Information Systems

… Decision Making

MIS - Decision Making

Decision Making and Business Intelligence

Life is full of choices.

That is as true in business as it is in your personal life.

Choices have consequences.

That is even more true in business than it is in personal life.

A **decision** is a choice among two or more options.

- it is as important to understand what is the question
- a decision statement should define a decision
  as narrowly as possible, but no more narrowly than that.

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Decision Making and Business Intelligence

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The purpose of a business intelligence system is to provide information that improves decision making !

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Decision Phases

The process of problem solving is generally broken down into the five phases

FIGURE 9.2 Problem-solving phases.

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310

The cycle of phases is far more complex than the sequence suggests. Each phase in making a particular decision is itself a complex decision making process.

Decision making is an iterative process.

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Decision Phases

Intelligence:

- the gathering of data
- collecting information without necessarily knowing how it will be used.
- consists of finding, identifying, and formulating the problem or situation that calls for a decision.
- ***deciding what to decide.***

The end result of the intelligence phase is a **decision statement**.

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Decision Phases

Design:

- alternative choices are formulated
- This phase may involve a great deal of research into the available options.
- During the design phase we should also state our objectives for the decision we are to make.
- Each alternative solution is evaluated after gathering data about the solution.
- Quantitative tools and models are used

At this stage the solutions are only outlines of actual solutions

A lot of creativity and innovation is required to design solutions

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Decision Phases

Choice:

- one of the alternatives that were developed in the previous phase is selected

- the possible solutions are compared against one another to find out the most suitable solution.

- the 'best' solution may be identified using quantitative tools like decision tree analysis or qualitative tools.

- uncertainty about the outcomes and scenarios make the choice of a single solution difficult.

The end product of this phase are step(s) to **implement**

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Decision Phases

Implementation:

- must follow any decision if that decision is to matter.

- the decision is ultimately carried out.

note: the depth and complexity of the
Intelligence,
Design and
Choice phases
will determine the clarity of the Implementation Phase

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Decision Phases

Monitor:

- review the result(s) of the Implementation.
- the decision implemented is evaluated.
- if the outcome is a failure:
  - decide if start from beginning
  - or just go back and implement a different choice
- if the outcome is a success:
  - measure the level of success

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Decision Phases

Occam's Razor and Common Sense:

- **methodological reductionism**

- Occam's Razor states that one should not make more assumptions than needed.

- When multiple explanations are available for a phenomenon, the simplest version is preferred. A

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Decision Process

Decision Process and Common Sense:

- **decisions must be made using information**
- guessing solutions not a viable business plan
- identify information
  - understand and valuate the source of information

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Decision Process

Data important part of any IS

Data transformed into information

Information

- important starting point for decision making

IS support decision

- providing the information (the raw material) to make decisions

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Quick Question

Data differs from **information** in which way?

A. Data is output and information is input
B. Information is output and data is input
C. Data is meaningful bits of information
D. There is no difference

DATA vs INFORMATION

- Important to understand the difference

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Data versus Information

Important to understand the difference

Example:

Data – hourly wage
Information – average wage

Data – date of birth
Information – average age

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Data

Facts or Figures

- Collected
- Recorded
- Stored
- Processed

Not meaningful on its own

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Information

Created from data

Quality of the Information:

traits of good information:

- accurate
- timely
- relevant
  - to context
  - to subject
- just sufficient (enough but not too much)
- worth its cost

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Information Systems (IS) and Decision Making

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Information Systems (IS) and Decision Making

Decision making

- Varied
- Complex
- -> investigate characteristics & dimensions

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Decision Making Processes

Decision Structure

- process of developing answers - solutions to the decision

Structured

Unstructured

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Decision Making Processes

Structured Decision

- Understood and accepted steps to formulate decisions

- Applying knowledge to make an informed decision

Examples:

Formula for computing reorder quantity

Standard method for allocating furniture

Quantities -how much should be withheld for income taxes from a paycheck

Structured refers to whether a computer could, conceptually, be programmed to carry it out.

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Decision Making Processes

Unstructured Decision

- No agreed-on decision-making method to formulate conclusion
- Not standardized

Examples:

Predicting future direction of economy

Assessing employee‘s performance

Unstructured require human judgment.

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Decision Making Processes

Structured versus Unstructured Decision

Terms refer to decision making process

Not to the subject

Example:

- Forecasting short time weather : **structured** decision
- Weather Systems: **unstructured** subject

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Information Systems (IS) and Decision Making

Decision Categories

- how much of an organization they affect
- for how long they affect it
- how much they constrain other decisions

From the bottom up, they are:

Operational Decisions
Tactical (Managerial Control) Decisions
Strategic Decisions

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Decision Categories

Operational Decisions

Day-to-day activities

Examples:

How much coffee to purchase?

Which invoices should be paid today?

IS: Transaction Processing Systems (TPS)

Collect, store, modify & retrieve transactions

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Decision Categories

Tactical (Managerial Control) Decisions

Allocation and utilization of resources

Examples:

How to budget for computer hardware?

How many individuals to assign to a project?

IS: Management Information Systems (MIS)

Narrower definition

Support of management decision making

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Decision Categories

Strategic Decisions

Broader-scope, organizational issues

Examples:

- Should a new product line be started?
- Should a new warehouse be built?

IS: Executive Information Systems (EIS)

MIS for senior executives

- Easy access to information
- Supports decision making process
- Provides access to internal & external information

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Quick Question

Forecasting the expected sales growth is an example of which type of decision process?

A. Managerial
B. Unstructured
C. Executive
D. Structured

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Quick Question

Determining which invoice is 30 days old and now needs to be paid is which type of decision process?

A. Managerial
B. Unstructured
C. Executive
D. Structured

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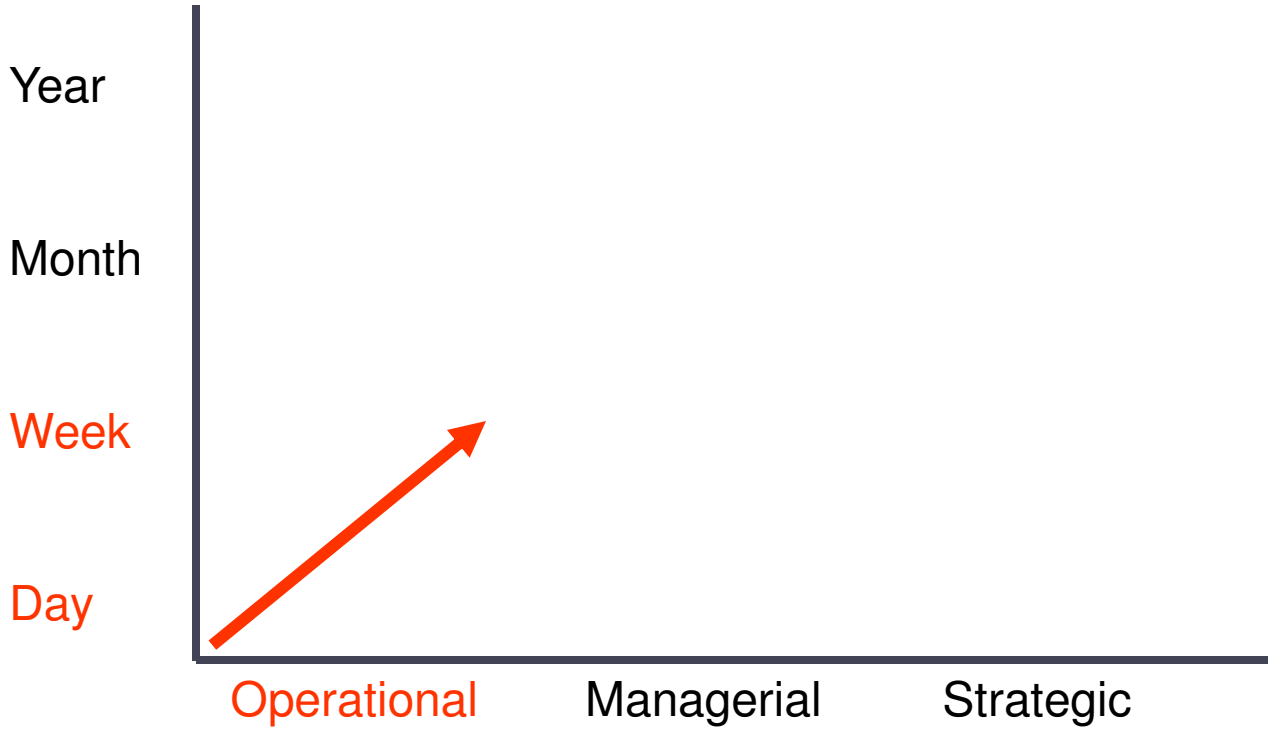
Decision Categories and Processes

Decision Timeframes



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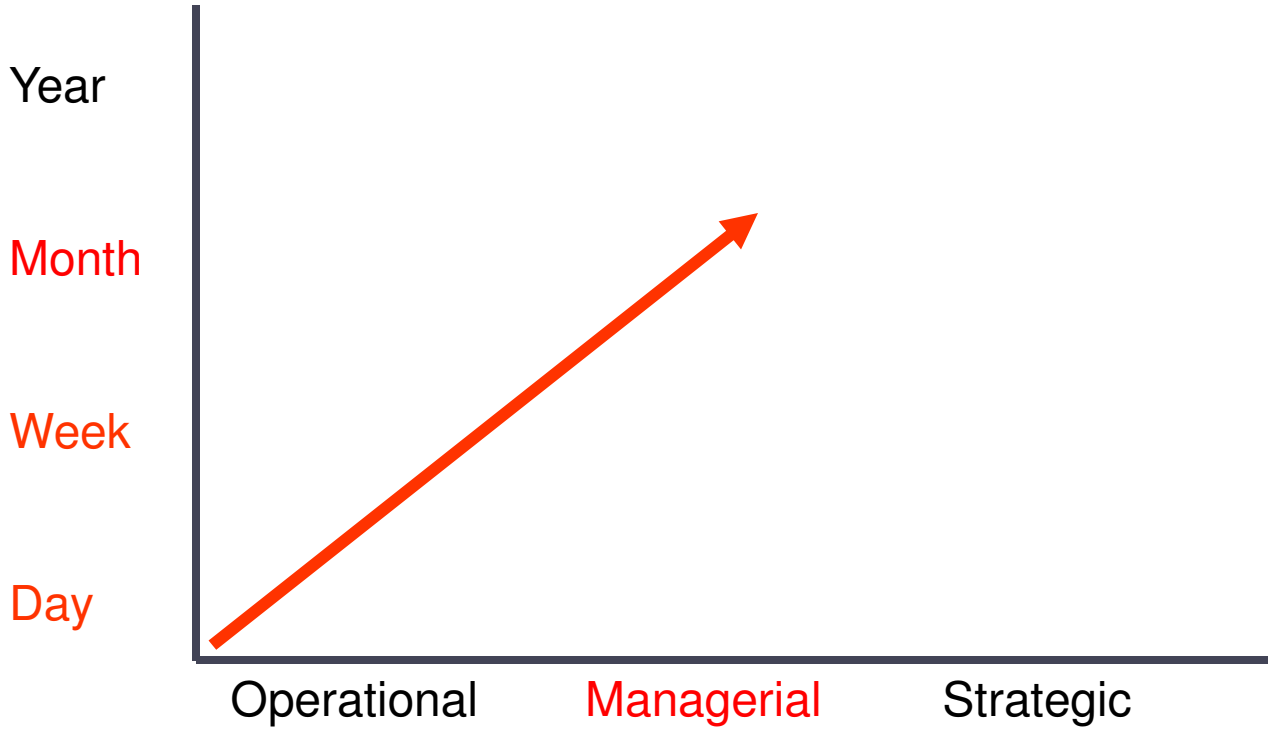
Decision Categories and Processes

Decision Timeframes



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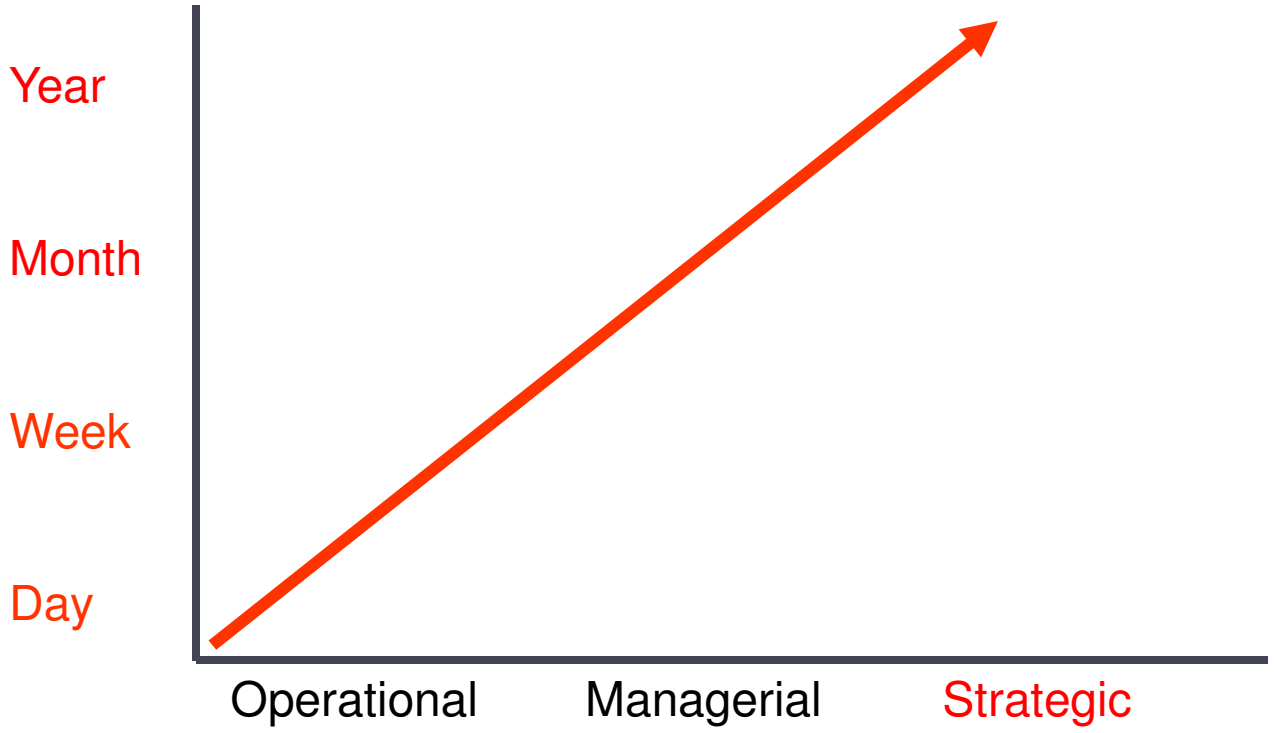
Decision Categories and Processes

Decision Timeframes



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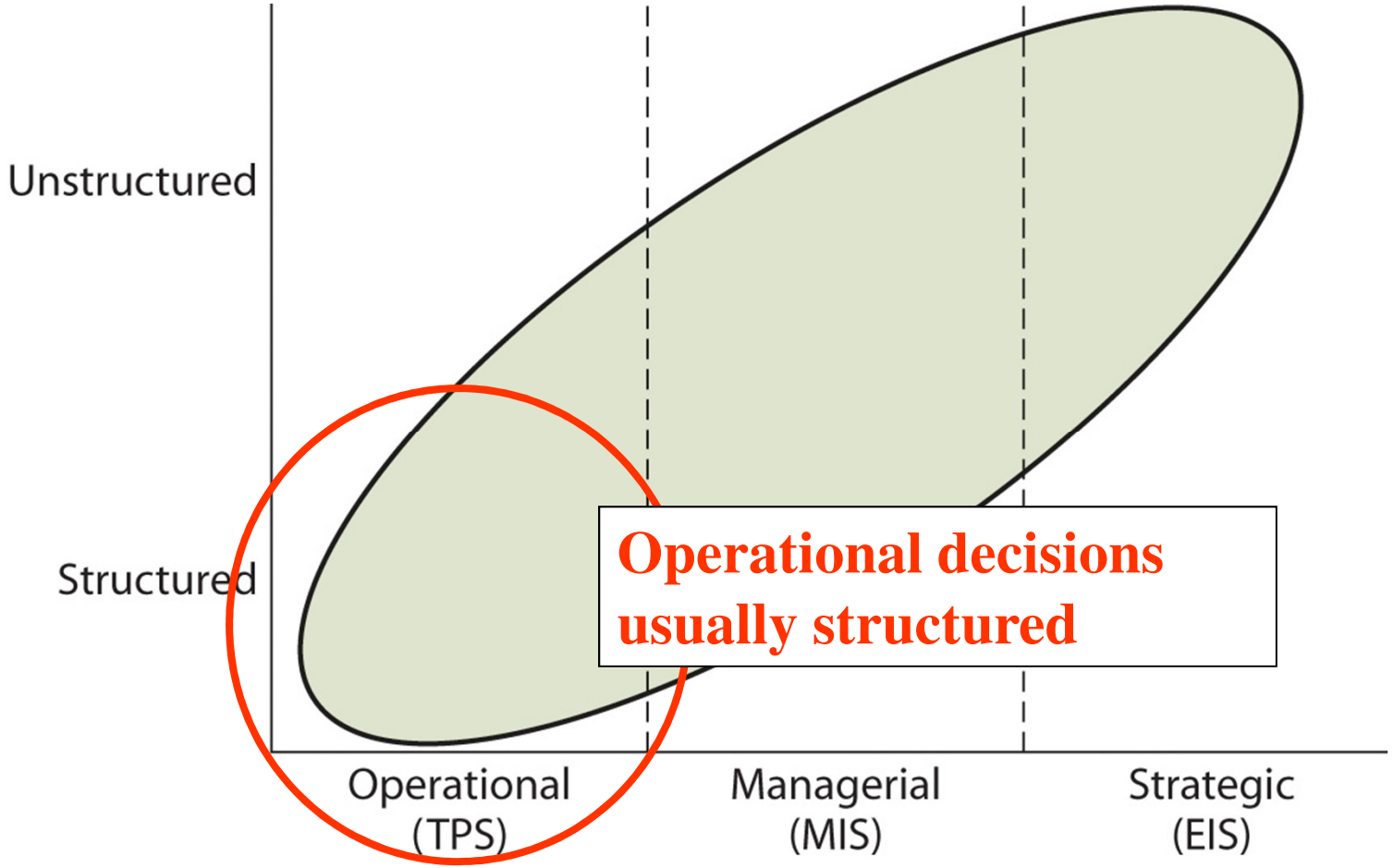
Relationship Between Decision Categories and Processes



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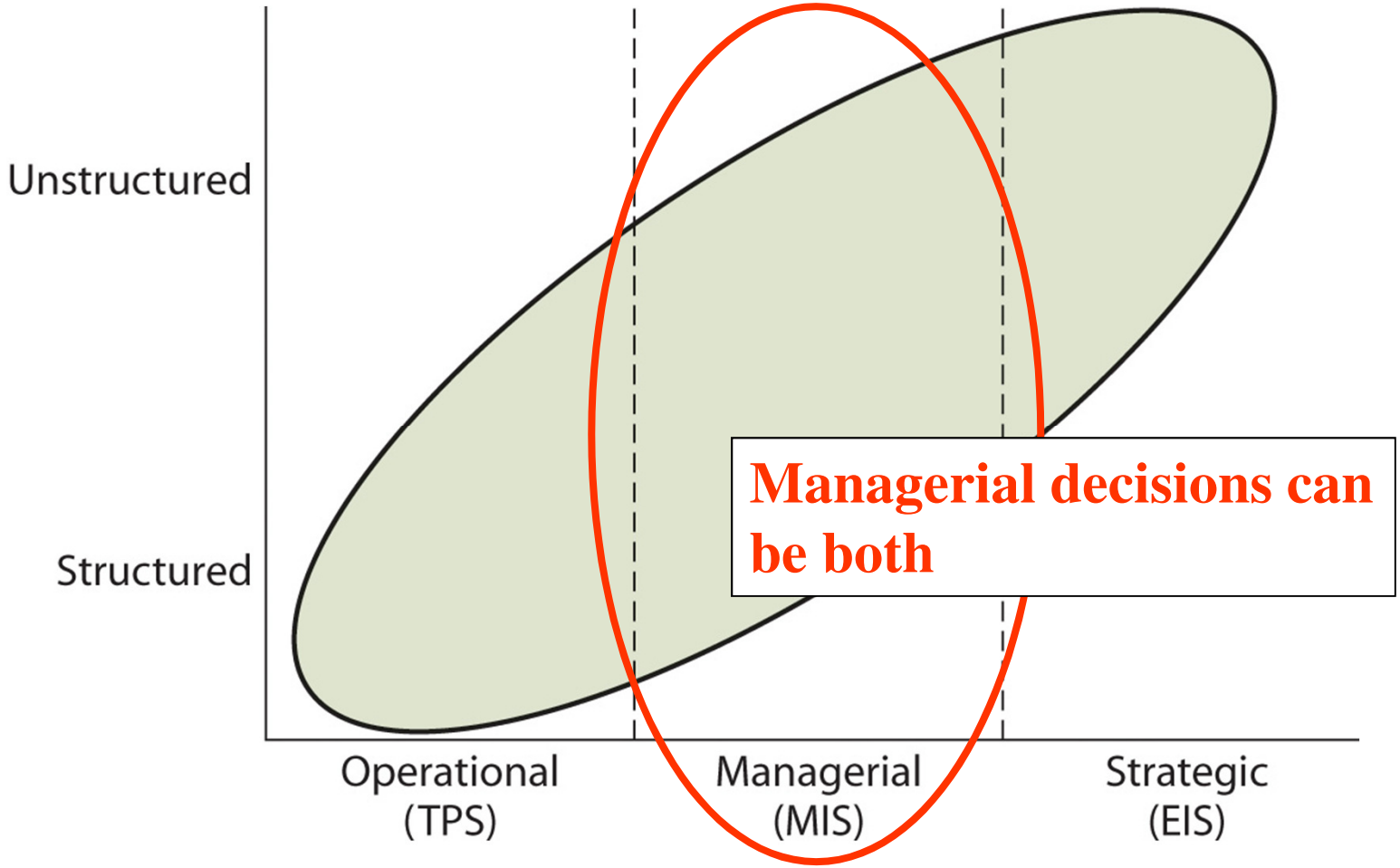
Relationship Between Decision Categories and Processes



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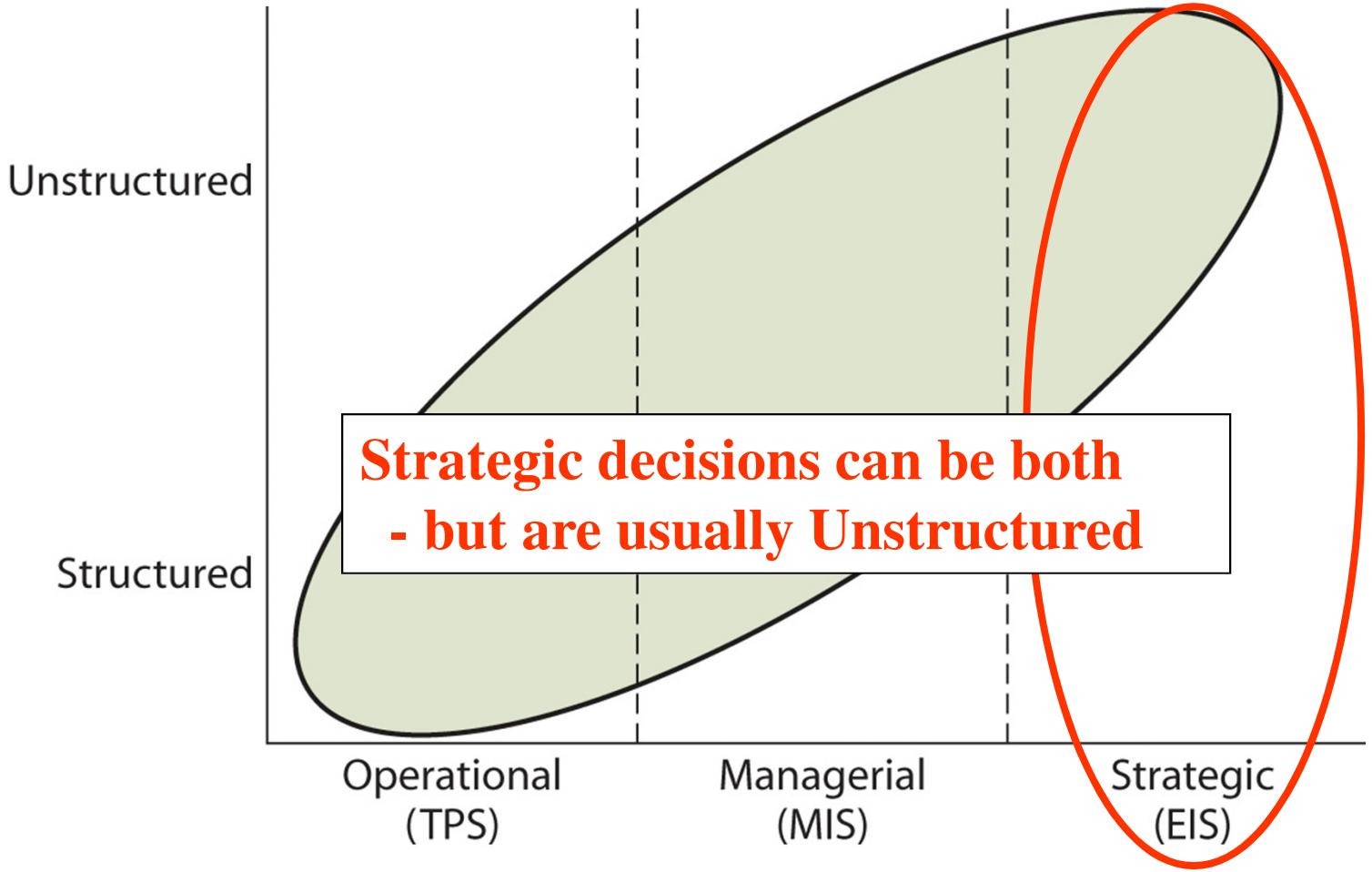
Relationship Between Decision Categories and Processes



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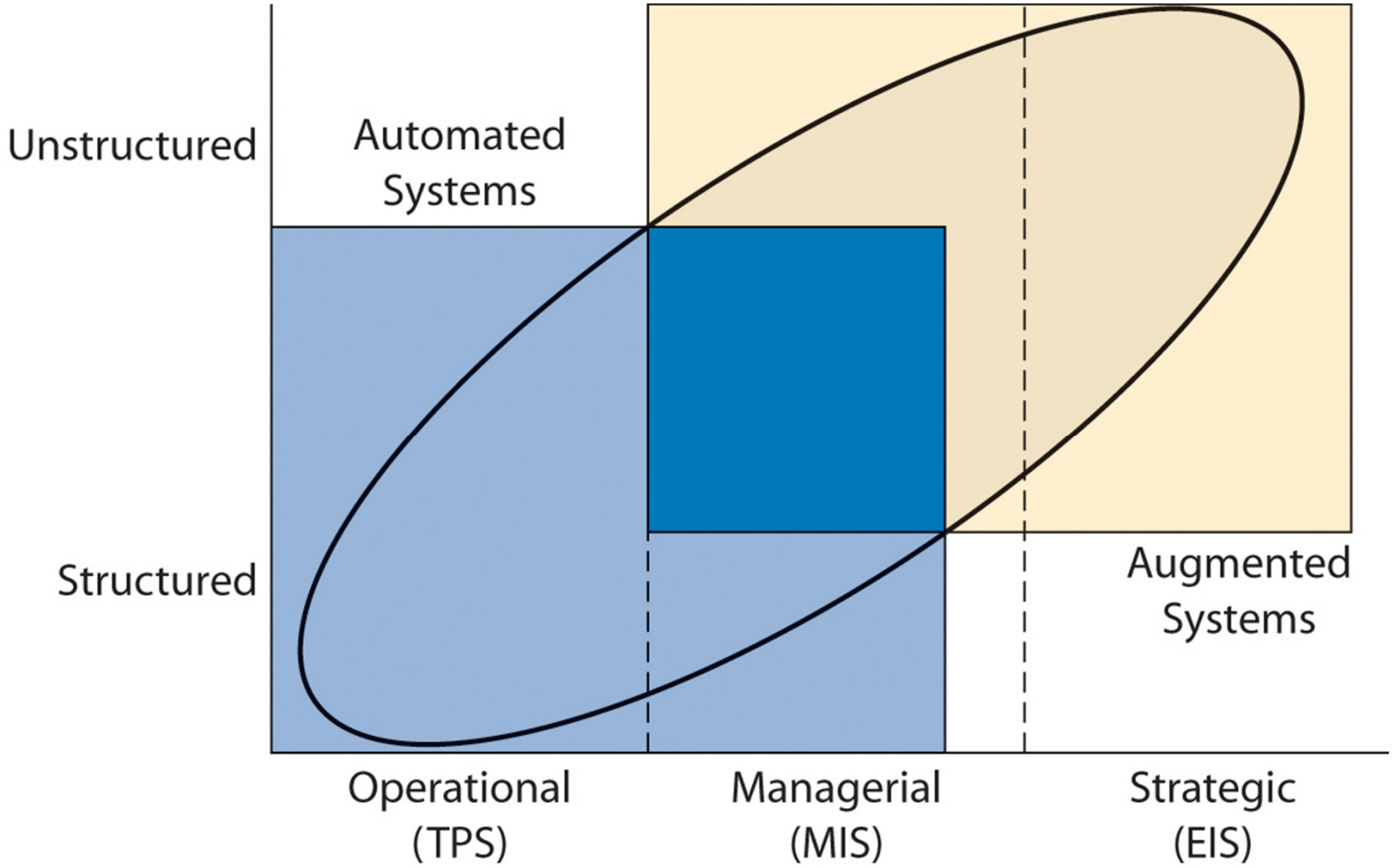

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Data Mining

- change the data into information by collating and grouping

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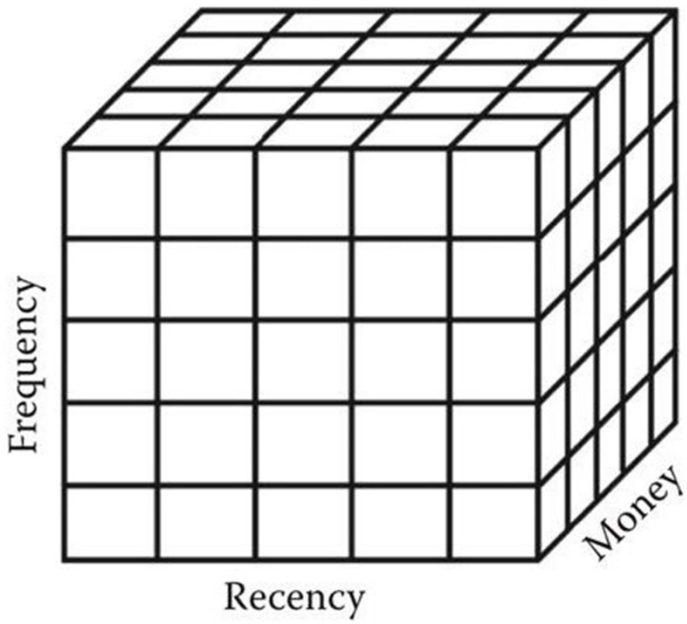
RFM Method

-one way to group customers is the RFM method

- this method groups customers on the basis of
  - Recency:
  - Frequency:
  - Money:

FIGURE 8.8 RFM cube.



RFM Method

Way of analyzing and ranking customers according to their purchasing patterns

A simple technique that considers

- How recently (**R**) a customer has ordered
- How frequently (**F**) a customer orders
- How much money (**M**) the customer spends per order

MIS - Business

Common Sense

- what process do you use currently to make decisions ?

- would the same process(es) work in a business environment ?