Decision Making and Problem Solving

Session 2 Problem Solving using the Logical Approach

Andre Samuel

http://www.samuellearning.org
From Last week

• Have a read of handout 1 on website [http://www.samuellearning.org](http://www.samuellearning.org)

• Think whether ‘you are logical or magical problem solver?’

• If you were the CEO of your organization, how would you ensure the organisation remained competitive?
The Business Environment

• The environment in which organizations operate today is becoming more and more complex, creating:
  • opportunities, and
  • problems
  • Example: globalization

• Business environment factors:
  • markets, consumer demands, technology, and societal...
## Business Environment Factors

<table>
<thead>
<tr>
<th>FACTOR</th>
<th>DESCRIPTION</th>
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<tbody>
<tr>
<td>Markets</td>
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<td></td>
<td>Strong competition</td>
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<td>Expanding global markets</td>
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<td>Blooming electronic markets on the Internet</td>
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<td>Innovative marketing methods</td>
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<td>Opportunities for outsourcing with IT support</td>
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<td></td>
<td>Need for real-time, on-demand transactions</td>
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<td>Consumer demand</td>
<td>Desire for customization</td>
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<td></td>
<td>Desire for quality, diversity of products, and speed of delivery</td>
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<td></td>
<td>Customers getting powerful and less loyal</td>
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<tr>
<td>Technology</td>
<td>More innovations, new products, and new services</td>
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<td>Increasing obsolescence rate</td>
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<td>Increasing information overload</td>
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<td>Social networking, Web 2.0 and beyond</td>
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<td>Societal</td>
<td>Growing government regulations and deregulation</td>
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<td>Workforce more diversified, older, and composed of more women</td>
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<td>Prime concerns of homeland security and terrorist attacks</td>
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<td>Increasing social responsibility of companies</td>
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<td>Greater emphasis on sustainability</td>
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Organizational Responses

• Be Reactive, Anticipative, Adaptive, and Proactive
• Managers may take actions, such as
  • 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  ...cont...>
Managers actions, continued

• 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)
• Automate many tasks of white-collar employees
• Automate certain decision processes
• Improve decision making by employing analytics
How are Decisions Made?

• Rationality
• Bounded rationality
• Intuition
Rationality

• Problem is clear and unambiguous
• Single, well defined goal is achieved
• All alternatives and consequences are known
• Preferences are clear
• Preferences are constant and stable
• No cost or time constraints exist
• Final choice will maximise payoff
Bounded Rationality

- Decision-making behaviour that is rational BUT is limited by the ability to process information
- Cannot analyse all possible information
- Result is ‘satisficing’ – accepting solutions that are ‘good enough’
- Need to bear in mind ‘escalation of commitment’ – increased support for a previous decision despite evidence it is wrong
Degree of Structuredness (Simon, 1977)

• Decision are classified as
  • Highly structured (a.k.a. programmed)
  • Semi-structured
  • Highly unstructured (i.e., non-programmed)
Structured Problems and Programmed Decisions

Structured problems are straightforward, familiar and easily defined. They are solved by:

• Procedures
• Rules
• Policies
• A repetitive decision that will be used again in the future
Unstructured Problems and Non-programmed Decisions

Unstructured problems are new and unusual, with ambiguous or incomplete information. They are solved by:

• A unique decision
• Custom-made solution
• A solution that may never be required again in future
Types of Control (Anthony, 1965)

- Strategic planning (top-level, long-range)
- Management control (tactical planning)
- Operational control
### A Decision Support Framework
(by Gory and Scott-Morten, 1971)

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

Simon (1977) purported that decision making should:
1. identify all the possible alternatives;
2. determine all the possible consequences of these alternatives;
3. evaluate all the possible consequences.
• Problem solving involves processing information.
• Conceptualising problem solving in this way, Newell and Simon (1972) argued that it is a three-stage process:
  1. Recognising the task environment
  2. Transformation into the person’s problem space
  3. Processing the data and moving towards the goal
Figure 2.1 Problem solving according to Newell and Simon (1972)
Decision Making Process

Four phases (Simon, 1977):
- intelligence
- design
- choice
- implementation
Adair (1997) *The classic approach to decision making*
Logical Approach

• Step - by step
• Systematic
• Ensures each stage fully covered
• Disaster plans
• Expert systems

• Use with intelligence and care
**ASK SIR L**

- A appreciate
- S specify
- K causes

- S solutions
  - Generate
  - Select

- I implement
- R review
- L earn

**Simon’s Model**

- Intelligence stage
- Design stage
- Choice stage
- Implement stage
A appreciate

• A problem exists
• Early identification
• Minimise consequences
• Time to prepare / react

• Scan the environment - Market Analysis
• SWOT analysis
A appreciate

• Problem may not be ‘something going wrong’

• But ‘how to achieve a desired result’

• Approach is the same!
S specify

• Exactly what is the problem
• **Problem** is the difference between what people desire (or expect) and what is actually occurring
  • Symptom versus Problem
• Scale and consequences
• Is it really a problem?
• Is it ‘your’ problem?
• Is it soluble?
S specify

• What is / is not going wrong
• Who is affected? who isn’t?
• what happens?
• Where? How? When?
• Why? Leads to next stage
S specify

• Problem Classification
  • Classification of problems according to the degree of structuredness

• Problem Decomposition
  • Often solving the simpler sub-problems may help in solving a complex problem
  • Information/data can improve the structuredness of a problem situation

• Problem Ownership
K causes

• Of these events
• Causes, not effects
• Are you sure?
• Weight for probability
• Consequences of being wrong?
K causes

• Brainstorm?
• Potential:
  all, not just ‘obvious’ ones
  how do you know?
• Possible
• Actual
Sol n solutions

• To achieve the desired result
• Often, to return to the desired state
• Tackle the causes

• Generate
• Select
Generate

• Solutions that tackle causes
• Or effects
• Solve whole problem
• Or particular aspects
• Combination of ideas

• Lessen likelihood
• and / or consequences
Brainstorming

• Group generate ideas
• Broad / wide-ranging
• Include ‘daft’ ideas
• And impractical ones
• Non-critical
• Spin off each other
Brainstorm Exercise

• In groups of 4ish

• For 10 minutes

• Discuss ‘how to achieve work-life balance’

• Present findings in 2 minutes
Select

• Relative merits
• Weighted for importance
• Will it work?
• Test, trial, model, simulation
• Tackle ‘down side’
• Avoid over-reaction / over kill
• Beware hidden agendas / vested interests

• 3 key Factors:
  1 Suitability
  2 Acceptability
  3 Feasibility
Adair (1997) Lobster Pot Model
Adair (1997) Decision Making Criteria

- MUST
- SHOULD
- MIGHT
I implement

• The chosen solution
• Often the hardest part
• Particularly if ‘nasty’
• Plan
Project Management

- Individual in charge
- Consultants?
- Resource constraints
- E.g. time and £
- Required actions
- Specific responsibilities
Change Management

• ‘Softly, softly’
• Time to understand, accept and adjust
• Dry runs; pilot schemes

• Or ‘Big bang?’
• Over in 1 go; concentrated effort
• Less confusion
R review

• Check the solution is working
• Overall and elements
• Outcomes / objectives achieved?
• Cause and effect
• Immediacy of outcomes
• Reasons for failure
• Need to ‘start again’?!
L  learn

• From the experience
• Avoid repeating mistakes
• Encourage repeated success
• Improve problem solving
• Overall and elements
• Correct approach? e.g. ASK SIR L
• Done correctly?
Learn

• Spread the word
• ‘Learning organisations’
• Report, inform
• Instruct, train
• Processes and procedures
• Practice
• Test
Simon’s Decision-Making Process  
Turban et al  
(2011)
References


