Solutions – Chapter 1

Ethical and Societal Issues

Who Is Interested in Your Social Network Updates?

Discussion Questions

1. Student responses may vary. Individual privacy is an important social issue. People can inadvertently disclose personal information while using the Internet. Once private information or photos have been placed on the Internet, it can be very difficult to remove them. Selling access to this kind of information may seem unethical.

2. Student responses will vary. Companies such as Comcast, a major communications company, hire full-time social media experts who interact with customers online to address problems and complaints. For example, if you complain about Comcast service on Twitter, you might be contacted by a Comcast employee offering to help you.

Critical Thinking Questions

1. Businesses are flocking to social networks to harvest consumer sentiment for use in guiding product development. They are also watching social networks to confront negative publicity and to develop targeted advertisements.

2. A computer-based information system (CBIS) is a single set of hardware, software, databases, telecommunications, people, and procedures that are configured to collect, manipulate, store, and process data into information. This is similar to the monitoring of social media.

Information Systems @ Work

Aldra Manages Workflow to Support Customization

Discussion Questions

1. Aldra found that the complexities of building its high-quality products were causing confusion in the order processing system and delays in manufacturing, leading to missed deadlines. Order specifications were sometimes incomplete or incorrect, and correcting orders is time consuming.

Lack of coordination among departments resulted in additional errors that occasionally resulted in costly idle time on the production line. The lack of coordination also led to errors in calculating manufacturing costs, which reduced profits.

2. Aldra purchased information systems from Infor Corporation that allowed the company to better coordinate efforts across departments. Using the software, Aldra now models its critical core processes (workflows) and then uses the models to improve communication across the value chain. The models define the specific employees involved in the various stages of the process. The system then generates daily activities for each employee displayed in a particular area on the computer desktop. As activities approach their deadline, they are moved to the top of the list.

Critical Thinking Questions

1. Responses will vary.

2. Responses will vary.

Review Questions

1. The components of an information system are: input, processing, and output.

2. Data is the raw material from which information is composed. Information includes a context for the data. Knowledge is an awareness of how to apply the information.

3. Characteristics of valuable information:
   - Accurate
   - Complete
   - Economical
   - Flexible
   - Reliable
   - Relevant
   - Simple
   - Timely
   - Verifiable
   - Accessible
   - Secure

4. A computer-based information system (CBIS) is a single set of hardware, software, databases, telecommunications, people, and procedures that are configured to collect, manipulate, store, and process data into information.

The six components of a CBIS are hardware (computer equipment), software (programs), people, telecommunications (link computer systems into effective networks), databases (organized collections of facts and information), and procedures detailing use.

5. A transaction processing system (TPS) and a management information system (MIS) are both common types of computer-based information systems used in business today. A transaction processing system (TPS) is an organized collection of people, procedures, software, databases, and devices used to record completed business transactions. The primary inputs for a payroll TPS are the number of employee hours worked during the week and the pay rate. The primary output consists of paychecks. A management information system (MIS) is an organized collection of people, procedures, software, databases, and devices that provides routine information to managers and decision makers. Producing a report that describes inventory that should be ordered is an example of an MIS.

6. Electronic-commerce (e-commerce) involves any business transaction executed electronically between parties such as companies (business-to-business), companies and consumers (business-to-consumer), business and the public sector, and consumers and the public sector. Mobile-commerce (m-commerce) refers to transactions conducted anytime, anywhere using wireless communications.

7. Multimedia is a natural extension of virtual reality. It can include photos and images, the manipulation of sound, and special 3D effects. Once used primarily in movies, 3D technology can be used by companies to design products, such as motorcycles, jet engines, bridges, and more. Autodesk, for example, makes exciting 3D software that companies can use to design large skyscrapers and other buildings. The software can also be used by Hollywood animators to develop action and animated movies.

8. Knowledge management systems are organized collections of people, procedures, software, databases and devices used to create, store, share, and use the organization’s knowledge and experience. Examples will vary.

9. The technology acceptance model (TAM) specifies the factors that can lead to higher acceptance and usage of technology in an organization, including the perceived usefulness of the technology, the ease of its use, the quality of the information system, and the degree to which the organization supports the use of the information system.

10. User satisfaction is what a user thinks and feels about a product and its quality.

11. Organizations employ various strategies to achieve a competitive advantage. Among these are the forming of alliances with other companies, developing a niche market, maintaining competitive costs, and creating product differentiation.

12. Productivity is a measure of the output achieved divided by the input required (Productivity [in percent] = [Output/Input] X 100). It is difficult to estimate the impact that investments in information technology have on productivity because the information system is not productive by itself. It takes well-managed, trained, and motivated employees to use the IS in a way that delivers measurable gains in output.

13. Customer relationship management (CRM) programs help companies of all sizes manage all aspects of customer encounters, including marketing and advertising, sales, customer service after the sale, and programs to retain loyal customers.

14. Total cost of ownership is a measure of the total cost of owning computer equipment, including desktop computers, networks, and large computers.

15. The role of a systems analyst is multifaceted. Systems analysts help users determine what outputs they need from the system and construct the plans needed to develop the necessary programs that produce these outputs. Systems analysts then work with one or more programmers who make sure that the appropriate programs are purchased, modified from existing programs, or developed.

16. The operations component of a typical IS department focuses on the use of information systems in corporate or business unit computer facilities. It tends to focus more on the efficiency of information system functions rather than their effectiveness.

17. The overall role of the chief information officer (CIO) is to employ an IS department's equipment and personnel in a manner that will help the organization attain its goals. The CIO is usually a manager at the vice-presidential level concerned with the overall needs of the organization. He or she is responsible for corporate-wide policy, planning, management, and acquisition of information systems.

Discussion Questions

1. An ideal automated license plate renewal system can be broken down by inputs, processing, outputs, and feedback, which might include such features as: Inputs – Web site form that asks for existing number and expected expiration date; Processing - provides a renewal form, a date for next renewal, and payment options; Output – immediate on-screen and e-mail confirmations and a report detailing result; and, Feedback - given to determine if the process is working appropriately.

2. Student responses will vary. An ideal system may include the following components:
   - Create a schedule
   - Review the schedule
   - Modify the schedule:
   - Delete a course
   - Add a course

3. One possible answer:

Raw materials	**Used CDs from students**
Inbound logistics	Prepaid shipping envelopes
Warehouse and storage	Storage room/containers and inventory system
Process control system	Ability to provide quotes to buyers and sellers of CDs and process payments
Customer service	Phone/email support and ordering, tracking of orders
Marketing and sales	Marketing plan
Retrieval system	Ability to locate CDs in inventory for outbound shipping
Outbound logistics	Ability to send/track CDs sold

4. Valuable information is accurate, complete, economical, flexible, reliable, relevant, simple, timely, verifiable, accessible, and secure. It does not become useful unless the knowledge of how to use it is available. The following table summarizes characteristics of valuable information and provides examples of each characteristic:

Characteristic	Examples
Accurate	Information is error free. For example, hourly wage amount to be used in paycheck calculations must be accurate.
Complete	All aspects of information are stored. For instance, good faith estimate of home purchase price by law must be complete.
Economical	Information needs to be maintained on reasonably priced media. Survey information represents population but was gathered at a lower cost from a percentage of total population.
Flexible	Information has been stored in a way to ensure future uses might be developed. For example, data in a spreadsheet can be used to calculate additional values.
Reliable	Information can be trusted with no redundancy or anomalies. A price quotation that comes from reputable vendor is an example.
Relevant	Information reflects true situation. An example is a simulation model of automated guided vehicles which needs to know vehicle loading times, not the cost of electricity.
Simple	Avoids information overload. For instance, year end inventory report contains key figures and summarized information.
Timely	Information arrives when needed. Month old stock prices might not be a good indicator of today's prices.
Verifiable	Information can be checked. For instance, average home price in an area can be verified by checking with Chamber of Commerce and various realty agents.
Accessible	Managers may query database to retrieve the information. A planner queries inventory database to determine amount of wood screws in stock.
Secure	Information is kept in a password-protected database management system. A disgruntled ex-employee is unable to access system and destroy information.

5. A knowledge management system (KMS) is an organized collection of people, procedures, software, databases, and devices used to create, store, and use the organization's knowledge and experience. Research has shown that the success of a KMS is linked to how easy it is to use and how satisfied users are with it. A decision support system (DSS) is an organized collection of people, procedures, software, databases, and devices that support problem-specific decision making. The focus of a DSS is on making effective decisions.

6. Virtual reality can provide a realistic environment for learning in conditions that might otherwise result in harm or expense. New drivers could benefit from VR because the potential for serious injury or damage is eliminated until the driving process is better understood.

The system could take the form of a hardware/software combination that simulates road conditions and car controls. Potential drawbacks might include a difference from reality and false sense of security. Benefits would be cost savings and safety-related issues.

7. Student responses will vary. Information systems can be used to enhance a manager's ability to formulate, control, and analyze corporate planning activities.

8. Firms are seeing widespread growth in positions related to the Internet. Among these are Webmaster (manages Website related issues), Network Specialists, Hardware and Webserver Specialists, Marketing and E-Commerce Specialists, Programmers, Graphic Artists, and Content Developers.

9. Technology diffusion is a measure of how widely technology is spread throughout an organization. An organization in which computers and information systems are located in most departments and areas has a high level of technology diffusion. Technology infusion, on the other hand, is the extent to which technology permeates an area or department. In other words, it is a measure of how deeply embedded technology is in an area of the organization. Some architectural firms, for example, use computers in all aspects of designing a building from drafting to final blueprints. The design area, thus, has a high level of infusion.

10. The purpose of this question is to encourage students to think about what the forces in Porter's model translate to in the real world. The following table provides guidelines and sample responses for the discussion. A company called *New Wave Multimedia Desktop Computer Corporation* was selected to illustrate the analysis.

Competitive Force	**Strategic Plan's Counter to Competitive Force**
Rivalry among existing competitors	Develop new products and new looks to standard products
Threat of new entrants	Develop strategic alliances with software/hardware producers to dissuade new startup companies
Threat of substitute products	Differentiate product line so that fewer substitutes are available: integrate high end speakers, monitors, audio and video components into computer system

Bargaining power of buyers	Develop high quality service reputation and maintain buyer profiles: make buyers desire a relationship with this corporation through high levels of trust and support
Bargaining power of suppliers	Develop long term relationships with suppliers and integrate inventory systems with information technology

11. A strategy which may serve the company well is the development of a *niche market*. This would help them build and protect their spot as a leading vendor of high-end multimedia computer systems. Student responses will vary. The best approach might be to encourage them to think in terms of strategic alliances, niche markets, competitive cost approaches, and product differentiation used either alone or in combination to protect the 'turf' of their example corporation.

12. The systems analyst would work with the sales representative to determine the outputs needed. The analyst would work with programmers to purchase, modify, or develop suitable programs. Programmers would then use the plans developed by systems analysts to develop or adapt computer programs to produce desired outputs.

13. The overall role of the chief information officer (CIO) is to employ an IS department's equipment and personnel in a manner that will help the organization attain its goals. The CIO is responsible for corporate-wide policy, planning, management, and acquisition of information systems. Some of the CIO's top concerns include integrating IS operations with corporate strategies, keeping up with the rapid pace of technology, and defining and assessing the value of systems development projects. This individual works with other high-level officers of an organization, including the chief financial officer (CFO) and the chief executive officer (CEO), in managing and controlling total corporate resources.

14. The supply chain would include high school students and college students.

15. Responses will vary. Students should indicate which IS position most appeals to them and why.

16. Responses will vary. Students should list some career goals and how a computer-based information system can be used to achieve them.

Problem-Solving Exercises

1. Student should prepare a data disk and a backup disk for the problem solving exercises and other computer-based assignments you will complete in this class.

2. Students should search through several business magazines (Business Week, Computerworld, PC Week, etc.) or an Internet search engine for recent articles that describe potential social or ethical issues related to the use of an information system.

3. A possible job description for a systems analyst follows:

   As a Systems Analyst, you will be accountable for providing technical support in a Vehicle Processing Center environment.

   Duties:

   - *Work with End Users to determine systems and application requirements*
   - *Root Cause Analysis as necessary and Documentation of Site Infrastructure*
   - *Level 1 & 2 Help Desk support for Incidents & Service Requests*
   - *Rollout of Desktop & Laptop Hardware*
   - *Troubleshooting Basic Networking – TCP/IP, DHCP, Cisco VPN, Wi-Fi*
   - *Support of Mobile (RF Narrowband and GSM) and Tethered (USB) Scanners*
   - *Desktop administration including Windows XP & Windows 7, Microsoft Office 2007 and Third Party*
   - *Support of Thin Clients, Mobile Phones, Blackberry Devices, Printers, and A/V equipment*

   Source: www.monster.com

Team Activities

1. Students should print and hand in a database with team information.

2. Students should interview a company that recently introduced new technology.

3. Students should submit a report describing their findings.

Web Exercises

1. After accessing the Web site, students could look for information about Course Technology.

2. Students should submit a report describing their findings.

3. Students should use the Internet to search for information about a company that has excellent or poor product quality and submit a brief report describing what they found.

Career Exercises

1. Students should write a brief report on their career choice and two additional careers of interest.

2. Students should write a report describing the job opportunities, job duties, and starting salaries for careers in finance, management, information systems, and two other career of interest.

3. Students should write a report describing how five companies in their career use information systems to help achieve a competitive advantage.

Case Studies

Case 1: Information System as an Effective Force Against H1N1 Pandemic

Discussion Questions

1. The business intelligence software provided daily reports from the system informing physicians and nurses of the current status in all emergency rooms and of any changes in the status quo. Using its new information system, EMA was the first to spot the outbreak of H1N1 in the Northeast. Doctors knew that about 6 percent of patients complain of flu-like symptoms on any given day. When the EMA BI system reported that 30 percent of patients were arriving with flu symptoms, the doctors warned the country that H1N1 was on the move.

2. Student responses will vary. However, in this case, doctors knew that about 6 percent of patients complain of flu-like symptoms on any given day. When the EMA BI system reported that 30 percent of patients were arriving with flu symptoms, the doctors warned the country that H1N1 was on the move.

Critical Thinking Questions

1. Business intelligence or BI systems are designed to extract, or mine, useful information out of the data collected by businesses or organizations into databases. That data may consist of detailed sales information collected at the time of a sale or patient symptom information collected at the time of an examination. Tracking medical statistics across their 21 emergency rooms was similar to tracking sales statistics across retail outlets.

2. Student responses will vary.

Case 2: Creativity Moves Up the Value Chain

Discussion Questions

1. In 2007, Creativity found its business model challenged by growing globalization and economic hardships. To save money, some of its customers decided to "do away with the middleman," and purchase crafting materials directly from the Asian manufacturers. Creativity needed to find new ways to provide value to its customers.
2. The company acquired data about purchase transactions from retailers in craft-related markets and added that data to its data warehouse. Using the Cognos software and Smart Software's SmartForecast program, Creativity determined a need for more "design-oriented, fashion-oriented" products—especially ones associated with popular U.S. media, such as television shows and celebrities.

Critical Thinking Questions

1. By improving communication between its brands and sharing its research findings, Creativity elevated the corporate awareness of the entire company and created an environment where everyone is working towards common goals. To further communication, CIO Jim Mulholland used Cognos to develop a software dashboard that provides corporate news and information on the desktops of company managers across its brands. These communication improvements help safeguard against duplication of effort. Each brand is aware of what the other brands are experiencing and working on, allowing brands to learn from each other.

2. Creativity and other struggling businesses want to create valuable information from low-cost data to learn how to work more intelligently and efficiently. Integrating data from sources, and elsewhere into data warehouses for analysis allows companies to discover what products are likely to sell, what products return the highest profits, where to cut costs, where to invest for the highest return, and other key information to fuel smart decision making.

Questions for Web Case

Altitude Online: Outgrowing Systems

Discussion Questions

1. The systems need to be able to share information. Four disparate systems make this difficult.

2. Jon's first step should be to define the system's requirements: what the system is required to do.

Critical Thinking Questions

1. Jon would need to think about the time required to design the system and the costs involved.

2. While visiting the branch offices, Jon could explain the need for the new system and request suggestions for improvement.

Altitude Online: Addressing the Needs of the Organization

Discussion Questions

1. By starting from scratch with a unified platform, the system engineers will be able to craft a system that meets currently neglected business needs. The new system can provide state-of-the-art information management practices that give the company a strong competitive advantage.

2. Altitude Online requires industry-specific systems. Those in the online advertising and marketing industry have information system needs that go beyond standard business systems.

Critical Thinking Questions

1. The stakeholders are in twelve locations across the country.

2. Altitude Online could benefit from the expertise of a company like SAP in the following areas: supply chain management, financials, project management, human resource, customer relationship management, and a variety of data services.