Announcements

- Business paper preferences due Thursday
- Assignment 1 posted and due Tuesday (10/6)
  - On OTIS case
- Read ch 3 of Laudon and Laudon for Thursday (Book now available in Bookstore!)

Business Analysis Paper Preferences

Due THIS THURSDAY - 10/1!

- We want you to try to form your own groups.
  - However, we may modify the groups to balance skills and experience

- As a group, turn in (paper):
  - Names of proposed group members with emails
  - List of companies you would like to study

- Use the form we provide on the class webpage!

Business Paper Preferences 10/1

- To help us create balanced groups...
- ...you will self identify your best skills from:
  - W: Writing
  - A: Accounting and finance
  - C: Computers and technology
  - S: Business strategy
  - L: Literature Search

Example:

- Bob Smith smith@yahoo.com   A, L
- Jane Doe  do@hotmail.com      C, W
- Chris Tomato  chris@gmail.com  S, W

Business Analysis Paper Preferences

Due Thursday 10/1!

At least two of your preferred companies must be from this list:

- Emirates (airline)
- CVS Caremark
- eBay
- Carrefour (Supermarket Chain)
- Charles Schwab
- Inditex (Clothing retailer)
- Netflix
- Toyota
- Amazon

With your preferences in mind, we will make the final company assignments to the groups.
What is a Business?
An organization that provides a product and/or a service that satisfies a need for which people are willing to pay money.

Makes money if revenues exceed costs.

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.

Recall: What is a System?
- Interrelated components
  - Input
  - Processing
  - Output

Business as a system
A business is an organizational system where
- economic resources (input)
- are transformed by various organizational processes (processing)
- into goods and services (output).

Important Things to Understand
Two terms:
1) business functions
2) business processes

Information systems provide
• information (feedback) on the operations of the system
• New capabilities, including analytics e.g. customer behavior and targeting

It would be a good idea to make absolutely sure that you know what they are.
Business Functions

Function: An area of specialization within an enterprise

Examples
- Design
- Engineering
- Sales
- Finance
- Marketing
- Accounting
- Human resources
- Etc...

What prompts the creation and justification of business functions?
- Specialization
- Size
- Efficiency
- More cost effective

Business Processes

What is a business process?
- A designed succession of actions to the accomplishment of some result in a business.
- Example
  - Order Fulfillment

A Business Process

Cross Functional Process

- A business process that crosses over multiple functions
- Are all business processes cross functional?
A business process within a function

Example: Channel Selection Process within Marketing function

- New Product Idea
- Conduct Focus Group Studies
- Find sales by channel
- Data for similar products
- Combine information
- Make decision

Processes tend to be more simple at smaller organizations

Enrollment Process at a small, fictitious university...

- Student
- Universal Bureaucrat
- Fee Processing
- Financial Aid
- Housing
- Dining
- Recreation Membership
- Health Insurance
- Class Registration

Similarly, at small companies

Example: Capital Equipment Purchase Business Process...

- BOSS

Big company

Capital Equipment Purchase Business Process

- Director
- Manager
- Finance
- Accounting
- IT Dept.
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Figure 2-3

Levels In a Firm

- Senior Management
- Middle Management
- Operational Management

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The Business Environment

- Global environment factors
  - Technology and science
  - Economy
  - Politics
  - International change
- Immediate environment factors
  - Customers
  - Suppliers
  - Competitors
  - Regulations
  - Stockholders

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The Role of Information Systems in a Business

- Firms invest in information systems in order to:
  - Achieve operational excellence.
  - Develop new products and services.
  - Attain customer intimacy and service.
  - Improve decision making.
  - Promote competitive advantage.
  - Ensure survival.

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Systems For Different Levels of Management

- Transaction processing systems:
  - Keep track of basic activities and transactions
  - (e.g., sales, credit decisions, flow of materials in a factory)
- Management information systems and decision-support systems:
  - Assist monitoring, controlling, decision making, and administrative activities
- Executive support systems:
  - Help address strategic issues and long-term trends, both in firm and in external environment

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Types of Business Information Systems

- Transaction processing systems:
  - Serve operational managers.
  - Answer routine questions
    - E.g., Is the widget in stock? Was Bob paid?
  - Monitor status of internal operations and firm’s relationship with external environment.
    - E.g., Is the gizmo in production? Did we get paid?
  - Feed information to higher level info. systems.

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A Payroll TPS

A TPS for payroll processing captures employee payment transaction data (such as a timecard). System outputs include online and hard copy reports for management and employee paychecks.

Figure 2-5
Types of Business Information Systems

- Management information systems:
  - Assist middle managers with reports on firm’s performance.
  - Summarize and report on basic operations using data from TPS.
  - Provide weekly, monthly, annual results, but may enable drilling down into daily or hourly data.
  - Typically not very flexible systems with little analytic capability (in contrast to higher level systems).

Types of Business Information Systems

- Executive support systems (ESS):
  - Serve senior managers.
  - Address strategic issues and long-term trends
    - E.g., what products should we make in five years?
  - Nonroutine decision making
  - Provide generalized computing capacity that can be applied to changing array of problems
  - Draw summarized information from MIS, DSS, and data from external events
  - Typically use portal with Web interface to present content
Enterprise applications
- Systems that span functional areas, focus on executing business processes across the firm, and include all levels of management.
- Supply chain management systems
- Customer relationship management systems
- Enterprise Resource Planning Systems
- Knowledge management systems

Supply Chain Management Systems
- Manage relationships with suppliers, purchasing firms, distributors, and logistics companies.
- Manage shared information about orders, production, inventory levels, and so on.
  - Goal is to move correct amount of product from source to point of consumption as quickly as possible and at lowest cost.
- Type of interorganizational system:
  - Automating flow of information across organizational boundaries

Enterprise Resource Planning Systems
- Integrate data from key business processes into single system.
- Speed communication of information throughout firm.
- Enable greater flexibility in responding to customer requests, greater accuracy in order fulfillment.
- Enable managers of large firms to assemble overall view of operations.
- Alcoa used ERP to eliminate redundancies and inefficiencies in its disparate systems.

Customer Relationship Management Systems
- Help manage relationship with customers.
- Coordinate business processes that deal with customers to optimize revenue and customer satisfaction, and increase sales.
- Combine sales, marketing, and service record data from multiple communication channels to provide unified view of customer, eliminate duplicate efforts.
- E.g., Saab CRM applications to achieve 360 degree view of customers resulted in greater follow-up rate on sales leads and increased customer satisfaction.

Knowledge Management Systems
- Intangible knowledge assets
  - Knowledge of producing and delivering products
  - Source of value and advantage for firms
  - Knowledge management systems:
    - Help capture, storage, distribute, and apply knowledge so that it can be leveraged for strategic benefit.
    - Include systems for:
      - Managing and distributing documents, graphics, other digital knowledge objects
      - Creating knowledge directories of employees with specialized expertise
      - Distributing knowledge
Business Benefits of Collaboration and Teamwork

• Large business firms: "command and control" organizations in which upper management created the strategy and middle management carried out their orders.
• Today, businesses rely on collaborative culture.
• Teams of employees responsible for creating and building

Evaluating and Selecting Collaboration Software Tools

• What are your firm’s collaboration challenges?
• What kinds of solutions are available?
• Analyze available products’ cost and benefits.
• Evaluate security risks.
• Consult users for implementation and training issues.
• Evaluate product vendors.

The Time/Space Collaboration Tool Matrix

Collaboration technologies can be classified in terms of whether they support interactions at the same or different time or place, and whether these interactions are remote or collocated.

Figure 2-12

Information Systems Services

• Services provided by the information systems department include:
  • Computing and telecommunications services
  • Data management services
  • Application software services
  • Physical facilities management services
  • IT management services
  • IT standards services
  • IT educational services
  • IT research and development services

Where are we, and how did we get here?

Let’s survey the history of IT over the past few decades!

The History of IT from 1960-2000
The Data Processing Era (1960-1980)
- By 1960 economy dominated by large, multi-divisional, hierarchical businesses
  - Corporate Office
  - Divisional operating units in different markets
    - Example: GE
      - Corporate office in Connecticut
      - Lighting in Cleveland
      - Locomotives in Erie
      - ...
    - Within each division many “functional departments”
      - Accounting, Finance, Engineering, etc.

The Data Processing (DP) Era (1960-1980)
- Needed to keep track of massive amounts of data for
  - Payroll
  - Payments to customers and suppliers,
  - etc.

The Data Processing (DP) Era (1960-1980)
- These large companies purchased mainframe computers
  - to manage the data processing.
  - They 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

The Data Processing (DP) Era (1960-1980)
- Meanwhile computers were developed for scientific and defense purposes

DP Era (1960-1980)
- Commercial computing evolved...
  - 1954 -- IBM 650 dominates commercial market
    - Leased for $3,250 per month (over $22,000 per month in today’s dollars!)
IBM 360
1964 - IBM 360,
- Interoperable peripheral and computer family
- Great improvement over previous generation
- A massive development effort by IBM
- Ensured IBM's dominance in the 60s and 70s

Data Processing Era (1960-1980)
- “You never got fired for buying IBM.”
- Average market share of 68% in the 70s.

Meanwhile
- Digital introduces the mini-computer (1960s)
- UNIX operating system developed (1969)
- Bob Metcalfe invents Ethernet (1973)

DP Era (1960-1980)
- Technology Evolution
  - First - Stand Alone Mainframes
  - Next - Dumb terminals attached to mainframe
  - ("Time-Shared" Phase in Messerschmitt’s terminology)

Data Processing Era (1960-1980)
- 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

DP Era (1960-1980)
- IS evolved from supporting lower functions to higher level functions
  - Low: Inventory, Purchasing, Scheduling
  - Medium: Productions Operations Management
  - High: Corporate wide planning

DP Era (1960-1980) -- Annual Budgeting
- Budgeting was an important function made easier by computers
- Accounting of
  - Revenues, Expenditures, Assets, Liabilities
  - Generate Profit and Loss Statement
- Before computers
  - Was difficult to do once a year
- After computers
  - Could “close the books” more often
  - Could break down profits and losses to each level of the corporate hierarchy
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

Budgeting

Better budgeting and resulting accountability lead to consistent earnings growth.

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

- 1977 – Apple introduces a successful microcomputer


- 1981 – IBM introduces its PC!
  - Intel develops CPU
  - Microsoft develops operating system
- IBM PCs were rapidly adopted by the commercial market.


- PCs threatened the DP manager
  - Easier to manage one central mainframe than a PC on every employees desktop
  - Data not Centralized.
    - 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!
### The Micro Era (1980-1995)

- Users wanted the convenience of word processing, CAD, etc...
- Vendors marketed directly 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.

### The Micro Era (1980-1995)

- Management realized the importance of bringing order to the chaos
  - Coined the term Chief Information Officer (CIO) in the 80s

### Beginning of Internet

- 1969 – ARPANET linked scientists
- 1977 – TCP/IP used to link networks to ARPANET
- 1984 – The term Internet comes into use
- 1985 – NSF takes over management of Internet Backbone
- 1990 – WWW (Tim Berners-Lee at CERN)
- 1991 – HTML
- 1993 – Mosaic Browser (Marc Andreessen and Eric Bina)

### 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
- Because of success of Internet technologies...
  - UNIX, HTML, TCP/IP
  - IT managers used these technologies for internal networks - “intranets”

### The Network Era (1995 - ?) - Internet Phenomenon

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

- 1984 Founded by Leonard Bosack and Sandra Lerner (Stanford IT Staff)
- Developed a Router
  - A device to forward data packets from one network to another
- By 1998, Cisco had a market value of $100 billion!

Netscape

- Founded by Marc Andreessen and Jim Clark
- Browser based on Original Mosaic
- IPO in 1995
  - First day went from $28 → $75!
  - The company’s revenues doubled every quarter in 1995!
- Excitement triggered the dot-com boom.
  - Hundreds of companies started, most didn’t survive...

The network era

- 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.
  - Wal-Mart used point of sale data to drive supplier replenishment (CRP)

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.

Result: Organizational Performance Improvement

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Source: Standard & Poor’s Composite, Moneyline厌恶 and FTC price to book data.
The Network Era (1995 - ?) - Internet Phenomenon

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

The Network Era (1995 - ?) - Internet Phenomenon

- "The Technology leader of Tomorrow must be a business leader with all of the management skills of any other senior executive...

The CIO has gone from being a corporate god in the 1980s to the chief blame taker in the 1990s when IT initiatives often have failed to deliver their promised productivity gains."¹

¹Sifonis and Goldberg, "Changing Role of the CIO," Information Week, March 24 1997

The Network Era (1995 - ?) - Internet Phenomenon

- In 1996 the CIO turnover rate was 17.7%!¹

Take Away: Managing IT in the Network Era is difficult, but if you do it right the rewards can be huge!

¹Deloitte and Touche

Essentials of Management Information Systems
Chapter 2 E-Business: How Businesses Use Information Systems

Components of a Business

Organizing a Business: Basic Business Functions

- Five basic business entities:
  - Suppliers
  - Customers
  - Employees
  - Invoices/payments
  - Products and services