Information Systems
ISM 3011

Unit 10A

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

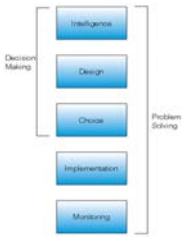


FIGURE 10-1
How Decision Making Relates to Problem Solving
The three stages of decision making—intelligence, design, and choice—are augmented by implementation and monitoring to result in problem solving.

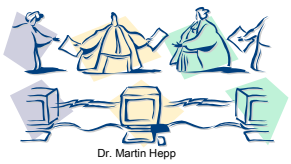
Programmed versus Non-programmed Decisions

- 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

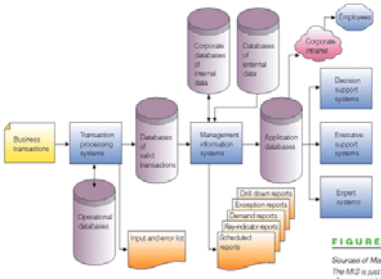


FIGURE 10-3
Sources of Managerial Information
The MIS is just one of many sources of managerial information. Decision support systems, executive support systems, and expert systems also assist in decision making.

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	C89321	CAR	08/12/01	144	P1234	$3,214
P12453	C89321	CAR	08/12/01	288	P3214	$5,660
P12454	C03214	GWA	08/13/01	12	P4902	$1,224
P12455	C52313	SAK	08/12/01	24	P4012	$2,448
P12456	C34123	JMW	08/13/01	144	P3214	$ 720
....	....	....	....	....	....	....

(b) Key-Indicator Report

Daily Sales Key Indicator Report

	This Month	Last Month	Last Year
Total Orders Month to Date	$1,808	$1,694	$1,914
Forecasted Sales for the Month	$2,406	$2,224	$2,608

(c) Demand Report

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

Salesperson ID	Amount
CAR	$42,345
GWA	$38,950
SAK	$22,100
JWN	$12,350
....	....
....	....

(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	C89321	GWA	08/12/01	576	P1234	$12,856
P22153	C00453	CAR	08/12/01	288	P2314	$28,800
P23023	C32832	JMN	08/11/01	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.)

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Outputs of an MIS

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Developing Effective Reports

Guidelines	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.

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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

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Functional Aspects of the MIS

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Functional Aspects of an MIS

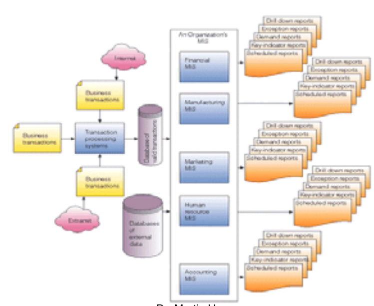

FIGURE 10.5
The MIS is an integrated collection of functional information systems, each supporting particular functional areas.

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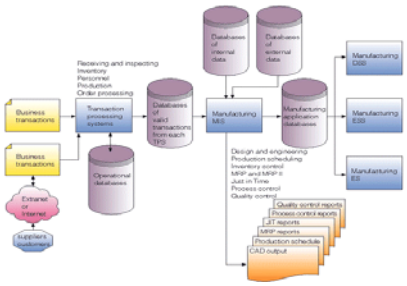
Overview of a Manufacturing MIS



Master Production Scheduling and Inventory Control

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

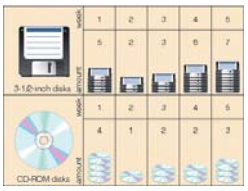


FIGURE 10-8

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

Product Pricing

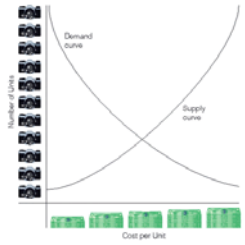


FIGURE 10-11

Typical Supply and Demand Curve for Pricing Analysis

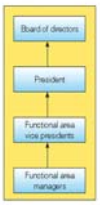
Dynamic Pricing

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

FIGURE 10-20

The Layers of Executive Decision Making



An Overview of Decision Support Systems

Characteristics of a DSS

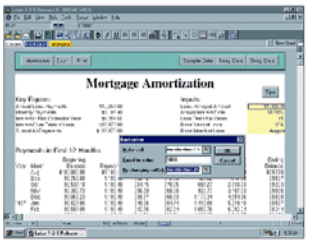
- Perform complex, sophisticated analysis
- Optimization, satisficing, heuristics
  - Simulation
  - What-if analysis
  - Goal-seeking analysis

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

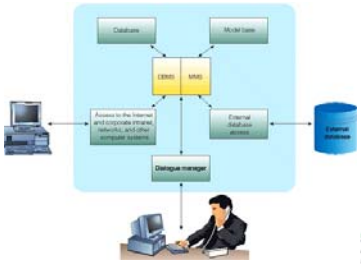


FIGURE 10-16

Conceptual Model of a DSS

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

Thank you!

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

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