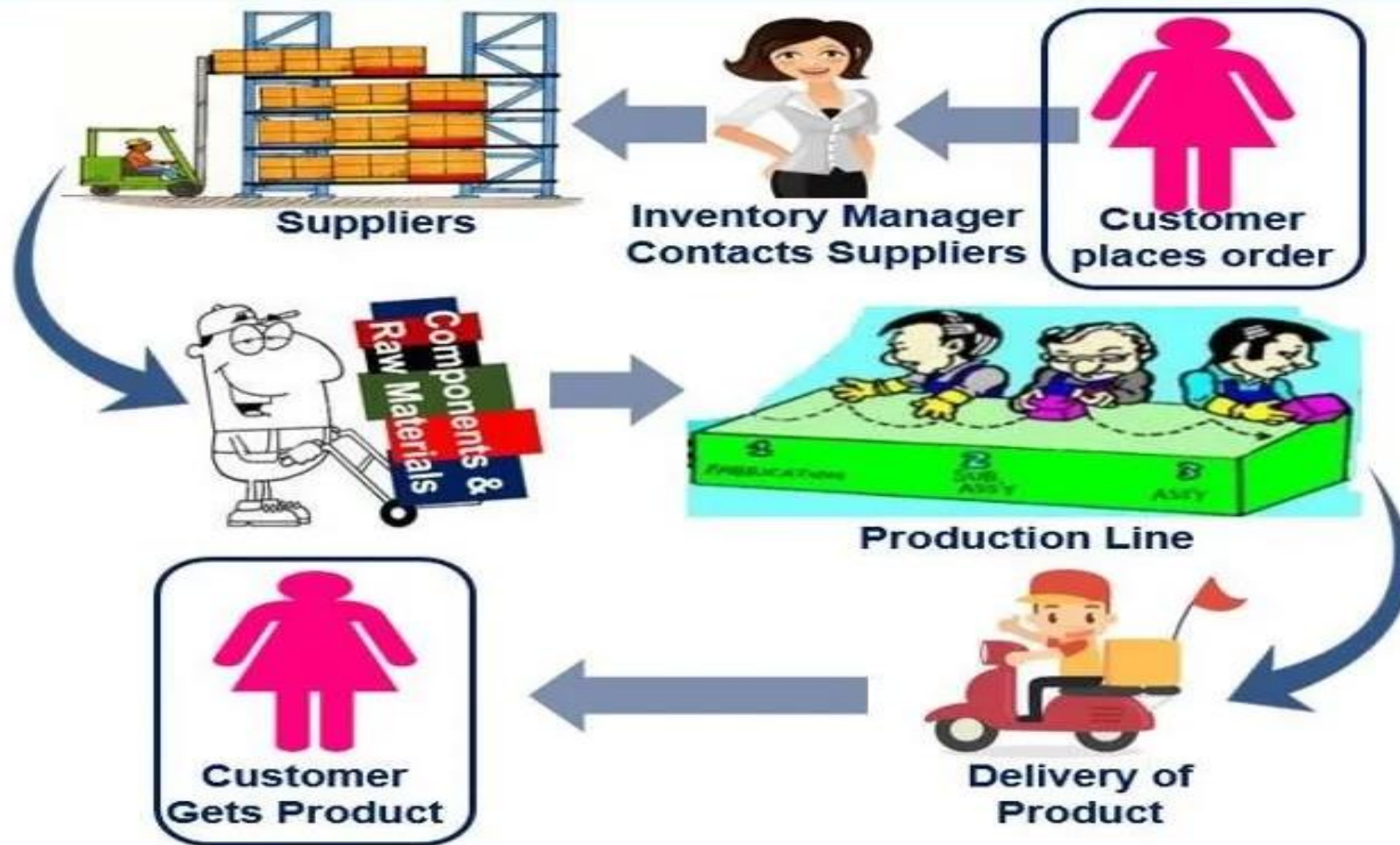


Definition of Just in Time

Just in Time (JIT) is a type of delivery in which the required goods are delivered on time and in exact quantities to keep warehousing at the processing location as low as possible.



Just in Time processes



The same meaning of Just in Time





The difference between Just in Case and Just in Time

Just in Case vs. Just in Time

Push vs. Pull



Production Approximation

Anticipated Usage

Large Lots

High Inventories

More Waste

Poor Communication

Production Precision

Actual Consumption

Small Lots

Low Inventories

Less Waste

Better Communication



Definition of Manufacturing Resource Planning

Manufacturing Resource Planning (MRP II) is a system that allows manufacturers to account for the human resources and raw materials necessary to avoid production delays.



Manufacturing Resource Planning Example



Manufacturing Dashboard Operations Planning Master Data Reporting Configuration Administrator

Manufacturing Orders

CREATE **IMPORT** Filters Group By Favorites

Cancelled	Confirmed	Done	Planned																								
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Definition of Enterprise Resource Planning

Enterprise Resource Planning (ERP) is a system for managing and integrating the functions of core business processes like finance, HR, supply chain, and inventory management in a single system.



Enterprise Resource Planning Example



ORACLE | NETSUITE SuiteSuccess

Search

Activities Sales/Marketing Expenses HR Financial Reports Documents Setup Analytics Board Metrics Support

Home

Reminders: 1 Expense Report to Approve

Subsidiary Navigator: Ireland, Netherlands, United Kingdom, United States

KPI Meter: Revenue 2.8M

Weekly New Business Trend: Weekly

SuiteAccess: Balance Sheet, Budget vs Actual, Profit and Loss, A/R Register

Navigation Portlet: Category: Executive Management

Sales: Customer Profitability, Sales by Item Summary, Sales by Partner, Sales by Customer

Inventory Management: Purchase Analysis, Committed Spend, Inventory Turnover, Inventory Profitability, Purchase Variances

Operations: Back Orders, Forecast vs. Quota, Inventory Valuation, Open Sales Orders, Open Purchase Orders

Key Performance Indicators

INDICATOR	PERIOD	CURRENT	PREVIOUS	CHANGE
Revenue	This Period vs. Last Period	£2,767,276	£2,582,732	7.1%
Expenses	This Period vs. Last Period	£2,438,445	£2,344,413	4.0%
Average Gross Profit	This Month vs. Last Month	£384	£367	4.7%
Receivables	Today vs. Same Day Last Month	£3,238,137	£2,864,681	13.0%
Operating Cash Flow	This Period vs. Last Period	£192,326	£340,477	43.5%
Total Bank Balance	This Period vs. Last Period	£2,411,032	£2,463,287	2.1%
Payables	Today vs. Same Day Last Month	£3,348,672	£2,895,987	15.6%

Sales & Operations

INDICATOR	THIS MONTH	LAST MONTH	THIS Q	LAST Q	THIS FY	LAST FY	THIS FYTD	LAST
New Leads	7	0	21	0	21	0	7	0
New Customers	5	5	5	13	18	50	16	0
New Opps	42	0	42	0	42	0	16	0
Pipeline from New Opps	£16,217	£0	£16,217	£0	£16,217	£0	£16,217	£0

New vs Existing Customer Sales

DATE: All

SUBSIDIARY: All

TOTAL: 2

Revenue By Period Trend

By Period

Revenue By Period in Millions

Exercises Chapter 5



Question 1 : What is the meaning of material management ?

Question 2 : What are the scopes of material management ?

Question 3 : How do the relationships between material management and production ?

Question 4 : What is the meaning of Master Production Schedule ?

Question 5 : What is the meaning of Material Requirements Planning ?

Exercises Chapter 5 (con't)



Question 6 : What is the meaning of Capacity Planning ?

Question 7 : What is the meaning of Just in Time ?

Question 8 : What is the meaning of Manufacturing Resource Planning ?

Question 9 : What is the meaning of Enterprise Resource Planning ?



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