

# Lecture 04: BI vs Decision Support System

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# Examples of manager decisions

- Employ strategic planning
  - Use new and innovative business models
  - Restructure business processes
  - Participate in business alliances
  - Improve corporate information systems
  - Improve partnership relationships
  - Encourage innovation and creativity
- Improve customer service and relationships
  - Move to electronic commerce (e-commerce)
  - Move to make-to-order production and on-demand manufacturing and services
  - Use new IT to improve communication, data access (discovery of information), and collaboration
  - Respond quickly to competitors' actions (e.g., in pricing, promotions, new products and services)

# Decision Making Process

- Managers usually make decisions by following a four-step process (a.k.a. the scientific approach)
  1. Define the problem (or opportunity)
  2. Construct a model that describes the real-world problem
  3. Identify possible solutions to the modeled problem and evaluate the solutions
  4. Compare, choose, and recommend a potential solution to the problem

# Decision making process: difficult factors

- Technology, information systems, advanced search engines, and globalization result in more and more alternatives from which to choose
- Government regulations and the need for compliance, political instability and terrorism, competition, and changing consumer demands produce more uncertainty, making it more difficult to predict consequences and the future
- Other factors are the need to make rapid decisions, the frequent and unpredictable changes that make trial-and-error learning difficult, and the potential costs of making mistakes

# Decision making: type of decisions vs type of control

Type of Decision	Type of Control		
	Operational Control	Managerial Control	Strategic Planning
Structured	Accounts receivable Accounts payable Order entry 1	Budget analysis Short-term forecasting Personnel reports Make-or-buy 2	Financial management Investment portfolio Warehouse location Distribution systems 3
Semistructured	Production scheduling Inventory control 4	Credit evaluation Budget preparation Plant layout Project scheduling Reward system design Inventory categorization 5	Building a new plant Mergers & acquisitions New product planning Compensation planning Quality assurance HR policies Inventory planning 6
Unstructured	Buying software Approving loans Operating a help desk Selecting a cover for a magazine 7	Negotiating Recruiting an executive Buying hardware Lobbying 8	R & D planning New tech. development Social responsibility planning 9

# Operational decisions

- Operational managers and other employees make *operational decisions* for the company.
- Operational managers include mid-level, supervisory and lower-level management.
- Operational decisions are the day-to-day decisions that have only a short-term impact on a company.
- Examples:
  - Scheduling employees
  - Training on specific tasks in a company (e.g., sales techniques, computer training, etc.)
  - Purchasing office supplies
  - Assigning work to specific employees

# Tactical decisions

- Officers and executives make *tactical decisions* for a company.
  - Officers and executives include the CEO, COO, CFO and other top-level management in a company.
  - Tactical decisions are decisions and plans that concern the more detailed implementation of the directors' general strategy, usually with a medium-term impact on a company.
- Examples:
- Size and structure of a work force
  - Sales and marketing strategy
  - Signing non-disclosure agreements
  - Work assignments allocated to particular groups and people
  - Large purchases within a previously approved budget



# Strategic decisions

- A board of directors, whose members are elected by a company's shareholders, makes *strategic decisions* for a company.
  - Strategic decisions are decisions and plans that have long-term or material impact on a company
- Examples:
    - The election of officers and executives
    - Equity grants or transfers (including compensation packages for officers and executives)
    - Annual budgets and audits
    - Shareholder distributions
    - Sale of substantially all a company's assets
    - Dissolution or sale of a company

# Automated decision making

- A relatively new approach to supporting decision making
- Applies to highly structures decisions
- Automated decision systems (ADS) (or decision automation systems)
- An ADS is a rule-based system that provides a solution to a repetitive managerial problem in a specific area

# Automated structured decisions

- ADS initially appeared in the airline industry called revenue (or yield) management (or revenue optimization) systems
  - Dynamically price tickets based on actual demand
  - Dynamically buy products from suppliers in shortage case
- Today, many service industries use similar pricing models
- ADS are driven by business rules!

# Automated un-structured decisions

- Unstructured problems can be only partially supported by standard computerized quantitative methods
- They often require customized solutions
- They benefit from data and information
- Intuition and judgment may play a role
- Computerized communication and collaboration technologies along with knowledge management is often used

# Automated semi-structured decisions

- Solving semi-structured problems may involve a combination of standard solution procedures and human judgment
- Information Systems handles the structured parts while DSS deals with the unstructured parts
- With proper data and information, a range of alternative solutions, along with their potential impacts

# Decisions support systems vs business intelligence

- Architectures are very similar because BI evolved from DSS
- DSS directly support specific decision making, while BI provides accurate and timely information, and indirectly support decision making
- BI has an executive and strategy orientation, especially in its dashboard components, while DSS, in contrast, is oriented toward analysts
- BI systems are constructed with commercially available tools and components, while DSS is often built from scratch
- DSS methodologies and even some tools were developed mostly in the academic world, while BI methodologies and tools were developed mostly by software companies
- Many of the tools that BI uses are also considered DSS tools (e.g., data mining and predictive analysis are core tools in both)

# Decisions support systems vs business intelligence

- Although some people equate DSS with BI, these systems are not, at present, the same
  - some people believe that DSS is a part of BI—one of its analytical tools
  - others think that BI is a special case of DSS that deals mostly with reporting, communication, and collaboration (a form of data-oriented DSS)
  - BI is a result of a continuous revolution and, as such, DSS is one of BI's original elements