LESSON 1 Operations Management and Operations Function

Objectives:

a. Define the term “Operations Management” and give examples.

b. Identify the three major functional areas of organization and discuss how they interrelate.

c. Describe the operations functions and the nature of operation manager’s job.

d. Differentiate between design and operations of production systems.

e. Discuss productivity in terms of what it is, why is it important, who is primarily responsible for it, and ways of increasing it.

f. Compare and contrast service and manufacturing.

g. Identify some of the current issues in operations management.

Introduction

Management Science is the study and development of techniques for the formulation and analysis of management and related business problems. Operations research models are often helpful in this process.

Operations Research is the application of techniques developed in mathematics, statistics, engineering and the physical sciences to the solution of problems in business, government, industry, economics and the social sciences.

Quantitative Methods employ mathematical models to reach a wide variety of business decisions.

- They give modern managers a competitive edge
- Managers do not need to have great mathematical skills
- Familiarity allows one to:
    - **Ask the right questions**
    - **Recognize when additional analysis is necessary**
    - **Evaluate potential solutions**
    - **Make informed decisions**

Qualitative Methods. Like more traditional methods, qualitative methods come in many varieties. Different researchers focus on different sources of data:

- One's own immediate experience
- Others' experiences, which we might seek to understand through:
    - **their speech or writing,**
    - **their other behaviors,**
    - **their products - technology, artwork, footprints, etc.**

What is Production and Operations Management (POM)?

- ***Production*** is the creation of goods and services
- ***Production*** and/or ***Operations Management*** are the activities that transform resources into goods and services.

Why Study POM?

- It is one of the 3 critical parts of any organization:
    - **Marketing** – generates demand
    - **Operations** – creates the product
    - **Finance/accounting** – tracks organizational performance, pays bills, collects money
- It shows us how goods and services are produced
- It shows us what POM managers do
- It is the costliest part of any organization

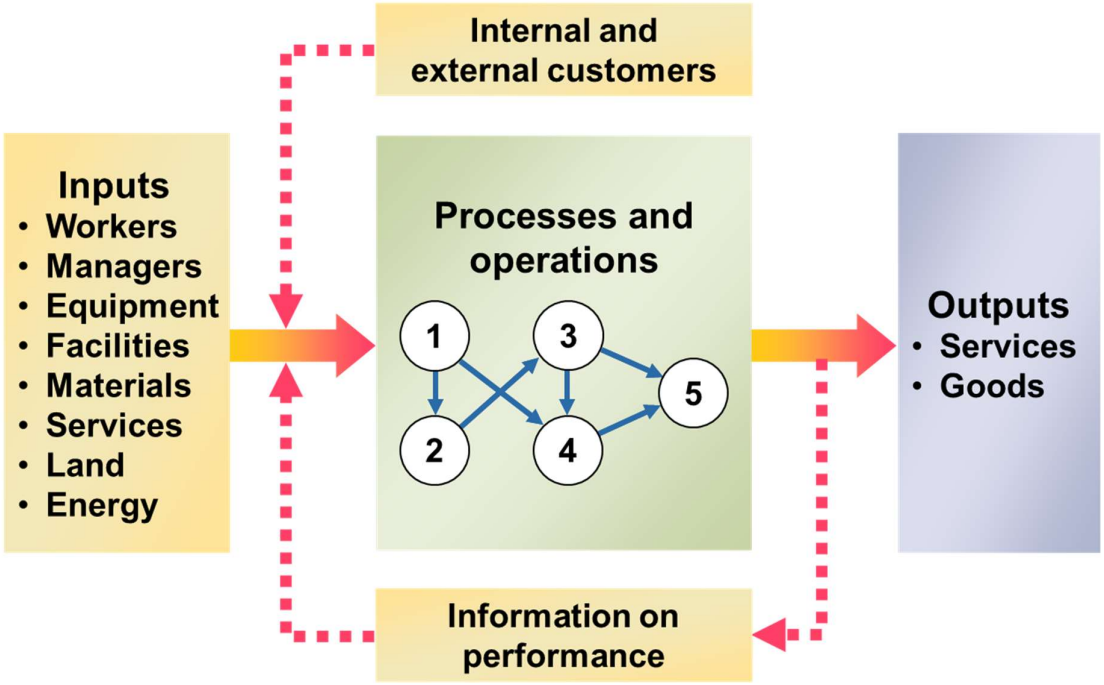
What is Operations Management?

- ***Operations management (OM)*** *is the science and art of ensuring that goods and services are created and delivered successfully to customers.*
    - ***Design*** of goods, services, and the processes that create them.
    - Day-to-day ***management*** of those processes.
    - Continual ***improvement*** of these goods, services, and processes.

- Efficiently using *processes* to transform *inputs* into valuable *outputs*
- Seeks to provide a competitive advantage.

- Successful operations management results from careful allocation of:
  - Human Resources
  - Capital
  - Information
  - Materials

Processes and Operations



Key Concepts

Production system: the way a firm acquires inputs then converts and disposes outputs.

Operations managers: responsible for the transformation process from inputs to outputs.

Scope of Operations Management

The operations function includes many interrelated activities such as:

- Forecasting
- Capacity planning
- Facilities and layout
- Scheduling
- Managing inventories
- Assuring quality
- Motivating employees
- Deciding where to locate facilities
- And more . . .

Role of Operations Manager

The Operations Function consists of all activities *directly* related to producing goods or providing services.

A primary function of the operations manager is to guide the system by decision making.

- **System Design Decisions**
- **System Operation Decisions**

System Design Decisions

- System Design
  - Capacity
  - Facility location
  - Facility layout
  - Product and service planning
  - Acquisition and placement of equipment
  - These are typically strategic decisions that:
    - usually require long-term commitment of resources
    - determine parameters of system operation

System Operation Decisions

- System Operation
  - These are generally tactical and operational decisions
    - Management of personnel
    - Inventory management and control
    - Scheduling
    - Project management
    - Quality assurance
    - Operations managers spend more time on system operation decision than any other decision area
  - They still have a vital stake in system design

Operations Managers have such titles as:

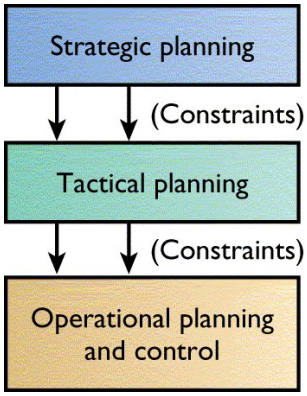
- Chief Operating Officer
- Hotel or Restaurant Manager
- Vice President of Manufacturing
- Customer Service Manager
- Plant Manager
- Field Services Manager
- Supply Chain Manager

OM's Contributions to Society

- **Higher Standard of Living**
  - Ability to increase productivity
  - Lower cost of goods and services
- **Better Quality Goods and Services**
  - Competition increases quality
- **Concern for the Environment**
  - Recycling and concern for air and water quality
- **Improved Working Conditions**
  - Better job design and employee participation

Top-down Approach to OM Strategy

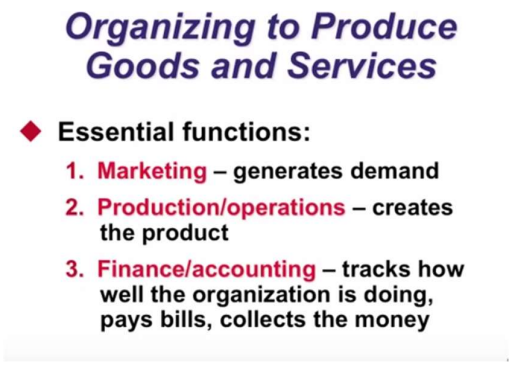
- Operations Strategy Decisions
  - **Strategic** (long-range)
    - Needs of customers (capacity planning)
  - **Tactical** (medium-range)
    - Efficient scheduling of resources
  - **Operational planning and control** (short-range)
    - Immediate tasks and activities

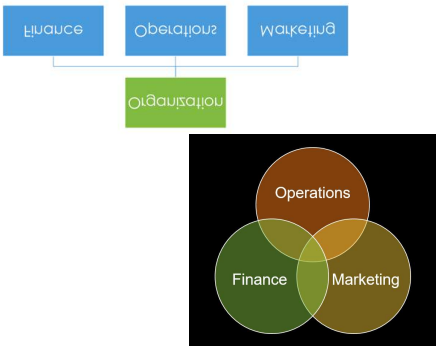


Three Issues at the Core of Operations Management

1. Efficiency
2. Cost
3. Quality

Role of OM within an Organization





Foundations of OM

1. Planning: Operations managers must constantly forecast, plan, and adjust to optimize processes based on conditions.

2. Process: Production of goods or services requires having strong, repeatable processes.

3. Efficiency: Managers must troubleshoot bottlenecks, inadequate resources, and downtimes to create optimal efficiency.

4. Cost Control: Production is typically a major part of a company's cost structure, and you must manage it wisely.

5. Quality: Good quality control is necessary to maintain customer satisfaction and the company's reputation. Companies can greatly suffer without it.

6. Continuous Improvement: To remain competitive, companies need to have processes in place to consistently seek better ways of doing things.

7. Technology: Underlying all of these foundations is technology. Well-used technology keeps a company ahead of the curve.

8. Profitability: Executed properly, all of the above foundations lead to a strong bottom line

Operations Management Concepts

- **Process design**
    - When a new product is to be introduced, the best way to produce it must be determined.

    - This involves charting the detailed steps needed to make the product.

- **Inventory management**

    - Inventory is tightly controlled to keep cost down and to avoid production that isn't needed.

    - Inventory is taken every four weeks and adjusted in the inventory management system accordingly.

Scheduling and Capacity

- Production schedules are created to ensure that enough product is available for both retail and wholesale customers, taking into account such factors as current inventory and production capacity.

Quality management

- goods and services that are reliable and perform correctly.

- ❑ Quality allows customers to receive the performance that they expect.

- Each product is inspected and must conform to the highest quality standards.

- If a product does not conform to standard (for example, wrong color, improper packaging, improper labeling, improper weight, size, or shape), then it is removed from inventory to determine where the process broke down and to initiate corrective action.

Planning and budgeting

- Representing the production area in all meetings, developing annual budgets and staffing plans, and watching technology that might affect the.

Inventory management

- Overseeing the management of inventory for items

Efficiency

- the amount of input to produce a given output.
    - The less input required, the lowers cost and waste

Responsiveness to customers

- actions taken to respond to customer needs.
    - Firm must react quickly and correctly to customer needs as they arise.

Productivity

$$\text{Productivity} = \frac{\text{Outputs}}{\text{Inputs}}$$

- ❑ Partial measures
    - output/(single input)
- ❑ Multi-factor measures
    - output/(multiple inputs)
- ❑ Total measure
    - output/(total inputs)

Example on Labor Productivity

10,000 units/500hrs = 20 units/hour ...

... or we can arrive at a unitless figure
(10,000 unit x P10/unit)/(500hrs x P9/hr) = 22.22

Example for Productivity Measurement

- ❑ You have just determined that your service employees have used a total of 2400 hours of labor this week to process 560 insurance forms. Last week the same crew used only 2000 hours of labor to process 480 forms.

- ❑ Is productivity increasing or decreasing?

Understanding Goods and Services

- A **good** is a physical product that you can see, touch, or possibly consume.
    - Examples of goods include: oranges, flowers, televisions, soap, airplanes, fish, furniture, coal, lumber, personal computers, paper, and industrial machines.

- A **service** is any primary or complementary activity that does not directly produce a physical product.

Similarities between Goods and Services

1. Goods and services provide value and satisfaction to customers who purchase and use them.
2. They both can be standardized or customized to individual wants and needs.
3. A process creates and delivers each good or service, and therefore, OM is a critical skill.

Key Differences between Goods and Services

Characteristics	Goods	Service
Customer Contact	Low	High
Uniformity of input	High	Low
Labor content of jobs	Low	High
Uniformity of output	High	Low
Production and delivery (output)	Tangible	Intangible
Measurement of productivity	Easy	Difficult
Quality assurance (Opportunity to correct problems)	High	Low
Amount of inventory	Much	Little
Evaluation of work	Easier	Difficult
Ability to patent design	Usually	Not usual

Current Challenges in OM

1. Technology
2. Globalization
3. Changing customer expectations
4. Changing job designs
5. Quality
6. Global manufacturing