M Information Systems 5th 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 M: Information Systems. 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

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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 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.

CLASSROOM OPENER
GREAT BUSINESS DECISIONS – Walt Disney Decides to Call His Mouse Cartoon Character Mickey, not Mortimer

Sunday, November 18, 1928, is a historic moment in time since it is the day that the premier of *Steamboat Willie* debuted, a cinematic epic of seven minutes in length. This was the first cartoon that synchronized sound and action.

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Like all great inventions, Mickey Mouse began his life in a garage. After going bankrupt with the failure of his Laugh O Gram Company, Walt Disney decided to rent a camera, assemble an animation stand, and set up a studio in his uncle's garage. At the age of 21, Walt and his older brother Roy launched the Disney Company in 1923. The company had a rocky start. Its first film, *Alice*, hardly made enough money to keep the company in business. His second film, *Oswald the Rabbit*, was released in 1927 with small fanfare. Then Disney's luck changed and in 1928 he released his seven minute film about a small mouse named Mickey. Disney never looked back.

The truth is Mickey Mouse began life as Mortimer Mouse. Walt Disney's wife, Lilly, did not like the name and suggested Mickey instead. Walt Disney has often been heard to say, "I hope we never lose sight of one fact – that this was all started by a mouse."

Would Mortimer have been as successful as Mickey? Would Mortimer have been more successful than Mickey? How could Walt Disney have used technology to help support his all-important decision to name his primary character? There are many new technologies helping to drive decision support systems, however it is important to note that some decisions, such as the name of a mouse, are made by the most complex decision support system available - the human brain.

CLASSROOM EXERCISE
Building Artificial Intelligence

The idea of robots and artificial intelligence is something that has captured people's attention for years. From the robots in Star Wars to the surreal computer world in the Matrix, everyone seems to be fascinated with the idea of robots.

Break your students into groups and challenge them to build a robot. The robot can perform any function or activity they choose. The robot must contain a digital dashboard and enable decision support capabilities for its owner. Have the students draw a prototype of their robot and present their robot to the class. Have your entire class vote on which robot they would invest in if they were a venture capital firm.

CLASSROOM EXERCISE
Great Example of DSS

The Analyst™ is an online diagnostic tool that fills the gap between what you need and what busy, human doctors can offer. With less and less time to address a patient's individual needs and yet more and more research and other information to digest, incorrect and incomplete diagnoses are frequently made On this site they have a great diagram that compares The Analyst to a Doctor. http://www.diagnose-me.com/?page=dizz&gclid=CIbdzaP785ECFQwcawodfCXpxA

CLASSROOM EXERCISE
Hod Lipson Demonstrates Cool Little Robots

Hod Lipson demonstrates a few of his cool little robots, which have the ability to learn, understand themselves and even self-replicate. At the root of this uncanny demo is a deep inquiry into the nature of how humans and living beings learn and evolve, and how we might harness these processes to

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make things that learn and evolve.

Hod Lipson works at the intersection of engineering and biology, studying robots and the way they "behave" and evolve. His work has exciting implications for design and manufacturing -- and serves as a window to understand our own behavior and evolution.
http://www.ted.com/index.php/talks/view/id/165

CLASSROOM EXERCISE
Building AI – Facebook Founders Fund AI Start-Up

The idea of robots and artificial intelligence is something that has captured people's attention for years. From the robots in Star Wars to the surreal computer world in the Matrix, everyone seems to be fascinated with the idea of robots.
Artificial intelligence research start-up Vicarious announced today that it has received a $15 million Series A round led by Good Ventures. The funding values the company at more than $100 million.
http://www.inc.com/john-mcdermott/facebook-founders-fund-artificial-intelligence-start-up.html

Break your students into groups and challenge them to build a robot to compete for a $15 million grant from Facebook. The robot can perform any function or activity they choose. The robot must contain a digital dashboard and enable decision support capabilities for its owner. Have the students draw a prototype of their robot and present their robot to the class. Have your entire class vote on which robot they would invest in if they were a venture capital firm.
***Best Videos for Class – show them in order to see the advances in technology!

- Nao Robot Example (3 mins)
- http://www.youtube.com/watch?v=2STTNYNF4lk

- NAO Next Generation (3 mins)
- http://www.youtube.com/watch?v=nNbj2G3GmAo&feature=related

- NAO Robots – All The Single Ladies Dance (Students will LOVE this!!)
- http://www.youtube.com/watch?v=vgEFC8Eb6i4&feature=related

CLASSROOM VIDEO
Something to Get Their Attention

Sheena Lyengar did her thesis work on "how people make decisions." Great Ted.com to show your students. http://www.ted.com/talks/sheena_iyengar_on_the_art_of_choosing.html

CLASSROOM EXERCISE
DSS Everywhere!

Break your students into groups and ask them to compare sensitivity analysis, what-if analysis, and goal-seeking analysis and to provide a business example of when they would use each type?

- Sensitivity analysis – studies the impact on a single change in a current model. For example – if we continually change the amount of inventory we carry, how low can our inventories go before issues start occurring in other parts of the supply chain? This would

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require changing the inventory level and watching the model to see "how sensitive" it is to inventory levels.
    - What-if analysis – determines the impact of change on an assumption or an input. For example – if the economic condition improves, how will it affect our sales?
    - Goal-seeking analysis – solves for a desired goal. For example – we want to improve revenues by 30 percent, how much does sales have to increase and costs have to decrease to meet this goal?
- Can you name a few different situations when you would use consolidation, drill-down, and slice-and-dice?
    - Consolidation would occur when grouping multiple store sales together to get a total for the company
    - Drill-down would occur when digging into the numbers on the balance sheet or income statement, such as revenues broken down into individual product revenues for each store during different dates and times
    - Slice-and-dice would occur when users begin looking at information with different dimensions, similar to the cubes of information

CLASSROOM EXERCISE
Measuring Efficiency and Effectiveness

Break your students into groups and ask them to create a plan to measure the efficiency and effectiveness of this course and recommendations on how they would improve the course to make it more efficient and more effective. Student answers to this exercise will vary. They will need to determine ways to benchmark current efficiency and effectiveness and ways to continuously monitor and measure against the benchmarks to determine if the course is becoming more or less efficient and effective (class quizzes and exams are the most obvious benchmarks). Ask your students to present their plan and recommendations to the entire class. Be sure students' plans and recommendations address the following:

- Design of the classroom
- Room temperature
- Lighting and electronic capabilities of the classroom
- Technology available in the classroom
- Length of class
- Email and instant messaging
- Students' attendance
- Students' preparation
- Students' arrival time
- Quizzes and exams (frequency, length, grades)

TEN WORST DRIVING DECISION ON VIDEO

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.
http://onemansblog.com/2007/02/07/10-worst-drivers-ever-caught-on-video/

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ROBOT VIDEOS – GREAT AI

Robot Violinist - Video

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

Robot Emotions

The emotional robot Science 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

BUSINESS DRIVEN START-UP – DIGITAL DASHBOARD

This is a great video to get your students thinking about how they can use Excel to create a digital dashboard. Ask your students if they could setup a digital dashboard for their courses what would it look like and how would it measure their progress. How to Setup a Digital Dashboard in Microsoft Excel

http://www.youtube.com/watch?v=V9GMCS-WjyI

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.

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CLASSROOM OPENER
Cable Ready

A current cable subscriber calls up to change the date for activating the service at a new address from Feb. 22 to March 1. The subscriber is successful and hangs up the phone happy. However, on February 22nd the cable at the current home is disconnected and the customer is no longer happy. The customer service representative forgot to change the date of the disconnection and only changed the date of the activation.

Practically speaking, these two events will almost always be linked - and the system probably should have prompted the customer service representative to ask if they were. The point: In focusing on business process, it is important to facilitate real-world tasks that are, by nature, "integrated."

CLASSROOM EXERCISE
Examining And Reengineering A College Business Process

Ask your students to discuss issues they have encountered around the college due to an inefficient or ineffective process. Choose one of the processes, break your students into groups, and ask them to reengineer the process. How would they change it to make it more effective or more efficient? Would they add a new technology device to help with the process such as a scanner, PDA, or RFID? Be sure to have them diagram the As-Is process and the To-Be process. Have them present their reengineered processes to the class.

CLASSROOM EXERCISE
Reengineering a Process

There is nothing more frustrated than a broken process. Ask your students to break into groups and discuss examples of broken processes that are currently causing them pain. The process can be a university process, mail-order process, Internet-order process, return merchandise process, etc. Ask your students to agree on one of the broken processes and to reengineer the process. Students should diagram the “As-Is” process and then diagram their “To-Be” process. Bring in a large roll of brown package wrapping paper and masking tape. Give each group two large pieces of the paper and ask them to tape the paper to the wall. These make for great “As-Is” and “To-Be” process maps.

CLASSROOM EXERCISE
Videos on BPM

Microsoft's business and industry offers a surprisingly good introduction to people driving business success through business process. The Business Process Management solution shows how to design a BizTalk application to manage a business process such as service order processing. The solution demonstrates how to construct a process manager and provides guidance about dividing a process into distinct stages. The solution also describes how to construct interruptible orchestrations as well as extensive, sophisticated exception handling.
The sections provide an overview of the solution, detailed explanations of the patterns and design choices, and information about building and running the solution.

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http://msdn.microsoft.com/en-us/library/aa559473.aspx

Funny video to kick-off your process modeling lecture – Finding Love is a Process
http://www.youtube.com/watch?v=S-Mbr31f2dg

CLASSROOM EXERCISE
How's My Driving – Just Ask My Car?

Using gadgets while you're driving can be a very bad thing, but an expert on automotive distractions says using a gadget that watches you while you're driving can be a very good thing. More than 40,000 people die every year in motor vehicle crashes, and research indicates that failures of attention - including distractions or drowsiness - probably played a role in most of those crashes.

Meiji Zhang tries to use a cell phone while she's behind the wheel in a driving simulator that's designed to work like a Chevy Malibu. The University of Iowa's National Advanced Driving Simulator was used to study the effects of driving distractions.

In one case he studied, a driver looked away from the road for 6 seconds to tap out a text message on her phone, slipped out of her lane and came to attention only when the tires hit the curb. "When she actually saw the video from the perspective of the camera, she was shocked to learn that she almost hit a telephone pole at 40 miles per hour," Lee said.

How many of your student's text, dial cell phones, etc. while driving?
Would this type of technology benefit your student drivers?

Break your students into groups and ask them to create a product that could help drivers pay greater attention to driving and less attention to gadgets. How are autonomous driving vehicles going to impact their lives?

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/

- **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.

- **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.

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- **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.

- **The Ansari X is another technological innovation competition focusing on spacecraft. To win the $10 million Ansari X Prize, a private spacecraft had to be the first to carry the weight equivalent of three people to an altitude of 62.14 miles twice within two weeks. SpaceShipOne, a privately built spacecraft, won the $10 million Ansari X Prize on October 4, 2004. Describe the potential business impacts of the Ansari X competition.**
  Space travel is the next exciting frontier. Business impacts could range from vacation trips to the moon to picking up space materials for the production of goods and services. The competition could also inspire other types of competition such as underwater houses and personal flying machines.

  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

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REVIEW OR DISCUSSION 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 massive volumes of information available, managers are

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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

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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 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

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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 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 we will realize the what.

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

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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.

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