

AGGREGATE PRODUCTION PLANNING (APP) AND THE MASTER PRODUCTION SCHEDULE (MPS)

Aggregate Production Planning (APP)

Aggregate Production Planning (APP) is a **medium-term** capacity planning process that determines the overall production levels, workforce requirements, and inventory management strategies to meet anticipated demand. It typically covers a planning horizon of **3 to 18 months** and focuses on balancing **demand and production capacity** while minimizing costs.

Objectives of APP:

1. **Balancing Demand and Capacity** – Ensuring that production levels align with market demand.
2. **Cost Minimization** – Reducing costs related to labor, inventory, subcontracting, and production changes.
3. **Efficient Resource Utilization** – Optimizing workforce, machines, and materials to avoid under- or over-utilization.
4. **Maintaining Stable Workforce Levels** – Avoiding excessive hiring, layoffs, or overtime work.

Key Strategies for APP:

- **Chase Strategy:** Adjusts production rates and workforce to match demand.
- **Level Strategy:** Maintains a constant production rate, using inventory and backorders to absorb fluctuations in demand.
- **Hybrid Strategy:** Combines elements of both chase and level strategies for flexibility and cost efficiency.

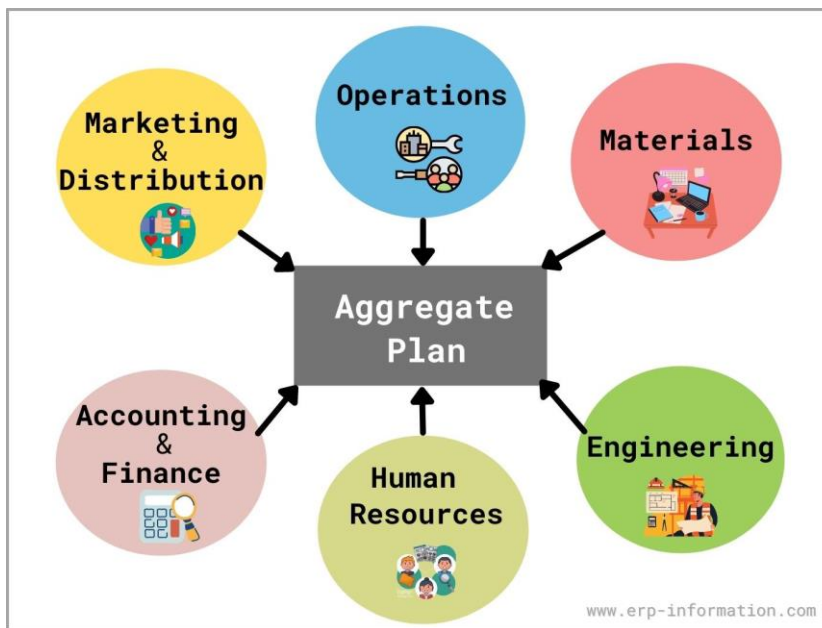
Inputs to APP:

- Forecasted demand
- Production capacity
- Workforce availability
- Inventory levels
- Cost considerations (labor, materials, storage)

Outputs of APP:

- Production rates
- Workforce requirements
- Inventory levels

- Subcontracting needs



Master Production Schedule (MPS)

The **Master Production Schedule (MPS)** is a **short-term**, detailed plan that specifies what products will be produced, in what quantity, and at what time. It is derived from the **Aggregate Production Plan** and provides a detailed **weekly or daily** breakdown of production activities.

Characteristics of MPS:

- Focuses on **individual products or product families** rather than overall production capacity.
- Typically covers a time frame of **weeks to months** (often 6 to 12 weeks).
- Helps in managing **material requirements planning (MRP)** and scheduling.

Objectives of MPS:

1. **Ensuring Product Availability** – Meeting customer demand without excessive inventory.
2. **Optimizing Resource Use** – Balancing production capacity and efficiency.
3. **Facilitating Supply Chain Coordination** – Synchronizing production with material procurement and distribution.
4. **Reducing Lead Times** – Ensuring timely manufacturing and delivery.

Inputs to MPS:

- Aggregate Production Plan
- Customer orders and demand forecasts
- Inventory levels

- Production capacity
- Lead times for raw materials and components

Outputs of MPS:

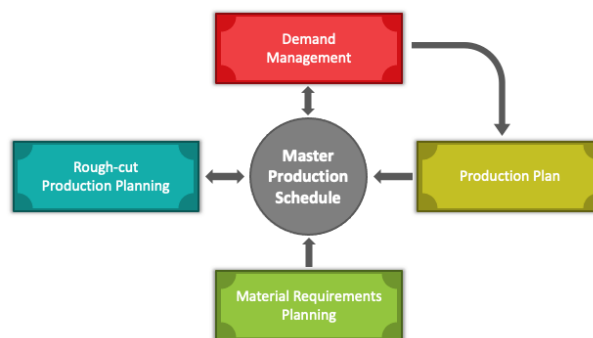
- Detailed production schedule
- Work orders for manufacturing
- Material requirement schedules
- Capacity utilization reports

Relationship Between APP and MPS

1. **Hierarchy:** APP is a higher-level **strategic** plan, while MPS is a more detailed **operational** plan.
2. **Time Horizon:** APP covers a **longer-term (3-18 months)**, while MPS focuses on **shorter-term (weeks to months)**.
3. **Granularity:** APP works with overall production levels, whereas MPS deals with specific product quantities and schedules.
4. **Dependency:** MPS is developed based on the guidelines and constraints set by APP.

MASTER PRODUCTION SCHEDULE

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Both APP and MPS are crucial for **effective production planning and control** in manufacturing. APP sets the foundation by aligning capacity with demand, while MPS ensures that the right products are produced at the right time, leading to efficient manufacturing operations.