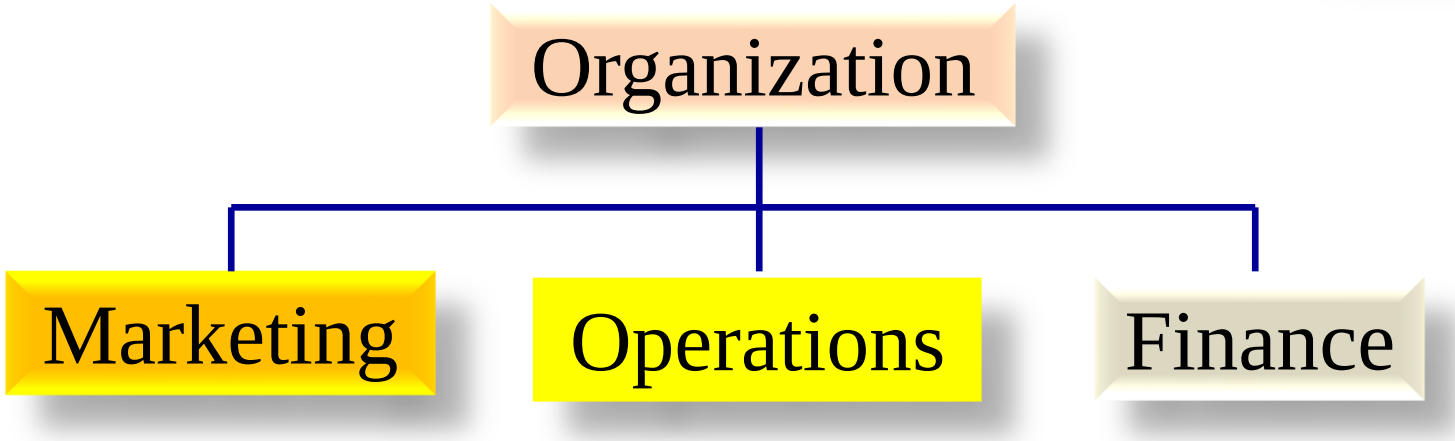
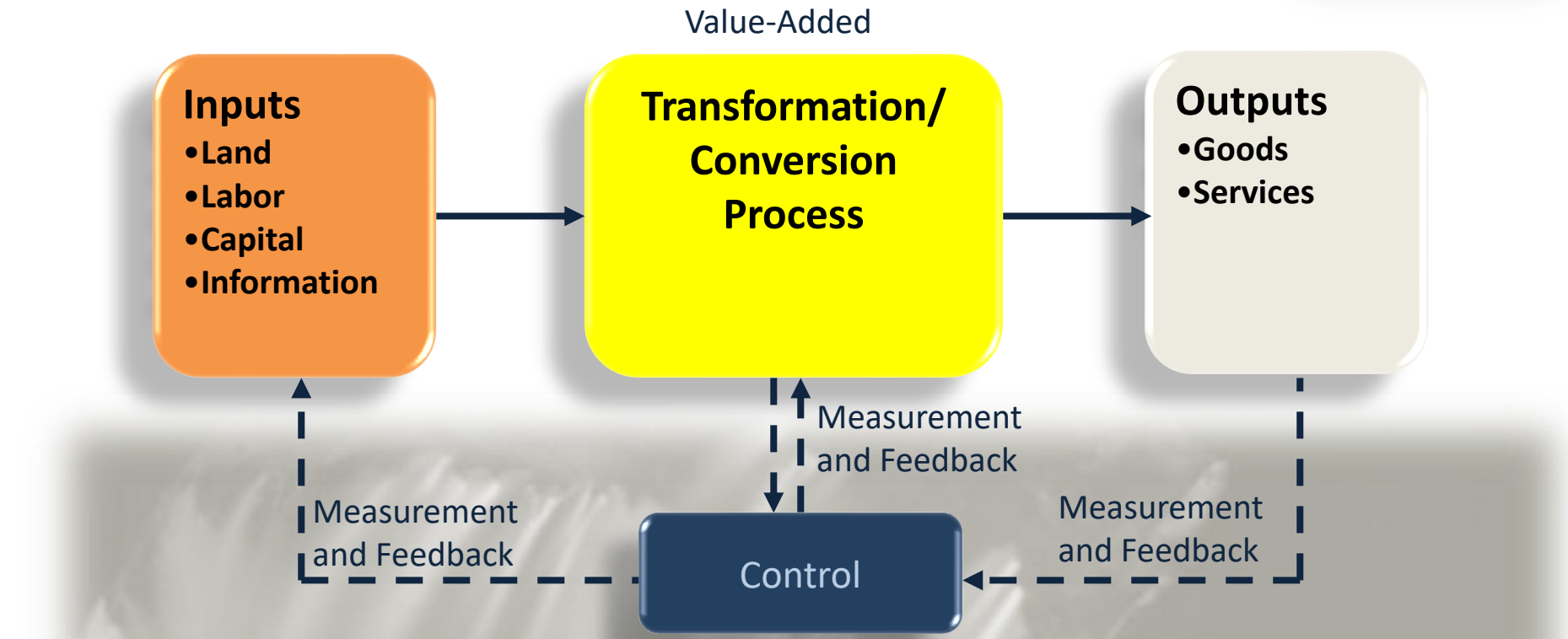
Operations Management

- **What is operations?**
  - The part of a business organization that is responsible for producing goods or services
- **How can we define operations management?**
  - The management of systems or processes that create goods and/or provide services

Basic Functions of the Business Organization



The Transformation Process



Feedback = measurements taken at various points in the transformation process

Control = The comparison of feedback against previously established standards to determine if corrective action is needed.

Scope of Operations Management

The scope of operations management ranges across the organization.

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 . . .

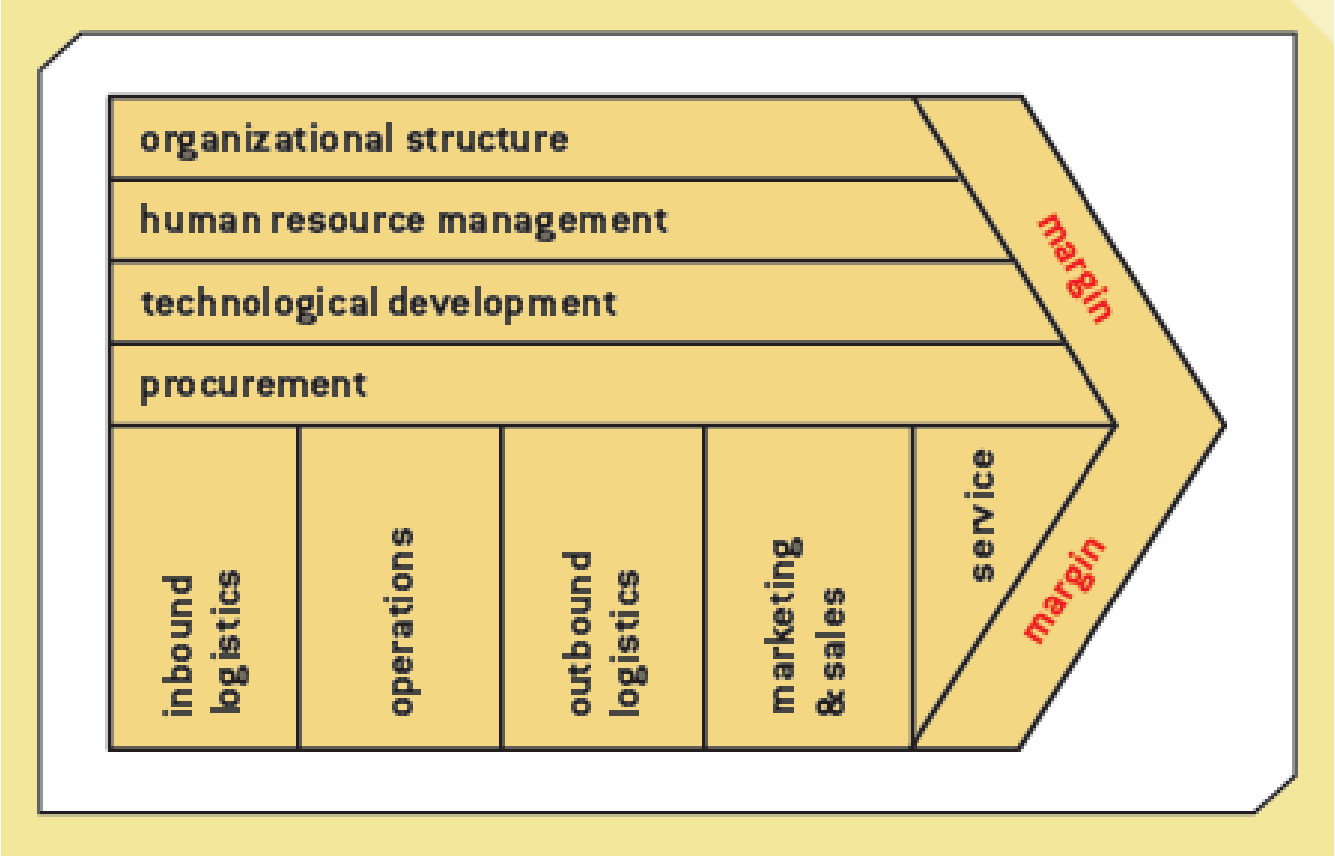
Supply & Demand

Operations & Supply Chains

Sales & Marketing

Supply	>	Demand	Wasteful Costly
Supply	<	Demand	Opportunity Loss Customer Dissatisfaction
Supply	=	Demand	Ideal

Michael Porter's Value Chain



The Value Chain and E-Commerce (cont'd.)

- **Primary activities:**
  - Inbound logistics
  - Operations
  - Outbound logistics
  - Marketing and sales
  - Service
- **The Internet**
  - Increases the speed and accuracy of communication between suppliers, distributors, and customers
  - Low cost means companies of any size can participate in value chain integration

Using Information Technologies for a Competitive Advantage

- Michael Porter
  - Professor at Harvard Business School
  - Identified three strategies for competing in the marketplace successfully
- Overall cost leadership
- Differentiation
- Focus

Using Information Technologies for a Competitive Advantage (cont'd.)

- Information systems
  - Help organizations reduce the cost of products and services
  - Assist with differentiation and focus strategies
  - Can help bottom-line and top-line strategies
- Enterprise systems
  - Supply chain management (SCM)
  - Customer relationship management (CRM)
  - Enterprise resource planning (ERP)
  - Collaboration software

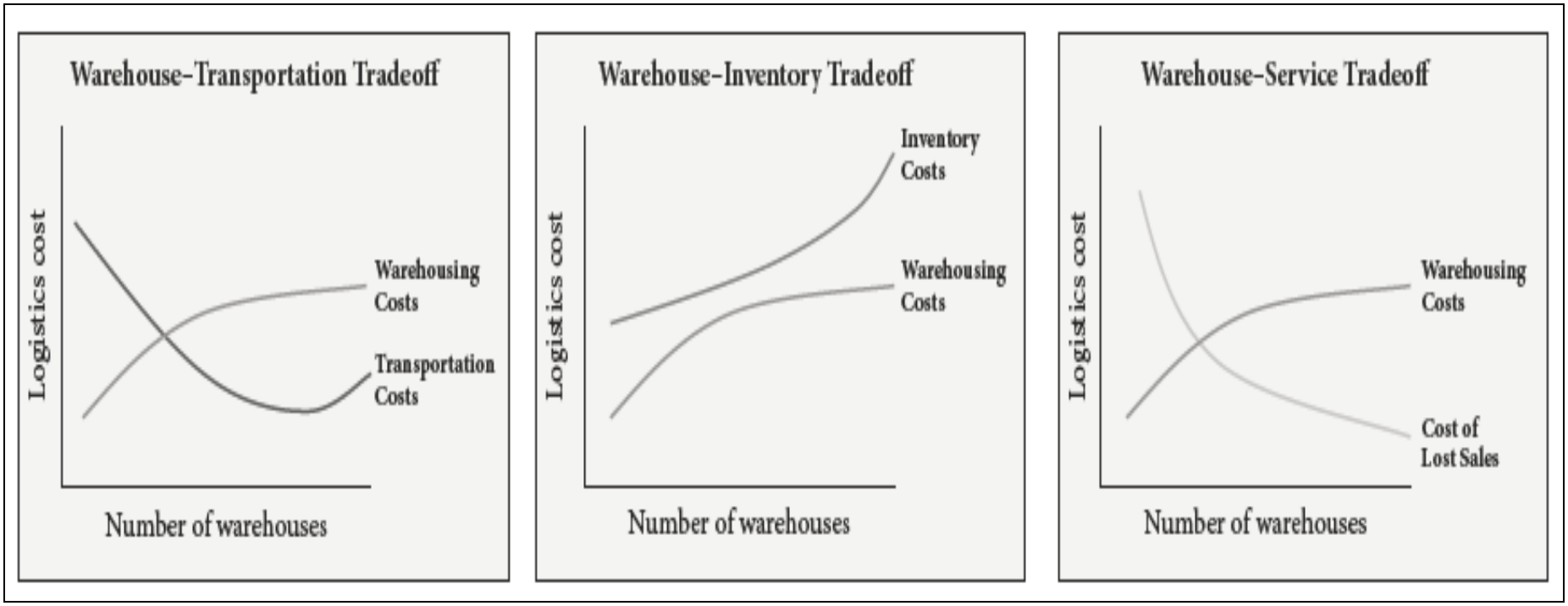
Using Information Technologies for a Competitive Advantage (cont'd.)

- **Differentiation strategies**
  - Make products and services different from competitors
  - Examples: Apple, Amazon.com
- **Focus strategies**
  - Concentrate on a specific market segment
  - Attempt to achieve a cost or differentiation advantage
  - Examples: Apple, Abercrombie & Fitch, Nordstrom

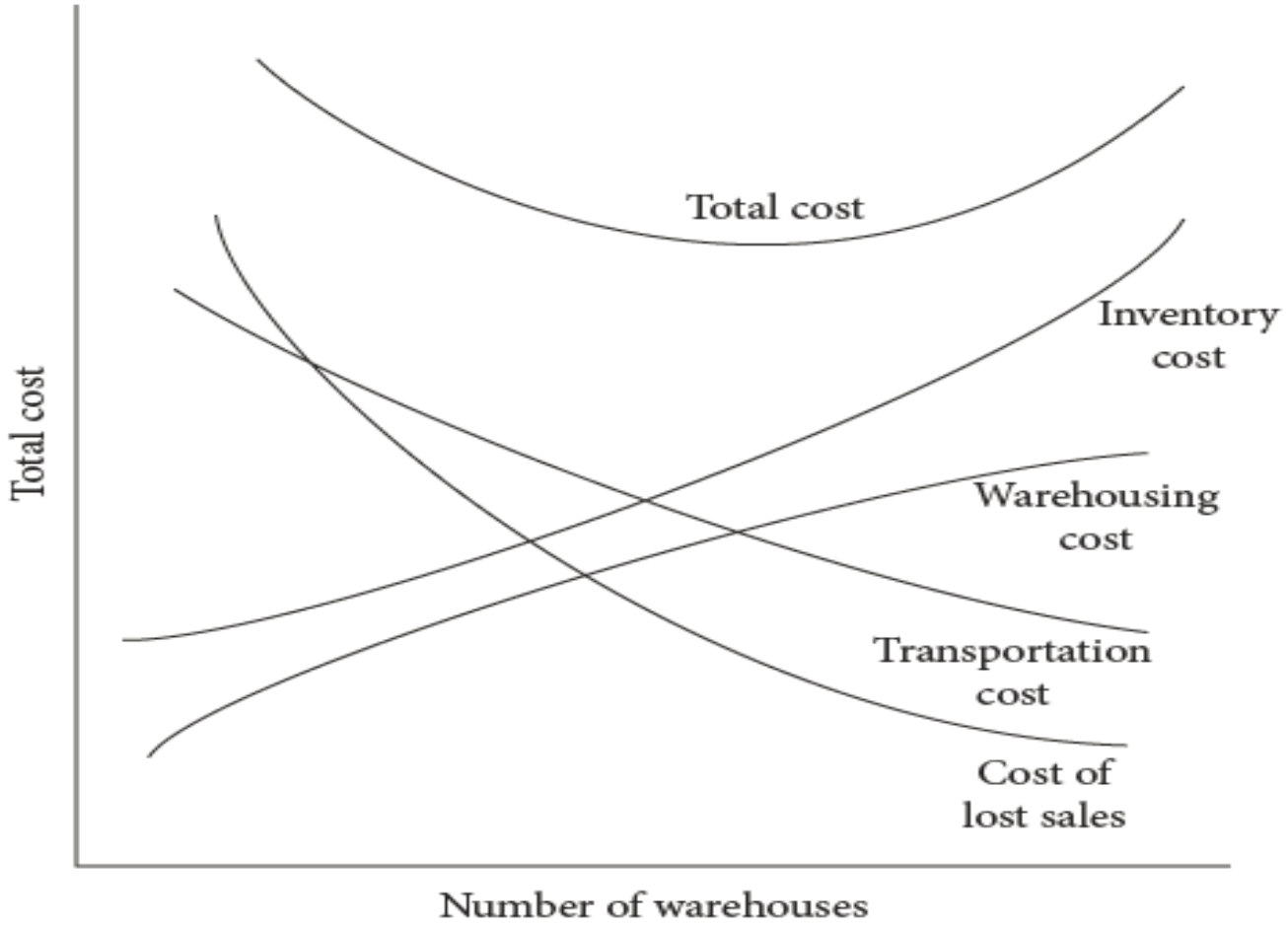
The Role of Distribution Operations in SCM

- Balancing supply and demand.
- Protecting against uncertainty.
- Allowing quantity purchase discounts.
- Supporting production requirements.
- Promoting transportation economies.

Functional Tradeoffs



Distribution Cost Tradeoffs



Source: Edward J. Bardi, Ph.D.

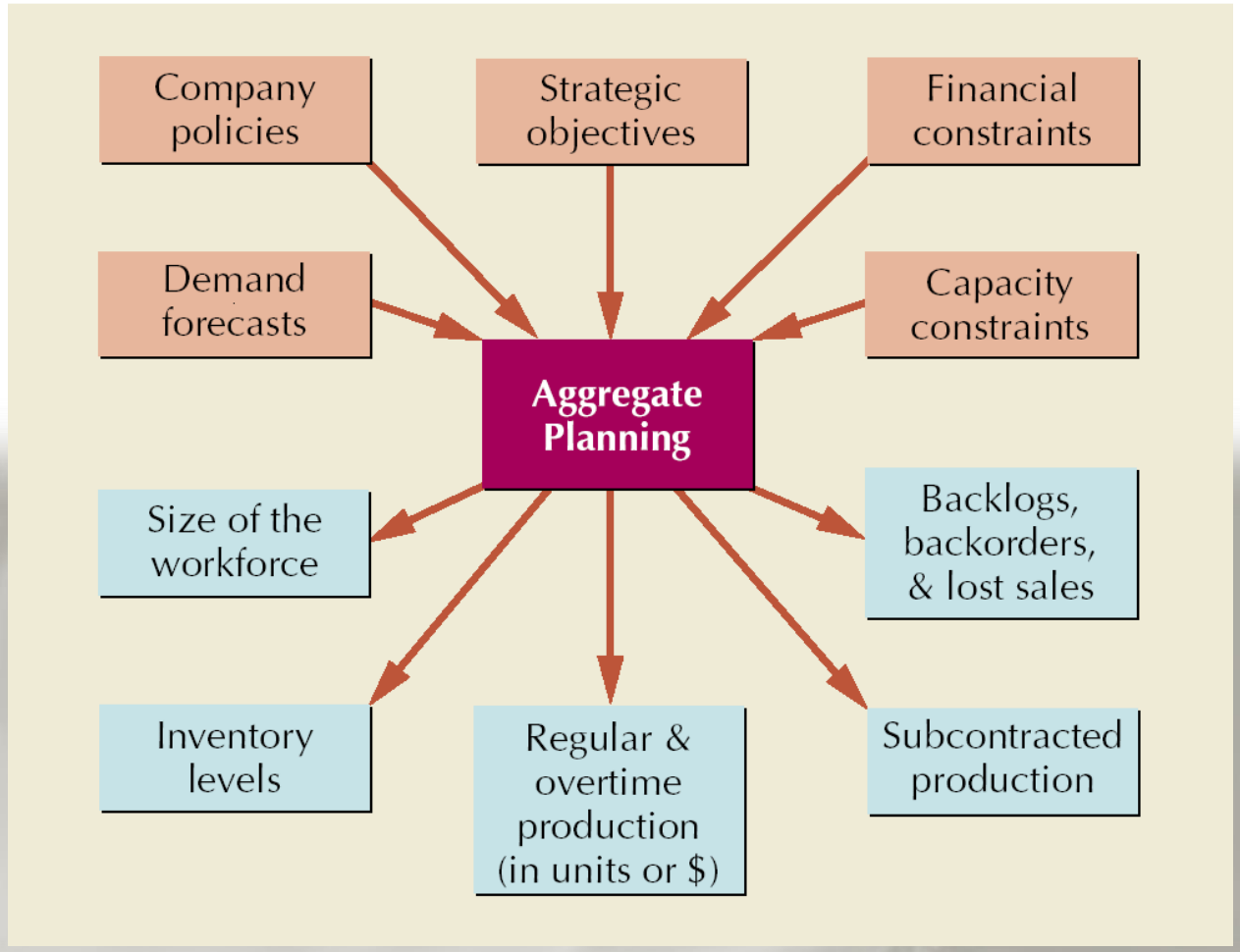
Resource Management: Strategies

Aggregate Planning

Sales and Operations Planning (S&OP) is an aggregate planning process that determines the resource capacity of the firm so as to meet the demand over an intermediate time horizon of 6-12 months.

- Determine the resource capacity needed to meet demand over an intermediate time horizon
  - *Aggregate* refers to product lines or families
  - Aggregate planning matches supply and demand
- Objectives
  - Establish a company wide game plan for allocating resources
  - Develop an economic strategy for meeting demand

Aggregate Planning Process



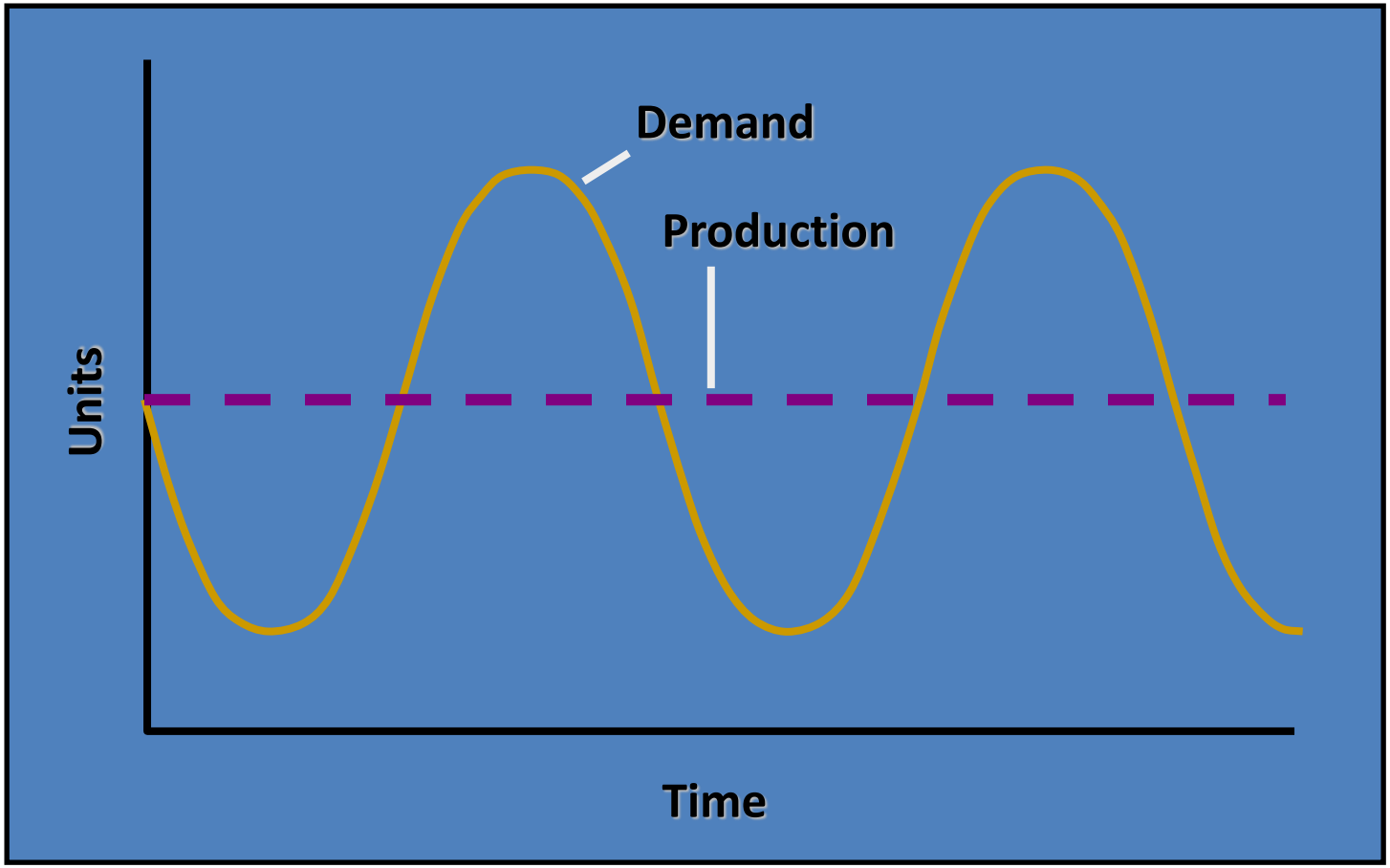
Meeting Demand Strategies

- **Adjusting capacity**
  - Resources necessary to meet demand are acquired and maintained over the time horizon of the plan
  - Minor variations in demand are handled with overtime or under-time
- **Managing demand**
  - Proactive demand management

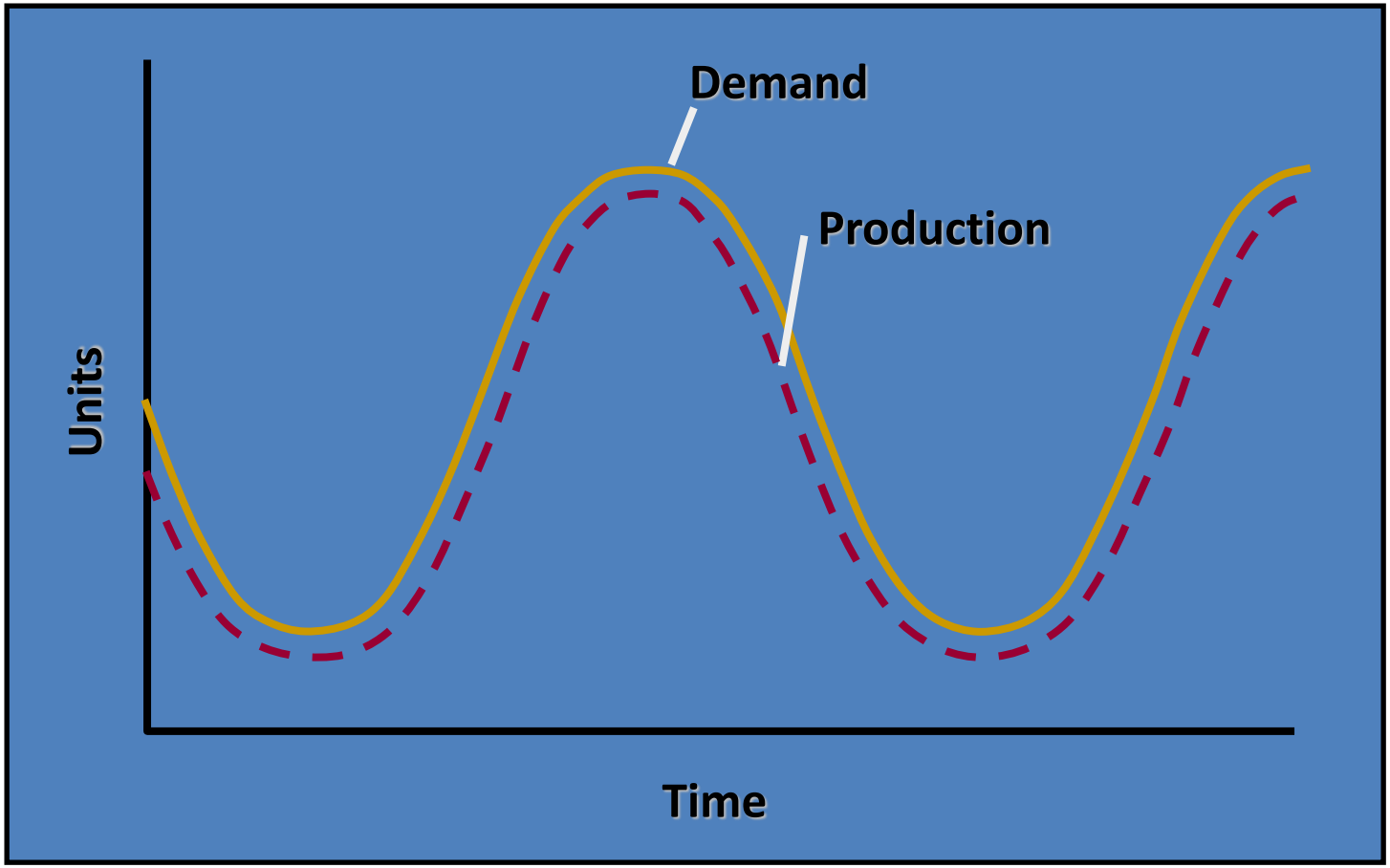
Strategies for Adjusting Capacity

- **Level production**
  - Producing at a constant rate and using inventory to absorb fluctuations in demand
- **Chase demand**
  - Hiring and firing workers to match demand
- **Peak demand**
  - Maintaining resources for high-demand levels
- **Overtime and under-time**
  - Increasing or decreasing working hours
- **Subcontracting**
  - Let outside companies complete the work
- **Part-time workers**
  - Hiring part time workers to complete the work
- **Backordering**
  - Providing the service or product at a later time period

Level Production



Chase Demand



Strategies for Managing Demand

- **Shifting demand into other time periods**
  - Incentives
  - Sales promotions
  - Advertising campaigns
- **Offering products or services with counter-cyclical demand patterns**
- **Partnering with suppliers to reduce information distortion along the supply chain**

Pure Strategies

Example:

QUARTER	SALES FORECAST (LB)
Spring	80,000
Summer	50,000
Fall	120,000
Winter	150,000

Hiring cost = $100 per worker
Firing cost = $500 per worker
Regular production cost per pound = $2.00
Inventory carrying cost = $0.50 pound per quarter
Production per employee = 1,000 pounds per quarter
Beginning work force = 100 workers

Level Production Strategy

Level production

$$\frac{(50{,}000 + 120{,}000 + 150{,}000 + 80{,}000)}{4} = 100{,}000 \text{ pounds}$$

QUARTER	SALES FORECAST	PRODUCTION PLAN	INVENTORY
Spring	80,000	100,000	20,000
Summer	50,000	100,000	70,000
Fall	120,000	100,000	50,000
Winter	150,000	100,000	0
		400,000	140,000

Cost of Level Production Strategy
(400,000 X $2.00) + (140,00 X $.50) = $870,000

Chase Demand Strategy

QUARTER	SALES FORECAST	PRODUCTION PLAN	WORKERS NEEDED	WORKERS HIRED	WORKERS FIRED
Spring	80,000	80,000	80	0	20
Summer	50,000	50,000	50	0	30
Fall	120,000	120,000	120	70	0
Winter	150,000	150,000	150	30	0
				100	50

Cost of Chase Demand Strategy

(400,000 X $2.00) + (100 x $100) + (50 x $500) = $835,000

Five Basic Elements of Operational Excellence:

- Just-in-time (JIT)
- Total Quality Management
- Total productive maintenance
- Employee involvement
- Simplicity

Materials Management

- **Inventory Control Techniques:**

➢ Shortage of Inventory: This gives rise to stock-out cost. This includes cost of customer dissatisfaction; downtime cost; changeover cost; and opportunity cost.

➢ Excess Inventory Carrying Cost: If large inventories are carried as an insurance against stock-outs, a large amount of capital is blocked. This results in high inventory carrying cost.

1. **Always better control (ABC)**
2. **Vital, essential and desirable (VED)**
3. **Economic order quantity (EOQ)**
4. **JIT**

Excellence model