Continuing

exp: Demand for automobile tires in the replacement market.

Three major objectives for using MRP to control inventories of dependent demand items.

1. Improved customer service
   - Using MRP results in improving customer service:
     - Products are made available (on-hand) when customers need them
     - Contribute to reducing the lead time (LT)

2. Reduction in inventory investment
   - This is far more significant for WIP, parts, and subassemblies with dependent demand, than for the end item with independent demand.

3. Improved plant operating efficiency
   - Based on the philosophy of producing the right amount at the right time.
Elements of MRP

1. **MPS**
   - MRP assumes that the MPS for a product is given. It also assumes that there is adequate capacity available for producing the MPS.

2. **Bill of Material File (BOM)**
   - It is a list of raw materials, parts, and subassemblies that are required to produce a unit of each item.
   - Also called the product structure file or the exploded parts list.

3. **Inventory status file**
   - It is a complete record of each item held in inventory. Although each raw material or part may be used at different levels in one or more products, there is only one material record for each item.
   - It has the following details:
     - Low-level code, which is the lowest level at which the material is used.
     - Inventory on-hand
     - Items on order, and
     - Customer orders for the item.
The inventory status file contains information on lot size, LT, safety stock, and scrap rate for each item.

**Parts/Components**

- **Replacement parts**
  - These parts are directly purchased by customers.
  - Supplies are made directly from inventories.

- **Service parts**
  - Forecasts for these parts are available to the company.
  - Included in the MTS

Inventory turn over = \( \frac{\text{Cost of goods sold (S)}}{\text{Average inventory value (S)}} \)
How does the MRP system work? (Level 0)

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1. Determine the # of units of each end item required in each time period (time bucket) from the MPS.

2. Gross Requirements (at Level 0) = \[ \begin{cases} \text{MPS + service parts; if it is used as a service part} \\ \text{MPS; otherwise} \end{cases} \]

3. Net Requirement = \( \text{GR} - \left\{ \text{Inv. on hand} - \text{SS - Inv. allocated to other uses} \right\} \)
   also called planned order receipts (P.O.R.)