

Production and operations management analysis



**ASSIGN
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Cheng Guoping Chapter 1

Introduction

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1. Production

System Production and operation management (POM) is the management of an organization's production system, which converts input into the organization's products and services.

1. 1Production system model

Inputs conversions subsystem output Feedback Feedback Figure 1 A
production System Model

1. 2Common ground and differences between manufacturing and services

1. 2. 1Common Ground:

- Entail customer satisfaction as a key measure of effectiveness
- Require demand forecasting
- Require design of both the product and the process
- Involve purchase of materials, supplies, and services

- Require equipment, tools, buildings, and skills, etc.

1. 2. 2Differences:

- Customer contact

Service involves a much higher degree of customer contact than manufacturing does. The performance of a service typically occurs at the point of consumption. Manufacturing allows a separation between production and consumption.

- Uniformity of input

Service operations are subject to more variability of inputs than manufacturing operations are. Each patient, each lawn, each TV presents a specific problem.

- Labor content of jobs

Manufacturing – capital – intensive. Service – a higher labor content.

- Uniformity of output

Products–standardization, low variability, smooth, efficient Service–customization, variable, slow.

- Store Goods may be stored

Services are consumed during delivery, cannot be stored.

- Measurement of productivity

In manufacturing, measurement is more straightforward In service operation, measurement is more difficult due to variations in demand intensity.

Table 1. Difference between manufacturing and service

Characteristic	Manufacturing	Service
Output	Tangible	Intangible
Customer Contact	Low	High
Uniformity	high	low
Labor content	Low	High
Uniformity of output	High	Low
Store of output	Easy	Difficult
Measurement of production	Easy	Difficult

2. Production and operations in the organization Figure 2 Basic management responsibilities

3. Function and jobs of POM

3.1 Functions

- Manufacturing—cutting, drilling, milling, etc. Or Teaching, farming, packing, consulting, mixing, etc.
- Transporting
- Storing
- Plant maintenance and management
- Material management
- Quality control, etc.

Table 2 functions of POM

Function	Planing	Capacity	Location	Layout
Projects	Products and services	Make or buy	Scheduling	Organizing
Degree of centralization	Subcontracting	Staffing	Hiring/laying off	Use of overtime
Directing	Incentive plans	Issuance of work orders	Job assignments	Controlling
Inventory control	Quality control	Work-in process control	Process control	

Figure 3 POM interfaces with a number of supporting functions 2. Jobs Table

3 Jobs of POM | Types of firms | Some Line Jobs | Some Staff Jobs | | | V. P. Manufacturing | Manufacturing engineer | | | Plant manager | Industrial engineer | | | Production manager | Quality control manager | | Manufacturing | Superintendent | Quality control engineer | | | Foreman | Material manager | | | Team leader | Inventory analyst | | | Crew chief | Production scheduler | | | V. P. Operations | Customer service manager | | | Store managers | Security manager | | Retailing | Operation manager | Maintenance manager | | | Department supervisor | Supplies specialist | | | Sales clerk | Warehouse manager |

4. Decision Making in POM

4. 1 Strategic Decision — Being of strategic importance, having long-term significance

- Deciding whether to launch a new-product development project
- Deciding on the design for a production process for a new product
- Deciding what new factories are needed and where to locate them
- How to allocate scarce raw materials, utilities, capacity, personal among new and existing business opportunities

4. 2. Operation decision — Planning production to meet demand

- Deciding how much finished-goods inventory to carry for each product
- Deciding what products and how much of each to include in next month's production schedule
- Deciding whether to increase production capacity next month by overtime or subcontract

- Deciding the details of a plan for purchasing raw materials

4. 3. Control decision —Planning and scheduling operations

- Deciding quality control criteria
- Deciding time arrangement
- Day-to-day decision about workers, product quality, machinery

4. 5. The emergence of production and operation management

Table 4 the development of POM Date | Contribution/concept and Tools |
 Originator | | 1776 | Division of labor | Adam Smith | | 1790 | Interchangeable
 parts | Eli Whitney | | 1910s | Scientific management principles | Frederick W.
 Taylor | | | Standard , Time study, methods analysis | | | | Planning | | | |
 Motion studies, method, Therbligs | Frank B. Gilbreth | | | Construction
 contracting | | | | Fatigue study | Lillian M. Gilbreth | | | Human factor in work |
 | | | Employee selection and training | | | | Gantt charts | Henry L. Gantt | | |
 Incentive pay systems | | | | Moving assemble line | Henry Ford | | | | EOQ
 mathematical model | F. W. Harris | | 1930 |

Hawthorne studies | Elton Mayo | | 1935 | Statistical procedures for sampling
 and quality control | Dodge, Romig, | | | | Shewhatt | | 1940-1947 | Operation
 research, | OR groups | | | | Linear programming | George Dantzig | | 1960s |
 Extensive development of quantitative tools (CPM/PERT) | | | | 1970s |
 Inventory control | | | | Material requirement planing (MRP) | | | | Mass
 production in service | | | | 1980s | Emphasis on manufacturing strategy | W.
 Skinner | | | | Just in Time (JIT) | Japanese | | | | Total quality control (TQC) |
 Japanese | | | | Optimized production Technology (OPT) | Goldratt | | | | CAD/CAM
 | | | | Flexible manufacturing system (FMS) | | | | 1990s | TQM/ISO9000 | | | |

Agile manufacturing (AM) | | | | Lean Production (LP) | | | | LAF | | | | Business
process reengineering (BPR) | | | | Concurrent Engineering (CE) | | | | CIMS, IMS
| | | | Virtual manufacturing (VM) | | | | World Class Manufacturing (WCM) | |

External Legal/political Social Economic Technological Market Competition
Product Information Customer Desires Resources People Materials Energy
Capital Equipment Facilities Technology Conversion Subsystem Direct
Outputs Products Services Indirect Outputs Taxes Wages and salaries
Technological Development Employee Impact Environment Impacts Social
Impact Control Subsystem Marketing Production Finance Maintenance POM
Public relations Personnel Industrial engineering Purchasing Accounting