Announcement

Business paper preference due date Changed;

Oct 17, 2012 is changed to Oct. 11, 2012
Functions on Competitive Advantages (CA)

Review

- Porter’s C A Model
- Competitive Advantages Strategies with I S
- Value Chains
- Quality Control
- Global Business
- BPM
- New Enhanced Business
The Role of Critical Thinking in Problem Solving

• Four elements of critical thinking:

  1. Maintaining doubt and suspending judgment
  2. Being aware of different perspectives
     • Including technology, organization, and people perspectives
  3. Testing alternatives and letting experience guide
  4. Being aware of organizational and personal limitations
Business process management (BPM)

Approach to business which aims to continuous improve business process

Business process management (BPM) = continuous improvement

Identify processes for change.
Analyze existing processes.
Design new process.
Implement new process.
Measure new process.
Feedback new findings
Business Processes in Book selling/Buying

Customer:
1. Go to bookstore
2. Search shelves
3. Book Available?
   - Yes: Purchase book, Take book home
   - No: Clerk searches
4. Found:
   - No: Inquire about ordering, Able to order?
     - Yes: Proceed
     - No: Go to another store
5. Return to Store
6. Purchase book
7. Take book home

Clerk:
1. Place Order
2. Receive book
3. Notify Customer
A Model of the Problem-Solving Process

- **Problem solving: four-step process**
  1. Problem identification
  2. Solution design
  3. Choice
  4. Implementation
  5. Feedback and any Results
Business Re-Engineering (BPR);

Radical thinking and redesign of business process

• A radical form of fast change

• Not continuous improvement, but elimination of old processes, replacement with new processes, in a brief time period

• Can produce dramatic gains in productivity, but increases organizational resistance to change
New Chapter:

Operational Excellence, Customer Intimacy, Enterprise Application
Objectives of Class

Enterprise systems, operational excellence?

Supply chain management systems coordinate planning, production, and logistics with suppliers

Customer relationship management systems help firms achieve customer intimacy

The challenges posed by enterprise applications?

Platforms for new cross-functional services by enterprise applications
Operational Excellence, Customer Intimacy
Enterprise Application

Operational excellence

Enterprise System

Supply Chain Management System

Customer Relationship Management System

Challenges posed by enterprise applications

New cross-functional services Platforms

SCPS  SCES

PRM  ERM
Manage a Global Supply Chain

Whirlpool Fixes Its Supply Chain

**Problem:** Uncontrollable supply chain, outdated systems.

**Solutions:** Eliminate manual procedures and implement supply chain software suite to allocate inventory more accurately and forecast demand.

i2 Technologies forecasting software and SAP ERP software reduce inventory and increase sales.

Demonstrates IT’s role in coordinating supply chains.

Illustrates digital technology as part of a solution that can benefit both a firm and its customers.
Whirlpool Fixes Its Supply Chain

• What experiences have you had with trying to purchase a product that wasn’t immediately available?

• What reasons did the vendor give for the product being unavailable?

• How could the vendor have managed its supply chain better?

• How was the problem eventually resolved?
Enterprise Systems

Also called

“Enterprise Resource Planning (ERP) Systems”

Suite of integrated software modules and a common central database

Collects data from many divisions of firm for use in nearly all of firm’s internal business activities

Information entered in one process is immediately available for other processes
Enterprise systems feature a set of integrated software modules and a central database that enables data to be shared by many different business processes and functional areas throughout the enterprise.
• Enterprise Software
  – Built around thousands of predefined business processes that reflect best practices
    • Finance/accounting: General ledger, accounts payable, etc.
    • Human resources: Personnel administration, payroll, etc.
    • Manufacturing/production: Purchasing, shipping, etc.
    • Sales/marketing: Order processing, billing, sales planning, etc.

  – To implement, firms:
    • Select functions of system they wish to use
    • Map business processes to software processes
      – Use software’s configuration tables for customizing
Business value of enterprise systems;

Increase operational efficiency

Provide firm wide information to support decision making

Enable rapid responses to customer requests for information or products

Include analytical tools to evaluate overall organizational performance
Supply chain:

Network of organizations and processes for:
- Procuring raw materials
- Transforming them into products
- Distributing the products

- **Upstream supply chain:**
  Firm’s suppliers, suppliers’ suppliers, processes for managing relationships with them

- **Downstream supply chain:**
  Organizations and processes responsible for delivering products to customers
Up stream  Supply Chain

Tier 1

Tier 2

Tier 3

- Tier 1: Final products
- Tier 2: Intermediate materials
- Tier 3: Raw materials

[Images of raw materials, processed materials, and final products]
This figure illustrates the major entities in Nike’s supply chain and the flow of information upstream and downstream to coordinate the activities involved in buying, making, and moving a product. Shown here is a simplified supply chain, with the upstream portion focusing only on the suppliers for sneakers and sneaker soles.
Supply Chain Management (SCM) Systems

Information and supply chain management

**Inefficiencies** cut into a company’s operating costs
Can waste up to 25% of operating expenses

**Just-in-time strategy:**
Components arrive as they are needed
Finished goods shipped after leaving assembly line

**Safety stock**
Buffer for lack of flexibility in supply chain

**Bullwhip effect**
Information about product demand gets distorted as it passes from one entity to next across supply chain
Inaccurate information can cause minor fluctuations in demand for a product to be amplified as one moves further back in the supply chain. Minor fluctuations in retail sales for a product can create excess inventory for distributors, manufacturers, and suppliers.
Supply chain management software

Supply chain planning systems
Model existing supply chain
Demand planning
Optimize sourcing, manufacturing plans
Establish inventory levels
Identifying transportation modes

Supply chain execution systems
Manage flow of products through distribution centers and warehouses
Three ways to make airline reservations

**Method 1:** Customer works through travel agent who has published listing of flights

- **FLIGHTS** → **Airline Reservation Agent** → **Travel Agent** → **CUSTOMER**
  - One airline
  - Published flight list

**Method 2:** Customer works through travel agent who uses a computerized reservation system

- **FLIGHTS** → **Travel Agent** → **CUSTOMER**
  - Most airlines
  - Published flight list

**Method 3:** Customer bypasses the travel agent and makes reservations using the World Wide Web

- **FLIGHTS** → **CUSTOMER**
  - Most airlines
Why is parts inventory management so important at Southwest Airlines?

What business processes are affected by the airlines’ ability or inability to have required parts on hand?

Why management, organization, and technology factors were responsible for Southwest’s problems with inventory management?

How did implementing the i2 software change the way Southwest ran its business?

Describe two decisions that were improved by implementing the i2 system?
Supply Chain Management and the Internet

- Intranets
- Extranets
- Demand-driven supply chains
  - Push-based model
  - Pull-based model
- Digital logistics nervous systems
Isolated business processes within the Firm to help manage its internal supply chain. Access to these private intranets can also be extended to authorized suppliers, distributors, logistics services, and, sometimes, to retail customers to improve coordination of external supply chain processes.
Global supply chain issues
  Global supply chains typically span greater geographic distances and time differences
  More complex pricing issues
    (local taxes, transportation, etc.)
  Foreign government regulations

Internet helps companies manage many aspects of global supply chains
  Sourcing, transportation, communications, international finance
Supply Chain Management (SCM) Systems

**Push-based model** (build-to-stock)
Schedules based on best guesses of demand

**Pull-based model** (demand-driven)
Customer orders trigger events in supply chain

**Sequential supply chains**
Information and materials flow sequentially from company to company

**Concurrent supply chains**
Information flows in many directions simultaneously among members of a supply chain network
The difference between push- and pull-based models is summarized by the slogan, “Make what we sell, not sell what we make.”
The future Internet-driven supply chain operates like a digital logistics nervous system. It provides multidirectional communication among firms, networks of firms, and e-marketplaces so that entire networks of supply chain partners can immediately adjust inventories, orders, and capacities.
Business value of SCM systems

- Match supply to demand
- Reduce inventory levels
- Improve delivery service
- Speed product time to market
- Use assets more effectively
- Reduced supply chain costs lead to increased profitability
- Increased sales
Case Study;

Information System Application

Otis Elevator:
Accelerating Business Transformation with IT

Text Book 2, Musacchio, pp. 125-144
Company Overview

- Otis is the industry leader.

- Otis pursues a differentiation strategy. It specializes in elevators for large, complex buildings and sells quality, service and the ability to customize elevators. Its products sell for a premium price.

- Otis has a large, highly-regarded service organization.

- Some Otis elevators have microprocessor-based control systems. These are replacing mechanical elevator control systems, but at a very slow rate.

- Reliability is more important than cost for Otis Elevator’s target customers.
Otis Has Strengthened Its business Presence Over Many Years
Who is Otis?

• Otis is the world’s largest manufacturer of elevators, escalators, and horizontal transport systems—it sells about 70k elevators and escalators each year.
• Worldwide, roughly 1 of every 4 new elevators is an Otis.
• Service contracts are crucial revenue sources. Otis services over 1.3 million elevators and escalators annually.
• Otis employs about 61,000 people. Roughly 87% work outside the U.S.
• Turnover was $6.8 billion in '02—about 76% was generated outside the U.S.

Otis has a truly global presence!

From Otis France materials
Otis is an important division of United Technologies

UTC is a diversified company consisting of 6 major divisions: Otis, Carrier, Chubb, Pratt & Whitney, Sikorsky, and Hamilton Sundstrand.

UTC’s turnover was $28.2 billion in ‘02. Worldwide, the corporation employed 155,000 people. Roughly 51% of its workforce is located outside the U.S.

Otis was responsible for 24% of UTC’s revenues in ‘02.
Otis Has Been a Pioneer for Over 150 Years!

1853: Otis was founded by Elisha Graves Otis, in New York.
1888: Otis won the Eiffel Tower contract.
1900: Otis unveiled the escalator at the Paris World’s Fair.
1910: Otis established its first manufacturing plant in France.
1925: Otis developed the first automatic control system.
1976: Otis became a subsidiary of United Technologies Corp.
1996: Otis & Pomagalski formed a joint venture for people movers.
2001: Otis completed its modernization program for the Eiffel Tower.
Elevators Vs. Steps Vs. Slider Lane?

Otis Patent 1861
Otis DC Elevator Motor
Circa 1889

Otis Type 84 26 Broadway, NYC
Circa 1930's
Otis Elevator’s Repair Service

Otis Elevator uses Otisline to achieve the responsiveness and quality essential to compete in the elevator service business. Otisline is a centralized system for dispatching mechanics to elevators requiring service. It uses a centralized database containing complete service records for each elevator installed.

Otisline improved service by handling all calls for service at a centralized service center that handles 9,000 calls per day. The system maintains detailed records and reports exception situations such as elevators with high levels of maintenance.

The use of information technology also extends to the service technicians and to the elevators. Using handheld computers linked to Motorola’s nationwide wireless network, Otis field service technicians across the country can communicate instantly with a central office in Connecticut for technical assistance and job dispatching. Communication can be initiated from a location as remote as the inside of an elevator shaft.
Additional enhancements include remote elevator monitoring (REM), direct communication with trapped passengers, and monthly reports on each elevator for subsequent analysis of performance patterns. Customers purchase the remote monitoring function for an additional monthly charge. It uses a microprocessor to report elevator malfunctions to the dispatching office via modem. Beyond supporting the dispatching function, Otisline serves as a central conduit for exchanging crucial information among field service mechanics, salespeople, design and manufacturing engineers, and managers.
Otis Elevator’s Repair Service

Debate:

“The type of centralized dispatching and remote monitoring used by Otis is impractical with most products and services.”

“Today’s customer’s for most products expect high levels of post-sales service that must be supported by extensive information systems.”
Otis Elevator’s Repair Service

• **Information systems** are an important part of the service Otis offers its customers.

• By **centralizing dispatching** and gaining better control of the maintenance process, better service was provided.
Otis Elevator’s Repair Service

CUSTOMER

Building owners and people who use elevators

PRODUCT

Elevator maintained in good operating condition

Timely elevator repair

History of service for each elevator
Otis Elevator’s Repair Service

**BUSINESS PROCESS**

**Major Steps:**
- Receive call about a problem
- Dispatch mechanics
- Perform repair steps
- Track progress until the elevator is fixed
- Update records

**Rationale:**
- Direct all calls for service to a centralized dispatching office. Use handheld terminals to maintain contact. Maintain records for anticipating and solving future problems.
# Otis Elevator’s Repair Service

## PARTICIPANTS
- Trained operators who answer calls for service
- Local mechanics

## INFORMATION
- Notification of problem
- Current status of all calls for service
- Maintenance history of each elevator
- Qualification and availability of mechanics

## TECHNOLOGY
- Computer at headquarters
- Handheld terminals
- Commercial wireless network
Service - Impact of OTISLINE
(Being Proactive)

• Microcomputers have been embedded in recent products -- information technology has been used to transform the product.

• The OTISLINE system makes it possible for Otis to offer performance contracts to its customers.

• OTISLINE makes it easier for senior management to spot and manage difficult situations, resulting in a higher level of customer satisfaction.
• If the information coming from OTISLINE is used appropriately, the system may enable Otis to become more customer-service oriented.

• OTISLINE significantly transforms information flow within the organization.

• Otis must market OTISLINE’s capabilities. A competitive advantage that is not properly positioned is not a competitive advantage at all.
Sales - OTISLINE Impact

- OTISLINE’s ability to enhance the service business can be a useful selling tool for New Equipment Sales (NES) representatives.

- The New Equipment Sales system uses OTISLINE to shorten the time it takes to record and process a customer order.
Viewing products as a combination of information, physical, and service components
Discussion of Next Steps

• Selling OTISLINE, or perhaps OTISLINE service, to other noncompeting organizations

• (e.g., appliance and automobile manufacturers) might be an attractive sideline business.
• Enhancing OTISLINE is an ongoing but significant responsibility. Competitors will undoubtedly respond with similar systems, probably with some enhancements.

• Finally, addressing the organizational and human resource issues is critical. The value of OTISLINE to the company is very compelling. Dealing with organization resistance is an important management challenge.