Decision Support Systems Categories

Week 9

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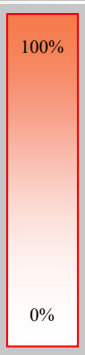
Decision Support Content of Different Types of Information Systems

- Decision Support Systems
- Executive Information Systems
- Expert Systems
- Information Reporting Systems
- Workgroup Information Systems
- Personal Information Systems
- Office Information Systems
- Transaction Processing Systems



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Differences in System Characteristics

Dimensions	TPS	MIS	DSS
Type of users	Clerical and supervisory	Middle Management	All levels including top mgmt. and professionals.
Focus	Data transactions	Information	Decision, flexibility
Applications	Payroll, sales data, inventory	Sales forecasting, Production control,	Strategic planning, integrated problems

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Differences in System Characteristics

Dimensions	TPS	MIS	DSS
Ease of use	Low	Moderate	High
Processing Interest	Expediency	Efficiency	Effectiveness
Reason for development	Cost saving, customer service	Reporting basic information	Improved decision making

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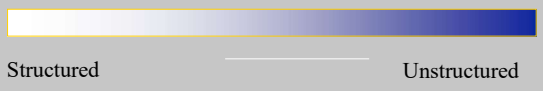
DSS: Decision Task, Context, User DSS relationship with Task

- Nature of decision task- classification by structure



Structured — Unstructured

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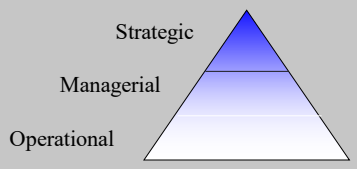
DSS relationship with Decision Context

- Decision Context
  - Emergent versus established setting
  - Level of decision making - Scope



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Information Characteristics for Different Types of Decisions

Characteristics	Operational		Strategic
Accuracy	High	⟷	Low
Level of detail	Detailed	⟷	Aggregate
Time horizon	Present	⟷	Future
Use	Frequent	⟷	Infrequent
Source	Internal	⟷	External
Scope	Narrow	⟷	Wide
Nature	Quantitative	⟷	Qualitative
Age	Current	⟷	Current/old

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User User's Psychological Types

- To take a test of your personality, go to http://www.davideck.com (optional)
- Introversion vs. Extraversion
  - less vs. more immediate interaction
  - on line chat vs. delayed electronic discussion
- Sensing vs. intuition
  - large number of facts vs. less data more 'hunches'
  - data-oriented DSS vs. less exhaustive DSS

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DSS: Decision Task, Context, User
User's Psychological Types contd.

- Thinking vs. Feeling
  - more use of logic vs. more human/ eclectic
  - Optimization or suggestion models vs. "group ware"
- Judgement vs. Perception
  - quick to decide vs. slow to decide
  - model-oriented DSS vs. data-oriented DSS

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DSS: Decision Task, Context, User
DSS relationshio with User

Temperament	*Needs assistance in …*
SP (Sensing & Perceptive)	• Coherence of plan • Following selected solution
SJ (Sensing & Judging)	• Categorizing, classifying • Generating creative alternatives
NT (iNtuition & Thinking)	• Attending to facts & details • Looking at impact on people
NF (iNtuition & Feeling)	• Attending to facts & details • Developing realistic alternatives • Implementation

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Taxonomy of DSS

- Basis for taxonomy: the degree to which the system determines the decision

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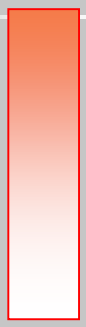
The DSS Hierarchy

- Suggestion systems
- Optimization systems
- Representational models
- Accounting models
- Analysis information systems
- Data analysis systems
- File drawer systems



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File Drawer Systems

- They are the simplest type of DSS
- Can provide access to data items
- data is used to make a decision
- ATM Machine
- Use the balance to make transfer of funds decisions

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Data Analysis Systems

- Provide access to data
- Allows data manipulation capabilities
- Airline Reservation system
- No more seats available
- provide alternative flights you can use
- use the info to make flight plans

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Analysis Information Systems

- Provide access to multiple data sources
- Combines data from different sources
- Allows data analysis capabilities
- Compare growth in revenues to industry average- requires access to many sources
- The characteristic of the recent "datawarehouse" is similar

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Accounting Models

- Use internal accounting data
- Provide accounting modeling capabilities
- Can not handle uncertainty
- Use s Bill of Material
- calculate production cost
- make pricing decisions

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Representational Model

- Can incorporate uncertainty
- uses models to solve decision problem using forecasts
- Can be used to augment the capabilities of Accounting models
- Use the demand data to forecast next years demand
- Use the results to make inventory decisions.

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Optimization Systems

- Used to estimate the effects of different decision alternative
- Based on optimization models
- Can incorporate uncertainty
- Assign sales force to territory
- Provide the best assignment schedule

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Suggestion Systems

- A descriptive model used to suggest to the decision maker the best action
- A prescriptive model used to suggest to the decision maker the best action
- May incorporate an Expert System
- Applicant applies for personal loan
- use the system to recommend a decision

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Solver Oriented DSS

- Performs certain computations for solving a particular type of problem. The solver could be economic order quality procedure for calculating an optional ordering quantity.

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Compound DSS

- Its is a system that includes two or more of the above structures

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Text Oriented

- Supports a decision maker by electronically keeping track of textual represented information that have a bearing on a decision.
- Allows documents to be electronically created, revised and viewed as needed

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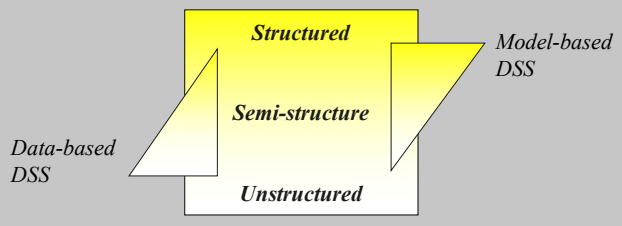
DSS Categories

- Support based DSS (Alter 1980)
  - Data-based DSS
  - Model-based DSS



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DSS Categories

- Based on the nature of the decision situation (Donovan & Madnick 1977)
  - Institutional
    - Culture of the organization
    - Regularly used
    - Used by more than one person
  - Ad hoc
    - One of kind
    - One-time use
    - Used by single individual

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DSS Categories

- Based on number of users (Keen 1980)

Individual, Multi-individual, Group

Benefits	Individual	Multi-individual	Group
Improving personal efficiency	H	H	L
Expediting problem solving	L	M	H
Facilitating communication	L	L	H
Promoting learning	M	H	H
Increasing control	L	H	M

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How can information systems help managerial work?

- Suitability of DSS in terms of task structure, decision context, and user. How is DSS adapted to fit the requirements of task, context, and user?
- Examine a decision situation of your choice and discuss desired DSS features. For example: look at the structuredness of decision tasks, management level, user type, ect. Is DSS helpful? Why? Or Why not?
- Identify detrimental effects of DSS. Can DSS contribute to making a bad decision and even to the downfall of an organization?

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DSS in Business

- What if analysis:- process of assessing the impart values
- Goal oriented:- process of determining the input values required to achieve a certain goal
- Risk analysis: assess risk associated with various alternatives
- Model Building: Allows one to identify the most appropriate model for solving problems
- Graphical analysis:- helps to understand large volumes of data

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Detrimental DSS Effects

- Design flaws
- Inadequate understanding of task or user
- Inadequate modeling of "reality"
- Inadequate understanding of human information processing constraints
- Can promote cognitive biases!

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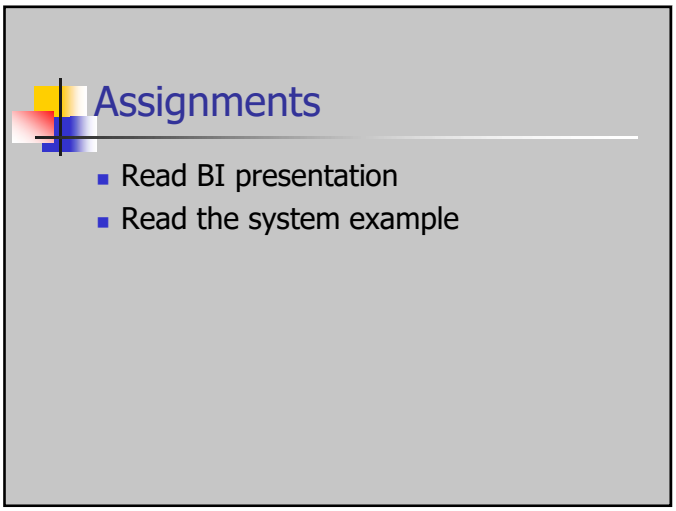
Assignments
Read BI presentation
Read the system example