ISM 50 - Business Information Systems

Lecture 2

Katerina Potika
UC Santa Cruz
1/6/11

ISM 50

Instructor
- Katerina Potika (potika@soe.ucsc.edu)
  - Office Hours:
    - Tuesday and Thursday, 10:30 – 11:30 AM in E2-341B

TA
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Announcements
- Send us your photo
- Add "ISM 050" to all email correspondence

Web page:
http://www.soe.ucsc.edu/classes/ism050/Winter11/

Review - Evaluation
- Exams (35%)
  - Midterm (15%)
  - Final (20%)
- Pop Quizzes (5%)
- Participation in class & online forum (10%)
- Oral Presentation / News Folios (5%)
- Business Paper (25%)
  - Proposal (5%)
  - Final Paper (20%)
- Database Assignment (10%)
- Weekly Assignments (10%)
Review - Oral Presentations

- 5 minutes in length
- Assigned to present one of the following:
  - Summary of the case study we will discuss in class that day.
  - Recent news story involving business and information systems.
  - Your group’s business paper project
- PowerPoint Presentation
  - E-mailed to me by the night before
- The list of the people who will do a presentation will be announced next week

Presentations

- Tue 1/11
  - Alexander Richard Shaffer
  - Ilya Rotenstein
- Thu 1/13
  - Harrison Stephen Taylor
  - Tiffany Hoi Ling Chan

Remember to read tips on giving a nice talk on the web site

Review 1 - News Folios

- Those who are not assigned a presentation will do a “news folio.”
- Task:
  - Collect 3 news articles that are relevant to the class
  - print/copy them
  - For each article, write a 200 word description of how the article relates to issues discussed in class.
- Due dates:
  - Article 1 - January 20
  - Article 2 - February 10
  - Article 3 - February 24

Presentation /Folio Summary

- You will be assigned either a news folio or an in-class presentation
- You should find an interesting news story to either present in class, or hand in as a folio
Review 2 - Business Analysis Paper

- Go to class web page and click on business paper in the announcements for detailed guidelines.
- Paper Should Have:
  - Industry Profile
  - Company Profile
  - Information Technology
  - Potential Customers/Competitors/Partners (Porter model)
  - Leadership
  - Market and Financial Performance

Review: Citing Sources

- Plagiarism is illegal and cheating and will not be tolerated!!
- You must cite your sources in the body of the text!!!

"Semiconductors have found a place in virtually every electronic device in existence. This helps explain why the industry was able to reach $200 billion in sales before a slump brought the figure back down in 2001."[1]

END NOTE:

Review - Citing Sources

- The easiest way to lose points on your paper is to not cite sources!
- Guide on the class website will help you cite your sources correctly.
- Talk to the TA or Instructor if you have questions.

Review 3: Homework 1

- Turn in Both:
  - A Resume
  - And Cover Letter
  - Due 1/11 (less than a 1 week from today)
Review: Personal Resume Criteria

Resume should be:
- One page
  - Focus:
    - Education, Experience, Skills and Abilities
    - What can YOU do for an employer?

Key ingredients:
- Appealing look (fonts, format, margins)
- No Spelling mistakes
- Avoid irrelevant information from too far in the past
- Remember: It takes time to build a good resume...

Review: Building Your Resume

Some things employers look for:
- Academically Qualified.
- Well Rounded (includes extracurricular activities)
- Summer Internships, or Part-time work During School
- Professional Presence (Society Memberships)
- Interested and Understanding of Employer’s Area.

Review: Educational Content

- Degrees held or degrees you are currently working on.
- Name of the university.
- Degree Type and Program
- (Expected) Completion date
- GPA
- Include High School degree?
  - Maybe if you are a freshman or sophomore.

Review: Work Experience Content

- Reverse Chronological Order
- Provide Complete Information
  - Company Name
  - Location (city and state)
  - Employment dates (from - to)
  - 1999 to Present if still employed
- Job Title
  - Major responsibilities
  - Major accomplishments

How do these pertain to the job you are seeking?
Review: Sample

Bob A. King

Local address: 1234 Main Street, Santa Cruz, CA 95060
Phone: (408) 123-4567
Email: bking@email.com

Objective:
To obtain a full-time position in the field of computer engineering.

Education:
California State University, Santa Cruz
Bachelor of Science in Computer Science

Professional Experience:
Google, Inc.
Software Engineer
- Developed and maintained software for the company's mobile applications.
- Collaborated with cross-functional teams to ensure project goals were met.

A letter of introduction, to accompany resume.
Include brief description of background
Write it as if you were applying to take the class, or pretend like you are applying to a job.
Format it as a business letter.

Review: Example of Cover Letter

Bob Brown

123 Ocean St
Santa Cruz, CA 95060

September 21, 2005

Jane Smith
Chief Information Officer
ABC Corporation
Scotts Valley, CA 95060

Dear Ms. Smith:

I am writing to apply for the position of Web Architect at ABC Corporation. I feel especially well qualified for this position because of my extensive coursework in both programming and in information systems. I have had experience designing the website of XYZ Corporation. I have enclosed a copy of my resume. Please contact me if you have any questions about my background.

Sincerely,

Bob Brown
Where are we, and how did we get here?

The History of IT from 1960-2000

R. D. Nolan (Harvard) breaks down history into 3 eras
- Data Processing Era (1960-80)
- Micro Era (1980-95)
- Network Era (1995-??)

A logical division, but not universal
- Messerschmitt divides into 4 phases
  - Centralized, Time shared, de-centralized, networked

Data Processing Era (DP) (1960-1980)
- By 1960 economy dominated by large, multi-divisional, hierarchical businesses
  - Corporate Office administered autonomous operating enterprises
  - Each divisional unit produced for different market
- Example: GE
  - Corporate office in Connecticut
  - Lighting in Cleveland
  - Locomotives in Erie
  - ...
- Within each division many "functional departments"
  - Accounting, Finance, Engineering, etc.

- **Usage of IT in business:**
  - These large companies purchased mainframe computers
  - Manage the data processing
  - Lots of input and output data
  - Simple arithmetical calculations

- **Mainframe computers:**
  - Were slow, enormous, and expensive, by today’s standards.
  - But, they did make it possible to process the enormous volume of data, and transactions in a huge corporation


- Computers were developed for scientific and defense purposes
  - For simulations, calculations, etc.
  - Required collaboration and intensive computation to solve mathematical problems

- Commercial computing evolved...
  - 1954 -- IBM 650 dominates commercial market
    - Leased for $3,250 per month (over $22,000 per month in today’s dollars!)

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**IBM 360**

1964 - IBM 360

- Interoperable 6 computer and 40 peripheral family
- Great improvement over previous generation
- A massive development effort by IBM
- Ensured IBM’s dominance in the 60s and 70s
- “You never got fired for buying IBM.”
  - Average market share of 68% in the 70s.

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**DP (1960-1980): Milestones**

- Digital introduces the mini-computer (1960s)
- UNIX operating system developed (1969)
  - Set of tools allowing users to manipulate files
  - Towards Open Standards
- Bob Metcalfe invents Ethernet (1973)
  - Used cheap coaxial cable
  - Allowed computers to communicate through radio signals
**DP Era (1960-1980)**

**Technology Evolution**
- First - Stand Alone Mainframes
- Next - Dumb terminals attached to mainframe
- "Time-Shared" Phase in Messerschmitt's terminology

**Responsible Person of IT**
- The information resource manager was known as the *Data Processing (DP) manager*.
  - Charged with supporting the business
  - *Not* with changing how the business was run
  - "Manage DP as a business within a business"


**IS evolved from supporting lower functions to higher level functions**
- **Low:** Inventory, Purchasing, Scheduling
- **Medium:** Accounting Mgmt, HR Mgmt, Productions Operations Mgmt
- **High:** Corporate wide planning (profits, human resources)

**Annual Budgeting**
- Control expenditures aimed at generating revenue during the calendar year
- An important function made easier by computers
- Monitor year-to-year growth in revenue and profit
- Accounting of
  - Revenues, Expenditures, Assets, Liabilities
  - Generate Profit and Loss (P&L) Statement
**Annual Budgeting II**

- **Before computers**
  - Was difficult to do once a year
  - Produced Profit & Loss statement and end-of-the-year Balance Sheet to compare with previous one

- **After computers**
  - Could “close the books” easily and more often
  - Could break down profits and losses to each level of the corporate hierarchy
  - Compared planned revenues/expenses with actual ones

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**Capital Budgeting**

- Analyze return and risk of expenditures intended to generate revenue over multiple accounting periods
  - Examples: New building, or factory

- **Before computer**
  - Calculations could become complicated

- **After computer**
  - Very easy

- Consequence: Every level of the organization could be held accountable for their ROI (Return On Investment)

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**Budgeting**

Better budgeting and resulting accountability lead to consistent earnings growth.

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**Build up to Micro Era**

- 1974 - Xerox PARC develops first computer with a mouse. They don’t commercialize it!

- 1974 - Altair PC for hobbyists

- 1975 - Bill Gates and Paul Allen found Microsoft
Build up to the Micro Era

- 1976 – Apple is founded
  - Steve Jobs, Steve Wozniak & Ronald Wayne build Apple I in a garage!
  - More a motherboard than a personal computer
- 1977 – Apple introduces a successful microcomputer: Apple II
  - Became the market leader despite high price
  - Replaced cassette tapes with floppy disk, Color graphics, Software


- 1981 – IBM introduces its PC!
  - Intel develops CPU
  - Microsoft develops operating system
  - Epson develops the printer

  IBM PCs were rapidly adopted by the commercial market.


- Others followed
  - 1983 – Compaq introduces first successful IBM-PC clone
  - 1983 – Apple introduces first personal computer with GUI
  - 1984 – DELL is founded
- Meanwhile
  - 1982 – Sun Microsystems introduces workstations (for scientific and engineering markets)
  - Desktop “clients” connected to high-powered “servers”


- The transition from mainframes to microcomputers was not easy!
- PCs threatened the DP manager
  - Easier to manage one central mainframe than a PC on every employees desktop!
  - Data not Centralized
    - Replication of accounting and reporting functions
    - The numbers on my PC are right, the ones on your PC are wrong!
  - Security Risks
  - DP managers put restrictions on PCs
  - Users defied them!

- Users wanted the convenience of word processing, CAD, etc...
- Vendors marketed direct to the users instead of the DP managers.
- Example: Spreadsheets

Spreadsheet Example

- VisiCalc (1979)
  - First Spreadsheet
  - For Apple II computer
- Lotus 1-2-3 (1983)
  - Mimicked VisiCalc
  - For IBM PC
- Excel (1985)
  - Microsoft
  - Surpassed Lotus when Windows took off.


- Fragmented IT organization
- Management realized the importance of bringing order to the chaos
  - Chief Information Officer (CIO) in the 80s: “Senior executive responsible for establishing corporate information policy, standards, and management control over all corporate information resources”
  - Reflected the expanded role of IT leadership
  - From “automation” to “information”
Beginning of Internet

- 1969 - ARPANET linked scientists
- 1977 - TCP/IP used to link networks to ARPANET
- 1984 - the term Internet comes into use (by scientists, military, hobbyists)
- 1985 - NSF takes over management of Internet Backbone
- 1990 - WWW (Tim Berners-Lee at CERN)
  - Married hypertext to Internet
  - Linked independent clients/servers
  - Building blocks: URI, HTTP, HTML
- 1991 - HTML
- 1993 - Mosaic Browser (Marc Andreesen and Eric Bina)
  - GUI

The Network Era (1995 - ?)

- After chaos of Micro Era, organizations converged on Client Server networked architectures
  - Client PC allowed user to have direct access to her own computer
  - Server housed organizational data
  - Workstations: Sun, HP, IBM, Digital, Microsoft
- Because of Success of Internet technologies:
  - UNIX, HTML, TCP/IP
  - IT managers used these technologies for internal networks - “intranets”
  - Could easily hook “intranet” to the outside world (vendors, partners, outsourcers, etc.)

The Network Era (1995 - ?) – Internet Phenomenon

- Internet built on open standards
  - Different than control-oriented development philosophy
  - Benefits: Scalable, Extensible, ...
  - Self-managed
- Lots of vendors selling Interoperable equipment
  - More decisions to make than the DP manager of the 1960s!
  - Many companies started and flourished

Companies of that era

- Cisco: founded 1984
  - Developed a Route: a device to forward data packets from one network to another
  - By 1998, Cisco had a market value of $100 billion!
- Netscape:
  - Browser based on Original Mosaic
  - IPO (Initial Public Offering) in 1995 (First day went from $28 -> $75!)
  - The company’s revenues doubled every quarter in 1995!
  - Excitement triggered the dot-com boom
The network era permitted new ways of doing business:
- Employees could check on their benefits with a web browser.
- Customers could "self-serve" themselves.
  - In 1998, 70% of Cisco's $800 million of service revenue was provided over Internet, by allowing customers to access their intranet.

Information Resource Management

- Strategic realization
  - Information is the resource to be managed not just data.
  - Need to get information into the hands of workers, so workers can be more productive.
    - e.g. access to shared databases.

"Sense and Respond"
- IT innovation: integral part of every company's strategy formulation process.
  - e.g.: Knowledge Management, Super Market Replenishment
- IT breakthroughs surprised companies:
  - Should follow to match competitor's IT initiative?
  - Should not jeopardize existing status

Result: Organizational Performance Improvement

<table>
<thead>
<tr>
<th>Market Value Rank</th>
<th>Company Name</th>
<th>Sales per Employee</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>General Electric</td>
<td>$49,012</td>
</tr>
<tr>
<td>2</td>
<td>Coca-Cola</td>
<td>120,454</td>
</tr>
<tr>
<td>3</td>
<td>Microsoft</td>
<td>644,141</td>
</tr>
<tr>
<td>4</td>
<td>Enron</td>
<td>494,049</td>
</tr>
<tr>
<td>5</td>
<td>Intel</td>
<td>58,850</td>
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<tr>
<td>6</td>
<td>Philips Neth</td>
<td>42,914</td>
</tr>
<tr>
<td>7</td>
<td>IBM</td>
<td>64,727</td>
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<tr>
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<td>AT&amp;T</td>
<td>50,818</td>
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<tr>
<td>9</td>
<td>PFE</td>
<td>58,038</td>
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<tr>
<td>10</td>
<td>Procter &amp; Gamble</td>
<td>147,287</td>
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<tr>
<td>11</td>
<td>Bristol-Myers Squibb</td>
<td>75,167</td>
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<tr>
<td>12</td>
<td>Wal-Mart Stores</td>
<td>24,446</td>
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<tr>
<td>13</td>
<td>Johnson &amp; Johnson</td>
<td>52,189</td>
</tr>
<tr>
<td>14</td>
<td>American Telephon Group</td>
<td>11,039</td>
</tr>
</tbody>
</table>

Source: Standard & Poor's Composite. Market values and S&P at the year-end values.
The Network Era (1995 - ?) - Internet Phenomenon

- For IT manager -- Enormous challenge to manage networks of thousands of computers!

- In 1996 the CIO turnover rate was 17.7%!!
- Take Away: Managing IT in the Network Era is difficult, but if you do it right the rewards can be huge!

"Deloitte and Touche"

History of Computing (Messerchmitt)

- Centralized
  - A few big mainframes to automate business functions such as payroll and accounting
- Time-Shared
  - Terminals added so many could access main frame
- Decentralized
  - PCs on every desk
- Networked
  - Applications could be geographically distributed
**E - Business**

**DEFINITION:** The use of Internet technologies to inter-network and empower:
- business processes
- e-commerce
- enterprise communication and collaboration

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**E-commerce**

**DEFINITION:** The buying and selling, and marketing/servicing of products, services, and information over a variety of computer networks.

- Examples:
  - Advertising
  - Sales
  - Customer support
  - Online payment mechanisms

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**Intranets & Extranets**

- Intranet (inside the enterprise)
- Extranet (between enterprise & partners)

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**Why Does a Company Need to Make a Profit?**

- An obligation to owners/shareholders
  - Owners and shareholders have invested money and time. They expect to see something in return.

- Survival requires continued investments
  - new product development.
  - facilities and equipment.
  - acquiring other companies.
  - Invest in employees (training and salary increases)

- Stakeholders want to see performance before investing in a company’s future.
Reminder - Business Analysis Paper Preferences due Tuesday!

- **As a group**, turn in 3 things:
  - List of your proposed group members.
  - List of companies you would like to study.
  - Suggested person to do the 5 minute presentation on your group’s project.

- If you don’t have someone in mind to work with, turn in the above 3 things as an individual.

Reminder - Business Analysis Paper Preferences

- **At least two** of your preferred companies must be from this list:
  - Southwest Airlines
  - Federal Express
  - Home Depot
  - Wal-Mart Stores
  - Charles Schwab
  - Amazon.COM
  - Ebay, COM

- With your preferences in mind, we will make the final company assignments to the groups.

Another Reminder...

- **Assignment 1** is also due Tuesday
  - Resume, and
  - Cover Letter
- See class webpage for detailed instructions.
- Your photo

- **Read:**
  - Chapter 2 - Section I of O’Brien (reader pp 69-77)

Review: Suggested sources of Information

- Company website
- 10K report
  - (This is the annual report public companies file with Security and Exchange Commission.)
- Article Databases
  - A database of articles from magazines like “Business Week” and economics journals.
  - Find it at [http://library.ucsc.edu](http://library.ucsc.edu)
  - Click on “article database” on left margin.
  - Click on “LexisNexis Academic” or try “Business Source Premier from Ebsco Host”
  - Try this tonight! And let us know if you have problems on Thursday

- Industry specific publications
- Books
- Good Magazines (The Economist)
- Consulting groups: Forrester, Gartner, ..