Announcements

- Due today: Resume and Cover Letter
- Read Frito Lay case for Monday
- Homework assignment 2 is posted on web (due on April 15th)
- posted to web site soon:
  - Group/Company Assignments
  - Presentation/News Folio Assignments
Announcements

Monday’s Presentations:
News Folio Presentation

ISM 50
Robert Culpi
4/08/2009
Oyster Cards
Oyster Card Quick Facts

- First issued in 2003
- By 2007 ten million Oyster Cards had been used with about five million in active use.
- 80% of all journeys using London public transportation used the Oyster card.
- Can store up to 90 pounds of credit.
- Fares using the Oyster card are cheaper than using cash.
Oyster Cards

- Increased Efficiency
- Increased Effectiveness Public Transportation System
- Increased Customer Satisfaction
Increase in Efficiency

- The use of Oyster Cards has eliminated the need for ticket booths to sell various public transport tickets.
- Decreases the number of theft from fake tickets.
- Decreased the amount of time it takes a passenger to board a bus or underground rail.
- These changes have allowed for a reduction in the operation cost of the public transportation system in London and can pass the savings to the customer.
Increase in Effectiveness

- The Oyster card works all over Greater London on the London Underground, London buses, the Docklands Light Railway (DLR), London Overground, trams, and some of the National Rail.

- The use of the Oyster card unifies the public transportation system.

- The Oyster card increases the public transportation’s effectiveness of assisting the public with traveling from one destination to another.
Increase in Customer Satisfaction

10. The Oyster card increases the ease at which the public can travel.

10. Saves the public time because they no longer have to go to ticket booths to buy their tickets.

10. Oyster card reduces the operating costs of public transportation and the reduction of cost leads to a reduction ticket prices for the customers.
Summary of How Article Relates to ISM 50 Concepts

Information Systems

Competitive Advantage
- Support of Strategies for Competitive Advantage

Effectiveness
- Support of Business Decision Making

Efficiency
- Support of Business Processes and Operations
Information System Roles

Competitive Advantage

Effectiveness

Efficiency

Information Systems

Support of Business Processes and Operations

Support of Business Decision Making

Support of Strategies for Competitive Advantage
**BLOCKBUSTER: Alliance with TiVo**

- Let TiVo Subscribers download and stream movies from their home
- In exchange, Blockbuster will sell TiVo's Digital Video Recorders.
“For Blockbuster, the deal responds to the growing appeal of movie and video watching on computers, handheld devices, or in home living rooms via set-top boxes or video game consoles.”

Also plans to make movies available on Apple Inc Products

Advantages:
Movies more available: Online, in stores, and now, downloadable thru TiVo DVR's

More recent movies will be available compared to competitors
COMPETITORS

Netflix: order movies online and get them in the mail.
Redbox: $1/night DVD Rentals.

Free movie codes.
blog.redbox.com
THE END
Today’s discussion

- Review of net present value
- Review of business processes
- Business process reengineering
- More on Porter’s models
- Other concepts from O’Brien Chapter 2
Finding the value of an IT Project

http://www.soe.ucsc.edu/classes/ism050/Spring09/Cash_Flow.pdf

- Insight: $1 tomorrow is worth less than $1 today!
- Say the interest rate $i = 10\%$ per year
- The discount factor $d = 1 / (1+i) = 1/1.1 = 0.91$
- Now suppose we have a stream of payments
  - $X_0, X_1, X_2, X_3, \ldots$

Then the net present value $\text{NPV}$ of this stream of payments is computed as

$$\text{NPV} = X_0 + dX_1 + (d^2)X_2 + (d^3)X_3 + \ldots$$
Net Present Value Example 1

ROI = 0.24/3 = 0.08

Green: annual payments
Blue: i = 0
Purple: i = 0.1
Red: NPV
Review: Net Present Value

- **NPV Business Rules**
  - If $NPV > 0$, we choose to do the project
  - If $NPV = 0$, we are neutral (interest rate $i$ for that case is the internal rate of return)
  - If $NPV < 0$, we choose NOT to do the project

- **Know these terms:**
  - NPV, and the discount factor (defined 3pp back)
  - ROR = the rate of return (just interest rate $i$ in the example). Also the internal rate of return defined above
  - ROI = return on investment = $(NPV - Cost) / Cost$

*To get better at math, gorge on chocolate*

Big Productivity/Financial Gains from Network Era IT Deployments

- **Clariant Case, p. 66**
  - “If any details were skipped, the $2 million project might not have met its 30 to 40 percent internal rate of return.” Assume even payments over years 1 – 4, and zero afterward. How large are these payments?

- **WESCO Case, p. 71**
  - “The company could save $12M annually... Considering that it cost $400K to implement...” Assume even payments over years 1 – 4, and zero afterward. What is the internal ROR?
"The tool, which cost only $7.8M, has added $122M in sales." Assume even payments over years 1 - 4, and zero afterward. What is the internal rate of return?
2009 Counterexample: Doctor's Office

- **Doctors, Dentists, Hospitals...**
  - In the U.S. (and other countries) IT deployments in health care fields lag deployments in other industries.
  - Doctors have computers, but prefer not to use email.
  - Hospitals exchange patient information on paper.
  - Patients often must call in to make appointments.
  - Much insurance and billing traffic is sent through regular paper mail.
A Modest Proposal

- Administration’s Budget Proposal
  - The federal stimulus package contains $19 B to fund health care IT initiatives
  - Of that, $1 B to be allocated early to study approaches and design information-sharing standards
  - Rand study: the U.S. could save $81 B annually from Electronic Medical Records (EMR) and other health IT projects
  - Less than 20% of U.S. Doctors use EMRs!

Why the slow progress? Analyze using tools from O’Brien

- Problem: EMR standards, and security
- Problem: Doctors’ competitive strategies, lock-in, and switching costs
- Problem: Organizational adoption
Network-era computing may boost service quality, but not productivity!

Problem: quality is hard to measure in the short term/hard to monetize.

To achieve productivity gains, it really matters how networked computing is used

...Business Process Reengineering
What is Business Process Reengineering?

- **A fundamental rethinking and redesign of business processes**

- Minor improvement to a business process is often called streamlining the business process
A Business Process

Customer

Sales

Finance

Inventory Control

Warehousing

Order

Take Order

Enter Order

Credit Check

Check Stock

Print Packing list

Find Goods

Ship

Print Invoice

Tell Mfg. to make order
Cross Functional Process

- A business process that crosses over multiple functions

- Are all business processes cross functional?
A business process within a function

Example: Channel Selection Process within Marketing function

- New Product idea
- Conduct Focus Group Studies
- Mine Demographic data
- Find sales by channel Data for similar products
- Combine information Make decision
Processes tend to be more simple at smaller organizations

Enrollment Process at a small, fictitious university...

- Fee Processing
- Financial Aid
- Housing
- Dinning
- Recreation Membership
- Health Insurance
- Class Registration
Processes tend to be more complex at larger organizations.

Enrollment Process at UCSC…

- Billing
- Financial Aid
- Health Insurance
- Housing
- Dinning
- Class Reg.
- Rec center
Similarly, at small companies

Example: Capital Equipment Purchase Business Process...
Big company

Capital Equipment Purchase Business Process

Director

manager

finance

accounting

IT Dept
So where do Information Systems Fit into this Story??

- Coordinates flow of information between functional departments carrying out a business process.
  - Increase Speed
  - Reduce Errors

- May reduce number of steps in a business process.

- May even allow new processes that would not have been feasible before...
Business Process Example

Customer
- Order
  - Take Order
    - Enter Order
      - Check Stock
        - Print Packing list
        - Find Goods
          - Ship

Sales
- Print Invoice

Finance
- Credit Check

Inventory Control
- Tell Mfg. to make order

Warehousing

Business Functions
A Streamlined Business Process

Business Functions

Customer

Sales

Finance

Inventory Control

Warehousing

Order

Take Order

Credit Check

Enter Order

Check Stock

Print Packing list

Find Goods

Tell Mfg. to make order

Automatic Credit Check

Print Invoice

Ship
A Reengineered Business Process

Customer
- Order
  - On web

Business Functions
- Sales
- Finance
- Inventory Control
- Warehousing

Inform Mfg. to replenish stock

Automatic Credit Check
Automatic Checking of Stock

Print
- Packing list
- And invoice

Find Goods

Ship
Role of Information Systems in Business Process Reengineering?

- IS often enables complicated business processes be made more simple.

- IS doesn’t always drive business process reengineering though...
# Results: Business Information Systems Drive Improvement

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>3</td>
<td>1</td>
<td></td>
<td>General Electric</td>
<td>$49,012</td>
<td>$98,081</td>
<td>$320,797</td>
</tr>
<tr>
<td>16</td>
<td>16</td>
<td>2</td>
<td></td>
<td>Coca-Cola</td>
<td>120,164</td>
<td>309,259</td>
<td>639,593</td>
</tr>
<tr>
<td>NA</td>
<td>577</td>
<td>3</td>
<td></td>
<td>Microsoft</td>
<td>NA</td>
<td>171,304</td>
<td>510,885</td>
</tr>
<tr>
<td>3</td>
<td>2</td>
<td>4</td>
<td></td>
<td>Exxon</td>
<td>464,112</td>
<td>685,176</td>
<td>1,503,490</td>
</tr>
<tr>
<td>17</td>
<td>9</td>
<td>5</td>
<td></td>
<td>Merck</td>
<td>69,040</td>
<td>134,492</td>
<td>439,348</td>
</tr>
<tr>
<td>273</td>
<td>216</td>
<td>6</td>
<td></td>
<td>Intel</td>
<td>36,690</td>
<td>69,506</td>
<td>393,564</td>
</tr>
<tr>
<td>27</td>
<td>8</td>
<td>7</td>
<td></td>
<td>Philip Morris</td>
<td>82,814</td>
<td>186,315</td>
<td>369,171</td>
</tr>
<tr>
<td>1</td>
<td>1</td>
<td>8</td>
<td></td>
<td>IBM</td>
<td>64,747</td>
<td>127,011</td>
<td>291,348</td>
</tr>
<tr>
<td>2</td>
<td>4</td>
<td>9</td>
<td></td>
<td>AT&amp;T</td>
<td>50,969</td>
<td>169,391</td>
<td>401,557</td>
</tr>
<tr>
<td>54</td>
<td>33</td>
<td>10</td>
<td></td>
<td>Pfizer</td>
<td>58,038</td>
<td>111,900</td>
<td>254,146</td>
</tr>
<tr>
<td>11</td>
<td>18</td>
<td>11</td>
<td></td>
<td>Procter &amp; Gamble</td>
<td>147,267</td>
<td>208,635</td>
<td>337,396</td>
</tr>
<tr>
<td>53</td>
<td>26</td>
<td>12</td>
<td></td>
<td>Bristol-Myers Squibb</td>
<td>75,167</td>
<td>138,564</td>
<td>311,586</td>
</tr>
<tr>
<td>467</td>
<td>17</td>
<td>13</td>
<td></td>
<td>Wal-Mart Stores</td>
<td>51,446</td>
<td>84,461</td>
<td>142,979</td>
</tr>
<tr>
<td>25</td>
<td>30</td>
<td>14</td>
<td></td>
<td>Johnson &amp; Johnson</td>
<td>52,199</td>
<td>90,829</td>
<td>250,044</td>
</tr>
<tr>
<td>70</td>
<td>41</td>
<td>15</td>
<td></td>
<td>American Int'l Group</td>
<td>11,026</td>
<td>315,842</td>
<td>762,217</td>
</tr>
</tbody>
</table>

Source: Standard & Poor’s Compustat. Market value ranks and SPE reflect calendar year-end values.
GE Case Study, page 85 in the Reader

- Six Sigma Quality: “define, measure, analyze, improve, control”---and IT enables many of those activities
- Implemented by a famous CEO...
The GE Saga:
Jack Welch, Jeff Immelt

- **Jeff Immelt: take risks or else**
  [http://www.businessweek.com/magazine/content/05_13/b3926088_mz056.htm](http://www.businessweek.com/magazine/content/05_13/b3926088_mz056.htm)

- **Jack Welch is wrong for the times (2006)**

- **Jack Welch is the #1 CEO in America (1998)**
Porter Competitive Model?

- **What is it?**
  - A model to help understand the competitive environment in which a company operates.

- **What are the “5 forces”?**
  - Intra-Industry Competition
  - Bargaining power of Suppliers
  - Bargaining power of Customers
  - Substitutes
  - Threat of New Entrants.
Porter Competitive Model
(Identify the Industry and the Specific Market Being Evaluated)

- Potential New Entrants
- Bargaining Power of Suppliers
- Intra-Industry Rivalry
- Strategic Business Unit
- Bargaining Power of Buyers
- Substitute Products and Services
Porter Competitive Model
Education Industry – Universities

Bargaining Power of Suppliers
- Faculty
- Staff
- Equipment and Service Suppliers
- Alumni
- Foundations
- Governments
- IT Vendors

Intra-Industry Rivalry
SBU: UCSC
Rivals: UC campuses, CSU, Private universities, Community Colleges

Substitute Products and Services
- Internet Distance Learning
- Books and Videotapes
- Computer-Based Training
- Company Education Programs

Potential New Entrants
- Foreign Universities
- Shift in Strategy by Universities or Companies

Bargaining Power of Buyers
- Students
- Parents
- Businesses
- Employers
- Legislators
Porter Model in Business Paper

- You must include a Porter Model in your Business Paper
  - Figure
    - Make it look nice!
  - Narrative analysis of the five forces
    - Identify the industry.
    - Identify the major buyers, suppliers, potential new entrants, substitutes, and inta-industry rivals.
    - Discuss if and why these players put strong or weak competitive pressures on your business.
Example: Usefulness of Porter Model

- Bob wants to start a dentist office
  - However, bob did not go to dental school
  - Bob will hire the dentist and other staff
  - Is this a good model?

<table>
<thead>
<tr>
<th>Suppliers</th>
<th>Bob’s Dentist Office</th>
<th>Buyers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dentist (Alice)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

No! Dentist has too much bargaining power, she could always go into business for herself.
Example: Usefulness of Porter Model

Suppose Alice, who is a dentist, opens an office

New Entrants
- Dental School Graduates
- Dentists moving in from other regions

Suppliers
- Staff
- Hygienists

Intra-industry rivals
SBU: Alice’s Dentist Office
Other local dentist offices

Substitutes
- Alternative Medicine?

Buyers
- Public in general
- Insurance companies
- Those wanting cosmetic dentistry
“Primary” Porter Strategies

- **In economics you will learn a market where**
  - Product is a commodity
  - Firms all have the same production costs
  - New firms can enter market at no cost (“free entry”)
  
  profits are driven to zero.

- **Consequently Firms need to**
  - Differentiate and/or
  - Achieve Cost leadership
“Primary” Porter Strategies

**Differentiation**—customer values the differences that you provide in products, services or capabilities.

**Cost**—become the lowest cost provider. If this is the only primary strategy in the industry, over time there will only one ultimate winner.
Porter Supporting Strategies

- **Innovation**
  - Can reduce costs and or differentiate

- **Growth**
  - Help offset fixed costs
  - Establish reputable brand (differentiate)

- **Alliances**
  - Achieve more complete solution (differentiate)
  - Integration of each others technology may reduce costs
Rules Regarding Strategies

- Must pick *at least* one of the two primary strategies.

- Can pick any combination of supporting strategies.

Let’s test the logic of this using Dell and Wal-Mart Stores.
Dell, Inc. Strategies

Primary Strategy:

Differentiation

Least Cost

Supporting Strategies:

Innovation

Growth

Alliances
Wal-Mart Strategies

Primary Strategy:
- Least Cost
- Differentiation

Supporting Strategies:
- Innovation
- Growth
- Alliances
Porter Model Tips

1. To incorrectly define the industry can cause major problems in doing Section I of the business analysis paper.

2. You must identify the specific market being evaluated.

3. Your analysis company is the “Strategic Business Unit.”

4. Identify rivals by name for majors, by category for minor rivals if needed to present the best possible profile of rivals.
Porter Model Tips

5. Be sure to address the power implications of both customers and suppliers. Power buys them what?

6. Identify buyers and suppliers by categories versus companies.

7. Summarize your Porter Model analysis.
What do Porter Models Have to do with IT?

Any ideas?
Strategic Application Evolution

Progression of Information Technology within an enterprise.
Level 1: Strategic
Level 2: Offensive
Level 3: Defensive
Level 4: Cost-Justified
Level 5: Controlled

The progression is from bottom to top.
Strategic Uses of Information Technology

**Strategy**
- Improving Business Processes
- Promote Business Innovation
- Locking in Customers and Suppliers

**IT Role**
1. Use IT to reduce costs of doing business
2. Use IT to create new products or services
3. Use IT to improve quality; Use IT to link business to customers and suppliers

**Outcome**
- Enhance Efficiency
- Create New Business Opportunities
- Maintain Valuable Customers and Relationships
Strategic Uses of Information Technology

**Strategy**
- Raise Barriers to Entry
- Build a Strategic IT Platform
- Build a Strategic Information Base

**IT Role**
- Increase amount of investment or complexity of IT needed to compete
- Leverage investment in IS resources from operational uses to strategic uses
- Use IT to provide information to support firm’s competitive strategy

**Outcome**
- Increase Market Share
- Create New Business Opportunities
- Enhance Organizational Collaboration
Porter Model and Information Systems:

1. Build **barriers** to prevent a company from **entering** an industry?

2. Build in costs that would make it difficult for a customer to **switch** to another supplier?

3. Change the basis for competition within the industry?

4. Change the balance of power between a company and its customers or suppliers?

5. Provide the basis for new products and services?
Porter’s Value Chain

- The Competitive Model deals with the environment within which a company competes.

- The Value Chain addresses the flow of a product through the organization.
  - It starts with the original idea in research and tracks its progress all the way to the customers.
Generic Value Chain

PRIMARY ACTIVITIES

INBOUND LOGISTICS | OPERATIONS | OUTBOUND LOGISTICS | MARKETING AND SALES | SERVICE

SUPPORT ACTIVITIES

FIRM INFRASTRUCTURE
HUMAN RESOURCE MANAGEMENT
TECHNOLOGY DEVELOPMENT
PROCUREMENT
Value Chain Purpose

- A way of classifying a company's activities and how they help deliver value to the customer.

- A framework for evaluating decisions like outsourcing, or deployment of IT.
Things to Remember Regarding the Value Chain

- The ultimate objective is value to customer.

- As a new product and/or services moves through the value chain, it is important to maximize value-add activities and minimize things that do not add value to customer.

- Functional departments must be sure to emphasize the ultimate goal of value to customer and not do things that seem to make them look good but contradicts the ultimate objective.
Simple Value Chain for Manufacturing Industry

- Research and Development
- Engineering
- Production and Manufacturing
- Marketing
- Sales and Distribution
- Service
Simple Value Chain for Retail Industry

Partnering with Vendor → Buying → Managing Inventory → Distributing Inventory → Operating Stores → Marketing and Selling
Examples of IT Supporting Value Chain
Other terms in Chapter 2

- **Agile Company**
  - Ability to prosper in rapidly changing environment
  - Some good examples in O’Brien ch2
A Virtual Company

A form of organization that uses telecommunications networks and other IT to link the people, assets and ideas of a variety of business partners, no matter where they may be located, in order to exploit a business opportunity.
Virtual Company Positives

• Share infrastructure and risk.
• Link complementary core competencies.
• Reduce concept-to-cash time through sharing.
• Increase facilities.
• Expand market coverage.
• Migrate from selling products to selling solutions.
• Migrate from selling boxes to selling systems.
Possible Negative Factors

• Will the vendor be able to perform the service at a cost sufficiently low enough and still gain a profit?

• Will the people laid off take with them essential skills and insights that the company needs?

• Will the vendor be able to respond to the organization’s new needs for capabilities and flexibility?
Explicit knowledge
- That which can be written down

Tacit Knowledge
- That which is can not be written down
- Example: How to Ride a bicycle.

Much of a company’s value is in its knowledge
- Patents, documents
- Tacit knowledge in employee’s heads
Other terms in Chapter 2

- **Knowledge-Creating Company**
  - Create new business knowledge
  - Disseminate knowledge throughout company

- **Knowledge Management Systems**
  - Facilitate this dissemination
  - Often, like a search engine on a company intranet.

- **Aside:** might a knowledge management system affect the negotiating power of employees?
Total Quality Management

How do you say to a long time, loyal, hard working employee that quality isn’t good enough?
Total Quality Management

1. We are good, but we must continue to improve.

2. Individually and/or departmentally we may be very good but we must be as good in the total efforts of the entire organization.
What You’d Get From 99.9% Suppliers

- At Least 20,000 Wrong Drug Prescriptions Each Year.
- More than 15,000 Newborn Babies Dropped by Doctors or Nurses Each Year.
- Unsafe Drinking Water at Least One Hour Each Month.
- No Telephone Service or Television Transmission for Nearly Ten Minutes Each Week.
- Two Short or Long Landings at O’Hare Airport Each Day.
- Nearly 500 Incorrect Surgical Procedures Each Week.
- 2,000 Lost Articles of Mail Per Hour.
What You’d Get From Six Sigma Suppliers

- One Wrong Prescription in 25 Years.
- Three Newborn Babies Dropped by Doctors or Nurses in 100 Years.
- Unsafe Drinking Water One Second Every Sixteen Years.
- No Telephone Service or Television Transmission for Nearly Six Seconds in 100 Years.
- One Short or Long Landing in Ten Years in all the Airports in the U.S.
- One Incorrect Surgical Procedure in Twenty Years.
- Thirty-five Lost Articles of Mail Per Year.
Chapter 2 Summary

- Porter models are important as a way to evaluate competitive environment and/or internal processes.

- Use Porter strategy terminology in discussing how an industry and companies in the industry compete.