Lecture 14 of MIS

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Objectives
1. Describe different types of decisions and the decision-making process.
2. Evaluate the role of information systems in helping people working individually and in a group make decisions more efficiently.

Chapter Outline
10.4–10.5 Decision-Support Systems (DSS)
- Decision-Support Systems (DSS)
- The Difference between MIS and DSS
- Types of Decision-Support Systems
- Components of DSS
- DSS Applications and the Digital Firm

Key Terms
Business intelligence, Data-driven DSS,
Data visualization
DSS database, DSS software system
Model-driven DSS, Predictive analysis
Sensitivity analysis, Semistructured decisions
Structured decisions, Unstructured decisions

Section 12.1: Decision-Support Systems (DSS).
DSSs combine data, sophisticated analytical models and tools, and user-friendly software into a single powerful system that can support semistructured or unstructured decision making. The components of a DSS are the DSS database, the DSS software system, and the user interface. There are two kinds of DSS: model-driven DSS and data-driven DSS.

(1) Decision-Support Systems (DSS):
- Computer system at the management level of organization
- Combines data, analytical tools, and models
- Supports semi-structured and unstructured decision-making

(2) The Difference between MIS and DSS
MIS: Provides reports based on routine flow of data, Assists in general control of the organization.
DSS: Emphasizes change, flexibility, rapid response, models, assumptions, ad-hoc queries, and display graphics

(3) Types of Decision-Support Systems
Model-Driven DSS: Primarily stand-alone, Uses models to perform “what-if” and other kinds of analysis
Data-driven DSS: Supports decision making by allowing users to extract and analyze useful information previously buried in large databases

(4) Model-Driven DSS:
Model: Abstract representation illustrating components or relationships
- Statistical models: Expected statistical function, means, medians, deviations,…
- Optimization models: Using linear programming, determine optimal resource allocation
- Sensitivity analysis: Asks “what-if” questions repeatedly to determine the impact of change
- Forecasting models

(5) Data-driven DSS:
- Associations: Occurrences linked to a single event
- Sequences: Events linked over time
- Classification: Recognizing patterns that describe the group to which an item belongs
- Clustering: Similar to classification when no groups have yet been defined. Discovers different groupings within data

(6) Overview of a decision-support system (DSS)

(7) Components of DSS
- DSS Database: Collection of current or historical data from a number of applications or groups. Can be a small PC database or a massive data warehouse
- DSS Software System: Collection of software tools used for data analysis, such as OLAP tools, datamining tools, or a collections of mathematical and analytical models
- Model: Abstract representation illustrating components or relationships of a phenomenon

(8) Sensitivity Analysis: Models that ask “what-if” questions repeatedly to determine the impact of changes in one or more factors on the outcomes.

(9) DSS Applications and the Digital Firm:
Model-driven DSS:
- Cargo revenue optimization: Continental Airlines
- Pricing Decisions: ShopKo Stores
- Supply Chain Management: Sonoco Products
(10) **Continental Airlines**: develop CargoProf to forecast cargo capability and set optimal value on what they need.

![Cargo Booking Agent Request](image)

(11) **ShopKo Stores**: Shopk导入一套“markdown optimizer” 的信息系统，藉由记录各分店历史销售量与价格，拟定最佳定价策略，分析季节、地点、过去需求、当地偏好

![Markdown optimizer](image)

(12) **Sonoco Products**: Helping with decisions in Supply chain management
- Comprehensive examination of supply management chain
- Searches for most efficient and cost-effective combination
- Reduces overall costs
- Increases speed and accuracy of filling customer orders

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