ISM 50 - Business Information Systems

Lecture 6

Guest Instructor: Subhas Desa
Course Instructor: John Musacchio

UC Santa Cruz
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Class Announcements

- Reading for next time
  - Cisco Case
- Assignment 2 due Thursday
- Folio 1 due today
- Business Paper Proposal Due in 1 week!
Class Announcements

- Project proposals due in 7 days!!
  - 2-3 pages
  - Give a plan what you will cover in report
  - Cite some references, and show that you have started your research!
    - Remember *references must be cited in the body of the text* with footnotes or end notes.
  - See website for more details.
Student Talks
Frito-Lay

Hand Held Computer Project

- 3 stated objectives
  - Replace optical scanner system used now
    - IBM will stop supporting it soon
  - $\frac{1}{2}$ hour per day per driver paper-work reduction
  - Marketing effectiveness
    - Detailed sales data
      - will help make regional marketing decisions
      - Negotiate with stores for more shelf space
Frito-Lay

- **Cost of Implementation (Approximated!!):**
  - **Data Center upgrade**
    - $1.2 million
  - **Machinery in Truck**
    - 10000 trucks X ~$3000 per truck = $30 million
  - **computers in distribution centers**
    - 5-10 million?
  - **45 Systems Development Professionals**
    - $70K x 45 = ~3 million

- **TOTAL: 45-55 million**
To have a 10% Rate of Return, what would the benefits per year have to be?
(for simplicity assume these benefits are received every year forever)
~5 million
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
  - (~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)
How to mitigate risks?

- **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
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
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?

New Entrants

Suppliers | Bob’s Dentist Office | Buyers
--- | --- | ---
Dentist (Alice) | |

Substitutes

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

- **Suppliers**
  - Staff
  - Hygienists

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

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

- **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
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
What do Porter Models Have to do with IT?

Any ideas?
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

- *Porter’s Competitive Model* deals with the company’s competitive environment.

- *Porter’s Value Chain* tracks progress of a product through organization
  - Starts with idea in research
  - Finishes with delivery to customer.
Generic Value Chain

SUPPORT ACTIVITIES

- Firm Infrastructure
- Human Resource Management
- Technology Development
- Procurement

PRIMARY ACTIVITIES

- Inbound Logistics
- Operations
- Outbound Logistics
- Marketing and Sales
- Service
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.
Examples of IT Supporting Value Chain
From O’brien Ch2: A Virtual Company

- A form of Organization
- ...that uses telecommunication and other IT to link
  - People
  - Assets
  - Ideas
  - Business partners
- ... in order to exploit a business opportunity
Virtual Company Positives

- Move more quickly

- Combine the products and services of specialized vendors to create something new.

- Might allow company to focus more on offering solutions (products+services) rather than product itself.
Possible Negative Factors

- Will vendors be low enough cost?
  - What about their bargaining power?

- Should the skills and knowledge be developed and maintained in-house?
  - Competitive advantage
  - Future flexibility
Explicit knowledge
- That which can be written down

Tacit Knowledge
- That which is cannot 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?
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.

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Roles in information access

- User
- 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

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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?

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Some modalities of information access

- **Pull**: Search, navigate, browse
- **Push**: Aggregate, filter, consolidate
- **Subscribe**
- **Intermediary**
  - Delegate
  - 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
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?
Enterprise 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??
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 role 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
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?