15.760 Introduction to Operations Management

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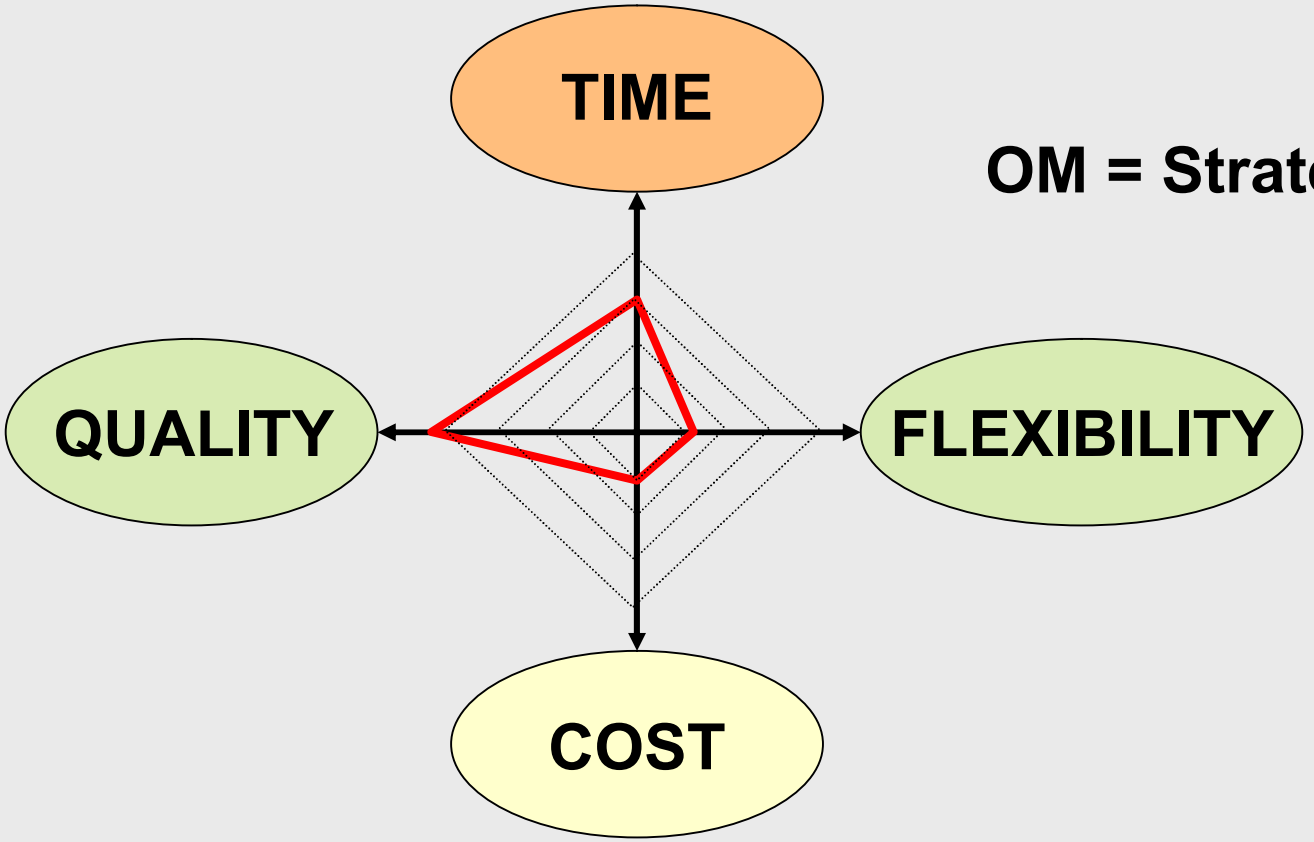
Bio

- French, Eng.D in Production Systems from Ecole des Mines de Paris
- PhD (2000) in Operations Research from MIT
- Research: Online sales channels, dynamic pricing, e-procurement, manufacturing revenue management, order fulfillment, product introduction
- Experience in Electronics, Aeronautics, Transportation and Software

Class Outline

- Class Introduction: Concepts & Outline
- Organization
  - Material
  - Assignments/Grading

What is Operations Management?



OM = Strategy Execution!

Why Study OM (1)?

Dell Vs. Compaq, HP

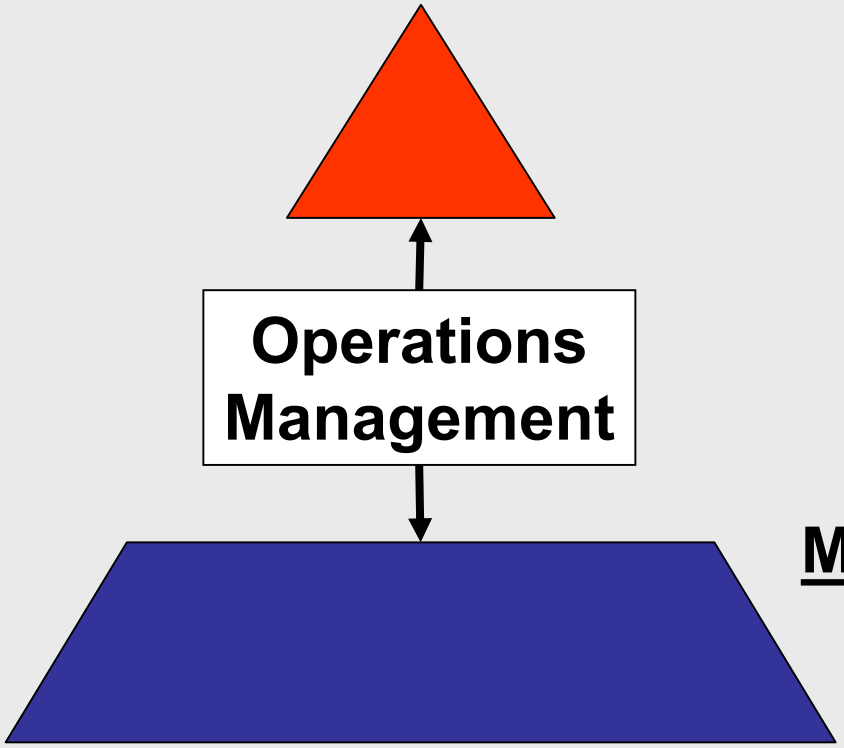
Toyota Vs. Ford, GM

Amazon Vs. Barnes & Noble

JetBlue, Southwest Vs. American Airlines

Why Study OM (2)?

Corporate Structure



<u>Top Management</u>
speaks the language of
MONEY

<u>Mid-Mgt., Associates, Workers</u>
speak the language of
THINGS

OM merges physical and financial analyses, and requires great care to people issues!

Why Study OM (2) ?

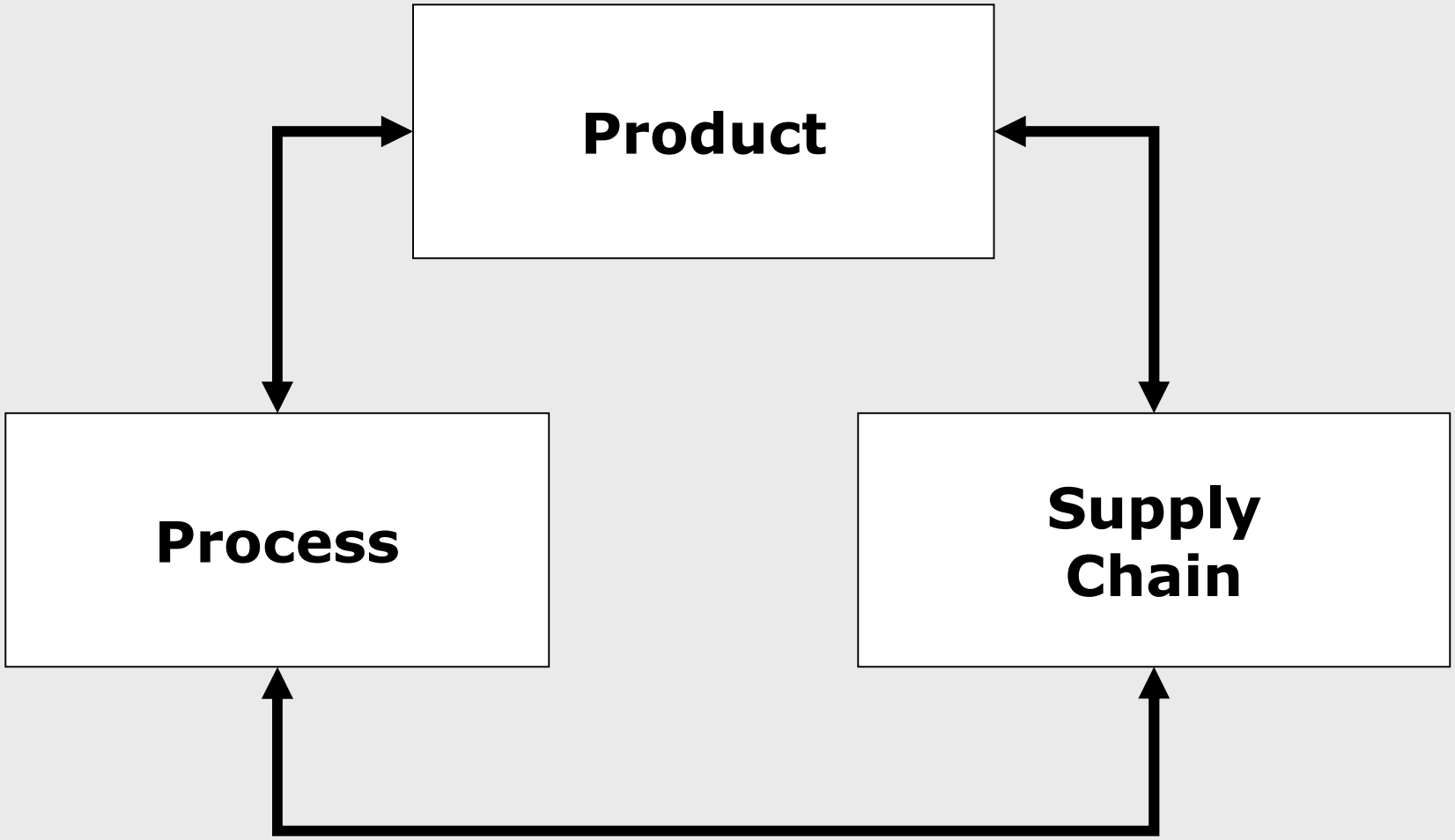
Set of responsibilities:

1. **DESIGN**
2. **PLANNING**
3. **CONTROL**
4. **IMPROVEMENT**

Why Study OM (3) ?

- Boeing
- Microsoft
- Intel
- Massport
- Johnson & Johnson
- Southwest
- Lucent Technologies
- Amazon
- United Technologies
- AT Kearney
- Dell
- PRTM
- McKinsey & Company

Components of Operations Management



Product Definition

- Product Type (Good or Service)
- Strategic Positioning
- Product Architecture

Service Vs. Manufacturing Operations

- **Intangibility** (Explicit and Implicit)
  - "We manufacture perfume; we sell Hope"
  - PERCEPTION Vs. EXPECTATION, ADVERTISE & MATERIALIZE
- **Perishability** (no inventory buffer)
  - Can't inventory seating room!
  - CAPACITY PLANNING/FLEXIBILITY, PREVENTION/CULTURE
- **Heterogeneity** (supply and demand variability)
  - Consider medical service delivery!
  - HIRING, TRAINING, PLANNING, CUSTOMIZATION
- **Simultaneity** (of production and consumption)
  - No safety nets for quality problems…
  - HIRING, TRAINING, HR, PLANNING, CONCURRENT ENGINEERING

Slide courtesy of Prof. Charles Fine, MIT.

Process Definition

- Type (Discrete or Continuous)
- Process Architecture
  - Technology
  - Physical Flow
  - Information Flow

} Process Flow Diagram

Supply Chain Definition

- **Supply Chain Architecture**
  - **Physical & Information Flow**
  - **Integral/Modular Relationships**
  - **Incentives**
- **Coordination**
  - **Delivery**
  - **Inventory**
  - **Information Systems**

Class 1 Wrap-Up

1. **Operations Management = Strategy Execution**

2. **Strategic Product Definition:**
Quality + Cost + Time + Flexibility

3. **Operations Management Components:**
Product Devlpt. + Process + Supply Chain

4. **Operations Management Activities:**
Design + Planning + Control + Improvement

5. **Service Operations Features:**
Intangibility + Perishability + Heterogeneity + Simultaneity

Course at-a-glance

#	Day	Date	Contents	Readings	Assignments	Sim
1	Mon	29-Mar	Course Introduction	Course Syllabus		
2	Wed	31-Mar	Case: Burger King + McDonald's	Types of processes		
3	Fri	2-Apr	Lecture: Capacity	Wait-in-line blues	1 Ex. Buildup, 1 Ex. Queueing	
4	Mon	5-Apr	Case: National Cranberry			
5	Wed	7-Apr	Case: Webvan			
6	Fri	9-Apr	Lecture: Inventory	Automate or Die	1 Ex. EOQ, 1 Ex. Newsboy	
7	Mon	12-Apr	Case: Barilla	Managing Supply-Chain Inventory		
8	Wed	14-Apr	Case: Sport Obermeyer	Rocket Science Retailing	Case Write-up	
9	Fri	16-Apr	Lecture: Production Control	Growth in MRP, Control of JIT	1 Ex. Kanban, 1 Ex. Commonality	
10	Wed	21-Apr	Case: Hewlett-Packard			
11	Fri	23-Apr	Book: The Goal	The Goal	Book Review	
12	Mon	26-Apr	Lecture: Quality	Hank Kolb case	1 Ex. SPC, 1 Ex. 6 Sigma	
13	Wed	28-Apr	Case: Toyota			
14	Fri	30-Apr	Lecture: Process Design	Reengineering Work, ERP Tech. Note		
15	Mon	3-May	Case: Global Financial Corporation			
16	Wed	5-May	Lecture: Supply Chain Design	Chapter 8 Clockspeed		
17	Fri	7-May	Lecture: Product Design			
18	Mon	10-May	Case: Sega Dreamcast		Simulation Write-up	
19	Wed	12-May	Simulation & Course Wrap-up			

Organization

- Course uses Sloan's class server (15.760 BC H2)
- Course Materials:
  - Course Packet (Cases and Readings)
  - *The Goal: A Process of Ongoing Improvement,* E. Goldratt and J. Cox
- Grading

– Class participation	30%	individual
– Book review	10%	
– Case write-up	30%	in teams of 3
– Simulation	30%	

- Professional Standards