

# MAN301T: Entrepreneurship & Management functions

## Session 9

<https://sites.google.com/a/iiitdm.ac.in/sudhirvs/courses/entrepreneurship-management>



INDIAN INSTITUTE OF INFORMATION TECHNOLOGY,  
DESIGN AND MANUFACTURING,  
KANCHEEPURAM

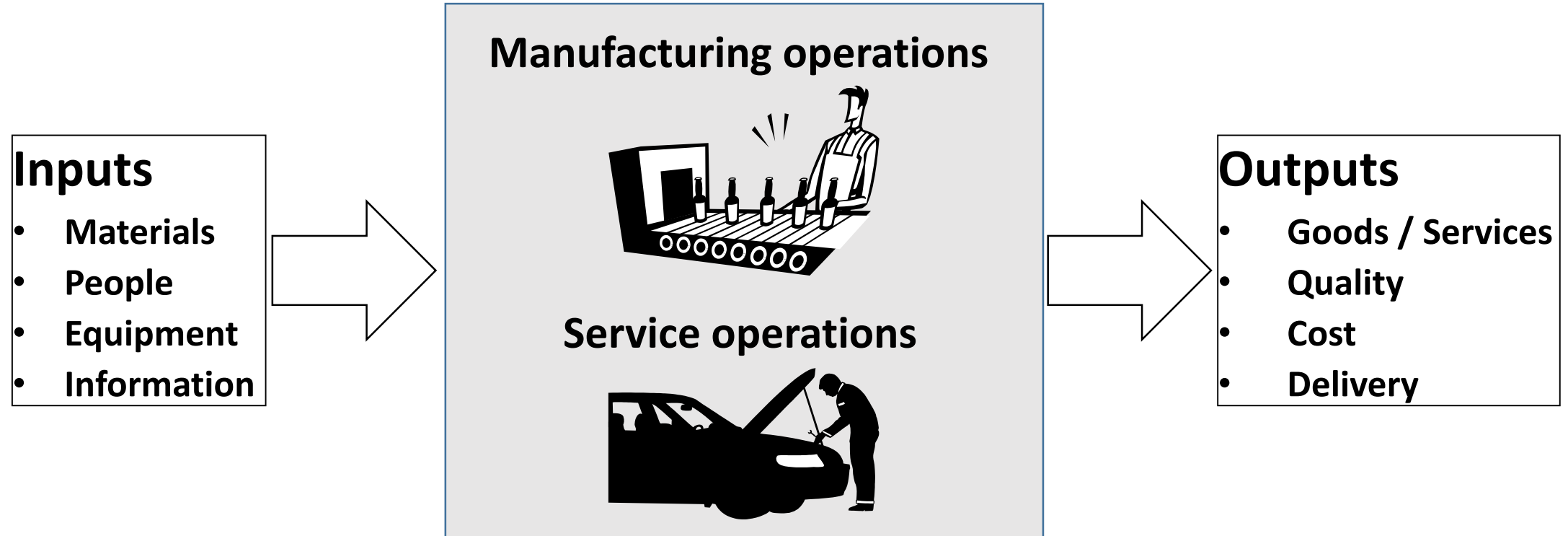
- Sudhir Varadarajan, PhD

# Contents

Introduction to Operations Management

Key Activities in Operations Management

# Operations/Production is the Core Transformation Process of a Company

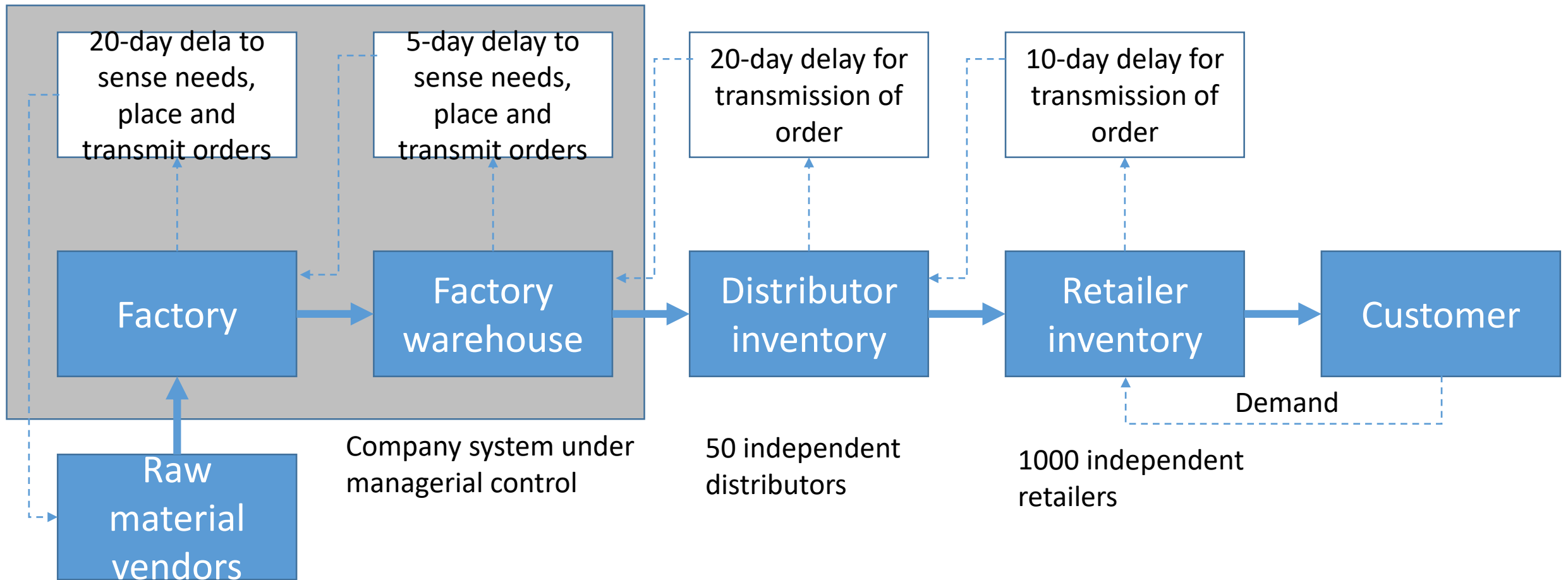


Operations Management is the planning, scheduling, and control of the activities that transform inputs into finished goods and services & enhance profitability (bottom-line)

# Types of Operations / Production Systems

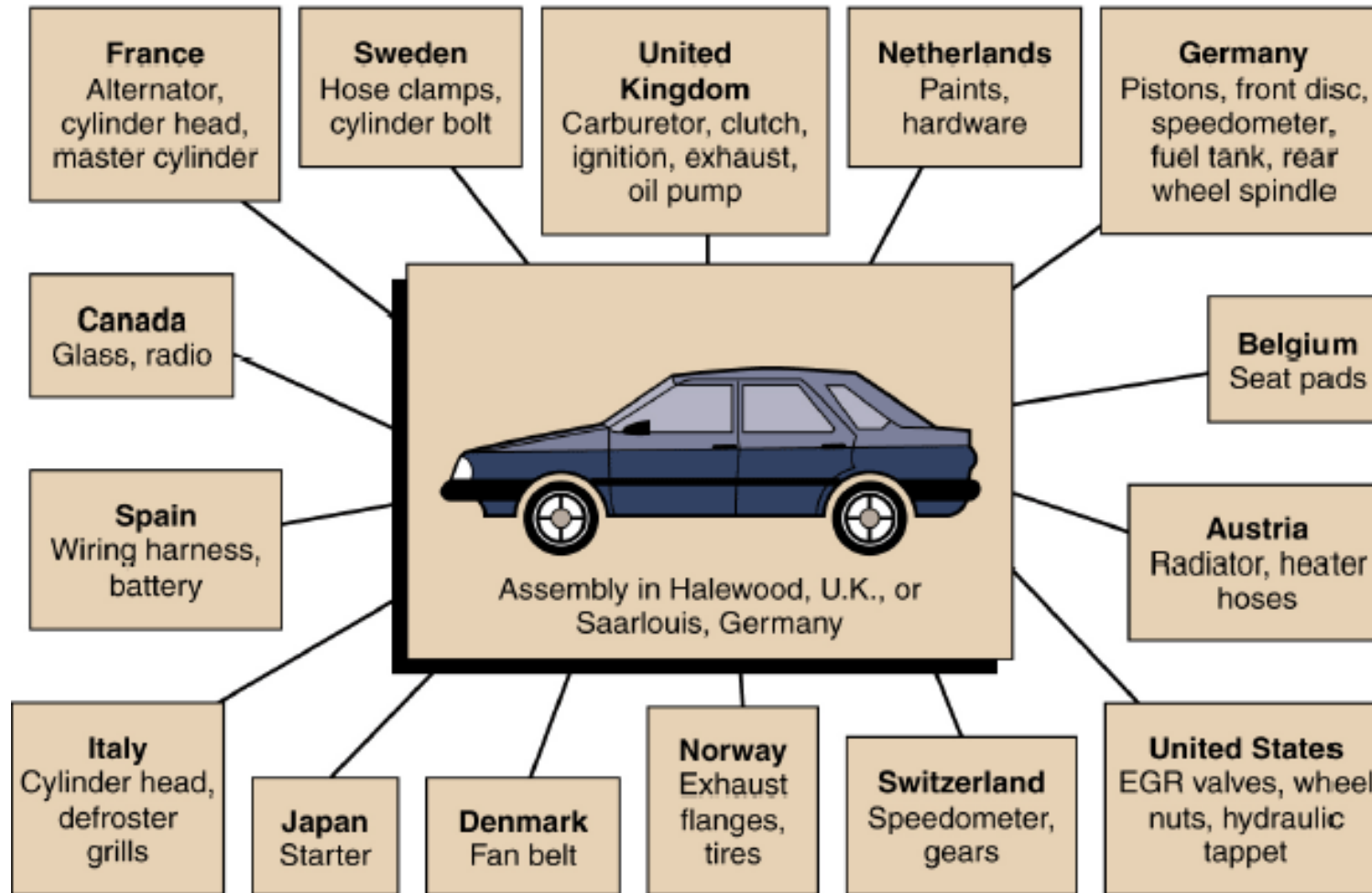
- Classified by the nature of demand
  - Continuous & High Volume Demand (product-focused systems). Example, Industrial Fabrication and Assembly Lines, Oil refining, Mass food services, Driver's license processing
  - Intermittent Demand & High Product Variety (process-focused / batch systems). Example, machine shop, medical clinic, Municipal offices, large scale projects
  - Mass customization (High Volume and Product Variety)

# A typical production-distribution system

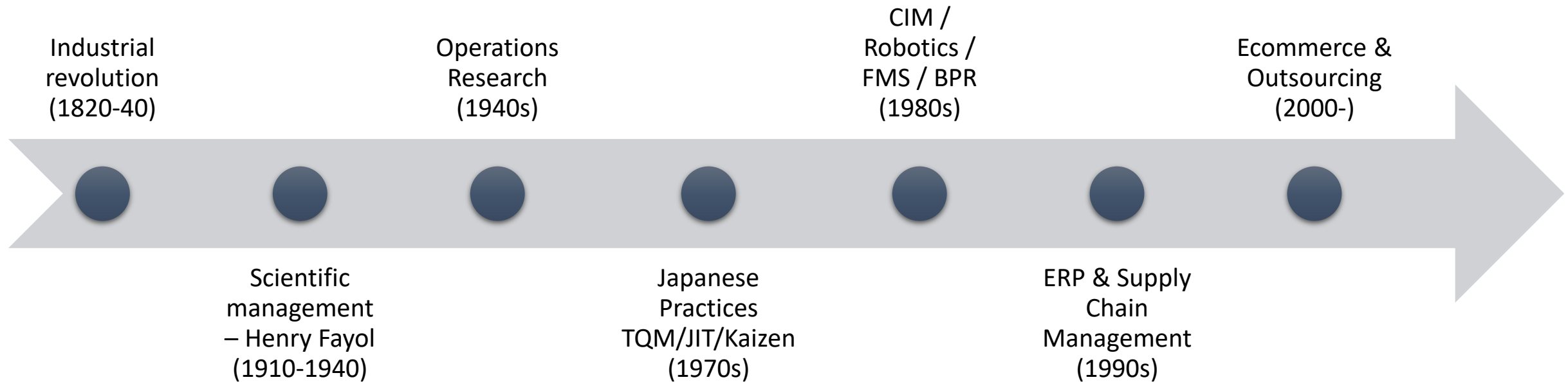


# Operations & Global Supply Chains

Assembling a World Car



# Evolution of Operations Management Practices



# Contents

Introduction to Operations Management

Key Activities in Operations Management



# Key Activities in Operations Management

Demand  
Forecasting &  
Prediction

Capacity &  
Location planning  
for capital and  
resource levels

Selection of  
equipment and  
processes

Inventory &  
materials  
management

Planning and  
control for work  
scheduling

Purchasing and  
managing supplier  
relationships

Logistics or  
acquisition and  
distribution

# Demand Forecasting and Prediction

- The forecast is the single most useful and important database for operations management decisions. It affects decisions on capacity, plant locations, manpower distribution systems and inventory levels
- We need to make plans that range from a day-to-day to a year-to-year basis. The planning horizon depends on the particular application, but is relatively short
- “Forecasting” depends on having enough historical data to be able to describe the record in statistical terms and on reasonably stable market generating factors
- “Prediction” methods are used when we have little experience on which to base estimates of the future (uses subjective and objective information)

## **Methods of Forecasting**

- Time series forecasting models (moving averages, exponential moving averages)
- Causal forecasting methods (Regression analysis, Econometric models)

## **Predictive Methods**

- Delphi (expert panel, long-range predictions, NPD)
- Market surveys (testing market with questionnaires, tests of trial products)
- Historical analogy and life cycle analysis

# Capacity Planning

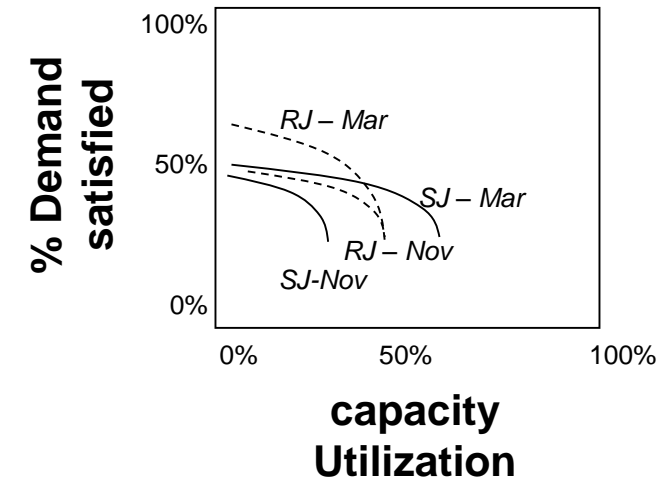
- Capacity is the limiting capability of a productive unit to produce within a stated time period, normally expressed in terms of output units per unit of time
- Measures of capacity vary by the nature of output
  - When the output are relatively homogeneous, the capacity units are obvious – number of automobiles (auto plant), megawatts of electricity (power plant)
  - When the units of output are diverse, it is common to use a measure of the availability of the limiting resource as the capacity measure. Ex: Available seat miles (airlines), Available bed-days (hospital)
- Steps in capacity planning
  - Estimate future demand->Translate into physical capacity requirements->Generate alternate capacity plans related to requirements->Analyze economic effects of alternate plans->Identify risks
- Capacity Increments and Economies of scale

# Inventory Management

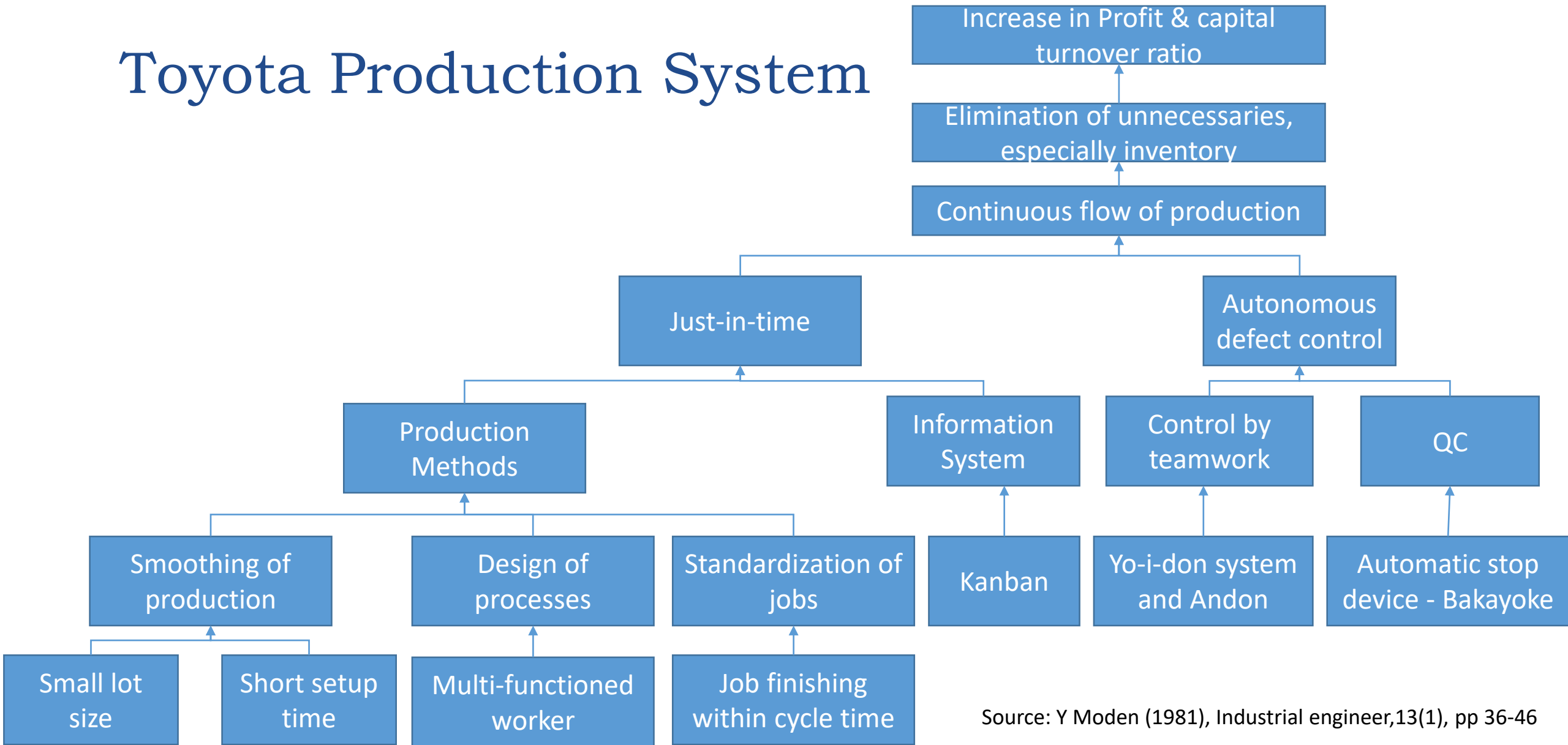
- The process of ensuring that the firm has adequate inventories of all parts and supplies needed, within the constraint of minimizing total inventory costs
- Types of Inventory Items
  - Raw materials and purchased parts from outside suppliers
  - Components: subassemblies that are awaiting final assembly
  - Work in process: all materials or components on the production floor in various stages
  - Finished goods: final products waiting for purchase or to be sent to customers
  - Supplies: all items needed but that are not part of the finished product, such as paper clips, duplicating machine toner, and tools
- Ordering (Setup) Costs
  - The costs, usually fixed, of placing an order or setting up machines for a production run
- Acquisition Costs
  - The total costs of all units bought to fill an order, usually varying with the size of the order
- Inventory-Holding (Carrying) Costs
  - All the costs associated with carrying parts or materials in inventory
- Stockout Costs
  - The costs associated with running out of raw materials, parts, or finished-goods inventory

# The Experience Curve Phenomenon

- As experience is gained through production (cumulative units produced), unit costs are reduced
- The cost improvement may happen due to learning by workers, changes in production methods and tools, improved product design from the point of view of manufacturability, improved flow and economies of scale
- The experience curve is particularly important in the rapid developmental and mature phases of the product life cycle and for continuous production systems



# Toyota Production System



Source: Y Moden (1981), Industrial engineer,13(1), pp 36-46

# Spot Quiz 3: 1 / 3

1. What type of operations best explains Maruti Suzuki's business?
  - a) It is a product-focused system
  - b) It is a process-focused system
  - c) It is a mass-customization system
2. What type of operations best explains TCS' business?
  - a) It is a product-focused system
  - b) It is a process-focused system
  - c) It is a mass-customization system
3. What type of operations best explains IIITDM's business?
  - a) It is a product-focused system
  - b) It is a process-focused system
  - c) It is a mass-customization system

# Spot Quiz 3: 2/3

4. Pick the correct match
  - a) Time series – Moving average
  - b) Causal – Regression
  - c) Forecasting – Delphi
5. What is the difference between forecasting and predictive methods?
  - a) Forecasting uses past trends, while predictive methods rely on surveys
  - b) Forecasting uses qualitative data, while predictive methods use quantitative data
  - c) None of the above
6. Seat-Miles will most probably be a measure of
  - a) Capacity
  - b) Inventory
  - c) Logistics



# Spot Quiz 3: 3/3

7. What is stockout cost?
  - a) Cost of finished stocks inventory
  - b) Cost of holding raw material inventory
  - c) Cost of running out of raw material or finished goods
8. Which of the following statement is true?
  - a) Experience curve is useful to monitor product-focused business
  - b) Experience curve is useful to monitor process-focused business
  - c) None of the above
9. What is the difference between operations and supply chain mgmt?
  - a) Operations is within a firm whereas supply chain could involve other firms
  - b) Supply chain management is a subset of operations management
  - c) No difference
10. How do you think supply chain management evolved? Draw a systems model using elements like outsourcing, competition, ICT, globalization

# Things to find out before next class

