ISM 50 - Business Information Systems
Lecture 6

Instructor: John Musacchio
UC Santa Cruz
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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?

**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.

**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 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
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 Bowls, on average.
- The best team usually wins.

Roles in information access

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

Exercise

- User
- Author or publisher
- Librarian or teacher
- Recommender

How are these roles being changed by networked computing?

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

Push vs. pull

- User
- Notification
- Subscription
- Control over what is provided
- Time when it is provided
- Push

Intermediate cases:
- Notification of topic
- Accessing documents

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>
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

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

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?

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??

Later on More capabilities added

- Order Processing
- Product Costing

- The planning tool begins to take more and more of an active role in the business processes.

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

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 $i=0\%$
$$NPV = \sum_{j=0}^{\infty} x_j \cdot (1 + 0\%)^{-j} = -0.5 + 0.30 \cdot (1 + 0\%)^{-1} + 0.35 \cdot (1 + 0\%)^{-2} = -0.5 + 0.30 \cdot 1 + 0.35 \cdot 0.5 = 0$$

Net Present Value when $i=10\%$
$$NPV = \sum_{j=0}^{\infty} x_j \cdot (1 + 10\%)^{-j} = -0.5 + 0.30 \cdot (1 + 0.1\%)^{-1} + 0.35 \cdot (1 + 0.1\%)^{-2} = -0.5 + 0.30 \cdot 0.9 + 0.35 \cdot 0.8 = 0.06$$

Net Present Value when $i=20\%$
$$NPV = \sum_{j=0}^{\infty} x_j \cdot (1 + 20\%)^{-j} = -0.5 + 0.30 \cdot (1 + 0.2\%)^{-1} + 0.35 \cdot (1 + 0.2\%)^{-2} = -0.5 + 0.30 \cdot 0.8 + 0.35 \cdot 0.6 = -0.06$$

Quadratic Formula:
$$ax^2 + bx + c = 0 \quad x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$
$$x = (1 + i)^{-1} \quad c = -0.3 + 0.3 \cdot 0.35 - (1 + i)^{-1}$$
$$d = 0.35$$
$$e = -0.3 + 0.3 \cdot 0.35$$
$$f = 1 + i$$

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

$$i = 18\% \text{ or } 28\%$$