Operations Management
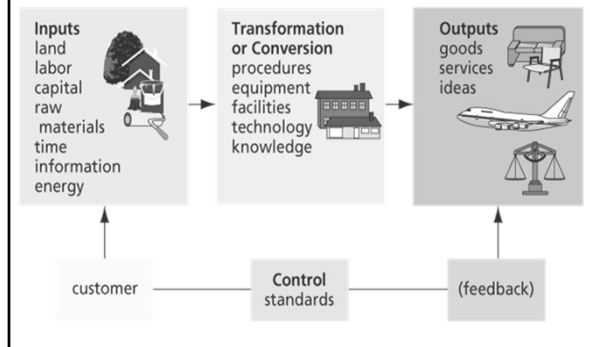

"Hey, Al! What do you know about shelf life?"

The Nature of Operations Management (OM)

- The development and administration of the activities involved in transforming resources into goods and services

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Key Operations Management Terms

- Manufacturing
  - Activities and processes used in making tangible products; also called *production*

- Operations
  - Activities and processes used in making both tangible and intangible products

The Transformation Process

Inputs	Transformation or Conversion	Outputs
land labor capital raw materials time information energy	procedures equipment facilities technology knowledge	goods services ideas

customer —— **Control** standards —— (feedback)

Operations Management in Service Businesses

- Service providers use human and mechanical processes to provide products that are intangible
- The transformation process requires inputs such as employees, equipment, and supplies
- Outputs provide a benefit from a performance, event or type of involvement with the service provider
- Approximately 80% of the U.S. economy is based on the service industry

Manufacturing vs. Service

- Nature and consumption of output
- Uniformity of inputs
- Uniformity of outputs
- Labor required
- Measurement of productivity

Steps of Planning and Designing Operations Systems

1. Planning the product

2. Designing the operations process
   a. Standardization
   b. Modular design
   c. Customization

3. Planning capacity

4. Planning Facilities
   – Facility Location
   – Facility Layout

Layout

- *"…how equipment, machinery, and people will be arranged to make the production process…efficient…"*

Process Layout

Fur-cutting   Stuffing and sewing   Dressing   Shipping

Product Layout

| Combining and whipping | Sugar-added coloring | Molding | Detailing | Wrapping and shipping |

Cellular Layout

● Task in the manufacturing process
🧍 Employee
➡ Work flow
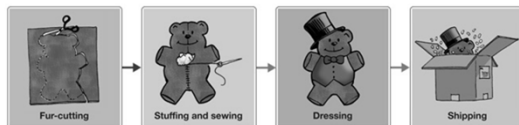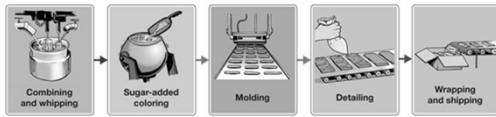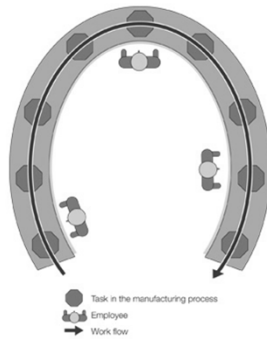
Managing the Supply Chain

Purchasing Management

Inventory Control Management

Routing and Scheduling

Distribution Management

Purchasing

- Procurement
  - Buying the right items
  - Obtaining desired quality
  - Buying the right quantity
  - Paying the lowest price
  - Obtaining inventory at the right time

Managing Inventory

- Three basic types of inventory:
  - Finished-goods inventory
  - Work-in-process inventory
  - Raw materials inventory

Inventory Control Process

Determines how many supplies and goods are needed, and keeps track of:

- Quantities on hand
- Where each item is
- Who is responsible for it

Inventory Management Approaches

- Economic order quantity model (EOQ)
  - Identifies the optimum number of items to order

- Just in time inventory management (JIT)
  - Uses smaller quantities of materials that arrive "just in time"

- Material-requirements planning (MRP)
  - Schedules the precise quantity of materials needed to make the product

Routing and Scheduling

- Routing
  - The sequence of operations through which a product must pass
- Scheduling
  - The assignment of required tasks to departments or specific machines, workers, or teams
  - Gantt charts
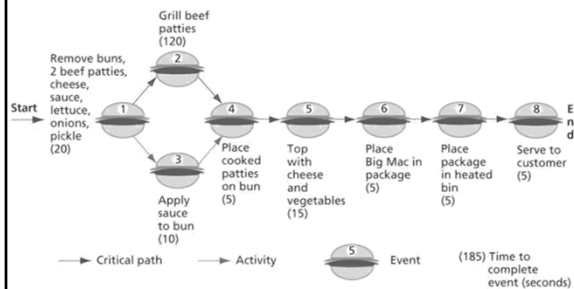 - Program Evaluation and Review Technique (PERT)

Hypothetical PERT Diagram for Making a McDonald's Big Mac

Managing Quality

- Quality Control
  - The process an organization uses to maintain its established quality standards

- Malcolm Baldrige National Quality Award

- Total Quality Management (TQM)

- Statistical Process Control

- ISO 9000

Malcolm Baldrige Quality Award

- The Baldrige criteria are:
  - Leadership
  - Information and analysis
  - Strategic planning
  - Human resource development and management
  - Process management
  - Business results
  - Customer focus and satisfaction

Total Quality Management (TQM)

- To regain a competitive edge, a number of firms have adopted a total quality management approach:

  - Uniform commitment to quality in all areas of the organization will promote a culture that meets customers' perceptions of quality

Establishing Standards—ISO 9000

- Designed to ensure consistent product quality under many conditions

- Provides a framework for documenting how a certified business keeps records, trains employees, tests products, and fixes defects
  – Inspection
  – Sampling

Inspection

- Purchased items and finished items
  – To determine what the quality level is

- Work-in-process
  – To find defects before the product is completed so that necessary corrections can be made

Sampling

- Whether to inspect 100% of output or only part of it is related to:

  – Cost of the inspection process

  – Destructiveness of the inspection process

  – Potential cost of product flaws in terms of human lives and safety