ISM 50 - Business Information Systems

Lecture 6

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UC Santa Cruz

October 16, 2007
Class Announcements

- Reading for next time
  - Cisco Case

- Folio 1 due today
  - (only those not assigned a presentation)

- Assignment 2 due Thursday

- Business Paper Proposal Due in 1 week!
Class Announcements

- Project proposals due in 7 days!!
  - 1-2 pages
  - Give a plan what you will do
  - Cite some references, and show that you have started your research!
  - See website for more details.

- Speakers next class
  - Kevin Ortiz (Cisco Case)
  - Dino Fekaris (News)
Student Talks

Kelsey Perkins (News)

Yee Luong (News)
Frito Lay (Review)

- **Market:** Salty Snacks
  - Who owns Frito Lay?

- **Competitors:**
  - P & G (Pringles)
  - Anheuser Busch (Eagle Snacks)
  - Borden (Wise Chips)
  - Small Regionals

- **Sales Force**
  - 10000 people
  - Drive around in trucks; sell and deliver snacks
Frito Lay (Review)

- **Growth**
  - In the 70s, “double digit”
  - Mid 80s - slowed to single digit.
  - Foreign Expansion?
    - Not for Frito-Lay division, because PepsiCo has a separate international snacks div.

- **Good:**
  - Several top brands

- **Bad**
  - Monolithic national approach
Frito-Lay

- **Segmentation**
  - Supermarkets
  - “up/down street”

- **Regionalized Micro-Marketing**
  - Targeted smaller brands to regional customers

- **Hand Held Computer**
  - Small computer for each salesperson to carry around
  - Log sale transaction data.
HHC Project Good Idea?

Yes:
- Replaced optical scanner system that IBM would stop supporting soon
- Saves sales force time: 2.5 hours per week per driver
- Detailed sales data supports:
  - Regionalized marketing
  - Negotiations for shelf space with supermarkets
- Reduce errors

No:
- Expensive
  - (more than 50 million)
- Risky
  - Might not work technically
  - Sales force might not like it
    - Already upset about segmentation
- Equipment vendor might not be reliable
Frito Lay

- HHC was a $50+ million project
- How did they mitigate risks?
- Risk Mgmt
  - Pilot test of technology
  - 3 layer rollout
    - 1) essential systems
    - 2) sales compensation
    - 3) strategic uses of new data (fuzzy)
Action plan

- Region by region?
- All at once?
- Weakest or Strongest region first?
Frito Lay

HHC deployed to LA area first, a region that won a sales award. By the end of the 80’s
- HHC deployment completed
- Development of Information Systems to process HHC data to support operations.

Early 90’s re-org to decentralize decision making to different regions

1985
- Revenue: $2847
- Profit: $401

2004
- Revenue: $9091
- Profit: $2366

- Revenue growth ~ 6% per year on average
TQM: 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.
TQM: 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.
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.
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.
Information access

by

David G. Messerschmitt
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A hierarchy

**Data**: numbers, character strings, etc.

**Information**: recognizable patterns organized so as to inform or influence us in some way

**Knowledge**: concepts, relationships, truths, principles.

**Wisdom**: insight or judgement

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Classify these

- “XV”, “SF”, 34, “CN”, 16

- The 49-ers won Super Bowl XV by a score of 34 to 16.

- The National Football Conference wins 17 out of 20 Super Bowl’s on average.

- The best team usually wins.
Roles in information access

- Author or publisher
- Indexer or organizer
- Librarian or teacher or interpreter
- Recommender

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Classify these

Relative to *A Streetcar Named Desire*:
- Tennessee Williams
- Actor
- Critic
- Playbill magazine

Relative to *Understanding Networked Applications*:
- D.G. Messerschmitt
- Morgan Kaufmann
- Amazon.com

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Exercise

User
Author or publisher
Indexer or organizer
Librarian or teacher
Recommender

How are these roles being changed by networked computing?

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Push vs. pull

User

Control over what is provided
Time when it is provided

Intermediate cases:
Notification
Subscription

Publisher

Push

Pull

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Proper roles of push and pull in a workgroup

<table>
<thead>
<tr>
<th>Pull: work</th>
<th>Push: attention</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brainstorming</td>
<td>Notification of topic</td>
</tr>
<tr>
<td>Accessing documents</td>
<td>Notification of document availability</td>
</tr>
<tr>
<td></td>
<td>Reminder of deadlines</td>
</tr>
</tbody>
</table>

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Question

What are some differences between push and pull with respect to:

- invasiveness on the user?
- refinement of the information received?
- timeliness with which information received?
Some modalities of information access

- Pull: Search, navigate, browse
- Push: Aggregate, filter, consolidate
- Subscribe
- Delegate
- Intermediary
- Agent

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Aids in finding useful information

Besides the information content itself, other aids:

- reference to related information: hyperlink
- list of content: index
- description of content: metadata
- judgment of content: recommendation

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Exercise

Give an example of the following functions in the context of movie rentals:

Hyperlink
Index
Metadata
Recommendation
Question

Comment on the following widely held beliefs (at their time):

- “the movie will displace legitimate theater”
- “television will displace movies”
- “remote learning will displace the university campus as we know it”

What does this suggest about networked applications?

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Applications

- **What is an application?**
  - Computer software that performs useful capabilities for a user, organization, incorporating storage, manipulation, and communication of information.

- **An organizational application**
  - Supports an organization

- **Often called enterprise application**
  - (An enterprise is an organization with a commercial mission)
Types of organizational applications

- **Departmental**
  - Supports a single functional department
  - Example: An accounts management application for an accounting department.

- **Enterprise**
  - Support enterprise-wide processes and goals.
  - Example: coordinate information between functional departments involved in fulfilling an order.
    (or other cross functional process.)
Some Types of Organizational Applications

- **Worker Collaboration**
  - Example: video conferencing

- **Operations and Logistics**
  - Example: coordinate movements of goods between sites.

- **Decision Support**
  - Summarize info for execs.

- **Knowledge Management**
  - Organize and retrieve knowledge in company’s documents and databases
Examples

Software Merchant

- **Customer Relationship Management**
  - Maintain a case file of customer questions and complaints.
  - Website of Freq. Asked Ques. And documentation.
  - Chat application for customers to communicate with tech-support personnel.
Examples

On-Line Stock Trading

- Information Management application for paying customers
- Specialized software to interface with
  - customers
  - stock exchange
  - Customer’s bank
Some more terms

**Transaction Processing Systems** record and process data from business transactions.

**Batch Processing** - transactions are accumulated over a period of time and processed periodically.

In **Online Transaction Processing (OLTP)**, transactions are processed immediately.
Some More Terms

- A workflow application supports ongoing repetitive tasks.
  - Example: An application that passes a case summary of a customer from customer service to tech support.
So what exactly is ERP??
Early MRP

- MRP (Material or Manufacturing Resource Planning)
  - Take:
    - Product Demand forecasts
    - Inventory Balances
    - Replenishment Lead Times
  - Develop a Production schedule for a single plant
  - At this Point, it is a planning tool
Later on More capabilities added

- Order Processing
- Product Costing

- The planning tool begins to take more and more of an active roll in the business processes.
A desire to Link Across Functional Departments of firm

- Each functional department had its own legacy application
  - Programmed in different languages
  - Different Data formats

- Often some data was shared between departments by duplicating it.
MRP evolves into ERP

- A common software architecture with modules to support different business functions.
  - Accounting, finance, sales, HRM, material management, etc...

- Key features:
  - Multi-functional
  - Integrated
  - Modular
ERP Overview
ERP

- How would you design an ERP?
- Design a user interface for each module
  - Ask user to fill in certain “fields” at particular times.
  - Set up a sequence of events
    - When the sales department enters an order, that event triggers an event at the manufacturing department.
- But by doing this, aren’t we presuming a particular business process?
Questions

How standardized are organizational processes?

- Customer service
- Finance
- Manufacturing
Fundamental options

- Customize the application to existing organization?
- Mold organization to off-the-shelf application?
  - Is software a good way to propagate best practices?
Net Present Value when $i = 0$

\[
NPV = \sum_{j=0}^{\infty} x_j (1 + i)^{-j}
\]

\[
= -0.5 + 0.30 \cdot (1 + 0)^{-1} + 0.35 \cdot (1 + 0)^{-2}
\]

\[
= -0.5 + 0.30 + 0.35 = 0.15
\]

Net Present Value when $i = 10$

\[
NPV = \sum_{j=0}^{\infty} x_j (1 + i)^{-j}
\]

\[
= -0.5 + 0.30 \cdot (1 + 0.1)^{-1} + 0.35 \cdot (1 + 0.1)^{-2}
\]

\[
= -0.5 + 0.273 + 0.289 = 0.062
\]

Net Present Value when $i = 20$

\[
NPV = \sum_{j=0}^{\infty} x_j (1 + i)^{-j}
\]

\[
= -0.5 + 0.30 \cdot (1 + 0.2)^{-1} + 0.35 \cdot (1 + 0.2)^{-2}
\]

\[
= -0.5 + 0.25 + 0.243 = -0.0069
\]
Idea of RoR analysis:

What i makes NPV = 0?

\[ \text{NPV} = \sum_{j=0}^{\infty} x_j (1 + i)^{-j} = 0 \]

\[ = -0.5 + 0.30 \cdot (1 + i)^{-1} + 0.35 \cdot (1 + i)^{-2} = 0 \]

\[ = 0.35 \cdot (1 + i)^{-2} + 0.30 \cdot (1 + i)^{-1} - 0.5 = 0 \]

Quadratic Formula: \( ax^2 + bx + c = 0 \rightarrow x = \frac{-b + \sqrt{b^2 - 4ac}}{2a} \)

\[ x := (1 + i)^{-1} \]

\[ (1 + i)^{-1} = \frac{-0.3 + -\sqrt{0.3^2 - 4 \cdot 0.35 \cdot (-1)}}{2 \cdot 0.35} \]

\( (1+i)^{-1} = 0.8411 \text{ or } -1.69 \]

\( i = 0.188 \text{ or } -1.59 \)