

Foundation of Information Systems

Reading:

Laudon & Laudon
chapter 1

Additional Reading:

Brien & Marakas
chapter 1

Outline

- ❑ Information Systems
 - ❑ Definition, Role
 - ❑ Functions of Information Systems in Business Today

- ❑ Perspectives on Information Systems and Information Technology

- ❑ Understanding Information Systems
 - ❑ A Business Problem-Solving Approach

- ❑ Information Systems and your Career

NBA Teams make a Slam Dunk with IT

➤ Problem?

Escalating salaries and travel costs, difficulty of increasing revenue by improving employee performance

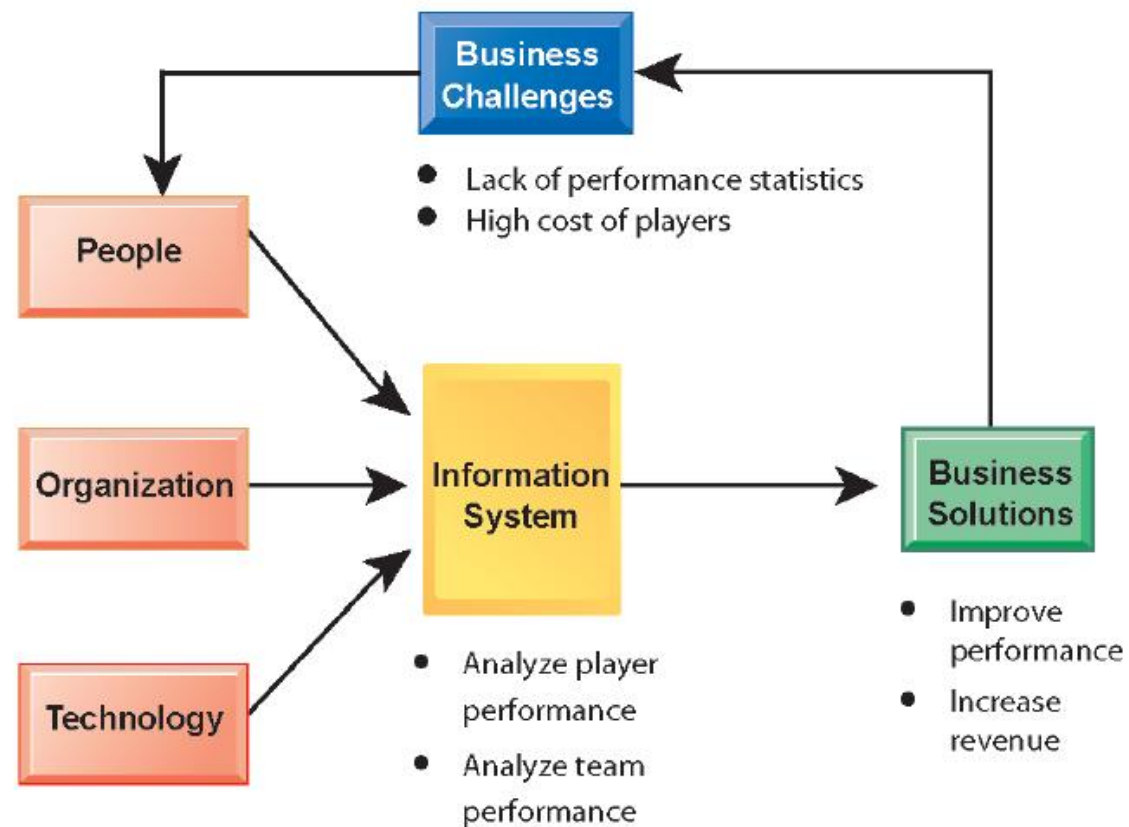


➤ Solution

- High resolution, organized video allows teams to review games and scout new players more efficiently.
- **Synergy Sports Technology's** tools help collect, organize, and distribute video of NBA games
 - ◆ Demonstrates IT's role in reducing cost, organizing data, and increasing efficiency
 - ◆ Illustrates the emerging digital firm landscape where businesses can use tools to analyze critical data

NBA Teams make a Slam Dunk with IT

- Monitor player and team performance
- Match videos of plays with statistical data
- Tag and index plays
- Maintain protected Web site
- Download video to iPods



Information System

➤ What is System?

Set of Interrelated components, with clearly defined boundary, working together to achieve common set of objectives

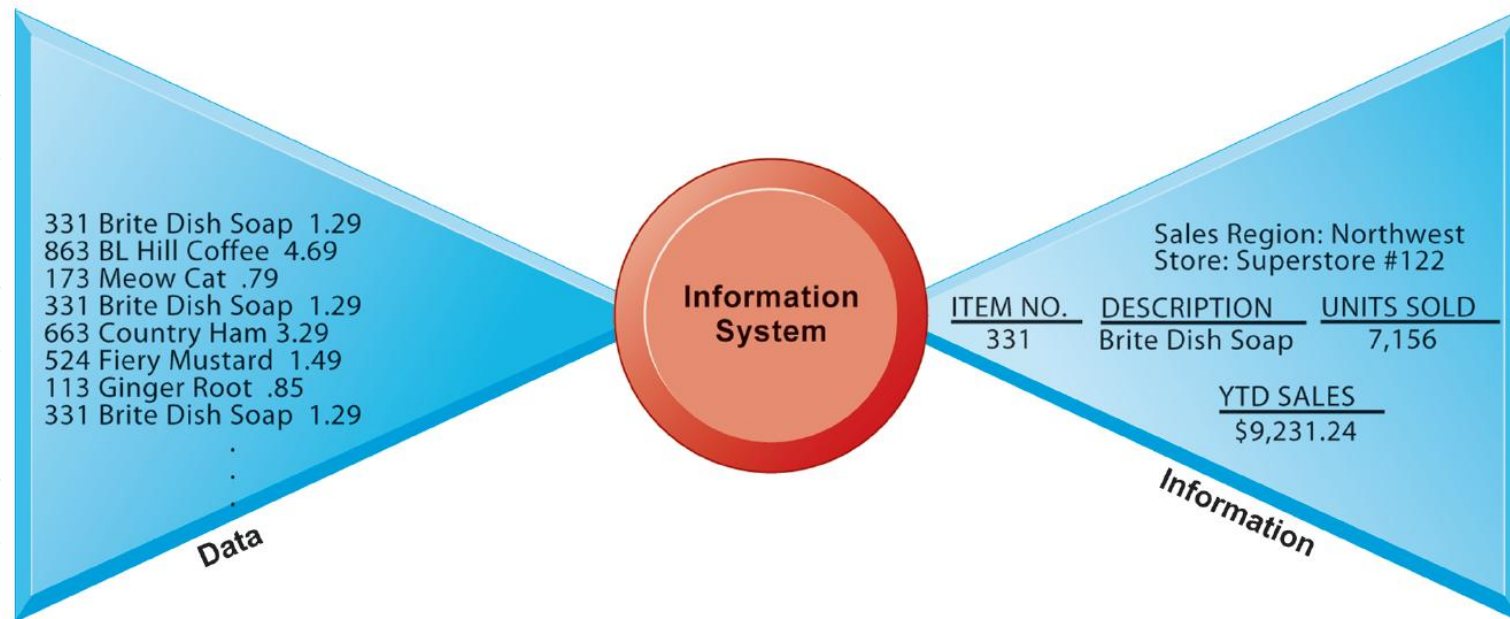
➤ Information Systems

- Set of interrelated components that
 - ◆ Collect/retrieve, process, store, and distribute information to
 - ◆ Support decision making, coordination, control
- Help managers and workers
 - ◆ Analyze problems
 - ◆ Visualize complex subjects
 - ◆ Create new products
- Not necessarily employ computers
 - ◆ Smoke signals, Card storage in library, etc.

Information System

➤ Information Systems

- Data → Stream of Raw facts
- Information → Data shaped into useful/meaningful form



Raw data from a supermarket checkout counter can be processed and organized to produce meaningful information, such as the total unit sales of dish detergent or the total sales revenue from dish detergent for a specific store or sales territory.

Information System

➤ Information Technology

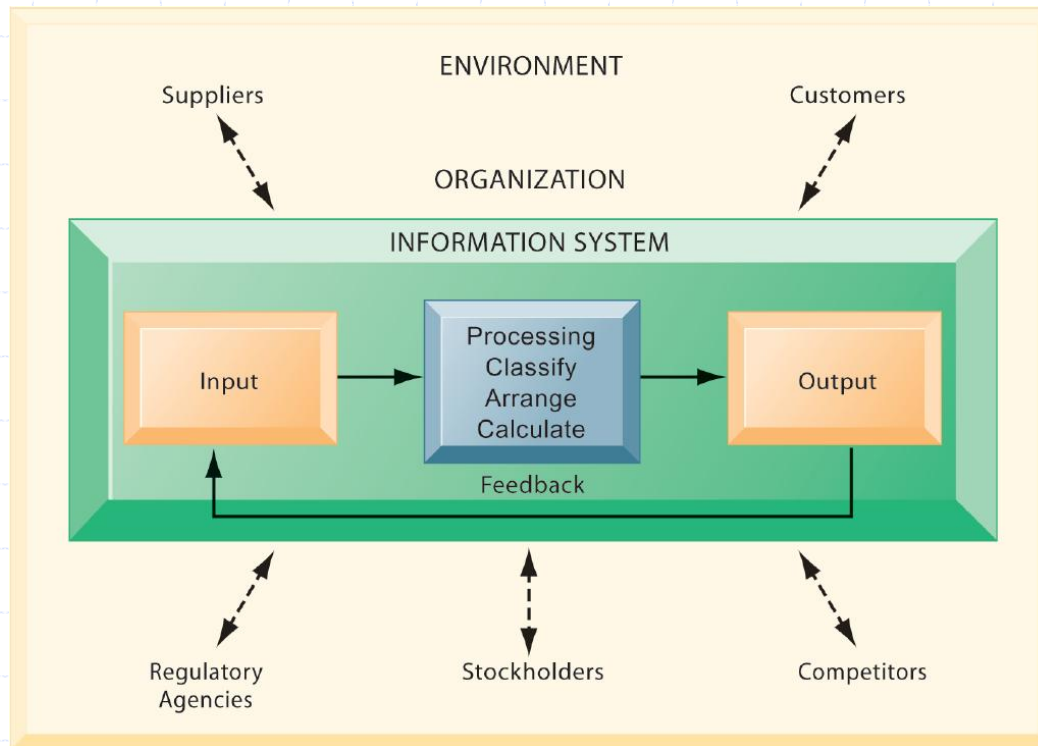
- Various hardware/software, networking, data management components necessary for IS to operate
 - ◆ PCs, disk drives, hand held PDA, iPods
 - ◆ Operating Systems - Windows, Linux,
 - ◆ MS Office desktop productivity suite, programs, ...
- IS and IT often used interchangeably

➤ Fundamental Roles of IS in Business

- Support of business process and operations
- Support of business decision making
- Support of strategies for competitive advantage

Information System

➤ Functions



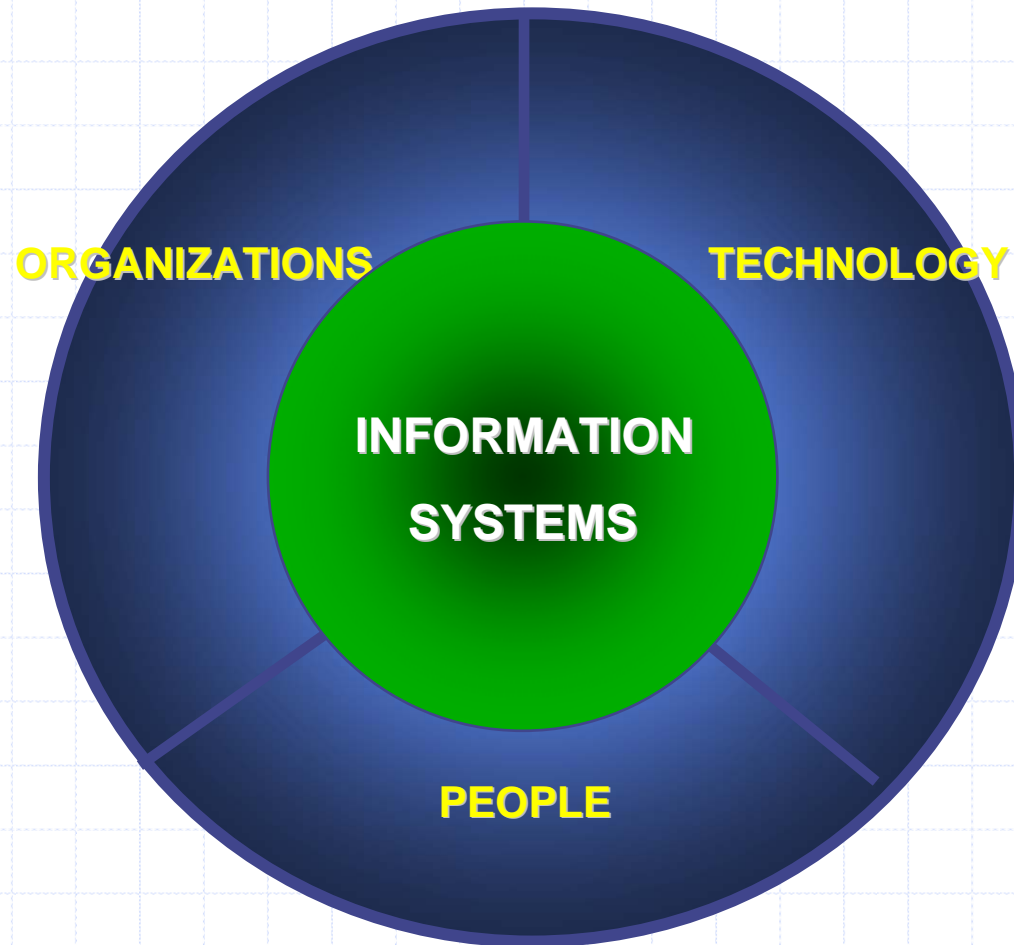
- ◆ Basic Activities
- ◆ Feedback
- ◆ Environmental Actors

Information System

➤ Role of People and Organizations

- Information Systems Literacy
 - ◆ Behavioral and technical approach
- Computer Literacy
 - ◆ Focuses on knowledge of IT
- Management Information Systems (MIS)
 - ◆ Focuses on Information System Literacy → COMP5131
 - ◆ Issues surrounding development, use, impact of information systems, used by managers and employees

Dimensions of Information Systems



Information Systems

➤ Organizations

- Integral Part – Vice Versa
- Coordinate work through structured hierarchy and business processes
 - ◆ Business processes → Logically related tasks and behaviors for accomplishing work
 - Fulfilling an order, Developing a new product
 - May be informal or include formal rules
- Culture embedded in information systems
 - ◆ What is Organizational Culture ?
 - ◆ Example → UPS's concern with placing service to customer first

Information Systems

➤ People

- Requires skilled people → Build, Maintain and Use
- Adequate Training
- Employee attitudes affect ability to use systems productively
- Role of managers
 - ◆ Perceive business challenges
 - ◆ Set organizational strategy
 - ◆ Allocate human and financial resources
 - ◆ Creative work, new products, services

Information Systems

➤ Technology

- IT Infrastructure → Foundation or platform that information systems built on
 - ◆ Computer hardware
 - ◆ Computer software
 - ◆ Data management technology
 - ◆ Networking and telecommunications technology
 - Internet and Web, extranets, intranets
 - Voice, video communications

Information System

Case Study - United Parcel Service

Using a handheld computer called a Delivery Information Acquisition Device (DIAD), UPS drivers automatically capture customers' signatures along with pickup, delivery, and time card information. UPS information systems use these data to track packages while they are being transported.



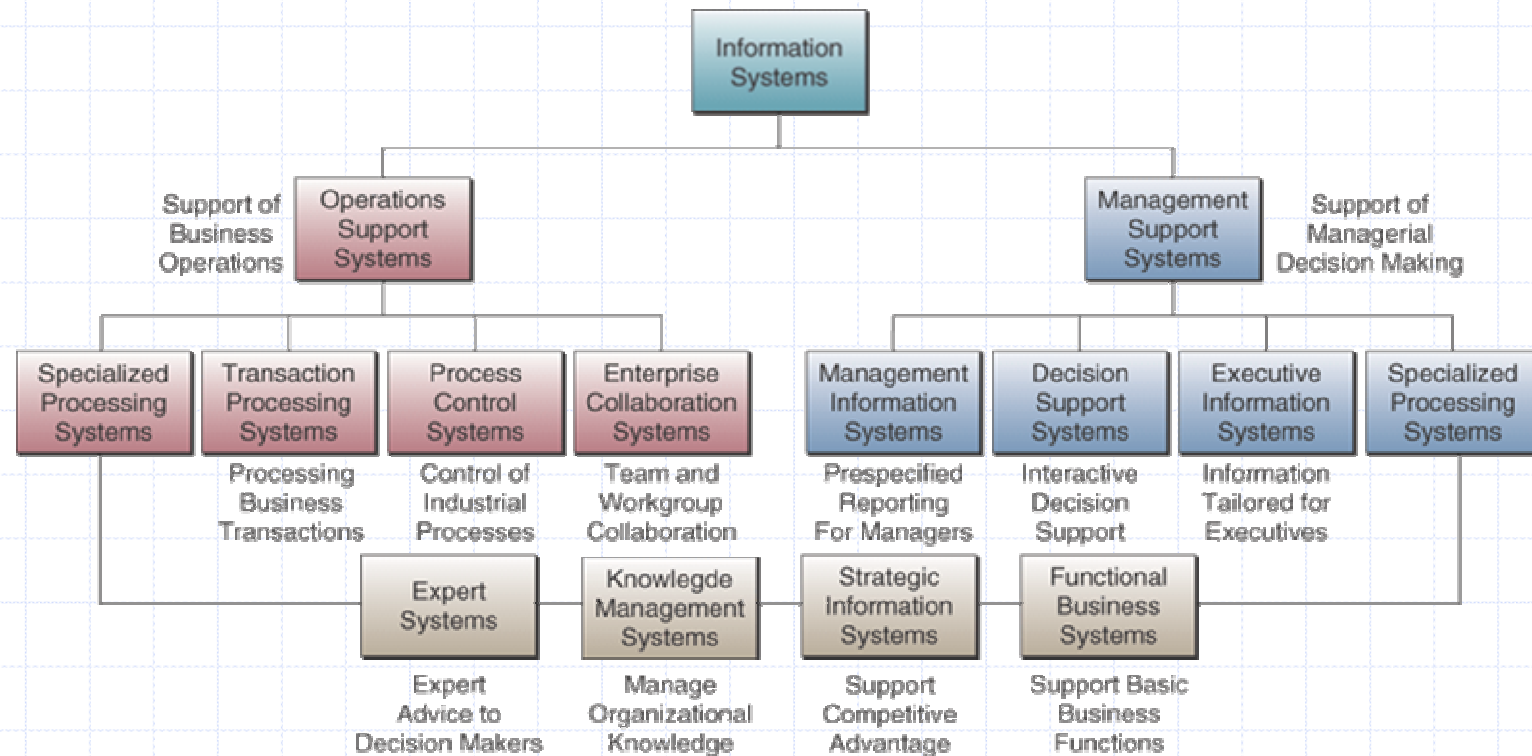
Information System

UPS Competes Globally with Information Technology

- **Case Study Questions**

- What are the inputs, processing, and outputs of UPS's package tracking system?
- What technologies are used?
- How are these technologies related to UPS's business strategy?
- What problems do these technologies solve?
- What would happen if these technologies were not available?

Types of Information Systems



Types of Operations Support Systems

➤ Transaction Processing Systems

- Record and process data from business transactions
- Examples: sales processing, inventory systems, accounting systems

➤ Process Control Systems

- Monitor and control physical processes
- Example: in a petroleum refinery use sensors to monitor chemical processes

➤ Enterprise Collaboration Systems

- Enhance team and work group communications
- Examples: e-mail, videoconferencing

Processing Transactions

➤ Batch Processing

- Accumulate transactions over time and process periodically
- Example: a bank processes all checks received in a batch at night

➤ Online Processing

- Process transactions immediately
- Example: a bank processes an ATM withdrawal immediately

Management Support Systems

➤ What are they?

- Provide information and support for effective decision making by managers

Types of Management Support Systems

➤ Management Information Systems (MIS)

- Provide reports and displays to managers
- Example: daily sales analysis reports

➤ Decision Support Systems (DSS)

- Provide interactive ad hoc support for decision making
- Example: A what-if-analysis to determine where to spend advertising dollars

➤ Executive Information Systems (EIS)

- Provide critical information for executives and managers
- Example: easy access to actions of competitors

Other Categories

➤ Expert Systems

- Provide expert advice and act as consultant to users
- Example: process monitor, credit application advisor

➤ Knowledge Management Systems

- Supports creation, organization of business knowledge
- Example: Internet access to best business practices

➤ Strategic Information Systems

- Support operations/management processes that provide strategic product/services for competitive edge
- Example: Online stock trading, shipment tracking

The Problem Solving Approach

- Few Business problems are simple or straightforward
- A Model of The Problem Solving Process
 - Problem Identification
 - Solution Design
 - Solution Evaluation and Choice
 - Implementation

Problem Identification

➤ Includes

- Agreement that problem exists
- Definition of problem
- Causes of problem
- What can be done given resources of firm

➤ Typical Organizational Problem

- Outdated business processes
- Unsupportive culture and attitudes
- Political in-fighting
- Turbulent business environment, change
- Complexity of task
- Inadequate resources

Problem Identification

➤ Typical Technology Problems

- Insufficient or aging hardware, Outdated Software
- Insufficient telecommunications/database capacity
- Incompatibility of old systems with new technology
- Rapid technological change

➤ Typical People Problems

- Lack of employee training
- Difficulties of evaluating performance
- Legal and regulatory compliance
- Work environment
- Poor or indecisive management
- Lack of employee support and participation

Model for Problem Solving Approach

➤ Solution Design

- Often many possible solutions
- Consider as many as possible
- Range of Solutions → Technology, Organization, People
- Most Successful Solutions → Integrated Approach

➤ Evaluation and Choice

- Cost
- Feasibility given resources and skills
- Length of time needed to implement solution

Model for Problem Solving Approach

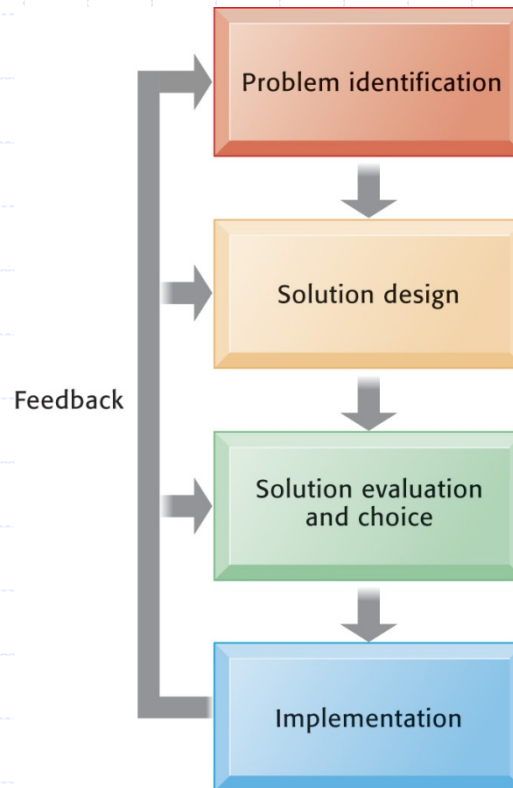
➤ Implementation

- Building or purchasing solution
- Testing solution, employee training
- Change management
- Measurement of outcomes
- Feedback, evaluation of solution

➤ Evaluation and Choice

- Cost
- Feasibility given resources and skills
- Length of time needed to implement solution

Model for Problem Solving Approach



➤ Problem Solving: Process, Not an Event

- Sometimes chosen solution doesn't work or needs adjustment

Role of Critical Thinking

➤ What is Critical Thinking?

- Sustained suspension of judgment with an awareness of multiple perspectives and alternatives
- Without critical thinking, easy to jump to conclusions, misjudge a problem and waste resources
- Best protection against incorrect results

➤ Four Elements

- Maintaining doubt and Suspending judgment
- Being aware of different perspectives
- Testing alternatives and letting experience guide
- Being aware of organizational and personal limitations

Connections

➤ Business Objectives, Problems, Solutions

- When firms cannot achieve business objectives these objectives become challenges
- Information systems often present solutions, partially or fully, to these challenges

Interactive Session – Saks Customers

➤ Questions

- What is the problem affecting the performance of Saks?
- What information does Saks need to solve this problem? What other pieces of data does Saks need in addition to those in its nine-box grid? Where can Saks acquire this information?
- What role should managers and employees have in designing the solution?
- Design a report that represents the information Saks needs to implement its merchandising strategy
- How might a better understanding of customer preference support Saks' strategy of improving existing facilities?

Information Systems and Business Careers

➤ Accounting

- Accountants → Information Systems
 - ◆ Summarize Transactions
 - ◆ Create Financial Records
 - ◆ Organize Data
 - ◆ Perform Financial Analysis

➤ Skills

- IT, software used in auditing, accounting functions
- System and network security issues
- Enterprise systems for financial reporting

Information Systems and Business Careers

➤ Finance

- Financial Management/Services → Information Systems
 - ◆ Develop Financial Reports
 - ◆ Direct Investment Activities
 - ◆ Implement Cash Management Strategies

➤ Skills

- IT, software used by financial managers and financial services firms
- New technologies for financial transactions, trading
- Enterprise systems for financial reporting

Information Systems and Business Careers



Equities analysts depend heavily on information systems for organizing and analyzing very large amounts of financial data

Information Systems and Business Careers

➤ Marketing and Advertising

- Technology driven changes
- Internet Advertising → Fastest growing, 30% annually
 - ◆ 13 billion US\$ in 2006
 - ◆ Expected 200,000 new jobs by 1012 in US

➤ Skills

- Understanding of Internet, marketing database systems
- Impact on marketing activities → brand development, promotion, sales
- Enterprise systems for product management, sales force management, customer relationship management

Information Systems and Business Careers

➤ Operations Management Services/Manufacturing

- Coordinate and Optimize Resources to produce goods and services
 - ◆ Industrial Production Managers
 - ◆ Administrative Services Managers
 - ◆ Operation Analysts

➤ Skills

- Hardware and software platforms for operations management
- How enterprise systems for production management, supplier management, sales force management, customer relationship management are used to achieve efficient operations and meet other goals

Information Systems and Business Careers

➤ Management

- Largest single group in US – 14 million members
 - ◆ Industrial Production Managers
 - ◆ Administrative Services Managers
 - ◆ Operation Analysts

➤ Skills

- Hardware and software to improve management, enhance leadership and coordination, improve achievement of overall corporate objectives
- In-depth understanding of how enterprise systems are used to achieve efficient operations and help make better decisions for improving firm performance

Information Systems and Business Careers

➤ Information Systems

- Most dynamic of all business professions, fastest 5/20
- IT → Key business objectives
- Outsourcing and Offshoring
 - ◆ Impact
 - ◆ Managerial IS positions ↑, Lower-level technical jobs ↓

➤ Skills

- In-depth knowledge of how new and emerging hardware and software to achieve six business objectives
- An ability to take a leadership role in the design and implementation of new information systems

Information Systems and Business Careers

➤ Common Requirements

- How IT helps achieve six business objectives
- Central role of databases
- Information analysis, impact of environment
- Working with specialists and systems designers
- Ethical, social, legal environment and issues
 - ◆ Use of IT to meet legal requirements