



Managers and their not-so rational decisions

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Abstract

Today's corporate environment requires managers to be excellent decision makers. Their ability to make fast, widely-supported, and effective decisions will, in large part, shape the performance of their firms. In this article, we describe two cognitive systems that influence decision making. System 1 refers to a process that is fast, effortless, and intuitive. System 2 is a slow, controlled, and rule-governed decision-making process. Both are important to a wide variety of managerial decisions, and they interact with each other. There are, however, a number of forces at work that hinder the effectiveness of these processes. For example, we know from prospect theory that managers are unwilling to incur loss, so much so that they often make irrational decisions based on a small probability that they could avoid such loss. Another example, the escalation of commitment, explains why managers may continue to dedicate resources to failed projects. We describe these and other biases, with a view toward helping managers better understand the problems of decision making and improve the effectiveness of their decisions.

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1. Managerial decision making

Each day, practicing managers around the globe make decisions, some of which are more important than others. Based on the prominence of decision making in everyday life, researchers in various disciplines – both within and outside of business schools – have examined the ways in which individuals make decisions. That various disciplines within business schools have studied decision making should come as no surprise, as managers make decisions that span the various business functions.

Webster's Dictionary defines decision as "the act of making up one's mind." Hastie (2001) suggests that decisions involve three main components: courses of action (i.e., alternatives), beliefs about objective states and processes (including outcome states), and desires (i.e., utilities) that correspond to the outcomes associated with each potential action–event combination. Stated more simply, Hastie suggests that good decisions are those which link decision-makers' utilities with decision outcomes.

In business settings, managers make various types of decisions. Managers may make relatively minor decisions that are primarily operational or tactical in nature. For example, a manager may need to decide which type of napkins to stock in a

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restaurant. In contrast, managers may make more strategic decisions that involve larger outlays of capital. Such strategic decisions may include, for example, potential acquisition targets or host countries for foreign direct investment.

A decision implies that an individual has access to two or more alternatives. Some decisions may involve many alternatives, such as “Which country should we enter to begin our globalization effort?” In contrast, other decisions may involve only two alternatives (i.e., “yes/no” decisions), such as “Should I hire this individual to work in our department?” In fact, Henry Mintzberg studied the decision-making processes used by executives and found most decisions that executives faced were yes/no decisions (Mintzberg, 1975).

The decisions managers make vary in risk and uncertainty. Although some managers use these two terms interchangeably, they are, in fact, distinct. Frank Knight (1921) suggested long ago that *risk* refers to situations in which statistical probabilities can be assigned to alternative potential outcomes. The probabilities associated with the outcomes of roulette, for example, are known to individuals in advance. In contrast, *uncertainty* refers to situations whereby the probability that a particular outcome will occur cannot be determined in advance. A manager, for instance, may be unable to articulate the probability that R&D expenditures will increase a firm’s sales in five years.

It is important to note, though, that risk and uncertainty are not always objective standards. Specifically, two managers may ascribe differing levels of uncertainty or risk to the same decision. To this end, scholars have examined the role of perceptions in understanding how these characteristics may influence decisions (e.g., Weber, Anderson, & Birnbaum, 1992).

1.1. How managers make decisions

There exists a sizeable literature – descriptive and normative – related to decision making. Perhaps the most prominent assumption in this body of literature is that decision makers are rational. Among scholars working in this arena, decision makers are understood to vary with respect to their beliefs, opinions, and preferences, but rationality deals with the notion that these should cohere in a defensible fashion (Shafir & LeBoeuf, 2002). This explanation complements the assertion by Eisenhardt and Zbaracki (1992, p. 18) that “In its most basic form, the rational model of choice follows the everyday assumption that human behavior has some purpose.” Summarizing the decision-making literature and the role of rationality, Shafir and LeBoeuf (2002, p. 492) suggest that “the rational-

ity assumption has come to constitute perhaps the most common and pivotal assumption underlying theoretical accounts of human behavior in various disciplines.”

Despite the dominant stronghold of rationality in decision-making research, some scholars have questioned this assumption. Herbert Simon (1957) introduced the concept of bounded rationality, which suggests that managers make imperfect decisions due to a variety of factors including lack of information, inadequate time, and cognitive limitations. Simon’s work suggests that managers could make better decisions, if only they could access the necessary resources. Instead, though, managers are often forced to make decisions without the resources necessary to ensure decision-making success. Simon labeled this process of making decisions that are suboptimal yet “good enough” as *satisficing*.

1.2. Decision-making processes

As decision-making research progressed, scholars began to question whether or not a single process properly described decision making. Stanovich and West (2002) summarized this research by suggesting that two cognitive systems, which they labeled as System 1 and System 2, influence decision making. According to their framework, System 1 refers to a process that is described as fast, automatic, effortless, and often emotional. Kahneman (2003) suggests that this system relies, to some extent, on habit and is difficult to break. Some scholars roughly equate this system to a decision-maker’s intuition or instincts (see also Miller & Ireland, 2005).

In contrast, System 2 is described as slow, controlled, requiring effort, rule-governed, and flexible (Kahneman, 2003). This system is often typified as a more “rational” decision-making process. Bazerman (2006) describes, for example, a rational decision-making process that includes steps such as defining the problem, identifying relevant criteria, weighting these criteria, generating alternatives, rating alternatives on each criterion, and computing the optimal decisions.¹ Some scholars propose that System 1 is less developed, while System 2 has evolved over time (for a synopsis, see Morse, 2006). This line of reasoning is consistent with Evans’ (2003) assertion that humans and animals share System 1 processes, but System 2 is believed to have evolved more recently and is uniquely human.

Both System 1 and System 2 processes are important to managerial decision making, and one is

¹ Hammond, Keeney, and Raiffa (1999) provide a slightly different rational decision-making model.

not inherently preferred over the other. For most people, these two processes work together in such a way that System 2 monitors the activities of System 1, either confirming or denying intuitive decisions. It would be impossible for managers to operate using comprehensive System 2 processes for every decision they face, so they often rely on System 1 processes wherever it is sufficient and practical (Chugh, 2004). In fact, skilled decision makers may actually make higher-quality decisions when they rely on their intuition rather than relying on purely economic utility functions. For example, a manager who has a hunch about hard-to-quantify potential synergies in a proposed acquisition may be operating under System 1 processes, but the manager would later confirm these hunches through the System 2 process of due diligence.

While both processes may work in tandem, they are also susceptible to biases that interfere with our ability to make good decisions. Most people are aware that biases can create false impressions and distort intuitive judgment, but biases also affect System 2 processes, causing managers to make irrational decisions. In the remainder of this article, we describe some of the most significant biases and how they affect managerial decision making.

2. Decision-making biases

Daniel Kahneman, the 2002 Nobel Laureate in economics, made many important contributions to rational decision-making theory in conjunction with Amos Tversky. Prospect theory, as their collective ideas came to be known, describes several potential systematic biases derived from laboratory experiments.² The results of these experiments cast doubt on the rational choices executives make.

2.1. Framing and loss aversion

One of the most common biases in decision making involves framing. When executives make decisions, they may frame the potential outcomes of their decisions differently relative to an earlier status quo. For example, some executives of a firm may consider a takeover or a buyout offer as the ideal solution to the firm's problems. Others within the firm may believe that the same transaction is destructive. Whether an option is framed as a gain or as a loss can lead to systematic differences in decision-makers' preferences, and may result in different outcomes for the firms involved.

When options are framed as potential for loss, prospect theory describes how managers may be irrationally unwilling to incur loss. The idea behind loss aversion is an observed asymmetry between perceived gains and losses. Results of several experiments suggest that decision makers are approximately twice more likely to try to avoid losses than favor gains; that is, their "value function" is twice as steep when they consider losses than when they consider gains. The perception that losses appear larger than equal-size gains forms the basis of the endowment effect in economics. Thaler (1980) found that individuals value their own goods that they consider selling more than they value goods that they consider buying. One practical implication of loss aversion was described by Odean (1998) in a study on investor behavior. This work suggests that investors hold on to their losing stocks too long, but sell their winning investments too soon.

Avoiding such loss aversion bias is nearly impossible, but being aware of its existence can help managers make better decisions. Furthermore, anticipation of loss aversion by competitors, buyers, or suppliers can improve the effectiveness of decision making. A recent article by Mercer (2005) lists several examples of the loss aversion bias from political science. Because the examples described above are from field settings rather than laboratory studies, they are more readily applicable to competitive conditions, the environment whereby many managerial decisions are made.

2.2. Risk seeking

In contrast to loss aversion, prospect theory researchers have also observed that decision makers irrationally seek risk. Risk-seeking behavior works in two different ways. First, individuals will take irrational risks when the alternative is a certain loss, despite the fact that System 2 processes should lead them to the opposite conclusion. This is actually the other side of the loss aversion coin, because it suggests that individuals strongly prefer risks that might possibly mitigate a loss. For example, managers may prefer a product development project with a high probability of large loss over a development project with a certain, but much smaller, loss. Second, individuals will take irrational risks when the potential payoff is unusually large. An example of this is evident in lottery jackpot events, whereby individuals are willing to bet for a large prize, despite its associated small probability. Here again, there appears to be a bias toward the potentially large payoff that distorts System 2 decision making.

Contrary to the principles of rationality, risk-seeking preferences also tend to be nonlinear. That

² For notable examples of their influential work, see: Kahneman, Slovic, and Tversky (1982), Kahneman and Tversky (1979).

is, when the probability of an event increases by the same rate but may lead to a different outcome, people make their decisions differently. For example, a .01 increase in the probability of an event occurring appears to be different for decision makers if this increase is added to an earlier low probability (e.g., .25) as compared to an earlier high probability (e.g., .99).

We see an example of risk seeking in the recent decisions made by Jeroen van der Veer. After taking the helm as CEO of Royal Dutch Shell PLC, van der Veer abolished the old board structure, streamlined decision making, and effectively concentrated power in the CEO position. The new structure facilitated risk-seeking behavior and was followed by a series of high risk investments. Rather than maintain the long-held and stable portfolio of traditional oil-development deals, van der Veer placed big bets on multi-billion dollar projects in places such as Qatar and Russia's Far East. *The Wall Street Journal* calls the strategy a gamble that is paying off for now, but, as van der Veer admits, it is still too early to deem the project an outright success (Cummins & Chazan, 2007).

2.3. Source dependence

Source dependence is based on the observation that decision makers often consider the source of an uncertain event, in addition to its level. For example, people may prefer to bet on a familiar sporting event, such as the NCAA Basketball March Madness, than on a matched chance event (e.g., a coin toss), regardless of the clearer probability in the chance event. Source dependence bias may explain failed acquisitions in seemingly related industries or failed investments in stocks of well-known but risky firms in the areas of technology, communication, and entertainment.

The problem of source dependence was likely a contributing factor to the recent collapse of the sub-prime mortgage industry. Banks and lenders are familiar with both mortgages and the underlying housing market. As housing prices boomed, they felt comfortable offering progressively easier and riskier lending terms. The number of no- or low-documentation loans increased three-fold from 2001 to 2006, placing lenders in a highly risky position. It is unlikely that they would have placed such high-risk bets in other, less familiar industries. When housing prices slumped nationwide, their position was exposed and delinquencies skyrocketed.

2.4. Escalation of commitment

Calvin Coolidge famously noted the importance of perseverance when he declared, "persistence and

determination alone are omnipotent." While there are virtues associated with trying again in the face of failure, problems arise when executives remain committed to a course of action despite mounting evidence that the action is not paying off. In fact, research suggests that decision makers are likely to allocate more funds to an investment project when feedback shows that the project is failing than when the project is succeeding (Staw & Ross, 1989). Perhaps owing to personal responsibility or ego, decision makers seem to interpret negative feedback as a signal that they should commit additional resources in order to save a project to which they were initially committed. Even though the initial decision was made on a rational System 2 basis, subsequent decisions may be irrational as they involve continued, and escalating, investment in a failing course of action.

History is replete with decisions that appear to have been influenced by irrational escalation of commitment. For example, the tunnel mega-project commonly known as "the Big Dig" was conceived, designed, and undertaken to relieve congestion of Boston's tangled historical streets. The project, initially estimated at a cost of \$2.6 billion, was plagued with a wide variety of implementation, environmental, and human resource problems from the beginning. Learning of serious problems at various stages of construction, turnpike officials and politicians continued to allocate additional funding. The Big Dig was completed in 2006, with expenses totaling over \$15 billion. Once the plans were in place and unexpected problems arose, a process of escalating commitment began that would have been very difficult to reverse.

Escalation of commitment may affect a broad array of business decisions. Shimizu and Hitt (2005), for example, found that many firms retained unprofitable business units with steadily mounting losses for years without divesting them. In several cases the arrival of outside executives, who were not involved in the initial acquisition decision, was needed to hasten divestiture of the failing division. Others have found evidence of this bias in the new product development process. Schmidt and Calantone (2002), for instance, found that managers who initiated a new product were less likely to perceive it as failing and were more likely to continue funding the project despite evidence of failure than those who assumed leadership after the product was launched. Escalation of commitment often occurs for another common business decision: information technology (IT) investment. Many internal IT projects become "runaways" that continue to receive funding in excess of their benefits (Nulden, 1996). Together, these findings suggest that simply giving managers more information

will not necessarily lead to better decisions. Instead, organizational, social, and psychological factors combine such that those who were involved in an initial decision may interpret negative incoming information differently than those who arrive later.

2.5. Overconfidence

There exists a substantial literature highlighting the egos of business executives (Hiller & Hambrick, 2005). This literature reflects a natural tendency to overestimate our abilities and perceived chances of success. This bias is sometimes called the Lake Wobegon effect, named for Garrison Keillor's humorous musings on the human condition as he describes the people of Lake Wobegon, "where all the women are strong, all the men are good-looking, and all the children are above average." Although assessments of self-competence vary based on the task being performed, overconfidence may span across multiple contexts. If individuals reassessed their behaviors, attributes, and abilities in light of changing tasks, they might avoid forming inflated estimates. This often does not happen, though, because past success becomes the primary influence in forming future beliefs. Falsely assuming that prior patterns of successful behavior will continue to work under new conditions, people overestimate their ability to succeed at tasks under new and changing requirements.

William Smithburg, CEO of Quaker, displayed such hubris and serves as an apt illustration. Renowned for his highly successful and almost impulsive acquisition of Gatorade, Smithburg purchased the brand for \$220 million and grew its worth to several billion dollars, representing nearly half of Quaker's sales. This success in hand, Smithburg embarked on an acquisition of Snapple for \$1.4 billion. Industry analysts voiced concern because Snapple was outside the mass-market arena, did not have manufacturing or distribution synergies with Gatorade, and was carrying obsolete material due to poor inventory management (Nutt, 2004). Despite these apprehensions, Smithburg was confident that he could succeed where others had failed in turning the Snapple brand into a money maker; unfortunately, the overconfidence effect potentially distorted his estimation of the problems associated with the Snapple brand. The disastrous result was summarized well by an April 1997 headline, which read: "\$1.4 billion mistake costs CEO his job" (Millman, 1997, p. 1).

The overconfidence effect is likely to influence managers at many different levels of the organization. Malmendier and Tate (2003) saw evidence of such a bias at the highest levels, finding that overconfident CEOs invested a greater percentage

of cash back into the firm rather than releasing the cash as dividends. These CEOs likely overestimated their ability to produce success and, as a result, ended up investing in many projects that they should have avoided. Others have found that overconfidence leads to dysfunctional strategic persistence among samples of both executives and students (Audia, Locke, & Smith, 2000). The problem of strategic persistence often arises because individuals who are successful at a task are more likely to believe, mistakenly, that they will continue to be successful under new conditions. Entrepreneurs may be particularly susceptible to this bias. Statistics abound which point to the low chances of success for new ventures. Entrepreneurs, however, generally feel that they will succeed where others typically fail. One study finds that 8 out of 10 entrepreneurs estimate their chances of success to be about 70%, and fully one-third believe their chances of success are completely certain (Cooper, Woo, & Dunkelberg, 1988). Although this may be more prevalent in some people than others or for some decisions as compared to others, it appears that people overestimate their abilities and chances of success with some degree of regularity.

3. Closing observations

Summarizing the research on decision making represents a daunting challenge. Herein, we outlined the basic processes that individuals employ to make decisions, and we reviewed a number of biases that may interfere with these processes. Although we believe it is important to understand these processes and biases, it is imperative to note that our review only scratches the surface of the vast decision-making literature. In the process of writing this article, for example, we entered the term *decision making* in a prominent search engine for academic research pieces, and the search returned over 32,000 relevant articles.

In our view, this academic work is important, and we seldom reflect on the significance of decision making in our lives. Herein, we have reviewed several different examples of decision making in the context of business. It is easy to forget, though, how many relatively simple decisions we make each day: Which clothes should I wear? Which way should I drive to work? Should I pick up my dry cleaning before or after work? What will I eat for lunch? In contrast, we make many other decisions that are less simplistic: Should I entertain another job offer? How should I manage my relationship with a difficult co-worker? In which neighborhood should I buy a new house? Simply stated, decision making pervades

our lives; as such, it is important to understand how we make decisions.

We have described a number of specific cognitive biases that affect managers' judgment; we expect most people's experience and everyday observations will confirm the presence of these biases in their own work environment. However, we would like to offer two caveats. First, we reviewed only a small number of decision-making biases. In fact, researchers have uncovered many other biases which we were unable to include in our review.³

Second, it is relatively straightforward to demonstrate that biases exist and apply to the general populace, but it is much more difficult for individuals to recognize the effect that these same biases have in governing their own judgments and inferences. There is a perceived asymmetry in susceptibility to biases that causes us to believe our own judgments are less prone to distortion than those of others (Ehrlinger, Gilovich, & Ross, 2005). In other words, people perceive themselves to be better-than-average in a wide variety of domains, and the decision-making context is no exception.

Another explanation for "bias blind spots" is that we assess susceptibility to bias differently for ourselves than we do for others. When examining ourselves, we rely on introspection and look for detectable traces of the influence of bias, but in most cases such traces are hard to find or do not exist. When evaluating others, however, we are more likely to consult our own abstract theories about biases and objectively apply them to the situation at hand. In this sense, we hope that our article has not armed readers with new theories to explain the faulty decisions of others without also turning these theories inward and applying them to one's own decision-making processes. Another phenomenon that brings about a bias blind spot is that people are more inclined to understand that they may be guilty of bias in the abstract, but less willing to admit susceptibility in specific instances.

In closing, then, we suggest that it is not enough to simply understand how managers make decisions and how biases might affect those decisions. It is also important to take the difficult final step of acknowledging that the same biases apply to ourselves and to our specific decisions. Hopefully, by better understanding the processes and biases involved in decision making, we might all make better decisions.

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³ For an excellent review of these biases, see Gilovich, Griffin, and Kahneman (2002).

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