

Are You Making the Right Decisions Right? Cognitive Limitations and Biases in Decision-Making

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“Nothing is more difficult, and yet more precious, than to be able to decide”.

Napoleon Bonaparte

Making decisions under uncertainty is a daunting task, yet we must face it in our everyday lives. Whether buying an umbrella in a cloudy day or funding a mega-project, individuals must rely on assumptions to supplement incomplete information and make choices based on their values and experiences, setting a strategy to reach a desired scenario.

Information and time are the most crucial variables in decision-making, with direct incidence in costs and returns. In a corporate setting, choices are constrained by a dominant logic enacted by senior management that package decisions in the organizational culture. These decisions are normally tied to “windows of opportunity” circumscribed by preconceived views of future states of nature. In other words, the capability of an organization to generate alternatives and make decisions is dependent on variables that are intrinsic (behavioral) to individuals and are derived from knowledge, perceptions of future states and motivations. This results in suboptimal product of insufficient alternative generation and decision quality based on the narrow “tunnel vision” tilted by the dominant logic in the organization.

Rationality is bounded primarily by the limitations of the human mind and the amount of information available, considering a specific objective and the expected cost of making a particular choice ^[1]. These constraints influence the perceptions of the external environment as a function of the threats and opportunities surrounding the organization and shape the views on how future scenarios may unfold.

To navigate uncertainty and simplify decision-making processes, individuals tend to take mental shortcuts, commonly known as heuristics, as “rules of thumb” based on the “common sense” when attempting to solve a problem. However, heuristics derive from values and perceptions, hence trying to design a “standard way to decide” is a utopia: decision-making processes and frameworks differ across individuals and organizations. An important point to highlight is that individuals tend to confuse decision with outcomes ^[2]: decisions are just chain of choices. There’s no “good” or “bad” decision, only “good” or “bad” outcomes. Increasing the quality of the decisions that construct a strategy will therefore increase the likelihood of a desired outcome, and that’s where efforts should be invested.

How can we then increase the quality of our choices and create a good strategy? One of the fundamental elements of a robust strategy is the clear understanding of the elements that tilt assumptions towards a particular direction. A seminal work in behavioral science, made by the psychologists Amos Tversky and Daniel Kahneman ^[3], identified three heuristics that drive

decision-making as well as the most common biases that naturally emerge to distort these “mental shortcuts”:

Heuristic 1: Representativeness: The judgment of the probability of an event based on the degree an event is representative of another. Biases to representativeness are:

Insensitivity to prior probabilities of outcomes: Considering influencing information to predict an outcome instead of the true characteristics of the universe. In other words: stereotyping. Let’s say for instance that, in a group of 10 individuals 3 are top managers. An individual from this group that is seen wearing a suit in an expensive restaurant can be normally assumed as a top manager, regardless the fact that, in reality, there is only 30% chance this is the case.

- **Insensitivity to sample size:** Also called conservatism, consists in inferring the characteristics of a group by extrapolating the proportions of a sample. For instance, inferring that the average height of all men is 6 feet based on a sampling of 1,000 men in a particular region.
- **Misconceptions of chance:** The belief that a sequence in a random process will represent the process itself. For instance, betting to a particular number in the lottery because it hasn’t appeared in previous draws.
- **Insensitivity to predictability:** Ignoring how predictable (or unpredictable) an outcome can be based on historical information (e.g.: the future price of a stock or commodity will be \$X because it followed a determined pattern in past periods; a hockey team will win the match because it has won the last three matches)
- **Illusion of validity:** Overestimating (or underestimating) a judgment and the capacity to predict based on past outcomes. For instance, predicting the good (or bad) performance of a construction contractor based on continuous good (or bad) outcomes in the past, ignoring variables that are particular to the new project.
- **Misconception of regression:** Also represented by the effect known as regression to the mean, consists in defining the average characteristics of a group by extrapolating the averaging elements of a sub-group, often ignoring contextual factors. For instance, comparing intelligence of parents and sons, overestimating the effects of punishment and rewards based on modifications in the past performance of an employee.

Heuristic 2: Availability: The judgment of frequencies of a class based on personal knowledge and experience. Biases to availability are:

Retrievability of instances: a class whose instances are easily retrieved will tend to increase the perception of occurrence over others that are not easily retrieved. In other words, a decision-maker will be inclined towards what he/she is more familiar with or what has seen more often: A person that witnessed a car accident will perceive the probability of occurrence of

another accident happening in the near future as high; a manager who is exposed to project failures will be inclined towards “failure” as a normal outcome of projects.

- **Effectiveness of a search set:** Focusing on the outcome of a search, ignoring the validity or robustness of the search itself. A specific context can lead to the favorable placement of some information that may be less relevant or numerous than other if the search is not conducted objectively. For instance, assuming the profitability of a product or a company based on a single marketing analytics report because it was readily available.
- **Imaginability:** Weighting future scenarios based on the probability of occurrence of favorable or unfavorable outcomes in the past, which increases the risks of overestimating or underestimating a situation. This bias is commonly observed when corporations are setting long-term strategies that heavily rely on extrapolating past experiences and discount contextual information or emerging trends.
- **Illusory correlation:** When two events are perceived to happen together, decision-makers will tend to incorrectly associate them as interdependent, deriving a “story” from the data without considering the possibility of a “hidden” variable. Common examples are assuming that cold weather causes people to shop more in malls, vaccines cause autism or that natural resources debilitates institutions in a country. It is essential to keep in mind the statistics mantra “correlation does not imply causation”.

Heuristic 3: Adjustment and Anchoring: When a relevant prediction is available, subsequent refinements are conducted to arrive to a final solution based on the initial value. Common biases are:

- **Insufficient Adjustment:** intuition can play a role on the way progressive adjustments are made based on an initial value or in the configuration of the data. Furthermore, people tend to adjust minimally to get closer to the original value. For instance, if somebody asks an analyst whether the oil price in 2020 will be more or less than \$50/bbl, the will give one or other answer. If, subsequently, this analyst is asked to predict the price, the answer will tend to be close to \$50/bbl .
- **Distorted evaluation of conjunctive and disjunctive events:** People tend to overestimate the occurrence of conjunctive events, creating over optimism (such as the sequence of activities to complete a project) and underestimate the occurrence of a disjunctive event (such as the failure of a complex component in a process)
- **Anchoring in the assessment of subjective probability distributions:** This bias consists in the assignment of an arbitrary probability of occurrence of an event based on personal beliefs or experience, without rigorous or formal analysis. This type of bias can heavily influence risk appraisal exercises, exposing organizations with insufficient mitigation strategies.

Understanding how individuals shape their criteria under uncertainty is essential for the

integrity of the decision-making processes. However, it is unrealistic to pretend perfect heuristics: trying to cover all biases could lead to situations of “analysis paralysis” or loss of competitiveness, eroding the value generation potential of a strategy. Instead, it is necessary to generate a high level of awareness by clearly identifying them as risks to the decision-making process, setting clear paths to remove, mitigate or accept them.

The dynamics of modern markets makes imperative for organizations to consider specialized independent perspectives when designing long-term strategies. Mitigating biases through the strategic integration of internal capabilities with professionals that are immune to politics and internal paradigms is paramount to increase the robustness in decision-making processes.

“We think, each of us, that we are much more rational than we are. And we think that we make our decisions because we have a good reason to make them. Even when it's the other way around. We believe in the reasons, because we've already made the decision”

Daniel Kahneman

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 - [3] Tversky, A. & Kahneman, D. (1974) 'Judgement Under uncertainty: Heuristics and Biases', *Science*, 185 (4157), pp. 1134-1131
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