Operations Management Overview

- **Definition**: Operations Management (OM) involves effectively and efficiently using resources and activities to transform materials and information into goods and services.
- **Historical Evolution**:
  - **Craft Production**: Highly skilled workers using simple tools to produce small quantities of customized goods.
  - **Industrial Revolution**: Introduction of assembly lines and mass production by Eli Whitney and Henry Ford.
  - **Scientific Management**: Led by Frederick Winslow Taylor, focused on efficiency through observation, measurement, and analysis.
  - **Quality Revolution**: Innovations by Japanese manufacturers leading to Lean and Just-In-Time (JIT) production.

Key Concepts

1. **Efficient Frontier (Operations Frontier)**:
   - **Definition**: A curve that represents the maximum possible output or efficiency given a set of inputs.
   - **Examples**:
     - **Airline Industry**: Positioning airlines based on cost and revenue per mile.
     - **Restaurant Industry**: Comparing costs and responsiveness to determine efficiency.
     - **Healthcare Sector**: Balancing cost efficiency and service responsiveness in hospitals.
   - **Tools**: Benchmarking, process redesign, and resource optimization to move towards the efficient frontier.
2. **Matching Supply with Demand**:
   - **Challenges**:
     - **Demand Variability**: Changes in customer demand patterns.
     - **Supply Inflexibility**: Difficulty in adjusting supply levels quickly.
   - **Case Studies**:
     - COVID-19 impact on healthcare and supply chains.
     - Success of food delivery services like Uber Eats during high-demand periods.
     - Semiconductor shortages affecting PlayStation 5 production.
   - **Strategies**: Forecasting, flexible staffing, and inventory management to better match supply with demand.
3. **Dimensions of Operational Performance**:
   - **Cost**: Efficiency in production and resource utilization.
     - Metrics: Cost per unit, labor productivity, utilization rates.
   - **Quality**: Meeting customer expectations and reducing defects.
     - Metrics: Conformance to specifications, performance quality, durability.
   - **Delivery (Timeliness)**: Speed and reliability in meeting customer demand.
     - Metrics: Lead time, flow time, on-time delivery rates.
   - **Flexibility**: Ability to adapt to changes and offer variety.

        - Metrics: Product mix, customization options, responsiveness to market changes.
4. **Operations Strategy and Execution**:
    - **Definition**: Coordinated actions and commitments to achieve competitive advantage through efficient operations.
    - **Alignment**: Synchronizing corporate, business, and functional strategies.
    - **Trade-offs**: Balancing conflicting objectives (e.g., cost vs. quality).
    - **Winners and Qualifiers**: Differentiating factors that make products/services stand out (winners) and minimum standards required (qualifiers).

Key Tools and Techniques

- **Productivity Calculation**: Using quantitative models (e.g., labor productivity) and qualitative strategies to enhance productivity.
- **Operational Trade-offs**:
    - Examples: Balancing wait times and labor costs in a call center.
    - **Winners and Qualifiers**: Elements that differentiate (e.g., low price, speed) and minimum standards (e.g., safety).

Practical Examples

- **Fast-food Restaurants**: Efficient preparation, menu variety, cost management.
- **Rental Cars**: Fleet management, pricing strategies, location logistics.
- **Fashion Retail**: Inventory management, rapid response to trends.
- **Emergency Rooms**: Staffing plans, patient flow management, cost efficiency.

Additional Topics

- **Waste, Variability, and Inflexibility**:
    - **Waste**: Non-value-added activities consuming resources (e.g., leftover food, idle time).
    - **Variability**: Fluctuations in demand (e.g., customer arrivals) and supply (e.g., weather disruptions).
    - **Inflexibility**: Inability to quickly adapt to changes (e.g., rigid staffing levels).
- **Operations Management at Work**:
    - **Process View**: Managing processes that transform inputs into outputs.
    - **Interdependence**: Coordination between business functions (e.g., marketing, finance, HR) for success.

Strategy, Strategy Execution & Focused Operations

- **Strategy Definition**: Integrated actions to exploit core competencies and gain a competitive advantage.
- **Alignment**: Ensuring that corporate, business, and functional strategies are in sync.
- **Execution Framework**:
    - Develop a mission statement.

  - Define and rank operational objectives.
  - Implement initiatives to achieve objectives.
  - Monitor metrics for success.

Management Levers - Key Operational Decisions

- **Operational Decisions**:
  - **New Products/Services**: Defining offerings.
  - **Technology**: Choosing and implementing technologies.
  - **Facilities**: Deciding on locations and capacities.
  - **Processes**: Designing efficient processes.
  - **Capacity Planning**: Ensuring adequate resources.
  - **Quality Management**: Maintaining high standards.
  - **Human Resources**: Effective staffing and training.
  - **Supply Chain**: Managing supplier relationships and logistics.

Detailed Topics from the Slides

1. **Matching Supply with Demand**:
   - Examples: Hospitals during COVID-19, Uber Eats during the pandemic, Sony PS5 semiconductor shortages.
   - Difficulty Factors: Demand variability, supply inflexibility, resource misallocation.
2. **Efficient Frontier Examples**:
   - **Airlines (2000 & 2012)**: Comparison of productivity and strategic positioning.
   - **Supermarkets and Grocery Stores**: Cost and convenience trade-offs.
   - **Restaurant Industry**: Responsiveness and cost performance analysis.
   - **Healthcare Sector**: Cost efficiency and responsiveness in emergency rooms.
3. **Operations Management Tools**:
   - Overcoming inefficiencies: Identifying and eliminating waste.
   - Operational trade-offs: Balancing objectives like cost and quality.
   - Evaluating redesigns/new technologies: Impact on productivity and efficiency.
4. **Waste, Variability, and Inflexibility**:
   - Waste: Non-value-adding activities (e.g., unused food, employee idle time).
   - Variability: Demand and supply fluctuations (e.g., customer arrivals, supply disruptions).
   - Inflexibility: Inability to adapt quickly to changes (e.g., rigid staffing levels).
5. **Process View of Operations Management**:
   - Transformation process: Converting inputs (materials, information) into outputs (goods, services).
   - Resource Management: Efficient use of equipment and human expertise.
6. **Interdependence among Business Functions**:
   - Success depends on coordination between functions (e.g., strategy, HR, marketing, finance, operations).
7. **Characteristics of Goods and Services**:

    - Goods: Tangible, consistent, low customer interaction, separable from production, inventoried.
    - Services: Intangible, inconsistent, high customer interaction, simultaneous production and delivery.
8. **Operations Strategy Decision Areas**:
    - Management levers for achieving objectives: New products, technology, facilities, processes, capacity, planning, quality, HR, supply chain.

Case Studies and Examples

- **Starbucks**: Trade-offs between flexibility and delivery.
- **McDonald's**: Balancing cost, flexibility, quality, and speed.
- **FedEx vs. Canada Post**: Comparing operational efficiency and responsiveness.
- **Southwest vs. American Airlines**: Differentiating competitive strategies and operational processes.