TIM 50 - Business Information Systems
Lecture 5

Guest Instructor: Huascar Sanchez
(hsanchez@soe.ucsc.edu)
UC Santa Cruz
10/12/2011

Most slides - and the better part of most other slides - are by Professor John Musacchio

Announcements

- Read
  - Messerschmitt Ch 2.3 (38-50)
  - Messerschmitt Ch 3.1-3.3 (59-82)
- News Folio 1 due Monday 10/17
  - (for those of you not assigned a presentation)
- Homework assignment 2 will be posted Monday 10/17
- Business Paper Proposal due Wednesday 10/19

Next Week's Presentations:

- Monday 10/17:
  - ??, news story
  - ??, news story

Basic Competitive Strategies

- Counter the competitive forces by implementing 5 basic competitive strategies:
  - Cost leadership
  - Differentiation
  - Innovation
  - Growth
  - Alliances
- How does IT support these strategies?

Porter Competitive Model
(Identify the Industry and the Specific Market Being Evaluated)

<table>
<thead>
<tr>
<th>Potential New Entrants</th>
<th>Bargaining Power of Suppliers</th>
<th>Intra-Industry Rivalry</th>
<th>Strategic Business Unit</th>
<th>Bargaining Power of Buyers</th>
<th>Substitute Products and Services</th>
</tr>
</thead>
</table>

Strategic Uses of Information Technology

<table>
<thead>
<tr>
<th>Strategy</th>
<th>IT Role</th>
<th>Outcome</th>
</tr>
</thead>
<tbody>
<tr>
<td>Improving Business Processes</td>
<td>Use IT to reduce costs of doing business</td>
<td>Enhance Efficiency</td>
</tr>
<tr>
<td>Promote Business Innovation</td>
<td>Use IT to create new products or services</td>
<td>Create New Business Opportunities</td>
</tr>
<tr>
<td>Locking in Customers and Suppliers</td>
<td>Use IT to improve quality</td>
<td>Maintain Valuable Customers and Relationships</td>
</tr>
</tbody>
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Strategic Uses of Information Technology

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<tbody>
<tr>
<td>Raise Barriers to Entry</td>
<td>Increase amount of investment or complexity of IT needed to compete</td>
<td>Increase Market Share</td>
</tr>
<tr>
<td>Build a Strategic IT Platform</td>
<td>Leverage investment in IS resources from operational uses to strategic uses</td>
<td>Create New Business Opportunities</td>
</tr>
<tr>
<td>Build a Strategic Information Base</td>
<td>Use IT to provide information to support firm’s competitive strategy</td>
<td>Enhance Organizational Collaboration</td>
</tr>
</tbody>
</table>

Porter’s Value Chain

- **Porter’s Competitive Model** deals with a 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.

Value Chain Purpose

- A way of classifying a company’s activities and how they help deliver value to customer.
- A framework for evaluating decisions like outsourcing, or deployment of IT.

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?

Generic Value Chain

- **Value Chain Purpose**
- 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 Retail Industry**

| Partnering with Vendor | Buying | Managing Inventory | Distributing Inventory | Operating Stores | Marketing and Selling |

**Other terms in Chapter 2**
- Agile Company
- Virtual Company
- Knowledge Management Systems

**Agile Company**
- Agility: the ability to prosper in a rapidly changing environment
  - Free: Lower the costs, adjust based on their perceived value, not cost to produce
  - Perfect: Defect-free products, customization, anticipation of future needs
  - Now: 24/7 accessibility to products/services, short delivery times, time-to-market

**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.

**A Virtual Company Example**

**Virtual Company**

- **Positives**
  - Can partner with others to share infrastructure and risk
  - Link complementary core competencies
  - Reduce concept-to-cash time through sharing
  - Expand market coverage, gain access to new markets and share market/customer loyalty

- **Negatives?**
  - Ability to perform the service at a sufficiently low cost to still gain a profit
  - Respond to the organization’s new needs for capabilities and flexibility
Other terms in Chapter 2

- **Explicit knowledge**
  - Data, documents, things that can be written down/stored in computers

- **Tacit Knowledge**
  - That can not be written down
  - "How-to"
  - Example: How to ride a bicycle

- **Much of a company's value is in its knowledge**
  - Patents, documents
  - Tacit knowledge in employees' heads ("trade secrets")

Knowledge Management

- **Knowledge-Creating Company**
  - Create new business knowledge
  - Disseminate knowledge throughout company→ products, services
  - Get employees share what they know and accumulate enterprise knowledge

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

- Aside: a knowledge management system might affect the negotiating power of employees?

Total Quality Management

Quality from the customer’s viewpoint
Meeting/exceeding the requirements/ expectations of customers for a product/service

Presentations

- Angela Tsai (news article)
- (Frito Lay)

Frito Lay Case

Time to debate!

- Break into discussion groups of 3-4 people
  - Position 1: The HHC is a great project
  - Position 2: The HHC is a bad project

- Take 10 minutes to write down your main arguments
  - You must try to convince the other side

- After debating, each student should hand in a small summary of their teams' argument line
  - Hand in summary with your name on
  - Extra participation credit!
Break into discussion groups of 3 or 4

- Position 1: The HHC is a great project
  - It will:
    - reduce burden on sales force.
    - replace optical scanner system that we need to replace soon anyway.
    - Give us lots of good data for more effective marketing.

- Position 2: The HHC is a bad project
  - It costs $40 million or more (almost 10% of our annual profits!)
  - There is no solid proof that it will increase revenue or reduce costs enough to justify the investment.
  - It might not work properly, wasting the sales force's time.
  - It is a distraction from our true mission - selling salty snacks!

The "Store-Door Delivery System"

- Strategy: Support your salespeople AND value your customers
- HOW?
  - Service point of sale twice/week
  - Restocked shelves
  - Removed stale products
  - Introduced new products/promotions to customers
  - Lined up new accounts
  - Initially, "national patterns" for product arrangement
  - Happy salespeople 😊

1985- Two Goals

- Two Goals
  1. Sustain at least 6% real sales growth
  2. Double-digit profit growth

- Key strategies:
  1. Build share & volume in the 7 brands. Move from 'national' to 'regional'.
  2. Effectiveness of new products, increase # of products and lower time to markets
  3. Improve productivity: technical limits of the delivery system

Frito Lay

- Market: Salty Snacks
- Competitors:
  - P & G (Pringles)
  - Anheuser Busch (Eagle Snacks)
  - Borden (Wise Chips)
  - Small Regionals
- Sales Force
  - 10,000 people
  - Drive around in trucks; sell and deliver snacks

Frito Lay

- 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
  - Supermarket merchandiser, account managers
  - "up/down street" (route drivers)
- Regionalized Micro-Marketing
  - Targeted smaller brands to regional customers
- Hand Held Computer
  - Small computer for each salesperson to carry around
  - Log sale transaction data.
**A day in the life of a salesperson (before HHC)... Sales+Account**

5 a.m. (Warehouse)  
Load truck with ordered products

6 a.m. (Customer site)  
Remove stales/Replenish shelves

Fill out consignment order form

4 p.m. (Warehouse)  
Turn in sales tickets. Fill "end-of-day" report

Calculate total order price (promotions, stales, new products)

6 a.m. (Customer site)  
Fill out sales ticket

Review sales ticket. Confirm calculations

6 p.m. (Home)  
Review sales ticket. Confirm calculations

**A day in the life of a salesperson (after HHC)...Sales!!!**

5 a.m. (Warehouse)  
Load truck with ordered products

Update HHC with consignment / price changes etc.

6 a.m. (Customer site)  
Remove stales/Replenish shelves

Enter data in HHC.

4 p.m. (Warehouse)  
Upload data from HHC to corporate computer

6 p.m. (Home)  
Confirm order in HHC. Print sales ticket

**Frito Lay**

- **HHC was a $40+ million project**
- **What were risks?**
- **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)

**3 stated objectives**

- Replace optical scanner system used now
  - IBM will stop supporting it soon
- Salesperson
  - ½ hour per day per driver paper-work reduction
  - No accounting errors
- Marketing effectiveness (micro-marketing)
  - Detailed sales data
    - will help make regional marketing decisions
  - Negotiate with stores for more shelf space

**Implementation**

- **Action plan**
  - Region by region?
  - All at once?
  - "Flagship" approach? Weakest first (less potential downside) or strongest region (greatest potential upside) 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

**Cash Flows**

- **Cash Flow**: A series of payments/receipts over a time period

```
<table>
<thead>
<tr>
<th>Year</th>
<th>cash flow</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>-3</td>
</tr>
<tr>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>2</td>
<td>8</td>
</tr>
<tr>
<td>3</td>
<td>15</td>
</tr>
</tbody>
</table>
```

- **Visualize using timeline**
  - Current year: 0

**Net Present Value**

- **NPV**: A quantity of money which, if received today, would be equally desirable as the cash flow
  - NPV of $x received in year $n = x \cdot \delta^n$
  - A cash flow may have payments/receipts in multiple years
  - Compute NPV for each year and add them

```
NPV = x_0 + \delta x_1 + \delta^2 x_2 + \delta^3 x_3 + \ldots = \sum_{j=0}^{n} \delta^j x_j
```

**Interest Rate**

- The discount factor might be based on the interest rate $i$ that could be received if investing in bank/other project
  - $\delta = 1 / (1+i)$

```
NPV = x_0 + \delta x_1 + \delta^2 x_2 + \delta^3 x_3 + \ldots = \sum_{j=0}^{n} \delta^j x_j
```

**Rate of Return (ROR)**

- Also known as Return on Investment (ROI)
- Is the ratio of money gained/lost in an investment relative to the amount invested
  - Computing ROR is the inverse problem to computing NPV
  - "What would the interest rate at the bank have to be in order for me to be neutral about investing in my project?"
  - The ROR equals the interest rate for which NPV = 0
  - Use this equation (NPV = 0) to find the ROR

**Cash Flows**

- Be able to compute:
  - NPV given the discount factor
  - NPV given the interest rate
  - Interest rate/Discount factor/ROR in order to have NPV = 0
  - Compare different investment plans based on their ROR/ROI
  - Evaluate whether it is worth investing in a plan given a desirable ROR
  - Know how to solve simple quadratic equations!!!
    - Use of quadratic formula
- Net Present Value when \( i = 0\% \)
  \[
  NPV = \sum_{j=0}^{3} x_j (1 + i)^{-j} \\
  = -0.5 + 0.30 \cdot (1 + 0)^{-1} + 0.35 \cdot (1 + 0)^{-2} \\
  = -0.5 + 0.30 + 0.35 = 0.15
  \]

- Net Present Value when \( i = 10\% \)
  \[
  NPV = \sum_{j=0}^{3} x_j (1 + i)^{-j} \\
  = -0.5 + 0.30 \cdot (1 + 0.1)^{-1} + 0.35 \cdot (1 + 0.1)^{-2} \\
  = -0.5 + 0.273 + 0.35 = 0.062
  \]

- Net Present Value when \( i = 20\% \)
  \[
  NPV = \sum_{j=0}^{3} x_j (1 + i)^{-j} \\
  = -0.5 + 0.30 \cdot (1 + 0.2)^{-1} + 0.35 \cdot (1 + 0.2)^{-2} \\
  = -0.5 + 0.25 + 0.243 = 0.0069
  \]

Idea of RoR analysis:

What \( i \) makes \( NPV = 0 \)?

\[
NPV = \sum_{j=0}^{3} x_j (1 + i)^{-j} = 0
\]

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

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

Quadratic Formula:

\[
x = \left(1 + i\right)^{-1} \frac{-3 + \sqrt{9 + 0.35 \cdot 0.35 - 4.35 \cdot (-1)}}{2 \cdot 0.35}
\]

\[
(1+i)^{-1} = 0.8411 \text{ or } -1.69 \quad i = 18\% \text{ or } -55\%
\]