Information Systems
ISM 3011

Fall 2003
Unit 10A

Assignment for Next Class

- Read and prepare case studies 1, 2, and 3 (p. 456 – 459).

Information and Decision Support Systems

Chapter 10

Principles and Learning Objectives

- Good decision-making and problem-solving skills are the key to developing effective information and decision support systems.
  - Define the stages of decision making.
  - Discuss the importance of implementation and monitoring in problem solving.

Principles and Learning Objectives

- Management Information Systems (MIS) must provide the right information to the right person in the right fashion at the right time.
  - Define the term MIS and clearly distinguish the difference between a TPS and an MIS.
  - Discuss information systems in the functional areas of business organizations.

Principles and Learning Objectives

- Decision support systems (DSSs) are used when the problems are more unstructured.
  - List and discuss important characteristics of DSSs that give them the potential to be effective management support tools.
  - Identify and describe the basic components of a DSS.

Principles and Learning Objectives

- Specialized support systems, such as group decision support systems (GDSSs) and executive support systems (ESSs), use the overall approach of a DSS in situations such as group and executive decision making.
  - State the goals of a GDSS and identify the characteristics that distinguish it from a DSS.
  - Identify the fundamental uses of an ESS and list the characteristics of such a system.

Decision Making and Problem Solving

Decision Making as a Component of Problem Solving

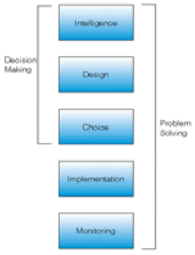


FIGURE 10-1

How Decision Making Relates to Problem Solving

The three stages of decision making—intelligence, design, and choice—are augmented by implementation and monitoring to result in problem solving.

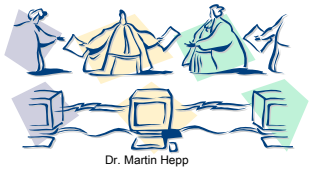
Programmed versus Non-programmed Decisions

- Programmed decisions
  - Structured situations with well defined relationships
  - Quantifiable
  - Management information system
  - Easy to computerize
- Non-programmed decisions
  - Rules and relationships not defined
  - Problem is not routine
  - Not easily quantifiable

Problem Solving Approaches

- **Optimization:** find the best solution
- **Satisficing:** find a good solution
- **Heuristics:** rules of thumb

An Overview of Management Information Systems



Inputs to an MIS

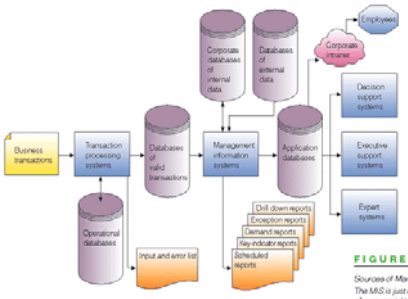


FIGURE 10-3
Sources of Managerial Information. The MIS is just one of many sources of managerial information. Decision support systems, executive support systems, and expert systems all assist in decision making.

Outputs of an MIS

(a) Scheduled Report

Daily Sales Detail Report — Prepared: 08-10-XX

Order #	Customer ID	Salesperson ID	Planned Ship Date	Quantity	Item #	Amount
P12453	C69231	CAR	06/13/01	144	P1234	$3,214
P12453	C69231	CAR	06/12/01	288	P3214	$5,660
P12454	C03214	GWA	06/13/01	12	P4302	$1,224
P12455	C52313	SAK	06/12/01	24	P4012	$2,448
P12456	C34123	JMW	06/13/01	144	P3214	$ 720

(b) Key-Indicator Report

Daily Sales Key Indicator Report

	This Month	Last Month	Last Year
Total Orders Month to Date	$1,806	$1,694	$1,314
Forecasted Sales for the Month	$2,406	$2,234	$2,606

(c) Demand Report

Daily Sales by Salesperson Summary Report — Prepared: 08-10-XX

Salesperson ID	Amount
CAR	$42,345
GWA	$39,950
SAK	$32,550
JMW	$12,360

(d) Exception Report

Daily Sales Exception Report—Orders Over $10,000 — Prepared: 08-10-XX

Order #	Customer ID	Salesperson ID	Planned Ship Date	Quantity	Item #	Amount
P12345	C69231	GWA	06/12/01	576	P1234	$12,956
P32153	C00453	CAR	06/12/01	288	P3214	$28,800
P23023	C32632	JMN	06/11/01	144	P2323	$14,400

FIGURE 10-4
Reports Generated by an MIS. The five types of reports are (a) scheduled, (b) key-indicator, (c) demand, (d) exception, and (e–h) drill down.
(Source: George W. Reynolds, Information Systems for Managers, 3rd ed. St. Paul, MN: West Publishing, 1995. Reprinted with permission of Course Technology.)

Outputs of an MIS

(a) First-Level Drill Down Report

Earnings by Quarter (Millions)

	Actual	Forecast	Variance
2nd Qtr. 2002	$12.5	$11.9	5.0%
1st Qtr. 2002	$10.8	$10.2	5.9%
4th Qtr. 2001	$10.2	$10.3	-1.0%
3rd Qtr. 2001	$12.9	$13.3	-3.0%

(b) Second-Level Drill Down Report

Sales and Expenses (Millions)

Qtr. 2nd Qtr. 2002	Actual	Forecast	Variance
Gross Sales	$110.9	$108.3	2.4%
Expenses	$ 98.9	$ 96.9	1.9%
Profit	$ 12.0	$ 11.3	6.0%

(c) Third-Level Drill Down Report

Sales by Division (Millions)

Qtr. 2nd Qtr. 2002	Actual	Forecast	Variance
Ready Care	$ 26.5	$ 26.9	-1.5%
Health Care	$ 30.0	$ 28.0	7.1%
Hotel	$ 20.9	$ 21.0	-0.5%
Snacks	$ 12.1	$ 12.5	-3.2%
Electronics	$ 11.5	$ 10.9	5.5%
Total	$ 101.0	$ 99.3	2.4%

(d) Fourth-Level Drill Down Report

Sales by Product Category (Millions)

Qtr. 2nd Qtr. 2002 Division: Health Care	Actual	Forecast	Variance
ToothPaste	$12.4	$13.1	-10.1%
MouthWash	$ 5.5	$ 5.5	-0.3%
Over-the-Counter Drugs	$ 5.8	$ 5.3	9.4%
Skin Care Products	$ 3.2	$ 3.4	-5.9%
Total	$30.0	$28.0	7.1%

Developing Effective Reports

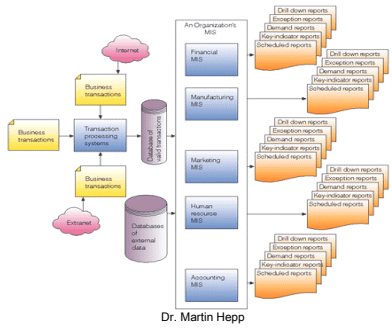
Guideline	Reason
Tailor each report to user needs.	The unique needs of the manager or executive should be considered, requiring user involvement and input.
Spend time and effort producing only reports that are useful.	Once instituted, many reports continue to be generated even though no one uses them anymore.
Pay attention to report content and layout.	Prominently display the information that is most desired. Do not clutter the report with unnecessary data. Use commonly accepted words and phrases. Managers can work more efficiently if they can easily find desired information.
Use management by exception reporting.	Some reports should be produced only when there is a problem to be solved or an action that should be taken.
Set parameters carefully.	Low parameters may result in too many reports; high parameters mean valuable information could be overlooked.
Produce all reports in a timely fashion.	Outdated reports are of little or no value.
Periodically review reports.	Review reports at least once a year to make sure all reports are still needed. Review report content and layout. Determine whether additional reports are needed.

Characteristics of an MIS

- Fixed format, standard reports
- Hard-copy or soft-copy reports
- Uses internal data
- User-developed reports
- Users must request formal reports from IS department

Functional Aspects of the MIS

Functional Aspects of an MIS



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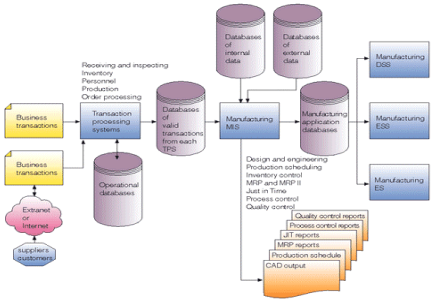
Overview of a Manufacturing MIS



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Master Production Scheduling and Inventory Control

- Economic Inventory (Order) Quantity (EIQ/EOQ)
- Reorder Point (ROP)

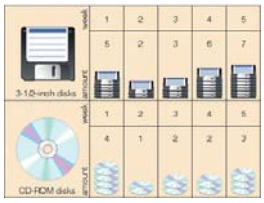

FIGURE 10-9
A master production schedule for computer disks and CDs indicates the quantity of each to be produced each week in thousands.

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Product Pricing

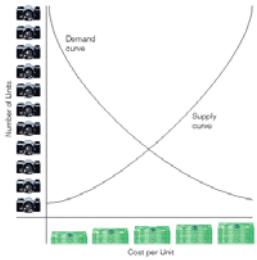

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FIGURE 10-11
Typical Supply and Demand for Pricing Analysis

Dynamic Pricing

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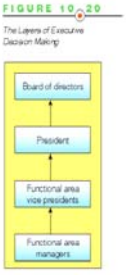
Executive Support Systems

- Help senior-level executives make decisions
- Examples:
  - Huge investment decisions
  - Global strategy
  - What-if analysis based on financial market or macroeconomic scenarios



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An Overview of Decision Support Systems

Characteristics of a DSS

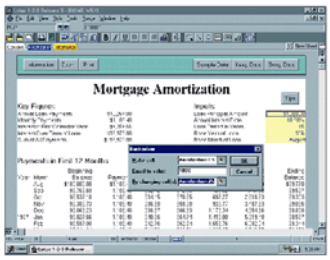
- Perform complex, sophisticated analysis
- Optimization, satisficing, heuristics
  - Simulation
  - What-if analysis
  - Goal-seeking analysis

Characteristics of a DSS

FIGURE 10-14

With a spreadsheet program, a manager can enter a goal, and the spreadsheet will determine the needed input to achieve the goal

(Source: Courtesy of Lotus Development Corporation.)



Components of a DSS

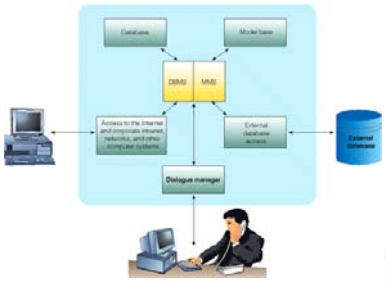


FIGURE 10-16

Conceptual Model of a DSS

DSS components include a model base, database, external database access, access to the Internet and corporate intranet, networks, and other computer systems, and a dialogue manager.

Thank you!

Any questions? Please send an e-mail to mhepp@computer.org!

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