

27.11: Materials Planning and Inventory Control

Learning Objectives

- Explain materials-requirement planning (MRP)
- Explain just-in-time inventory control (JIT)

After the facility location has been selected and the best layout has been determined, the next stage in production planning is to determine production material requirements.

Material-Requirements Planning (MRP)

Many manufacturing companies have adopted computerized systems to control the flow of resources and inventory. **Materials requirement planning (MRP)** is one such system. MRP uses a master schedule to ensure that the materials, labor, and equipment needed for production are at the right places in the right amounts at the right times. The schedule is based on forecasts of demand for the company's products. It says exactly what will be manufactured during the next few weeks or months and when the work will take place. Sophisticated computer programs coordinate all the elements of MRP. The computer comes up with materials requirements by comparing production needs to the materials the company already has on hand. Orders are placed so items will be on hand when they are needed for production, while maintaining the lowest possible amount of materials and product to remain in house. MRP helps ensure a smooth flow of finished products.

Practice Question

<https://assessments.lumenlearning.co...essments/14463>

Some manufacturing firms have moved beyond MRP systems and are now using enterprise resource planning (ERP) systems. ERP systems provides an integrated and continuously updated view of core business processes using shared databases maintained by a database management system. ERP systems track business resources—cash, raw materials, production capacity—and the status of business commitments—orders, purchase orders, and payroll. The applications that make up the system share data from and between various departments (e.g., manufacturing, purchasing, sales, accounting, etc.). ERP facilitates information flow between all business functions and manages connections to outside stakeholders.

Even with the implementation of highly integrated planning software, operations managers still need to plan for and control inventory.

Just-in-Time (JIT) Manufacturing

Just-in-time (JIT) manufacturing is strategy that companies employ to increase efficiency and decrease waste by receiving goods only when they are needed in the production process, thereby reducing inventory costs. In theory, a JIT system would have parts and materials arriving on the warehouse dock at the exact moment they are needed in the production process. To make this happen, manufacturers and suppliers must work together closely to prevent just-in-time from becoming “just-isn’t-there”. Operations managers must accurately forecast the need for materials, since even the slightest deviation can result in a slowdown of production.

Practice Question

<https://assessments.lumenlearning.co...essments/14464>

Unexpected events like the shutdown of ports due to Hurricane Harvey and the devastation and flooding caused by Hurricane Maria in Puerto Rico can cause chaos in the supply chains of manufacturers, resulting in problems for firms relying on JIT. But if employed properly, and in spite of these risks, a JIT system can greatly reduce inventory-holding costs and smooth production highs and lows.

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