Business Driven Information Systems 6th edition Baltzan Solutions Manual

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DECISIONS AND PROCESSES VALUE DRIVEN BUSINESS

2 CHAPTER

This guide provides a number of classroom activities, videos, and debates to accompany Business Driven Information Systems Fourth Edition. A few course suggestions:

- Create one or two test questions based on the classroom activity to help reward students who attend lectures.
- Many professors have found that assigning an activity and then lecturing on the material helps students gain a deeper understanding of the core MIS concepts as they have already struggled with applying the material to a real-world situation.
- Asking a small group of students to explain their answer to the activity to the entire class after completion ensures students come to class prepared. I select a different group each activity to explain their answer and they do not want to look unprepared in front of their fellow classmates. It is a powerful motivator to get my students reading prior to class. After the activity and student's presentations then I lecture – keeps my students engaged and helps to achieve a higher level of learning outcomes as they are constantly tasked with applying the concepts during class.
- Create an Ask the Professor Discussion board that runs the entire course where students can ask course and content related questions. I typically promise to respond within 24 hours and I always encourage my students to check the discussion board before sending an email. Many times if one student a questions so do other students.
- **Three Before Me Rule! This is something I have found that saves a great deal of time answering email. I state the Three Before Me rule in my syllabus. Before a student comes to me with a question they must provide three sources they used to answer the question themselves. This significantly cuts down on emails as many times students can find the answer to their questions but it seems easier just to email the professor. Sources can include the syllabus, the Ask The Professor Q&A Discussion Board, classmates, the textbook, etc. If I ask the student for the three sources and they do not have them I dock participation points. Works great on significantly cutting down my emails and helps to prepare my students for the real world!
- The core chapter material is covered in detail in the PowerPoint slides. Each slide contains detailed teaching notes including exercises, class activities, questions, and examples. Please review the PowerPoint slides for detailed notes on how to teach and enhance the core chapter material.

Enjoy your course and best of luck!
Paige Baltzan

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Decision making and problem solving encompass large-scale, opportunity-oriented, strategically focused solutions. Students today must posse's decision-making and problem-solving abilities to compete in the ebusiness world. Organizations today can no longer use a "cook book" approach to decision making. This chapter focuses on technology to help make decisions, solve problems, and find new innovative opportunities including:

- Transaction processing system
- Decision support systems
- Executive information systems
- Artificial intelligence (AI)
- Business process modeling
- Business process management
- Business process improvement
- Business process reengineering

SECTION 2.1 – DECISION SUPPORT SYSTEMS

- Making Organizational Business Decisions
- Measuring Organization Business Decisions
- Using MIS to Make Business Decisions
- Using AI to Make Business Decisions

SECTION 2.2 – BUSINESS PROCESSES

- Managing Business Processes
- Using MIS to Improve Business Processes

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SECTION 2.1
DECISION SUPPORT SYSTEMS

What is the value of information? The answer to this important question varies depending on how the information is used. Two people looking at the exact same pieces of information could extract completely different value from the information depending on the tools they are using to look at the information. This chapter discusses technologies that people can use to help make decisions and solve problems.

LEARNING OUTCOMES

Learning Outcome 2.1: Explain the importance of decision making for managers at each of the three primary organization levels along with the associated decision characteristics.

Decision-making skills are essential for all business professionals, at every company level, who make decisions that run the business. At the operational level, employees develop, control, and maintain core business activities required to run the day-to-day operations. Operational decisions are considered structured decisions, which arise in situations where established processes offer potential solutions. Structured decisions are made frequently and are almost repetitive in nature; they affect short-term business strategies.

At the managerial level, employees are continuously evaluating company operations to hone the firm's abilities to identify, adapt to, and leverage change. Managerial decisions cover short- and medium-range plans, schedules, and budgets along with policies, procedures, and business objectives for the firm. These types of decisions are considered semistructured decisions; they occur in situations in which a few established processes help to evaluate potential solutions, but not enough to lead to a definite recommended decision.

At the strategic level, managers develop overall business strategies, goals, and objectives as part of the company's strategic plan. They also monitor the strategic performance of the organization and its overall direction in the political, economic, and competitive business environment. Strategic decisions are highly unstructured decisions, occurring in situations in which no procedures or rules exist to guide decision makers toward the correct choice. They are infrequent, extremely important, and typically related to long-term business strategy.

Learning Outcome 2.2: Define critical success factors (CSFs) and key performance indicators (KPIs), and explain how managers use them to measure the success of MIS projects.

Metrics are measurements that evaluate results to determine whether a project is meeting its goals. Two core metrics are critical success factors and key performance indicators. CSFs are the crucial steps companies perform to achieve their goals and objectives and implement their strategies and include creating high-quality products, retaining competitive advantages, and reducing product costs. KPIs are the quantifiable metrics a company uses to evaluate progress toward critical success factors. KPIs are far more specific than CSFs; examples include turnover rates of employees, percentage of help-desk calls answered in the first minute, and number of products returned.

It is important to understand the relationship between critical success factors and key performance indicators. CSFs are elements crucial for a business strategy's success. KPIs measure the progress of CSFs with quantifiable

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measurements, and one CSF can have several KPIs. Of course, both categories will vary by company and industry. Imagine improved graduation rates as a CSF for a college.

Learning Outcome 2.3: Classify the different operational support systems, managerial support systems, and strategic support systems, and explain how managers can use these systems to make decisions and gain competitive advantages.

Being able to sort, calculate, analyze, and slice-and-dice information is critical to an organization's success. Without knowing what is occurring throughout the organization there is no way that managers and executives can make solid decisions to support the business. The different operational, managerial, and strategic support systems include:

- Operational: A transaction processing system (TPS) is the basic business system that serves the operational level (analysts) in an organization. The most common example of a TPS is an operational accounting system such as a payroll system or an order-entry system.
- Managerial: A decision support system (DSS) models information to support managers and business professionals during the decision-making process.
- Strategic: An executive information system (EIS) is a specialized DSS that supports senior level executives within the organization.

Learning Outcome 2.4: Describe artificial intelligence and identify its five main types.

Artificial intelligence (AI) simulates human thinking and behavior, such as the ability to reason and learn. The five most common categories of AI are:

1. Expert systems—computerized advisory programs that imitate the reasoning processes of experts in solving difficult problems.
2. Neural networks—attempts to emulate the way the human brain works.
3. Genetic algorithm—a system that mimics the evolutionary, survival-of-the-fittest process to generate increasingly better solutions to a problem.
4. Intelligent agents—a special-purpose knowledge-based information system that accomplishes specific tasks on behalf of its users.
5. Virtual reality—a computer-simulated environment that can be a simulation of the real world or an imaginary world.

CORE MATERIAL

The core chapter material is covered in detail in the PowerPoint slides. Each slide contains detailed teaching notes including exercises, class activities, questions, and examples. Please review the PowerPoint slides for detailed notes on how to teach and enhance the core chapter material.

Please review www.Baltzan.net for current videos, discussions, activities, and cases related to the core material.

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SECTION 2.2
BUSINESS PROCESSES

LEARNING OUTCOMES

Learning Outcome 2.5: Explain the value of business processes for a company, and differentiate between customer-facing and business-facing process.

A business process is a standardized set of activities that accomplish a specific task, such as processing a customer's order. Business processes transform a set of inputs into a set of outputs (goods or services) for another person or process by using people and tools. Without processes, organizations would not be able to complete activities. Customer-facing processes result in a product or service that is received by an organization's external customer. Business-facing processes are invisible to the external customer but essential to the effective management of the business.

Learning Outcome 2.6: Demonstrate the value of business process modeling, and compare As-Is and To-Be models.

Business process modeling (or mapping) is the activity of creating a detailed flowchart or process map of a work process showing its inputs, tasks, and activities, in a structured sequence. A business process model is a graphic description of a process, showing the sequence of process tasks, which is developed for a specific purpose and from a selected viewpoint.

Business process modeling usually begins with a functional process representation of what the process problem is, or an As-Is process model. As-Is process models represent the current state of the operation that has been mapped, without any specific improvements or changes to existing processes. The next step is to build a To-Be process model that displays how the process problem will be solved or implemented. To-Be process models show the results of applying change improvement opportunities to the current (As-Is) process model. This approach ensures that the process is fully and clearly understood before the details of a process solution are decided upon.

Learning Outcome 2.7: Differentiate among automation, streamlining, and reengineering.

Business process improvement attempts to understand and measure the current process and make performance improvements accordingly. Automation is the process of computerizing manual tasks, making them more efficient and effective, and dramatically lowering operational costs. Streamlining improves business process efficiencies by simplifying or eliminating unnecessary steps. Bottlenecks occur when resources reach full capacity and cannot handle any additional demands; they limit throughput and impede operations. Streamlining removes bottlenecks, an important step if the efficiency and capacity of a business process are being increased. Business process reengineering (BPR) is the analysis and redesign of workflow within and between enterprises and occurs at the systems level or companywide level and is the end-to-end view of a process.

CORE MATERIAL

The core chapter material is covered in detail in the PowerPoint slides. Each slide contains detailed teaching notes including exercises, class activities, questions, and examples. Please review the PowerPoint slides for detailed notes on how to teach and enhance the core chapter material.

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CHAPTER TWO
CLOSING MATERIAL

OPENING CASE TWO QUESTIONS
ROBOTS TOOK MY JOB

1. **Knowledge**: Define the three primary types of decision-making systems and how robots in the workplace could affect each.
    a. Decision-making skills are essential for all business professionals, at every company level, who make decisions that run the business. At the operational level, employees develop, control, and maintain core business activities required to run the day-to-day operations. Operational decisions are considered structured decisions, which arise in situations where established processes offer potential solutions. Structured decisions are made frequently and are almost repetitive in nature; they affect short-term business strategies.

    b. At the managerial level, employees are continuously evaluating company operations to hone the firm's abilities to identify, adapt to, and leverage change. Managerial decisions cover short- and medium-range plans, schedules, and budgets along with policies, procedures, and business objectives for the firm. These types of decisions are considered semistructured decisions; they occur in situations in which a few established processes help to evaluate potential solutions, but not enough to lead to a definite recommended decision.

    c. At the strategic level, managers develop overall business strategies, goals, and objectives as part of the company's strategic plan. They also monitor the strategic performance of the organization and its overall direction in the political, economic, and competitive business environment. Strategic decisions are highly unstructured decisions, occurring in situations in which no procedures or rules exist to guide decision makers toward the correct choice. They are infrequent, extremely important, and typically related to long-term business strategy.

2. **Comprehension**: Describe the difference between transactional and analytical information, and determine how robots could affect each for a grocery store such as Safeway.

    Transactional information encompasses all of the information contained within a single business process or unit of work, and its primary purpose is to support the performing of daily operational tasks. Analytical information encompasses all organizational information, and its primary purpose is to support the performing of managerial analysis tasks. Grocery stores use transactional information to make analytical decisions. The transactional information includes customer's names, account number, quantity purchased, date purchased, brands purchased, coupons used, and other types of product purchasing data. The analytical decisions that are made from this information includes:
    - Which types of products did the consumers buy together
    - Which types of products are purchased daily, weekly, monthly
    - When is the busiest time of day for the express lane
    - How many customers typically prefer self-checkout

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3. **Application**: Illustrate the business process model used by a robot to perform an analysis on a patient with a cold.

   Student answers to this question will vary. Be sure they included the following in their business process model

   - Gather data by scanning information from past records
   - Instantly understand all of the patient data
   - Quickly analyze all data files with similar symptoms to determine the best medication for the cold

4. **Analysis**: Explain business process reengineering and how robots might dramatically change the current sales process.

   Business process improvement attempts to understand and measure the current process and make performance improvements accordingly. Streamlining improves business process efficiencies by simplifying or eliminating unnecessary steps. Bottlenecks occur when resources reach full capacity and cannot handle any additional demands; they limit throughput and impede operations. Streamlining removes bottlenecks, an important step if the efficiency and capacity of a business process are being increased. Business process reengineering (BPR) is the analysis and redesign of workflow within and between enterprises and occurs at the systems level or companywide level and the end-to-end view of a process.

   A robot could be used by a customer to evaluate products in a store and select the products they wish to purchase by scanning them. The robot could then pack the items in a box in the warehouse and when the customer leaves the building they could locate the customer's car and carry the box to the car. The robot could accept the payment for the goods and give the customer directions to their next location.

5. **Synthesis**: Formulate different metrics that a personal trainer robot for a for fitness could provide a customer. Potential metrics include:
   - Number of calories burned
   - Number of steps taken
   - Heart rate
   - Distance of run
   - Distance of bike ride
   - Suggest run route

6. **Evaluation**: Argue for or against the following statement: Robots are better than humans in all business capacities. This statement makes for a great classroom debate!

REVIEW QUESTIONS

1. **Why must business professionals understand how MIS supports decision making and problem solving?**
   Decision making is one of the most important and challenging aspects of management. Decisions range from routine choices, such as how many items to order or how many people to hire, to unexpected ones such as what to do if a key employee suddenly quits or needed materials do not arrive. Today, with

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massive volumes of information available, managers are challenged to make highly complex decisions—some involving far more information than the human brain can comprehend, in increasingly shorter time frames.

2. **What is the relationship between critical success factors and key performance indicators? How can a manager use them to understand business operations?**
   Critical success factors (CSFs) are the crucial steps companies perform to achieve their goals and objectives and implement their strategies. Key performance indicators (KPIs) are the quantifiable metrics a company uses to evaluate progress toward critical success factors. KPIs are far more specific than CSFs. It is important to understand the relationship between critical success factors and key performance indicators. CSFs are elements crucial for a business strategy's success. KPIs measure the progress of CSFs with quantifiable measurements, and one CSF can have several KPIs. Of course, both categories will vary by company and industry. Imagine improve graduation rates as a CSF for a college.

3. **What are the three different levels found in a company? What types of decisions are made at each level?**
   A few key concepts about organizational structure will help our discussion of MIS decision-making tools. The structure of a typical organization is similar to a pyramid, and the different levels require different types of information to assist in decision making, problem solving, and opportunity capturing. The operational level supports transactional information, the managerial level supports analytical information and the strategic level supports executive information systems.

4. **Define transaction processing systems and describe the role they play in a business.**
   Transactional information encompasses all the information contained within a single business process or unit of work, and its primary purpose is to support the performance of daily operational or structured decisions. Transactional information is created, for example, when customers are purchasing stocks, making an airline reservation, or withdrawing cash from an ATM. Managers use transactional information when making structured decisions at the operational level, such as when analyzing daily sales reports to determine how much inventory to carry.

5. **Define decision support systems and describe the role they play in a business.**
   Decision support systems (DSSs) model information using OLAP, which provides assistance in evaluating and choosing among different courses of action. DSSs enable high-level managers to examine and manipulate large amounts of detailed data from different internal and external sources. Analyzing complex relationships among thousands or even millions of data items to discover patterns, trends, and exception conditions is one of the key uses associated with a DSS.

6. **Define expert systems and describe the role they play in a business.**
   Expert systems are computerized advisory programs that imitate the reasoning processes of experts in solving difficult problems. Typically, they include a knowledge base containing various accumulated experience and a set of rules for applying the knowledge base to each particular situation. Expert systems are the most common form of AI in the business arena because they fill the gap when human experts are difficult to find or retain or are too expensive. The best-known systems play chess and assist in medical diagnosis.

7. **What are the capabilities associated with digital dashboards?**
   Executive information systems use visualization to deliver specific key information to top managers at a glance, with little or no interaction with the system. A common tool that supports visualization is a digital

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dashboard, which tracks KPIs and CSFs by compiling information from multiple sources and tailoring it to meet user needs.

8. **What are the common DSS analysis techniques?**
   Consolidation is the aggregation of data from simple roll-ups to complex groupings of interrelated information. For example, data for different sales representatives can then be rolled up to an office level, then a state level, then a regional sales level. Drill-down enables users to view details, and details of details, of information. This is the reverse of consolidation; a user can view regional sales data and then drill down all the way to each sales representative's data at each office. Drill-down capability lets managers view monthly, weekly, daily, or even hourly information. Slice-and-dice is the ability to look at information from different perspectives. One slice of information could display all product sales during a given promotion. Another slice could display a single product's sales for all promotions. Slicing and dicing is often performed along a time axis to analyze trends and find time-based patterns in the information.

9. **How does an electronic spreadsheet program, such as Excel, provide decision support capabilities?**
   Excel can create DSS that can logically answer difficult optimization questions. Goal seek, scenario manager, and solver are all DSS tools included in Excel.

10. **What is the difference between the ability of a manager to retrieve information instantly on demand using an MIS and the capabilities provided by a DSS?**
    Managers can retrieve information from an MIS system however they will have to analyze the information using a DSS for what-if analysis, sensitivity analysis, and goal-seeking analysis.

11. **What is artificial intelligence? What are the five types of AI systems? What applications of AI offer the greatest business value?**
    Artificial intelligence (AI) simulates human thinking and behavior, such as the ability to reason and learn. Its ultimate goal is to build a system that can mimic human intelligence. AI systems increase the speed and consistency of decision making, solve problems with incomplete information, and resolve complicated issues that cannot be solved by conventional computing. There are many categories of AI systems; five of the most familiar are (1) expert systems, (2) neural networks, (3) genetic algorithms, (4) intelligent agents, and (5) virtual reality.

12. **What is a business process and what role does it play in an organization?**
    A business process is a standardized set of activities that accomplish a specific task, such as processing a customer's order. Business processes transform a set of inputs into a set of outputs—goods or services—for another person or process by using people and tools. Understanding business processes helps a manager envision how the entire company operates.

13. **Why do managers need to understand business processes? Can you make a correlation between systems thinking and business processes?**
    Some processes, such as a programming process, may be contained wholly within a single department. However, most, such as ordering a product, are cross-functional or cross-departmental processes and span the entire organization. The process of "order to delivery" focuses on the entire customer order process across functional departments. Another example is "product realization," which includes not only the way a product is developed, but also the way it is marketed and serviced. Some other cross-functional business processes are taking a product from concept to market, acquiring customers, loan processing, providing post-sales service, claim processing, and reservation handling. Understanding cross-functional

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business process is the same as understanding systems thinking!

14. **Why would a manager need to review an As-Is and To-Be process model?**
    As-Is process models represent the current state of the operation that has been mapped, without any specific improvements or changes to existing processes. The next step is to build a To-Be process model that displays how the process problem will be solved or implemented. To-Be process models show the results of applying change improvement opportunities to the current (As-Is) process model. This approach ensures that the process is fully and clearly understood before the details of a process solution are decided upon. The To-Be process model shows how the what is to be realized.

15. **How can a manager use automation, streamlining, and business process reengineering to gain operational efficiency and effectiveness?**
    Automation is the process of computerizing manual tasks, making them more efficient and effective and dramatically lowering operational costs. Streamlining improves business process efficiencies by simplifying or eliminating unnecessary steps. As the rate of change increases, companies looking for rapid change and dramatic improvement are turning to business process reengineering (BPR), the analysis and redesign of workflow within and between enterprises. A business process reengineering effort begins with defining the scope and objectives of the reengineering project and then takes the process designers through a learning process with customers, employees, competitors, and new technology. Given this knowledge base, the designers can create a plan of action based on the gap between current processes, technologies, and structures and their vision of the processes of the future. It is then top management's job to implement the chosen solution.

16. **Explain the difference between customer-facing processes and business-facing processes. Which one is more important to an organization?**
    Customer-facing processes, also called front-office processes, result in a product or service received by an organization's external customer. They include fulfilling orders, communicating with customers, and sending out bills and marketing information. Business-facing processes, also called back-office processes, are invisible to the external customer but essential to the effective management of the business; they include goal setting, day-to-day planning, giving performance feedback and rewards, and allocating resources.

17. **Explain how finding different ways to travel the same road relates to automation, streamlining, and business process reengineering.**
    Better, faster, cheaper is the path taken by automation, streamlining, and business process reengineering. Automation and streamlining are typically better, faster, and cheaper. Business process reengineering can change the entire process in a way that changes the entire industry standards making everything better, faster, and cheaper.

CLOSING CASE ONE QUESTION
BUSINESS IS BOOMING FOR WEARABLE TECHNOLOGIES

1. Define the three primary types of decision-making systems and how robots in the workplace could affect each.
    a. Decision-making skills are essential for all business professionals, at every company level, who make

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decisions that run the business. At the operational level, employees develop, control, and maintain core business activities required to run the day-to-day operations. Operational decisions are considered structured decisions, which arise in situations where established processes offer potential solutions. Structured decisions are made frequently and are almost repetitive in nature; they affect short-term business strategies. Wearable technologies can be used to:

- Track employees
- Sales patterns on the floor to tell if there are lines
- Temperature control to indicate if correct temperatures are maintained

b. At the managerial level, employees are continuously evaluating company operations to hone the firm's abilities to identify, adapt to, and leverage change. Managerial decisions cover short- and medium-range plans, schedules, and budgets along with policies, procedures, and business objectives for the firm. These types of decisions are considered semistructured decisions; they occur in situations in which a few established processes help to evaluate potential solutions, but not enough to lead to a definite recommended decision. Wearable technologies can be used to:

- Tracking where individuals are in the warehouse and strategically locating them nearest potential issues or malfunctions of equipment
- Tracking doctors in hospitals and being able to locate the nearest doctor during a problem or issue

c. At the strategic level, managers develop overall business strategies, goals, and objectives as part of the company's strategic plan. They also monitor the strategic performance of the organization and its overall direction in the political, economic, and competitive business environment. Strategic decisions are highly unstructured decisions, occurring in situations in which no procedures or rules exist to guide decision makers toward the correct choice. They are infrequent, extremely important, and typically related to long-term business strategy.

- This is the most difficult area to determine how wearable technology can help with decisions due to the infrequent nature of the decisions.

2. Describe the difference between transactional and analytical information, and determine how wearable technology could affect each for a grocery store.
Transactional information encompasses all of the information contained within a single business process or unit of work, and its primary purpose is to support the performing of daily operational tasks. Analytical information encompasses all organizational information, and its primary purpose is to support the performing of managerial analysis tasks. Grocery stores use transactional information to make analytical decisions. The transactional information includes customer's names, account number, quantity purchased, date purchased, brands purchased, coupons used, and other types of product purchasing data. The analytical decisions that are made from this information includes:
   - Which types of products did the consumers buy together
   - Which types of products are purchased daily, weekly, monthly
   - When is the busiest time of day for the express lane
   - How many customers typically prefer self-checkout

3. Illustrate the business process model used by a customer service repair technician using wearable technology glasses to fix a broken computer.
Student answers to this question will vary. Be sure they included the following in their business process model

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- Gather data by scanning computer with glasses
- Identify issues with computer and log issues with glasses
- Pull up computer manuals in glasses to determine how to correct issues
- Complete computer fix
- Ensure computer works
- Scan computer with glasses to log task complete

4. Explain business process reengineering and how wearable technology might dramatically change the current sales process.
   Business process improvement attempts to understand and measure the current process and make performance improvements accordingly. Streamlining improves business process efficiencies by simplifying or eliminating unnecessary steps. Bottlenecks occur when resources reach full capacity and cannot handle any additional demands; they limit throughput and impede operations. Streamlining removes bottlenecks, an important step if the efficiency and capacity of a business process are being increased. Business process reengineering (BPR) is the analysis and redesign of workflow within and between enterprises and occurs at the systems level or companywide level and the end-to-end view of a process.

   A wearable technology device could be used by a customer to evaluate products in a store and select the products they wish to purchase by scanning them. The store could then pack the items in a box in the warehouse and when the customer leaves the building they could locate the customer's car and carry the box to the car. The customer would then use the wearable device to pay for the items and accept the items right from the comfort of their car.

5. Formulate different metrics that a wearable technology for fitness could provide a customer.
   Potential metrics include:
   - Number of calories burned
   - Number of steps taken
   - Heart rate
   - Distance of run
   - Distance of bike ride
   - Suggest run route

6. Argue for or against the following statement: Wearable devices invade consumer privacy.
   Student answer to this question will vary. This statement makes for a great classroom debate!

OPENING CASE TWO QUESTIONS
DEFENSE ADVANCED RESEARCH PROJECTS AGENCY (DARPA)

CLASSROOM EXERCISE
Defense Advanced Research Projects Agency (DARPA) Grand Challenge

Ask your student to review the DARPA website to become familiar with the competition.
http://www.darpa.mil/Our_Work/TTO/Programs/DARPA_Robotics_Challenge.aspx
http://www.darpa.mil/NewsEvents/Releases/2012/04/10.aspx

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1. **How is the DoD using AI to improve its operations and save lives?**
   The DARPA Grand Challenge was designed to leverage American ingenuity to develop autonomous vehicle technologies that can be used by the military. Using AI driven vehicles the DOD will be able to send vehicles into dangerous situations without endangering any soldiers.

2. **Why would the DoD use an event, such as the DARPA Grand Challenge, to further technological innovation?**
   By offering a generous prize, along with notoriety the DOD is able to get many of the greatest minds in the country working on creating autonomous vehicles. It is a win-win. The DOD receives the technology and the winning team receives a prize and notoriety.

3. **Describe how autonomous vehicles could be used by organizations around the world to improve business efficiency and effectiveness.**
   There are numerous ways that autonomous vehicles could be used around by businesses from making deliveries, transporting goods and services to taking employees to and from the airport. The uses are limitless.

   DARPA Videos
   The DARPA challenge is an excellent topic when discussing AI. Here is the latest article on this year's DARPA challenge.

   - Robots And Their Masters Ready For DARPA 'War Zone' Race
     http://www.informationweek.com/showArticle.jhtml;jsessionid=THMMTXP1BKGDIQSNDLRCKH0CJUNN2JVN?articleID=193401499&queryText=aug+14
   - DARPA Grand Challenge Stanford Winning Team
     http://reviews.cnet.com/4660-11443_7-6358785.html?tag=vid.1
   - DARPA Challenge - 2005 Overview
     http://reviews.cnet.com/4660-11443_7-6353439.html?tag=vid.2
   - Special Features: Inside the DARPA Challenge
     http://reviews.cnet.com/4660-11443_7-6358769.html?tag=vid.3

CRITICAL BUSINESS THINKING

Instructor Note: There are few right or wrong answers in the business world. There are really only efficient and inefficient, and effective and ineffective business decisions. If there were always right answers businesses would never fail. These questions were created to challenge your students to apply the materials they have learned to real business situations. For this reason, the authors cannot provide you with one version of a correct answer. When grading your students' answers, be sure to focus on their justification or support for their specific answers. A good way to grade these questions is to compare your student's answers against each other.

1. **MODELING A BUSINESS PROCESS**
   Project Purpose: To revamp a process
   Potential Solution: Student answers to this question will vary depending on the process they have chosen to fix. Review the chapter for an example of an improved burger ordering process. Students can choose any process from reorganizing a sock drawer, making coffee, to revamping the way gas is purchased for an automobile.

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2. **REVAMPING ACCOUNTS**

Project Purpose: To revamp an accounting department using BPM.

Potential Solution: A key advantage of technology is its ability to improve business processes. Working faster and smarter has become a necessity for companies. Initial emphasis was given to areas such as production, accounting, procurement, and logistics. The next big areas to discover technology's value in business process were sales and marketing automation, customer relationship management, and supplier relationship management. Some of these processes involve several departments of the company and some are the result of real-time interaction of the company with its suppliers, customers, and other business partners. The latest area to discover the power of technology in automating and reengineering business process is business process management. Business process management (BPM) integrates all of an organization's business process to make individual processes more efficient. BPM can be used to solve a single glitch or to create one unifying system to consolidate a myriad of processes.

Many organizations are unhappy with their current mix of software applications and dealing with business processes that are subject to constant change. These organizations are turning to BPM systems that can flexibly automate their processes and glue their enterprise applications together. BPM technologies effectively track and orchestrate the business process. BPM can automate tasks involving information from multiple systems, with rules to define the sequence in which the tasks are performed as well as responsibilities, conditions, and other aspects of the process. BPM not only allows a business process to be executed more efficiently, but it also provides the tools to measure performance and identify opportunities for improvement - as well as to easily make changes in processes to act upon those opportunities such as:

- Bringing processes, people, and information together
- Identifying the business processes is relatively easy. Breaking down the barriers between business areas and finding owners for the processes are difficult
- Managing business processes within the enterprise and outside the enterprise with suppliers, business partners, and customers
- Looking at automation horizontally instead of vertically

3. **What Type of System Would You Use?**

Project Purpose: To differentiate between the different types of systems

Potential Solution:

- You need to analyze daily sales transactions for each region. (TPS)
- You need to analyze staffing requirements for each plant. (MIS)
- You need to determine which customers are at risk of defaulting on their bills. (Transaction Processing System)
- You need to analyze your competition including prices, discounts, goods, and services. (MIS)
- You need to analyze critical success factors and key performance indicators for status on operations. (EIS)
- You need to produce a graphical display of patterns and complex relationships for large amounts of data. (EIS)

4. **Unstructured Communications**

Project Purpose: To identify challenges associated with email as a communication tool

Potential Solution: Using email as a primary communication tool has several disadvantages such as issues tracking who received the email, who read the email, and who forwarded the email. If an employee's email is over its limit they will be unable to receive the email. A spam filter could accidently delete the email before the employee had a chance to read the important information. There are numerous issues when communicating

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with email. Your students can diagram how a professor could communicate with their class using email. Then ask your students to reengineer the process using alternative, and better, forms of communication.

5. **Long-Distance Huge**
   Project Purpose: Understanding innovation in technology
   Potential Solution: This is a great exercise to get students thinking about all of the new inventions that are going to be created due to new technologies such as haptic interfaces. Be sure your students share their creative and exciting ideas!

6. **Is a Computer Smarter Than a Human?**
   Project Purpose: To understand the future of technology
   Potential Solution: IBM Watson is every students dream. They would be able to quickly gather information for papers and research assignments. This is a great exercise for students to understand the power of analytics and the future they will be participating in at work.

7. **Searching Telephone Calls**
   Project Purpose: To understand analytics and marketing.
   Potential Solution: Students have a great time pitching their ideas for Find It. Make sure each group has time to present.

8. **Driving Your Business**
   Project Purpose: To understand how MIS supports a business
   Potential Solution: Student answer will vary depending on the type of business they choose to study. If you want to generate consistent answers then provide your students with a business type such as:
   - Extreme sports store
   - Grocery store
   - Clothing store
   - Online movie or music provider
   - Custom t-shirts
   - Electronic devices

APPLY YOUR KNOWLEDGE BUSINESS PROJECTS

Instructor Note: There are few right or wrong answers in the business world. There are really only efficient and inefficient, and effective and ineffective business decisions. If there were always right answers businesses would never fail. These questions were created to challenge your students to apply the materials they have learned to real business situations. For this reason, the authors cannot provide you with one version of a correct answer. When grading your students' answers, be sure to focus on their justification or support for their specific answers. A good way to grade these questions is to compare your student's answers against each other.

AYK I: Making Business Decisions

Porter's strategies outlined in Chapter 1 suggest entering markets with a competitive advantage in either overall cost leadership, differentiation, or focus. To achieve these results, managers must be able to make decisions and forecast future business needs and requirements. The most important and most challenging question confronting managers today is how to lay the foundation for tomorrow's success while competing to win in today's business environment. A company will not have a future if it is not cultivating strategies for tomorrow. The goal of this section is to expand on Porter's Five Forces Model, three generic strategies, and value chain analysis to

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demonstrate how managers can learn the concepts and practices of business decision making to add value. It will also highlight how companies heading into the 21 st century are taking advantage of advanced MIS capable of generating significant competitive advantages across the value chain. As we discussed in Chapter 1, decision making is one of the most important and challenging aspects of management. Decisions range from routine choices, such as how many items to order or how many people to hire, to unexpected ones such as what to do if a key employee suddenly quits or needed materials do not arrive. Today, with massive volumes of information available, managers are challenged to make highly complex decisions—some involving far more information than the human brain can comprehend—in increasingly shorter time frames.

AYK II: DSS and EIS

Dr. Rosen can use DSS systems to model all of the organizational information to support or reject his purchase decision. Dr. Rosen can use sensitivity analysis to study of the impact that changes in buying the new business will have on his current business. He can use what-if analysis to understand how economic conditions, professional reputation, and other competitors might affect his business in the future. He can use goal-seeking analysis to determine how much revenues will have to increase to offset the cost of the purchase.

AYK III: Finding Information on Decision Support Systems

Student answers to this question will vary depending on which systems they research on the Internet. In general, their presentation should focus on how a DSS can help grow a small to medium sized business. Be sure your students answer what types of DSS systems are available for a small business, how they can be used in a small business, and the cost associated with the different DSS systems.

AYK IV: Discovering Reengineering Opportunities

This assignment will change depending on how each school performs tuition payments and registering for classes. Just ensure each student presents As Is and To Be process diagrams clearly demonstrating how the new process will increase efficiency and effectiveness in the process. Broken, redundant, and antiquated processes can cause tremendous business inefficiencies. Your students should be able to easily identify which processes in your class registration system are broken, redundant, and antiquated since they are intimately familiar with this system. Since all colleges use different class registration systems the answer to this question will vary. The important part is to ensure they are identifying the issues along with suggestions for new ways to improve the process and fix the broken, redundant, and antiquated processes.

AYK V: Dashboard Design

The importance of this activity is to get your students thinking about each category and its importance to the company. Each category should be displayed with metrics to measure the indicator such as Green, Yellow, and Red status indicators or percentages or levels. This is the critical part of the activity - displaying how the dashboard is going to measure each indicator. For example:

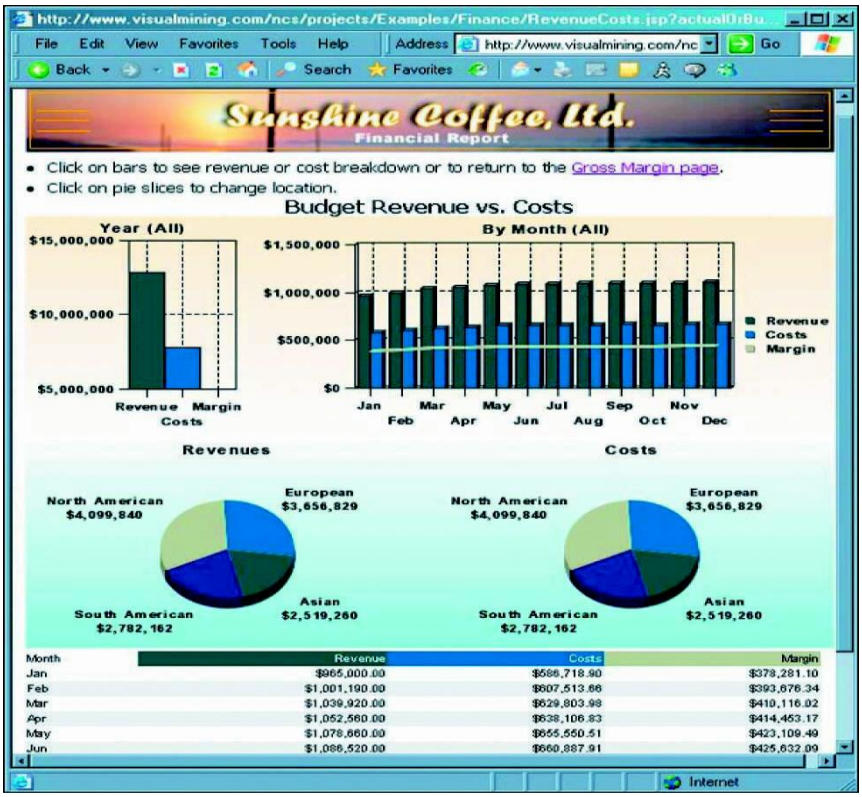
- Customers: satisfaction levels (red, green, yellow), number of customers, number of lost customers, number of new customers, order level per customers
- Marketing: campaign success, coupon success, new product launch success
- Sales: total sales, sales per quarter, sales comparatives, competitor sales comparatives, sales quota levels, sales representatives, sales per customer, sales per region
- Customer service: satisfaction, average time to resolve issues, metrics on call center, metrics on customer service representatives
- Billing: average collection period, outstanding bills, time to generate bills, customers in arrears
- Accounting: Total assets, total liabilities, net income

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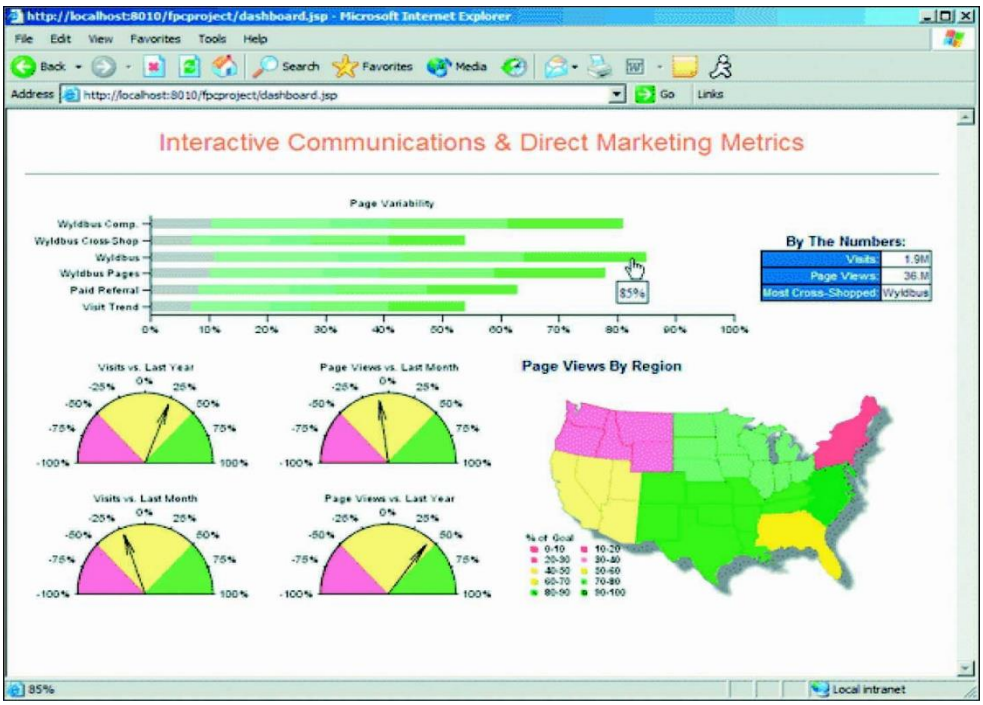
- Finance: ROI, ROA, IRR, NPV
- Logistics: Time for delivery, cost per delivery, lost orders due to failure to deliver, supplier metrics
- Human resources: Average days absent, average days sick, average days vacation, turnover

A common feature of an executive information system is a digital dashboard. Digital dashboards integrate information from multiple components and tailor the information to individual preferences. Digital dashboards commonly use indicators to help executives quickly identify the status of key information or critical success factors. Digital dashboards, whether basic or comprehensive, deliver results quickly. As digital dashboards become easier to use, more executives can perform their own analysis without inundating IT personnel with questions and requests for reports. According to an independent study by Nucleus Research, there is a direct correlation between use of digital dashboards and companies' return on investment (ROI).



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AYK VI: Driving Decisions

Great way to kick off a discussion on how decisions impact business. People have accidents. That's not what this post is about. People also do stupid, reckless things. But we're not focusing on that now either. This is about people that obviously lack the requisite skills to operate a motor vehicle – who were also unfortunate enough to have the evidence caught on film.

AYK VII: IYogi Help Desk Support

Help Desks are critical for any business and measuring the success of a help desk is far more difficult than it sounds. For example, if you track how long it takes to close an issues the staff might focus on getting through the issues quickly and not on the quality of the work completed. Here are a few examples of CSFs and KPIs:

- Time to resolution
- Number of issues resolved
- Type of computer causing majority of issues
- The average time a customer waits for their call to be answered.
- The % of customer calls presented to the Service Desk that are answered by the Service Desk (conversely the % of customers that abandon prior to being answered).
- The % of customer calls answered by the Service Desk within an agreed time threshold (here, % answered within 20 seconds).
- The % of customer calls that are resolved by the Service Desk at the first point of contact.
- Customer satisfaction with the Service Desk service.

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AYK VIII: Dashboard for Tracking Junk

Student's answers can include the following:

- Location
- Amount collected
- Number of stops
- Employee on truck
- Day of collection
- Months of most collection/least collection
- Truck maintenance
- Truck mileage

AYK IX: Building Robots

Your students robots will vary – ask them to include data tracking devices or wearables. Have fun with this exercise!!

Here are a few videos to give your students some ideas

Robot Violinist - Video

http://www.youtube.com/watch?v=EzjkBwZtxp4

Robot Emotions

The emotional robotScience correspondent Alok Jha visits the University of Hertfordshire to meet an android developed to show emotions

http://www.guardian.co.uk/technology/video/2010/aug/09/emotional-robot-university-hertfordshire

Robot Babies

The State Department readies new Internet freedom policies, the FAA may lift the ban on cell phones during air travel, and Japanese researchers are working on robot babies.

http://news.cnet.com/1606-2_3-50100306.html

AYK X: Educational Processes

Student analysis of this project will depend on how your school operates. Just be sure that the To-Be process includes updates to the current As-Is process.

AYK XI: Wearable Technologies Are Tracking You

This is a great project to help students understand how they can create metrics to measure their lives. The digital dashboards they create are fun to share as with peers and many students continue to use their dashboards after the class. Be sure they are thinking about exercise, cleaning (laundry), college, and finances.

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