STRATEGIC DECISION-MAKING: AN INTRODUCTION TO BOUNDED RATIONALITY AND THE INFLUENCE OF COGNITIVE ERRORS

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In making decisions, your own mind may be your worst enemy.

Hammond *et al*

Introduction

Strategic decision-making is the process by which top management makes its most fundamental decisions (Das and Teng: 1999: 758). It almost goes without saying, however the key responsibility of the senior management team in an organisation is to make strategic decisions. These overarching decisions are important in that they shape the organisation and its future and determine the resources committed. This is the reason the senior management team, and especially the CEO, are probably the most important group of people in any organisation; and the best remunerated. As the key decision makers, they are entrusted to use their expertise, experience and judgment to make the strategic decisions that will position the organisation to realise its mission and to be successful into the future. No other single group of people has a similar level of influence on the performance of the organisation.

In that context, it would be expected that the senior management team of an organisation would approach a decision situation in as rational a manner as possible: carefully weighing the evidence, evaluating the alternatives before coming to a considered choice. In reality however, the rationality of strategic decision-making is open to question. For example, Das and Teng identify the impact of organisational politics on strategic decision-making. They describe how competition and resolution of conflicting interests are at the heart of strategic decision-making. The senior management team often have objectives that are conflicting and the outcome of the decision-making process is the result of compromise and coalition building. Additionally, Das and Teng also identify the 'garbage can' (mal)approach to strategic decision-making, where the decision results from an interaction between four independent streams of events: problems, solutions, participants, and choice opportunities: or put another way, chance and timing!

This article looks at the process of strategic decision making, and in particular the cognitive difficulties and shortcomings that afflict decision makers. According to Hammond *et al*, sometimes the fault lies not in the decision-making process but rather in the mind of the decision maker and the way the human brain works can sabotage decisions. According to Das

and Teng, 'cognitive biases are and ever-present ingredient in strategic decision making'. As a reference point, the article will initially outline the rational model of decision making, and will then identify two alternative perspectives on decision making: bounded rationality and heuristics. The article will then describe a variety of decision-making shortcuts and cognitive biases, and will conclude by identifying possible approaches that senior management may utilise to manage and reduce the impact of such cognitive biases.

The Rational Model of Decision-Making

In management literature, the rational model of decision making is considered the model to exploit, even when the circumstances prevent a fully rational approach. The rational decision-making model is the most common description of the decision-making process. It is *normative*: it describes how decisions should ideally be made. The rational decision-making process is a cognitive, multi-step process for making choices between alternatives. The rational decision-making model assumes *homo economicus*, or that people emphasise logic, objectivity, and analysis over subjectivity and instinct when making decisions. Unfortunately, as is noted later in the article this does not reflect reality. For example, Thaler and Sunstein describe in *Nudge* (2009), the theoretical *homo economicus*. A person who can think like Albert Einstein, store as much memory as IBM's Big Blue and exercise the willpower of Mahatma Gandhi. In other words, *homo economicus* does not exist outside of economic models. The steps in the rational decision-making model are shown in Figure 1.

Figure 1: The Rational Decision-Making Model
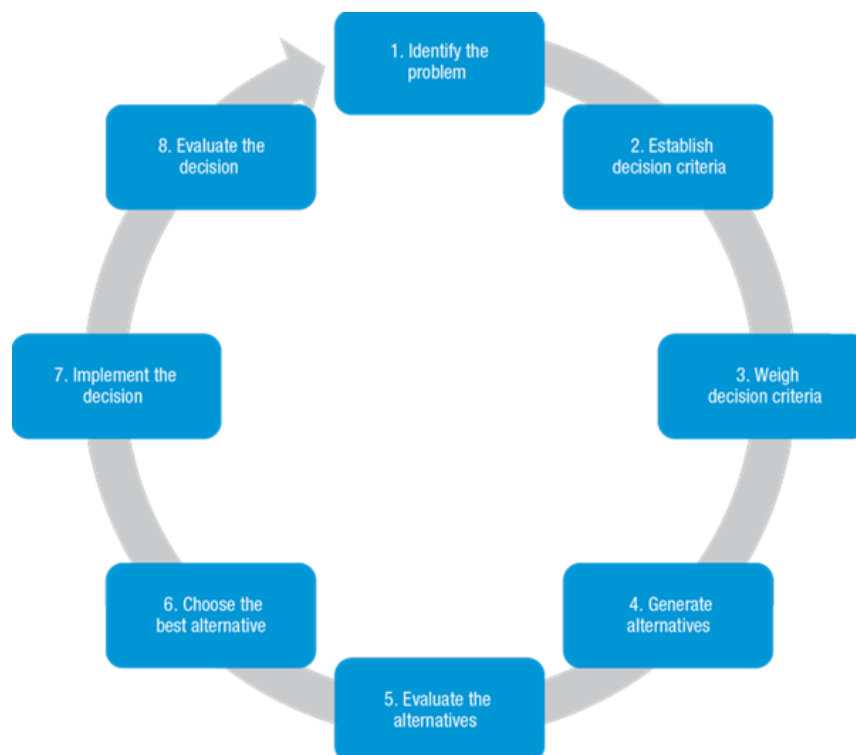
The rational decision-making model starts off with the identification of a problem and therefore the need to make a decision. The model emphasises the need to identify the fundamental nature of the problem, not the manifest symptoms. Once the problem is accurately described, the decision maker(s) must identify all the relevant criteria to evaluate possible solutions, and to weight these - as not all criteria are equally important. The next step involves identifying all possible alternative solutions to the problem and then to analyse these, based on the pre-established decision criteria. Based on the analysis, the decision maker must then make a choice. This step is more involved than imagined: for example, the decision maker may decide to choose the option that ranks highest on the most important criteria, or the alternative with the lowest risk, or the alternative that ranks the highest on average over all the comparative criteria, and so on. The last two steps involve actually implementing the alternative chosen and to then over time, assess its effectiveness and to determine, what other actions, if any, are necessary.

The Assumptions of the Rational Decision-Making Model

The rational decision-making model describes the process to reach decisions that are optimal, and has several underlying assumptions:
1. The decision issue is clear and well understood
2. The decision makers agree on criteria and weightings to be used in analysing the possible alternative courses of action
3. The decision makers are aware of all possible alternative courses of action
4. The objectives to be achieved in addressing the issue are clear, agreed and do not change
5. The final decision will maximise outcomes
6. There is full information available to decision-makers because there are no time or cost constraints
7. Decision makers are rational and fully objective

Unfortunately, it is obvious that most, if not all, of these conditions do not exist in reality, and certainly not in the context on the very complex strategic decisions made by the senior management of an organisation. Strategic decisions, and the resulting organisational implications, mostly rise in circumstance where the top management team simply cannot have all the information they would wish, understand all possible options and consequences or even necessarily agree on organisational priorities. When making strategic decisions, there are always time, information and cost constraints that undermine the decision-making process.

Alternative Perspectives on Decision Making

As a counterpoint to the rational model, the section below briefly outlines two alternative approaches to the problem of organisational decision making.
1. Bounded rationality and satisficing
2. Intuition and Heuristics

1. Bounded Rationality and Satisficing

The theory of Bounded Rationality was developed by Herbert Simon: for which he would receive the Nobel Prize for Economics. Simon argued that there are limits to how 'rational' people can be. The human mind necessarily restricts itself. It is bounded by 'cognitive limits'. In bounded rationality people do not seek to maximise benefits or outcomes when making decisions, as is assumed by the rational model of decision-making. Instead, according to Simon, people in the real world look for a solution that is 'good enough': an outcome that is satisfactory, rather than ideal. Simon described this as satisficing, a portmanteau of 'satisfy' and 'suffice'. There are several reasons why people do this, in particular people's inability to obtain, digest and process all the information that would be needed, and to do it within the timeframe necessary.

Simon applied the concept of satisficing to organisations as well as to individual people. He suggested that when making decisions, managers do much the same thing in their work as in their private life. 'Whereas economic man maximises, selects the best alternative from among all those available to him, his cousin, administrative man, satisfices, looks for a course of action that is satisfactory or 'good enough''. In other words, managers do not, and cannot, identify every possible solution to a problem, weigh and rate these with precision, and then choose, based on fully accepted criteria.

In later work, Simon went on to discuss a different interpretation of bounded rationality: rather than seeking to maximise decision utility, people follow some reasonable procedure, or sequence of thoughtful steps when they decide on an issue. That is, the behaviour and decisions of people are governed by 'procedural rationality': people seek to utilise reasonable procedures rather than sophisticated computations which are beyond their abilities. In other words, people should employ reasonable steps to ensure a best possible, though not perfect, decision outcome.

2. Intuition and Heuristics

Strategic decision-making involves time pressure, complexity and uncertainty and the rational decision-making process, which is slow and structured, may not always be appropriate. On the other hand, intuition allows senior management to deal with uncertainty and it stimulates the 'creative cognitions' that are key to the exploration of novel problem solutions. Calabretta *et al* (2016) describe how in an intuitive decision-making process, decision makers consciously identify a problem but then subconsciously consider and process their experiences, concepts and ideas connected with the problem, subconsciously make associations across these, and then consciously generate a solution. Thus, similar to rational decision-making, the intuitive process includes problem definition, analysis and synthesis, but the process occurs faster, and is deeply intertwined and mostly subconscious. Intuition, as applied here, is not random or irrational but is based on the decision-maker's expertise, experience and a solid understanding of the problem.

Related to intuition, *heuristics* are rules of thumbs for problem solving. According to Bingham and Eisenhardt (2011) heuristics represent a 'rational' decision-making strategy in very unpredictable situations. They conclude that heuristics are not just cognitive shortcuts, but are a means of using experience and tacit understanding to develop value-creating strategies. Managers learn processes from experience: repeating these processes allows a manager to derive inferences and insights from the outcomes of their actions. In other words, managers develop expectancies of how issues are interconnected, or 'cognitive maps' based on accumulated knowledge and experiences. Because management can rarely know the exact probability that would lead to the best outcome, they tend to apply certain heuristics using their judgment of the likelihood of these outcomes and events. In addition to generalised heuristics, research has anecdotally identified heuristics that are unique to particular firms, for example Yahoo's rules for alliance formation and Intel's manufacturing rules.

Problems in Rational Decision-Making

Strategic decisions are never simple to make. In addition to their complexity and ambiguity strategic decisions, similar to any decision, are undermined by the shortcomings in how people make decisions. Research has identified a wide range of such flaws in the way people think when making decisions. These flaws are especially dangerous for senior management, whose success depends on the strategic decisions that shape the organisation. This section will outline a number of well-documented cognitive biases that are particularly likely to undermine business decisions:
1. Groupthink
2. Anchoring bias
3. Framing bias
4. Sunk cost and escalation of commitment biases
5. The herd instinct
6. Over-optimism, overconfidence and loss aversion

1. Groupthink

The phase 'Groupthink' was coined by Irving Janis in 1974. Groupthink occurs when a team becomes so similar in their outlook that they lose the ability to be creative in their decision making. The desire for consensus overrides team member's desire to present alternatives, criticise a position, or express a contrary opinion. The result is an environment where perspectives aren't challenged. Groupthink requires individuals to avoid raising controversial issues or alternative solutions, and there is loss of individual creativity and independent thinking. Some employees may even feel uncomfortable offering thoughts outside 'the norm', and over time, the strategic decision-making process will weaken with the narrowed thinking that groupthink creates. Groupthink in the first instance, arises out a dysfunctional team environment and dynamic. There are several factors that influence the likelihood of whether or not groupthink will impact the decision-making process, including:
- A strong, persuasive group leader.

- A high level of team cohesion.
- A flawed team structure.
- The situation, and in particular, the existence of a crisis.

Groupthink may manifest in a wide range of situations and across many types of groups and team settings. For example, from the perspective of strategic decision-making, and referring to the list above, it is likely that a charismatic and more authoritarian CEO may readily create the circumstance in the senior management team where groupthink could occur. The senior management team would create an illusion of unanimity as no member overtly disagrees, and would pressurise, even if only implicitly, their colleagues that suggest doubts. This would likely even be the case where the evidence does not support the decision: groupthink leads to rationalisation and complacency. The senior management team know better!

2. Anchoring

The phenomenon of anchoring occurs because people tend to weight disproportionately one piece of information when making decisions: usually the first information they receive in relation to an issue. Similar to the perceptual error of "first impressions", an initial impression or piece of information "anchors", or shapes, subsequent judgments and conclusions on that issue. This can happen even if the initial piece of information is not fully relevant, or subsequently turns out to be inaccurate.

An anchor may take many forms: it can be a comment from a colleague, an article in the newspaper or even just a previous experience. For example, a product manager who is attempting to project sales figures for a product for the coming year will usually, and understandably, look at the previous year's figures as a starting point. In effect, the previous year's figures become an anchor – a reference point that tends to be given too much weight. The product manager will adjust these figures based on other factors, for example expected market growth rates, but the starting point of the previous year's figures will over-influence the sales projections. In situations where trends are relatively stable this may not undermine the usefulness of the projections, but where there is more rapid changes, over-reliance on the previous year's figures may lead to quite inaccurate projections.

While the phenomenon of anchoring may create problems in decision-making, it may also be used or manipulated to deliberately influence a decision in a particular direction. From this perspective, the person, or group, making a proposal may influence the decision by anchoring the discussion. For example, the CEO in outlining the suggested main points of the firm's new strategy, will provide the initial context - the anchor - for subsequent discussion. Thus, the CEO may begin to shape the decision about the firm's strategy before management colleagues and the Board of Directors even have sight of any proposals.

3. Framing bias

Although objectively it should not matter, how a problem is initially framed influences the way people think about it and ultimately perhaps the decision that they make. In other words, how the situation is described will influence the decision-making process. The initial framing of the situation provides a reference point for the subsequent analysis and discussion and people tend not to reframe a situation, once it is described. The framing bias frequently interacts with other psychological shortcuts: it may introduce an anchor or highlight sunk costs. For example, consider these two statements:
1. "A decision to close the manufacturing facility will result in a definite loss of one third of the workforce."
2. "A decision to close the manufacturing facility will enable the firm to save two thirds of the workforce."

Under the assumptions of perfect rationality, the framing of the problem should not matter as both statements are identical, however most people will judge statement two as more acceptable, as it framed in a more positive light.

Additionally, when a problem is posed in terms of potential gains people are generally more conservative and risk adverse. However, when a problem is posed in terms of potential losses, people are generally more aggressive, or accept higher risks. Similar to the anchoring bias, the framing bias may also be inadvertently used or deliberately manipulated to influence a decision in a particular direction. For example, the initial framing, or description of a particular strategic issue - by the CEO, or other senior manager - may influence the strategic decision finally taken. But despite its impact, it is unlikely even at senior management level, that the initial framing of the decision will be scrutinised.

4. Sunk-Cost and Escalation of Commitment

The sunk cost bias describes the phenomenon where people irrationally follow through on an activity that is not meeting their expectations because of the time and money already spent on it. People may base a decision on the desire not to write off the time or money already invested in a project, instead of cutting their losses and making the decision that would give them the best outcome going forward.

The sunk cost trap helps explain why senior management continue to use a particular strategy that is not having the expected impact. The CEO and senior management are reluctant to admit, even to themselves, that they have made a mistake and implemented an inferior strategy. They may believe that to change strategy is to admit failure. This may also potentially impact on how their performance is viewed, both internally and externally to the organisation. As a result, management may continue with a particular strategy, or even invest additional resources, in the forlorn hope that the poor strategic decision will turnaround. A famous example of the sunk cost phenomenon is the failed supersonic Concorde programme

that funding governments insisted on completing despite the airplane's poor outlook. In fact, the sunk cost bias is sometimes referred to as the 'Concorde fallacy'.

Related to the problem of distorting decision-making as a consequence of sunk costs, is the problem of escalation of commitment. Escalation of commitment describes situations where objective evidence indicates that continuing with an investment, or a strategy, is ill-advised and despite this, senior management decide to commit further resources: time; money; organisational credibility; and so on. The closer a project is to completion; the more likely management is exhibit escalation of commitment.

The reasons for escalation of commitment are similar to those that influence sunk cost decisions. When the senior management feel responsible for a strategy that is not working, it intensifies the threat associated with failure, and increases the management's motivation to justify the original decision. In addition, the management are more likely to note and weigh evidence that supports the decision and ignore evidence that does not, thus justifying the original decision.

5.   Herd Instinct

Herd instinct is typified by a lack of individual decision-making and reflection, causing people to think and act in the same way as those around them. In place of making an objective, independent decision, people effectively copy the decisions of others. The influence of the herd instinct may lead a CEO and senior management toward making similar decisions as rivals. The decision is based more on the conclusion 'every other firm else is doing this', rather than on an objective evaluation of the situation. The herd instinct tends to indicate a lack of creativity and analysis on the part of the senior management.

The main driving force behind herd instinct tends to be the fear of regret of missing out on an opportunity that others are pursuing. A second rationale for herd instinct behaviour is the natural human tendency to fear being left alone: there is safety in the herd. In the circumstance where the CEO and senior management team are forced to defend the strategy being pursued, they can rationalise their decisions by pointing to what their competitors are doing: the same thing! In other words, if everyone is doing it, how can it be wrong?

The phenomenon of 'information cascades' creates a similar effect. An information cascade refers to the process where one person observes the actions of others and then mimics their behaviour: despite not having objective evidence of the benefits of the behaviour. In other words, an information cascade develops when people ignore information in favour of inferences based on other people's actions: people feel an innate pressure to conform with others!

6. Overconfidence, Over-optimism, and Loss Aversion

The people who end up being promoted to CEO and other senior management positions understandably tend to be confident and optimistic: otherwise it is unlikely that they would ever been that successful. However, these characteristics tend to have a potentially significant impact on strategic decision making. By its very nature, strategic decision-making involves uncertainties and risk, and managers' attitudes toward uncertainty and risk inevitably feed into the decisions made.

Strategic decisions have two components: the probability of a particular outcome and the 'value' of that outcome. When making a judgment on the probability and value of a particular future positive outcome, people tend to be overoptimistic and overconfident. In general, people intrinsically believe that the future will be better! This reaction is likely to be further exacerbated by the more assertive and confident nature of people in senior management positions. The strategic decision-making process is therefore frequently based on unrealistic assumptions and forecasts. Further, senior management tend to downplay the existence and impact of (the inevitable) challenges and difficulties associated with a particular strategic decision.

As a counterpoint to the influence of overconfidence and over-optimism, senior management contradictorily may also fall victim to the influence of loss aversion. Loss aversion describes the tendency for people to experience, or feel, losses more acutely than gains. In other words, people will resent and react more to a loss of €100 than they will enjoy a win of €100! It is thought that the pain of losing is psychologically about twice as powerful as the pleasure of winning. Loss aversion tends to influence the evaluation of decision outcomes and senior management's outcome preferences. It will lead to senior management being overly prudent and to under-commitment to an otherwise objectively attractive opportunity.

Addressing Cognitive Biases

In the process of strategic decision-making, senior management may succumb to one, or a combination of several, cognitive biases and decisional shortcuts. While these cannot be eliminated, senior management do have a range of concrete strategies to help manage and mitigate these issues.

1. The adage 'forewarned is forearmed', is particularly apposite in the context of cognitive biases. The senior management in an organisation need to be aware of the existence and possible impact of cognitive biases and potential subconscious decision-making shortcuts. This awareness should ensure that the assumptions and beliefs underpinning decisions will be challenged and the supporting analysis is credible.

2. Related to the above, senior management, and in particular the CEO, need to create the environment where colleagues and reports feel empowered to question and debate strategic decisions and the rationale that underpins them.

3. Where the senior management team is more diverse, in gender, age, career background, etc, there is less likelihood of a dysfunctional and sycophantic culture evolving, where decisions are unquestioned. Senior management diversity is particularly important in reducing the potential for groupthink and its consequences.

4. In a similar manner, senior management should ensure that all strategic issues and decisions are evaluated from multiple perspectives: even if there is seeming agreement among the senior management team. Related, it is frequently useful to have a senior manager 'appointed' devil's advocate when discussing a particular proposal. The manager's role will be to question and criticise all elements of it. This process should identify the weaknesses in the proposal and its related assumptions.

5. Senior management should ensure that strategic decision-making is built on evidence and research. When making strategic decisions, reliable information and data analysis are critical to effective decision-making and reduces the possibility for untested assumptions influencing the decision-making process.

6. Senior management should make use of credible expertise in decision-relevant areas. These experts may be inhouse, for example, research engineers or marketing and sales managers, or external, for example industry experts or academics. Irrespective of the source, these people will bring not only their expertise to the process, but are most likely to be objective in the advice they provide.

7. Lastly, but critically, senior management need to ensure that individually and as a team, they are honest and openminded in how to approach the strategic decision-making process and the particular decision at hand. The senior management team need to accept other perspectives, avoid becoming defensive and admit when strategic decisions have not worked. They need to be open to exploring both the objectives of the firm – and of themselves.

Conclusion

The most important organisational responsibility of senior management is to make decisions: in particular, the strategic decisions that will shape the organisation and its future. These decisions are complex and made in a context of uncertainty and ambiguity. The senior management of an organisation, similar to every other person, are subject to being influenced: and in especially by their own subconscious minds and biases. People cannot be fully rational when making decisions, and do not have the time, inclination or capability to follow completely a purely rational approach to making a decision. Instead, even important decisions are influenced, sometimes undermined, by the innate limitations and cognitive biases of individuals. Because these limitations and cognitive biases are intrinsic to human

nature, they cannot be 'eliminated' from the decision-making process. Instead, people, including senior managers, need to reflect on and manage how their own assumptions, beliefs and emotions may seek to influence their decisions: forewarned is forearmed.

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