



Enhancing Decision Making



Management Information Systems

Chapter 12 Enhancing Decision Making

LEARNING OBJECTIVES

- **Describe different types of decisions and the decision-making process.**
- **Assess how information systems support the activities of managers and management decision making.**
- **Demonstrate how decision-support systems (DSS) differ from MIS and how they provide value to the business.**

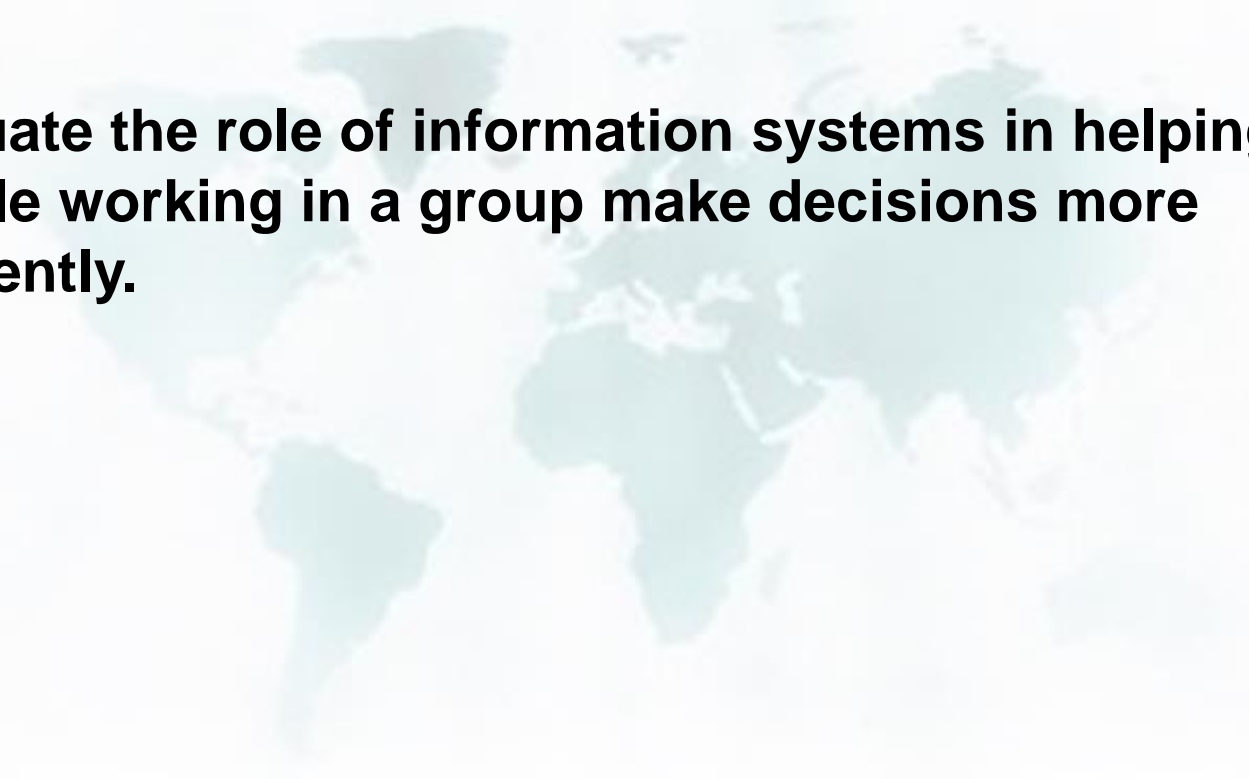


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LEARNING OBJECTIVES (cont'd)

- **Demonstrate how executive support systems (ESS) help senior managers make better decisions.**
- **Evaluate the role of information systems in helping people working in a group make decisions more efficiently.**





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Example of Supply Chain

- **Problem:** Cost pressures, complex supply chain.
- **Solutions:** Deploy modeling and optimization software to maximize return on investment and predict the most successful supply chain.
- **Modeling software fueled with data from Oracle data warehouse** improved efficiency and reduced costs.
- Demonstrates IT's role in restructuring a supply chain.
- Illustrates digital technology improving decision making through information systems.



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Decision Making and Information Systems

- **Senior managers:**
 - Make many unstructured decisions
 - E.g. Should we enter a new market?
- **Middle managers:**
 - Make more structured decisions but these may include unstructured components
 - E.g. Why is order fulfillment report showing decline in Minneapolis?
- **Operational managers, rank and file employees**
 - Make more structured decisions
 - E.g. Does customer meet criteria for credit?



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Decision Making and Information Systems

- **Information systems can only assist in some of the roles played by managers**
- **Classical model of management**
 - Five functions of managers
 - Planning, organizing, coordinating, deciding, and controlling
- **More contemporary behavioral models**
 - Actual behavior of managers appears to be less systematic, more informal, less reflective, more reactive, and less well organized than in classical model
 - Mintzberg's behavioral model of managers defines 10 managerial roles falling into 3 categories



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Decision Making and Information Systems

- **Three main reasons why investments in information technology do not always produce positive results**
 - 1. Information quality**
 - High-quality decisions require high-quality information
 - 2. Management filters**
 - Managers have selective attention and have variety of biases that reject information that does not conform to prior conceptions
 - 3. Organizational culture**
 - Strong forces within organizations resist making decisions calling for major change



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Systems for Decision Support

- **Management information systems (MIS)**
 - Help managers monitor and control business by providing information on firm's performance and address structured problems
 - Typically produce fixed, regularly scheduled reports based on data from TPS
 - E.g. **exception reports**: Highlighting exceptional conditions, such as sales quotas below anticipated level
 - E.g. **California Pizza Kitchen MIS**
 - For each restaurant, compares amount of ingredients used per ordered menu item to predefined portion measurements and identifies restaurants with out-of-line portions



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Systems for Decision Support

- **Model:**
 - Abstract representation that illustrates components or relationships of phenomenon; may be physical, mathematical, or verbal model
 - **Statistical models**
 - **Optimization models**
 - **Forecasting models**
 - **Sensitivity analysis models**



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Systems for Decision Support

Sensitivity Analysis

| | | | | | | |
|------------------------|-------|------------------------|------|------|------|------|
| Total fixed costs | 19000 | | | | | |
| Variable cost per unit | 3 | | | | | |
| Average sales price | 17 | | | | | |
| Contribution margin | 14 | | | | | |
| Break-even point | 1357 | | | | | |
| | | Variable Cost per Unit | | | | |
| Sales | 1357 | 2 | 3 | 4 | 5 | 6 |
| Price | 14 | 1583 | 1727 | 1900 | 2111 | 2375 |
| | 15 | 1462 | 1583 | 1727 | 1900 | 2111 |
| | 16 | 1357 | 1462 | 1583 | 1727 | 1900 |
| | 17 | 1267 | 1357 | 1462 | 1583 | 1727 |
| | 18 | 1188 | 1267 | 1357 | 1462 | 1583 |

This table displays the results of a sensitivity analysis of the effect of changing the sales price of a necktie and the cost per unit on the product's break-even point. It answers the question, "What happens to the break-even point if the sales price and the cost to make each unit increase or decrease?"

Figure 12-4



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Systems for Decision Support

- **Using spreadsheet pivot tables to support decision making**
 - Online Management Training Inc. (OMT Inc.), sells online management training books and streaming online videos to corporations and individuals
 - Records of online transactions can be analyzed using Excel to help business decisions, e.g.:
 - Where do most customers come from?
 - Where are average purchases higher?
 - What time of day do people buy?
 - What kinds of ads work best?



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Systems for Decision Support

Sample List of Transactions for Online Management Training Inc.

Microsoft Excel - Online Mgmt Training List.xls

File Edit View Insert Format Tools Data Window Help Adobe PDF

Type a question for help

A1 Online Management Training Inc.

| | A | B | C | D | E | F | G | H | I | J | K | L | M | N | O |
|----|---------------------------------|--------|---------|--------|----------|---------|-------------|---|---|---|---|---|---|---|---|
| 1 | Online Management Training Inc. | | | | | | | | | | | | | | |
| 2 | Transaction Log: October 28 | | | | | | | | | | | | | | |
| 3 | | | | | | | | | | | | | | | |
| 4 | | | | | | | | | | | | | | | |
| 5 | Cust ID | Region | Payment | Source | Amount | Product | Time Of Day | | | | | | | | |
| 6 | 10001 | East | Paypal | Web | \$20.19 | Online | 22:19 | | | | | | | | |
| 7 | 10002 | West | Credit | Web | \$17.85 | Online | 13:27 | | | | | | | | |
| 8 | 10003 | North | Credit | Web | \$23.98 | Online | 14:27 | | | | | | | | |
| 9 | 10004 | West | Paypal | Email | \$23.51 | Book | 15:38 | | | | | | | | |
| 10 | 10005 | South | Credit | Web | \$15.33 | Book | 15:21 | | | | | | | | |
| 11 | 10006 | West | Paypal | Email | \$17.30 | Online | 13:11 | | | | | | | | |
| 12 | 10007 | East | Credit | Web | \$177.72 | Book | 21:59 | | | | | | | | |
| 13 | 10008 | West | Credit | Web | \$21.76 | Book | 4:04 | | | | | | | | |
| 14 | 10009 | West | Paypal | Web | \$15.92 | Online | 19:35 | | | | | | | | |
| 15 | 10010 | South | Paypal | Web | \$23.39 | Online | 13:26 | | | | | | | | |
| 16 | 10011 | South | Paypal | Email | \$24.45 | Book | 14:17 | | | | | | | | |
| 17 | 10012 | East | Credit | Web | \$20.39 | Book | 1:01 | | | | | | | | |
| 18 | 10013 | North | Paypal | Web | \$19.54 | Online | 10:04 | | | | | | | | |
| 19 | 10014 | East | Credit | Web | \$151.67 | Book | 9:09 | | | | | | | | |
| 20 | 10015 | West | Credit | Web | \$21.01 | Online | 5:05 | | | | | | | | |

Ready

This list shows a portion of the order transactions for Online Management Training Inc. (OMT Inc.) on October 28, 2006.

Figure 12-5



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Systems for Decision Support

- **Microsoft Excel spreadsheet software**
 - **Pivot table:**
 - Categorizes and summarizes data very quickly
 - Displays two or more dimensions of data in a convenient format
 - **PivotTable Wizard has three elements**
 - Empty PivotTable:
 - With labels for rows, columns, and data areas
 - PivotTable Field List
 - Lists fields in list or database
 - PivotTable Toolbar