

Lecture 21/22, Mar 6, 2023

Decision Making and Problem Solving

- The process of developing a commitment to some course of action
- Decision making is problem solving
 - Problem: when a gap is perceived between existing state and desired state
- Decision making involves making a choice and committing resources; it is a process
- Problems can be well-structured (clear existing and desired state and how to get there; familiar problems that have standard operating procedures) or ill-structured (unclear existing and desired states and how to get there; unique problems without a standard procedure)
 - With experience, an ill-structured problem becomes a well-structured problem
- The rational decision-making process:
 1. Identify problem
 2. Search for relevant info
 3. Develop alternative solutions
 4. Evaluate alternative solutions
 5. Choose best solution
 6. Implement solution
 7. Monitor and evaluate chosen solution
- Perfect rationality: a decision strategy that is completely informed, perfectly logical and oriented towards economic gain (minimize cost, maximize output)
 - The “Economic Person” is the perfect decision maker
 - The Economic Person is:
 - * Completely informed, able to gather information without cost
 - * Perfectly logical
 - * Only decides based on economic gain, never emotions etc
- Bounded rationality: a decision strategy that relies on limited information and focuses on using what’s in front of you, reflecting time and other constraints

Stage	Perfect Rationality	Bounded Rationality
Problem Identification	Easy, accurate perception of gaps that constitute problems	Perceptual defence; jump to solutions; attention to symptoms rather than problems; mood affects memory
Information Search	Free; fast; right amount obtained	Slow; costly; reliance on flawed memory; obtain too little or too much
Development of Alternative Solutions	Can conceive of all	Not all known
Evaluation of Alternative Solutions	Ultimate value of each known; probability of each known; only criterion is economic gain	Potential ignorance of or miscalculation of values and probabilities; criteria include political factors; affected by mood
Solution Choice	Maximizes	Satisfies
Solution Implementation	Considered in evaluation of alternatives	May be difficult owing to reliance on others
Solution Evaluation	Objective, according to previous steps	May involve justification, escalation to recover sunk costs, faulty hindsight

Figure 1: Comparison between perfect and bounded rationality

- 2 types of decision makers:
 - Maximizers: using perfect rationality to get the best results
 - * Spends more time and energy and are less happy with outcomes
 - Satisficers: using bounded rationality, accepting the “good enough” to get good results given minimal effort

- * Can move on after deciding, happier with outcomes
- Framing: the aspects of the presentation of information that are assumed by decision makers
- Cognitive biases: tendencies to acquire and process information in a particular way that is prone to error
- Solution implementation: taking the decision and implementing it
 - Decision makers are often dependent on others to implement their decisions
 - When the implementer is not the decision maker problems can arise due to differential motivation, ability, and understanding of the problem
- Solution evaluation
 - Perfectly rational decision makers should be able to evaluate the effectiveness of a decision completely objectively
 - Bounded decision makers might encounter problems:
 - * Justification: overconfidence in the adequacy of your own decisions
 - Trying to defend your own decisions even when they're bad
 - * Sunk cost: justifying a faulty decision by arguing that it's not worth it to go back
 - Sunk costs are permanent losses of resources as the result of a decision
 - People are unlined to stick to a decision due to sink costs
 - Whether it's a sunk cost or an investment depends on framing – what is your perception?
 - Escalation of commitment (commitment bias): the tendency to invest additional resources in an apparently failing course of action
 - People acting as if they can recoup sunk costs
 - Personality, moods, and emotions can affect this
 - e.g. getting married when you're having relationship problems
 - To prevent this, shift the framing from saving rather than spending
 - * Hindsight: the tendency to review the decision-making process that was used to find what was done right or wrong
 - The tendency to assume (after the fact) that we knew the outcome all along
 - Taking personal responsibility for successful decisions while denying responsibility for unsuccessful outcomes
 - e.g. "I had a feeling this won't work out, look what happened now"
 - * Moods and emotions:
 - When we're in positive moods we tend to focus on the positives and overlook the negatives

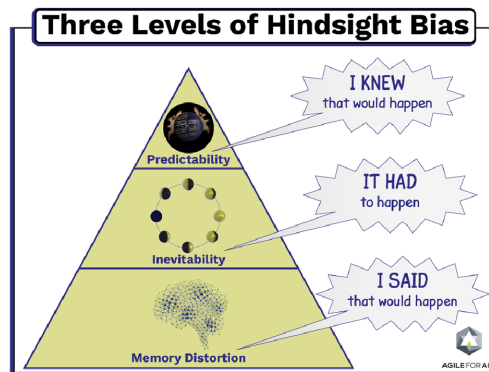


Figure 2: Levels of hindsight bias

- Common cognitive biases:
 - Overconfidence
 - Confirmation bias
 - Recency effect: more recent experiences have greater effect
 - Law of small numbers: rare exceptions and small samples
 - Anchoring

- Hindsight

Group Decision Making

- Advantages:
 - Decision quality (everyone's knowledge contributes)
 - * Groups are more vigilant (careful), generate more ideas, can better evaluate ideas
 - Decision acceptance and commitment (making sure everybody has the same view)
 - * Group decision is more acceptable to those involved
 - * Acceptability is especially important to make sure a decision is actually implemented
 - Diffusion of responsibility (less responsibility per person)
 - * If the decision doesn't turn out well, no one is singled out for punishment
- Group decision making makes ill-defined problems easier solve, but well-defined problems harder to solve
- Groups are more effective because:
 - They have more diversity in experience and skill
 - Can evaluate in different aspects and characteristics
- Disadvantages:
 - Time: group decisions take much longer because people need to discuss
 - Conflict: people may have different opinions, which leads to conflict
 - Domination: when a single (or a small group of) individuals dominate the conversation, the advantages of group decision making will not be realized
 - Groupthink: when group pressure damages the mental efficiency, reality testing, and moral judgement of decision-making groups
 - * Did a unanimous decision arose naturally or is it because we didn't consider all the factors?
 - * If everyone is always agreeing to everything, it might be a symptom of groupthink
 - * Other symptoms include a sense of superiority, self-censorship (staying quiet and accepting others' opinions even though you disagree), stereotyping of other groups, overconfidence, rationalization
 - * To overcome groupthink:
 - Training discussion leadership
 - Leaders should focus on decision making processes, and not exert pressure over decision outcomes
 - Establish norms that encourage and reward responsible dissent
 - Outside experts can be brought in from time to time
 - Stimulating and managing controversy to encourage discussion and bring attention to weaknesses
 - Using devil's advocates
 - Traditional and electronic brainstorming with anonymity
 - Nominal group technique: each individual generates ideas separately, and then shares them to the group for discussion and objective ranking
 - Structured ranking process encourages individuals to share their opinions separately and evaluate them objectively
 - Delphi technique: individuals contribute ideas anonymously, then revise them based on feedback from others
- Follow the rational decision making model