TIM 50 - Business Information Systems

Lecture 2

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UC Santa Cruz
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(Slides initially were produced by Prof. Musacchio)
Announcements

- Business paper preferences due Tuesday (1/12)
- Assignment 1 posted (1/14) and due Thursday (1/21)
  - On OTIS case
- Read ch 3 of Laudon and Laudon for Tuesday
Business Analysis Paper Preferences
Due NEXT WEEK - Tuesday 1/12!

- 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!
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.
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
Business Paper Preferences

**Example:**

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

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).

\[ \text{Input} \quad \rightarrow \quad \text{SYSTEM} \quad \rightarrow \quad \text{Output} \]
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).

Information systems provide

- information (feedback) on the operations of the system
Important Things to Understand

Two terms:

1) business functions

2) business processes

Will be frequently used throughout this course.

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

Analog to Sport Teams, e.g., baseball, basketball, Football, American football, and etc.
Business Functions

- **Examples**
  - Design
  - Engineering
  - Sales
  - Finance
  - Marketing
  - Etc...

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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 accomplish some result in a business.

Example

- Order Fulfillment
A Business Process

Business Functions
- Customer
  - Order
    - Take Order
    - Enter Order
      - Credit Check
        - Check Stock
          - Print Packing list
            - Tell Mfg. to make order
            - Find Goods
              - Print Invoice
                - Ship

- Sales
- Finance
- Inventory Control
- Warehousing
## Business Function and Process

<table>
<thead>
<tr>
<th>Functional Area</th>
<th>Business Process</th>
</tr>
</thead>
<tbody>
<tr>
<td>Manufacturing and production</td>
<td>Assembling the product</td>
</tr>
<tr>
<td></td>
<td>Checking for quality</td>
</tr>
<tr>
<td></td>
<td>Producing bills of materials</td>
</tr>
<tr>
<td>Sales and marketing</td>
<td>Identifying customers</td>
</tr>
<tr>
<td></td>
<td>Making customers aware of the product</td>
</tr>
<tr>
<td></td>
<td>Selling the product</td>
</tr>
<tr>
<td>Finance and accounting</td>
<td>Paying creditors</td>
</tr>
<tr>
<td></td>
<td>Creating financial statements</td>
</tr>
<tr>
<td></td>
<td>Managing cash accounts</td>
</tr>
<tr>
<td>Human resources</td>
<td>Hiring employees</td>
</tr>
<tr>
<td></td>
<td>Evaluating employees’ job performance</td>
</tr>
<tr>
<td></td>
<td>Enrolling employees in benefits plans</td>
</tr>
</tbody>
</table>
A business process that crosses over multiple functions

Are all business processes cross functional?
A Business Process

Business Functions
- Customer
  - Sales
  - Finance
  - Inventory Control
  - Warehousing

Order
  - Take Order
  - Enter Order
  - Credit Check

Check Stock
  - Print Packing list

Print Invoice
  - Find Goods
  - Ship

Tell Mfg. to make order
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

Mine Demographic data

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
• Dinning
• Recreation Membership
• Health Insurance
• Class Registration
Processes tend to be more simple at smaller organizations

Enrollment Process at UCSC…
Similarly, at small companies

Example: Capital Equipment Purchase Business Process...
Big company

Capital Equipment Purchase Business Process

Director

manager

finance

accounting

IT Dept
Business and Firm Hierarchies

• Hierarchy with authority is concentrated at top
• Goal: Achieve Coordination
• Typical Breakdown:
  – Senior management
  – Middle management
    • Knowledge workers
  – Operational management
    • Data workers
    • Production or service workers
• Each group has different needs for information
Components of a Business

Levels in a Firm

- **Senior Management**
  - Long range strategic decisions
  - *Create new knowledge & design products*

- **Middle Management**
  - Scientists and knowledge workers
  - Produce products, deliver new services, administrative work

- **Operational Management**
  - Production and service workers
  - Data workers
Levels in a Firm

Discussions: Who should undertake:

1. proposing new products?
2. introducing new products?
3. proposing expanding warehouse?
The Business Environment

Components of a Business

- Global environment factors (global)
  - Technology and science
  - Economy
  - Politics
  - International change

- Immediate environment factors (immediate)
  - Customers
  - Suppliers
  - Competitors
  - Regulations
  - Stockholders
Components of a Business

The Business Environment

- Technology and science
- Customers
- Stockholders
- Competitors
- International change
- Regulations
- Suppliers
- Politics
- Economy
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.
Systems For Different Levels of Management

- **Transaction processing systems (TPS):**
  - 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
• **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.
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.

Components of a Business

A Payroll TPS

Employee Data

To General Ledger

Employee/ File Database

Payroll System

Management reports

To government agencies

Online queries

Employee paychecks

Payroll data on master file

are computer files that record economic transactions measured in terms of a monetary unit of account by account type.
Management information systems and decision support system:

• 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).
Components of a Business

How MIS Obtain Their Data from TPS

Transaction Processing Systems  Management Information Systems

- Order file
- Production master file
- Accounting files

Order processing system
Materials resource planning system
General ledger system

MIS FILES
- Sales data
- Unit product cost data
- Product change data
- Expense data

Provide answers to predetermined questions, e.g., weekly, monthly reports, etc.

MIS
 Managers
Reports

Figure 2-6
This report, showing summarized annual sales data, was produced by the MIS in Figure 2-9.

### Sample MIS Report

**Consolidated Consumer Products Corporation Sales by Product and Sales Region: 2008**

<table>
<thead>
<tr>
<th>PRODUCT CODE</th>
<th>PRODUCT DESCRIPTION</th>
<th>SALES REGION</th>
<th>ACTUAL SALES</th>
<th>PLANNED</th>
<th>ACTUAL versus PLANNED</th>
</tr>
</thead>
<tbody>
<tr>
<td>4469</td>
<td>Carpet Cleaner</td>
<td>Northeast</td>
<td>4,066,700</td>
<td>4,800,000</td>
<td>0.85</td>
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<tr>
<td></td>
<td></td>
<td>South</td>
<td>3,778,112</td>
<td>3,750,000</td>
<td>1.01</td>
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<tr>
<td></td>
<td></td>
<td>Midwest</td>
<td>4,867,001</td>
<td>4,600,000</td>
<td>1.06</td>
</tr>
<tr>
<td></td>
<td></td>
<td>West</td>
<td>4,003,440</td>
<td>4,400,000</td>
<td>0.91</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td></td>
<td></td>
<td>16,715,253</td>
<td>17,550,000</td>
<td>0.95</td>
</tr>
<tr>
<td>5674</td>
<td>Room Freshener</td>
<td>Northeast</td>
<td>3,676,700</td>
<td>3,900,000</td>
<td>0.94</td>
</tr>
<tr>
<td></td>
<td></td>
<td>South</td>
<td>5,608,112</td>
<td>4,700,000</td>
<td>1.19</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Midwest</td>
<td>4,711,001</td>
<td>4,200,000</td>
<td>1.12</td>
</tr>
<tr>
<td></td>
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<td></td>
<td>18,559,253</td>
<td>17,700,000</td>
<td>1.05</td>
</tr>
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Decision Support System Example:
Voyage-Estimating Decision Support System

This DSS operates on a powerful PC. It is used daily by managers who must develop bids on shipping contracts.

Focus on problems that are unique and rapidly changing!

Optimization or statistical based
Decision Support System Example:
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This DSS operates on a powerful PC. It is used daily by managers who must develop bids on shipping contracts.

Focus on problems that are unique and rapidly changing!

Optimization or statistical based

1) Given a customer delivery schedule and freight rate, which vessels should be assigned to max profit?
• **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 and conditions
  - Draw summarized information from MIS, DSS, and data from external events
  - Links external data, e.g., stock, tax laws, economy trend, etc.
  - Typically use portal with Web interface to present content
This system pools data from diverse internal and external sources and makes them available to executives in an easy-to-use form.

Figure 2-9
You may wonder how an organization manages all these systems:

- **Enterprise applications**
  - Systems that span functional areas, focus on executing business processes across the firm, and include all levels of management.
    - Enterprise Resource Planning Systems (ERP)
    - Supply chain management systems (SCM)
    - Customer relationship management systems (CRM)
    - Knowledge management systems (KMS)
Enterprise Resource Planning Systems (ERP)

- 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.

E.g, Alcoa used ERP to eliminate redundancies and inefficiencies in its disparate systems.
Enterprise applications automate processes that span multiple business functions and organizational levels and may extend outside the organization.

Figure 2-14
Supply Chain Management Systems (SCM)

- 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
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Discussions: Do you have any experiences working with SCM?
Customer Relationship Management Systems (SRM)

- Help manage relationship with customers through IT technologies such as phone, message and ?
- Coordinate business processes that deal with customers to optimize revenue and customer satisfaction, and increase sales, e.g., bank customer services.
- 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.
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Knowledge Management Systems (KMS)

- Intangible knowledge assets
  - Knowledge about 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

Discussions: Do you have any experiences working with KMS?
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
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

Discussions:

1) Is your working experience more of “command & control” or of “collaboration & teamwork”?

2) What is your experiences of using IT-based technologies to enhance collaboration & teamwork in UCSC or elsewhere?
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.
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 colocated.

**Figure 2-12**

- **Same time, synchronous**
  - Face to face interactions: decision rooms, single display groupware, shared table, wall displays, roomware,...

- **Different time, asynchronous**
  - Continuous task: team rooms, large public display, shift work groupware, project management,...

- **Remote interactions**
  - Video conferencing, instance messaging, charts/MUDs/virtual worlds, shared screens, multi-user editors,...

- **Communication + coordination**
  - Email, bulletin boards, blogs, asynchronous conferencing, group calendars, workflow, version control, wikis,...
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 colocated.

**Figure 2-12**
The Information Systems Department

- Programmers
  - Write software instructions for computers
- Systems analysts
  - Principle liaisons to rest of firm
- Information systems managers
  - Leaders of teams of programmers and analysts, project managers, physical facility managers, telecommunications managers, database specialists, managers of computer operations, and data entry staff
- Senior managers: CIO (chief information officer), CPO (chief privacy officer), CSO (chief security officer), CKO (chief knowledge officer)
- End users
- External specialists
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- External specialists

CIO: oversee IT operations, strategic use of IT
CSO: develop and maintain IT security and policies
CPO: privacy compliance
CKO: develop knowledge management system
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
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Discussions:
What is your experiences of services provided by the IT at UCSC (or elsewhere)? Does it include all the items?