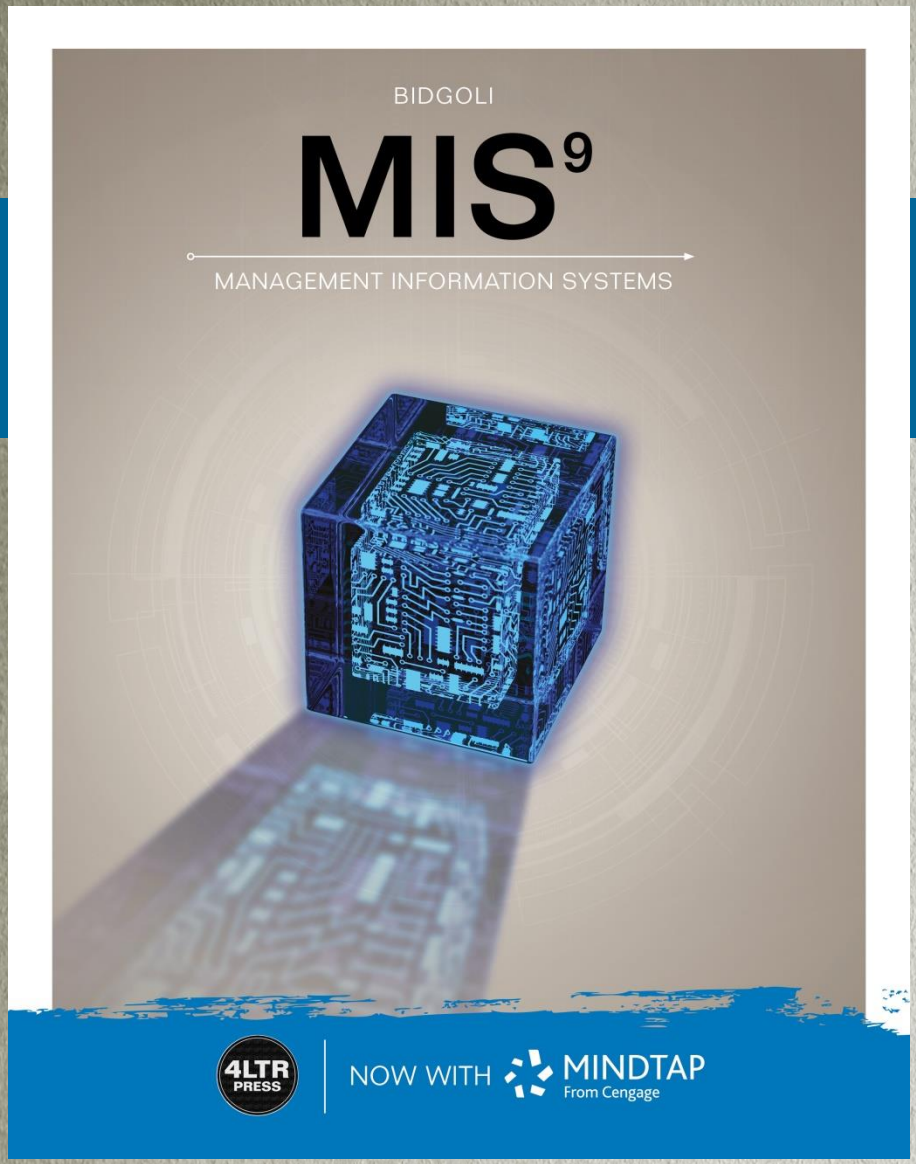


12

Management Support Systems

Learning Objectives (1 of 2)

- Describe the phases of the decision-making process in a typical organization and the types of decisions that are made
- Describe a decision support system
- Explain an executive information system's importance in decision making
- Describe group support systems, including groupware and electronic meeting systems

Learning Objectives (2 of 2)

- Summarize the uses for a geographic information system
- Describe the guidelines for designing a management support system

Types of Decisions in an Organization (1 of 4)

- Structured decisions
  - Can be automated because a well-defined standard operating procedure exists for these types of decisions
  - Known as programmable tasks
- Semistructured decisions
  - Include a structured aspect that benefits from information retrieval, analytical models, and information systems technology

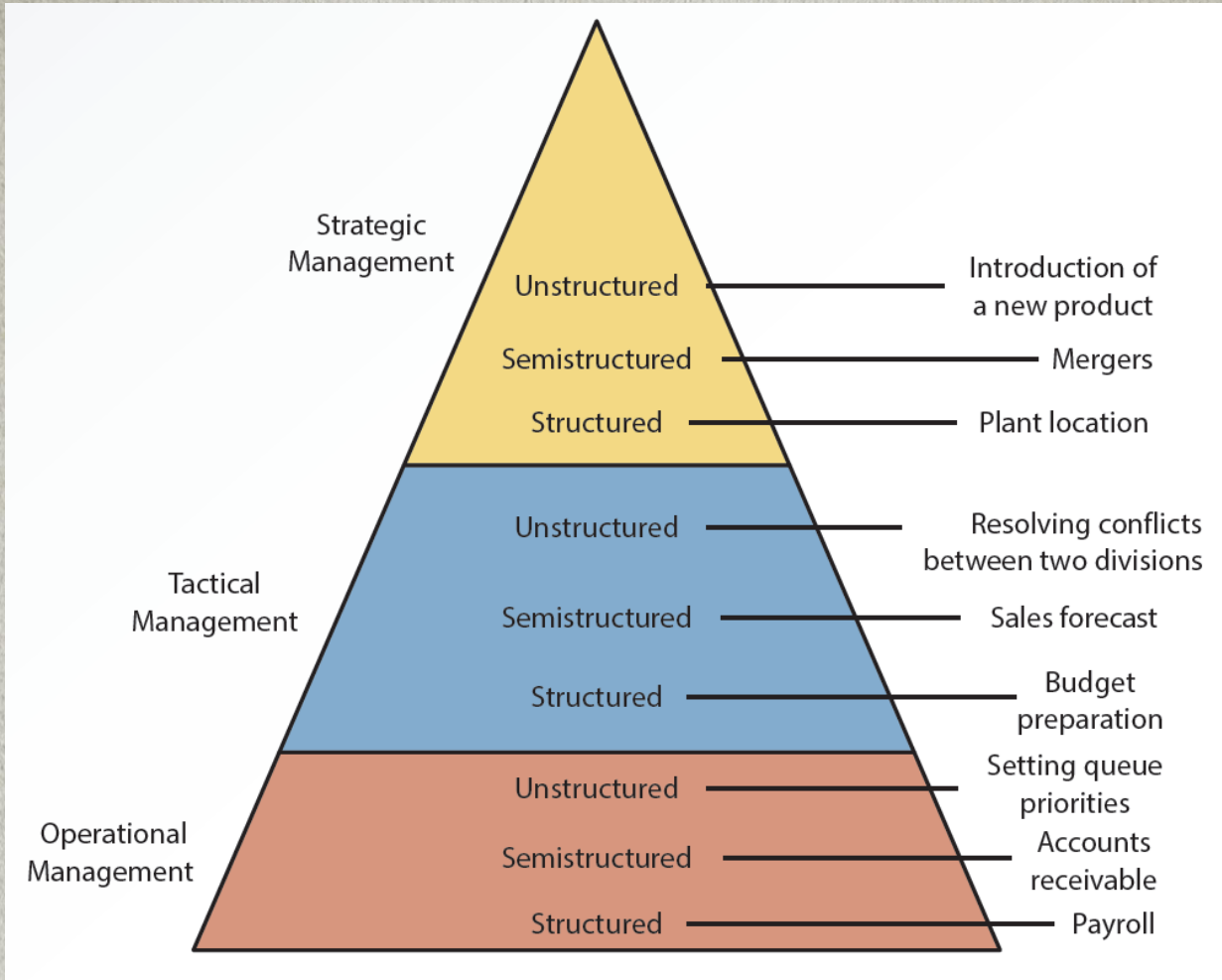
Types of Decisions in an Organization (2 of 4)

- Unstructured decisions
  - One-time decisions with no standard operating procedure
  - Decision maker's intuition plays an important role as information technology offers less support for the decisions

Types of Decisions in an Organization (3 of 4)

- Challenges in semistructured and unstructured decisions
  - Multiple criteria and users have to choose between conflicting objectives

Exhibit 12.1 Organizational Levels and Types of Decisions



Types of Decisions in an Organization (4 of 4)

- Management support systems (MSSs)
  - Different types of information systems that have been developed to support certain aspects and types of decisions
  - Each type is designed with unique goals and objectives

Phases of Decision Making

- Herbert Simon defined three phases
  - Intelligence phase
  - Design phase
  - Choice phase
  - Implementation phase

Intelligence Phase

- Decision maker examines the organization's environment for conditions that need decisions
- Data is collected from a variety of sources and processed
  - Allows decision maker to discover ways to approach the problem

Design Phase

- Defines the criteria for a decision
  - Generates alternatives for meeting the criteria
- Defines associations between the criteria and the alternatives
  - Requires understanding how each alternative affects the criteria
- Information technology does not support this phase of decision making

Choice Phase

- Selecting the best and most effective course of action is from the alternatives
  - Analyzing each alternative and its relationship to the criteria to determine whether it is feasible
- Decision support system (DSS)
  - Helps sort through possible solutions to choose the best one for the organization
  - Includes tools for calculating cost-benefit ratios

Implementation Phase

- Organization devises a plan for carrying out the alternative selected in the choice phase and obtains the resources to implement the plan
  - DSS does a follow-up assessment on how well a solution is performing

Decision Support Systems (1 of 2)

- Decision support systems (DSS): interactive information system designed to assist decision makers in an organization
  - Hardware
  - Software
  - Data
  - Mathematical and statistical models

Decision Support Systems (2 of 2)

- Requirements of decision support systems
  - Be interactive
  - Incorporate the human element as well as hardware and software
  - Use internal and external data
  - Include mathematical and statistical models
  - Support decision makers at all levels
  - Emphasize semistructured and unstructured tasks

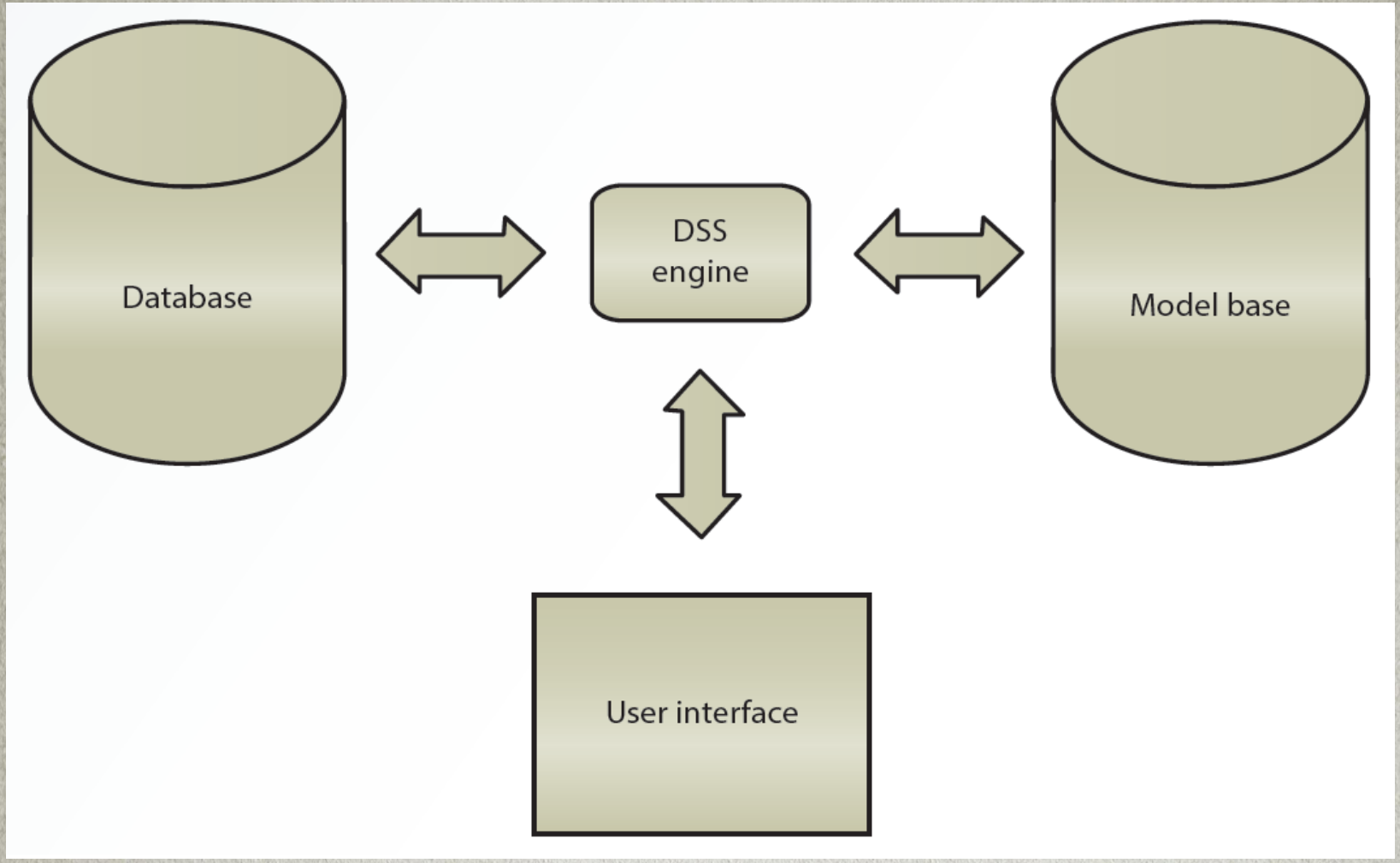
Components of Decision Support Systems (1 of 2)

- Database
  - Includes internal and external data and a database management system (DBMS)
    - Enables a DSS to perform data analysis

Components of Decision Support Systems (2 of 2)

- Model base
  - Includes mathematical and statistical models
    - Enable a DSS to analyze information
- User interface component
  - Allow users to access the DSS

Exhibit 12.2 Components of a DSS



DSS Capabilities

- DSS includes features to support decision making
  - What-if analysis
  - Goal-seeking
  - Sensitivity and exception reporting analysis
- Other capabilities
  - Graphical analysis, forecasting, simulation, statistical analysis, and modeling analysis

Roles in the DSS Environment (1 of 3)

- Users
  - Crucial because they use the DSS
  - Include department or organizational units in addition to people
- Managerial designer
  - Defines the management issues in designing and using a DSS
    - Issues are related to management's goals and needs

Roles in the DSS Environment (2 of 3)

- Technical designer
  - Focuses on how the DSS is implemented
  - Addresses questions
    - Data storage
    - File structure
    - User access
    - Response time
    - Security measures

Roles in the DSS Environment (3 of 3)

- Model builder
  - Liaison between users and designers
  - Responsible for supplying information
    - What the model does
    - What data inputs the model accepts
    - How the model's output should be interpreted
    - What assumptions go into creating and using the model

Costs and Benefits of Decision Support Systems

- Benefits
  - Increase in the number of alternatives examined
  - Fast response to unexpected situations
  - Ability to make one-of-a-kind decisions
  - New insights and learning
  - Improved communication, control, and decisions
  - Cost and time savings
  - Effective teamwork and use of data resources

Executive Information Systems (1 of 2)

- Executive information systems (EISs): interactive information systems
  - Give executives easy access to internal and external data
  - Branch of DSSs
  - Include drill-down features and digital dashboard
  - Designers should focus on simplicity when developing a user interface

Executive Information Systems (2 of 2)

- Adding features increases ease of use
- Require access to both internal and external data
- Must collect data related to an organization's critical success factors
- Include a digital dashboard: integrates information from multiple sources and presents it in a unified, understandable format

Reasons for Using EISs

- Provide managers with analytical and decision-making tools
- Include graphical representations of data that help executives make critical decisions
- Used by executives to share information with others quickly and easily
- Used by managers to improve efficiency and effectiveness of decision making

Avoiding Failure in Design and Use of EISs (1 of 2)

- Organizational resistance to the project
- Perception that the project is unimportant
- Lack of interest or commitment from management
- Inability to define objectives and information requirements clearly
- System's objectives are not linked to factors critical to the organization's success

Avoiding Failure in Design and Use of EISs (2 of 2)

- Project's costs cannot be justified
- Developing applications takes too much time, or the system is too complicated
- Vendor support has been discontinued
- Senior executives lack computer proficiency
  - Unlikely to use systems that need training
- Lack of understanding about what executives' work involves

EIS Packages and Tools (1 of 2)

- EISs are generally designed with two or three components
  - Administrative module for managing data access
  - Builder module for developers to configure data mapping and screen sequencing
  - Runtime module for using the system

EIS Packages and Tools (2 of 2)

- Tasks performed by managers using EIS
  - Tracking performance
  - Flagging exceptions
  - Ranking
  - Comparing
  - Spotting trends
  - Investigating/exploring

Group Support Systems (1 of 3)

- Group support systems (GSSs): assist decision makers working in groups
  - Use computer and communication technologies to formulate, process, and implement a decision-making task
  - Help overcome limitations of group interactions
  - Reduce communication barriers
  - Introduce order and efficiency into situations that are unsystematic and inefficient

Group Support Systems (2 of 3)

- Success depends on:
  - Matching the GSS's level and sophistication to the group's size and the scope of the task
  - Providing supportive management that is willing to champion using a GSS in the organization

Group Support Systems (3 of 3)

- Useful for:
  - Committees
  - Review panels
  - Board meetings
  - Task forces
  - Decision-making sessions that require input from several decision makers

Groupware (1 of 2)

- Assists groups in communicating, collaborating, and coordinating their activities
  - Collection of applications that supports decision makers by providing access to a shared environment and information

Groupware (2 of 2)

- Capabilities of groupware
  - Audio and video conferencing
  - Automated appointment books
  - Brainstorming
  - Database access
  - E-mail and online chat
  - Scheduling and to-do lists
  - Workflow automation

Electronic Meeting Systems

- Enable decision makers in different locations to participate in a group decision-making process
  - Features
    - Real-time computer conferencing
    - Video teleconferencing
    - Desktop conferencing

Advantages and Disadvantages of GSSs (1 of 2)

- Advantages
  - Costs and stress are reduced; infrequent travel by decision makers
  - Increased time to talk with each other and solve problems; decision makers do not travel long distances
  - Decreased shyness
  - Increasing collaboration improves the effectiveness of decision makers

Advantages and Disadvantages of GSSs (2 of 2)

- Disadvantages
  - Lack of the human touch
  - Unnecessary meetings
  - Security problems

Geographic Information Systems (1 of 2)

- Geographic information systems (GISs)
  - Capture, store, process, and display geographic information
    - Shows location of all city streetlights on a map
  - Uses spatial and nonspatial data for storing complex geographic objects
    - Points
    - Lines
    - Areas

Geographic Information Systems (2 of 2)

- Example: Google Maps
  - Interactive GIS that identifies routes from start to destination
  - User-friendly interface that helps one visualize the route

GIS Applications

- Categories
  - Education planning
  - Urban planning
  - Government
  - Insurance
  - Marketing
  - Real estate
  - Transportation and logistics

Guidelines for Designing a Management Support System (1 of 2)

- Important factors
  - Support from the top management
  - Objectives and benefits clearly defined
  - Identifying executives' information needs
  - Keeping lines of communication open
  - System's complexity hidden and interface kept simple

Guidelines for Designing a Management Support System (2 of 2)

- Maintaining consistency in design
- Designing a flexible system
- Making sure response time is fast

Summary (1 of 2)

- Different types of information systems are developed to support certain aspects and types of decisions
- Decision support system (DSS) is designed to assist decision makers in an organization
- EIS designers should focus on simplicity when developing a user interface

Summary (2 of 2)

- GIS uses spatial and nonspatial data and techniques for storing coordinates of complex geographic objects