

Decision making between psychological influence and mental perception -
Bounded rationality model

صنع القرار بين التأثير النفسي والإدراك العقلي – نموذج العقلانية المحدودة

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Abstract:

This study examines the field of decision-making, the circumstances surrounding this process, and the psychological and cognitive factors affecting it. It also identifies the most common decision-making models from a behavioral perspective.

This study concludes that decision-making is influenced by psychological and emotional factors, as well as the limited mental perception of the decision maker. Furthermore, the prevailing model in practice is bounded rationality.

Keywords:

Decision making - Psychological factors - Mental perception - Rationality - Bounded rationality

ملخص:

تتم هذه الدراسة بمجال صناعة القرار والظروف المصاحبة لهذه العملية وما تتأثر به من عوامل نفسية وإدراكية إضافة إلى تحديد نماذج صنع القرار الأكثر شيوعاً وذلك من منظور سلوكي. خلصت هذه الدراسة إلى أن اتخاذ القرار يتأثر بالعوامل النفسية والعاطفية بالإضافة إلى محدودية إدراك صانع القرار، كما أن النموذج السائد على أرض الواقع هو نموذج العقلانية المحدودة.

الكلمات المتاحية:

صناعة القرار – العوامل النفسية – الإدراك العقلي – العقلانية – العقلانية المحدودة

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Introduction

Decision-makers in their professional lives are continually confronted with a set of persistent problems and challenges that necessitate ongoing intervention and management. This process involves making decisions aimed at resolving issues and achieving predetermined objectives, while ensuring the optimal utilization of the available capabilities and resources.

It has long been assumed that decision-makers exhibit a high degree of rationality when assessing various alternatives and considering all relevant information in order to select the most optimal solutions. However, the behavioral approach has shown that Rationality is limited by lack of information, time constraints, and limited intelligence and perception of decision makers. Furthermore, decision-making is often influenced by psychological and emotional factors, which can shape the outcomes in ways that deviate from purely rational models.

Simon (Simon, A Behavioral Model of Rational Choice, 1955) argued that rationality is often unattainable and proposed the concept of bounded rationality in light of a lack of information and cognitive limitations of the decision maker, in addition to the influence of emotions and psychological factors.

From the above, the question arises about the effectiveness of decision models in addressing the various factors influencing decision makers in various situations. To identify an appropriate decision model, particularly with regard to behavioral dimensions, we adopted the three-model approach (rationality, bounded rationality, and Informed intuition model), which is one of the strongest classifications of decision models in the behavioral field. We also examined and compared the rational and bounded rationality models to determine the characteristics and requirements of each model, adopting the bounded rationality model as an updated and developed version of the rational model from a behavioral perspective.

1- The Nature of Decision-Making :

Decision making is inevitable and a common phenomenon in our daily lives. each day, we make many decisions. Even if we encounter a situation and choose not to make a decision, we have decided not to intervene or to take a neutral position. Like our daily lives, various departments and institutions, both public and private, encounter situations that require decision-making. This responsibility is assigned to specific, experienced, and qualified individuals known as leaders or decision-makers. Decision-making is not simply the process of selecting a solution or project from a basket of alternatives. Rather, it is a multidimensional process that requires stages and steps to arrive at the desired decision. It also requires courage, confidence, and a willingness to face the consequences of the decision, especially when it comes to decisions characterized by complexity and uncertainty (2024، غالمي).

1.1 Decision-making within the organization

Decision making is the process of identifying the problem, formulating and analyzing alternatives to choose the best alternative, while continuing to implement and control the alternative (DERVISHI & KADRIU, 2014).

Decision-making in organizations is the dynamic process through which a set of alternatives and proposals are examined, analyzed, and evaluated to solve a problem previously identified by decision-makers. This process also includes selecting the alternative that achieves the greatest number of objectives and monitoring its implementation to determine the achieved results. The definition makes it clear that decision-making in an organization is not complete unless the following three elements are present:

1.1.1 The problem that leads to decision-making:

A problem is a complex and confusing situation that puts the responsible party or decision-maker in a state of confusion and at a crossroads. Each path leads to an outcome or a solution to achieve a specific goal or goals. These solutions are known as alternatives.

1.1.2 Decision-maker or Decision-Making Group:

In some small and medium-sized enterprises (SMEs), decision-making is individualized by the general manager or the authorized financial manager or the disbursing authority. Other organizations rely on a decision-making group, consisting of the board of directors or a decision-making group (managers and/or owners, plus employees or consultants with expertise and experience).

1.1.3 Alternatives are solutions that require study, analysis, and testing:

Defining the dimensions of the problem and gathering available information about it facilitates understanding the characteristics of the problem, allowing for research and development of possible solutions or alternatives to address the situation and determining courses of action to achieve the objectives. Furthermore, comparing these alternatives requires studying and analyzing the information and characteristics related to each alternative using evaluation and comparison criteria, in addition to the experience, intuition, and awareness of the decision-maker.

The decision-making process involves choosing between at least two alternatives. If there is no more than one alternative, there is no need to choose; therefore, there is no decision.

The decision-making process does not end with the selection of an alternative and the determination of a course of action. The implementation of the decision must be monitored according to the established path. The results must also be monitored to determine the extent to which they achieve the objectives.

1.2 Factors Influencing Decision-Making within the Organizations:

Decision-making in various organizations is shaped by a set of factors, the most important of which are outlined below:

1.2.1 Environmental Factors:

Given that decision-makers and the organizations to which they belong are part of society, they are exposed to a range of environmental factors, whether internal, external, or even geographical.

1.2.1.1 Internal Factors:

Decision-making is influenced by various internal factors within an organization, such as internal policies and regulations, as well as its financial and human resources.

Internal Policies and Regulations:

Many organizations establish internal rules to regulate relationships, solve problems, and develop plans and strategies to address them, all within the framework of the prevailing public policies and legal systems in society.

Organizational Efficiency:

This refers to the organization's structural design and chain of command, in addition to the communication system across different levels of authority and the efficiency of the

material and human resources dedicated to handling decisions and resolving problems and disputes both within and beyond the organization.

2.1.2.1 External Factors:

The decision-maker is part of society and is influenced by it directly or indirectly; likewise, the decision-making process is affected by economic, political, social, and technological conditions, as well as prevailing customs and values. In addition, it is shaped by the decisions made by others, whether they are competitors, partners, or stakeholders (بلحاج، (2016).

1.2.1.3 Geographical Factors:

The geographical factor and its impact on decision-making cannot be ignored. Whether an organization's location is close or far from various partners and clients, in addition to the region's topography and climate, these are factors that can facilitate or complicate decision-making, especially in the case of a lack of funding and limited capabilities.

1.2.2 Factors Related to the Decision-Maker:

Factors related to the decision-maker can be divided into psychological and cognitive dimensions.

1.2.2.1 Psychological Factors:

These factors concern the individual decision-maker or the decision-making unit, whether advisors or the board of directors. The psychological aspect is a powerful controller of decision-makers' behavior, as emotions and the psychological environment influence decision-making. If the influence of these factors is positive, the behavior of decision-makers will reach a high level of rationality. However, if this influence is negative, this means that decision-making will be less rational (السعيد، 2013، الصفحات 241-242).

1.2.2.2 Cognitive Factors:

Cognition refers to the way decision makers understand and diagnose problems. and several key factors shape this perceptual process, including:

- The educational level and degree of awareness of decision-makers;
- Prior experience, accumulated learning, and habituation to solving problems objectively;
- The personal traits of the decision-maker, the extent of his or her maturity, and the manner of handling problems—particularly those involving complexity and uncertainty;
- Preferences, interests, and personal inclinations of decision-makers, which may obscure objectivity and lead to biased decisions.

1.2.3 Impact of the Problem:

The problems faced by decision makers in their leadership roles vary. Some are routine, ordinary problems that are often assigned to lower-level decision makers. New or unplanned problems are the responsibility of higher-level decision makers because they significantly impact decision-making, depending on their complexity and the amount of information available about them (cases of complete certainty, uncertainty, or complete uncertainty), in addition to the resources and costs required to study them and develop possible alternatives to solve them.

1.2.4 The Impact of Problem Framing:

At first glance, it may appear similar to the preceding heading; but the way the problem is presented and framed has a significant impact on the direction of the decision. Positive framing tends to motivate the decision-maker to work harder and avoid risk. Conversely, negative framing pushes the decision maker to take risks because they anticipate loss. There is no harm in taking risks. For example, if we present a student or business owner with a success rate of more than 50%, they decide to work harder and increase their chances of success. However, if we tell them that their failure rate is close to 50%, they anticipate failure and prepare themselves for this scenario. Decision makers seek gains and are harmed by the possibility of loss. When faced with certain gains, they are risk averse, but when faced with certain losses, they are risk tolerant (Maheran & Muhammad, 2009).

2 decision -making models from a behavioral perspective:

In light of the contributions of researchers in the field of behavioral finance, especially with regard to decision -making models, we find many classifications that include a large group of models, but most of the classifications if not all classifications address three main models:

The **rational model**, the **bounded rationality** and the **Informed intuition model**, which we refer as the three models approach.

the three models approach:

Currently, the most widely accepted scientific approach is the one that identifies three main models of decision-making: the rational decision-making model, the bounded rationality model, and the Informed intuition model (RIZUN & TARANENKO, 2014).

2.1 The Rational Model:

Many decision-making approaches are based on the idea that decision-makers are rational. Rationality has a variety of interpretations depending on the domain in which the description originates. In the context of decision-making, rationality implies that the decision-maker is able to distinguish between outcomes, rank them according to some metric, and then choose the optimal outcome. Although one might consider the assumption of rationality perfectly acceptable and even obvious, reality deviates significantly from this model (Towler, 2009).

The rational model calls for knowledge of all the alternatives open to choice. It requires complete knowledge or the ability to calculate the consequences of each alternative. It further assumes certainty regarding the decision-maker's present and future evaluation of these consequences. Moreover, it requires the ability to compare outcomes regardless of their diversity and heterogeneity on the basis of a stable quantity of utility (Simon, 1979) .

2.1.1 Requirements of the Rational Model:

Rationality in decision-making can be achieved if the decision maker is provided with the following conditions:

- Relatively stable economic conditions;
- Facing a clear, simple problem with the necessary information available;
- Clear and achievable objectives;
- Freedom from time pressure and the low cost of researching and developing alternatives;
- The availability of limited alternatives that achieve the stated objectives;
- The ability to measure and compare the consequences of each alternative.

2.2 The Bounded Rationality Model:

This model is based on the premise that rational decision-making behavior is constrained by the individual's limited ability to process all the data related to the alternatives, especially in complex and uncertain circumstances. The decision maker resorts to simplifying possible solutions and searching for a solution that meets an acceptable level of satisfaction.

This model was first proposed by Nobel Prize laureate Herbert Simon, who conducted a series of research studies in the field of decision-making and published numerous works in the second half of the last century. In the lecture he delivered in Stockholm, Sweden, on December 8, 1978, when he was awarded the Nobel Prize in Economic Sciences, Herbert Simon said: "Several procedures of fairly general application and widespread use have been discovered which transform difficult decision problems into tractable ones. One procedure already mentioned is the search for satisfactory options rather than optimal ones. Another is to replace abstract general goals with observable subgoals whose achievement can be measured. A third is to divide the decision-making task among several specialists, coordinating their work by means of communication structures and authority relationships. All these, and others, fit the general model of 'bounded rationality,' and it is now clear that the elaborate organizations created by humans in the modern world to carry out production and government work can only be understood as a mechanism for dealing with the limits of human capacity for understanding and calculation in the face of complexity and uncertainty" (Simon, 1979). Simon added that by the mid-1950s, the theory of bounded rationality had been proposed as an alternative to comprehensive rationality (Simon, 1979).

2.2.1 Assumptions of the Bounded Rationality Model:

Simon (1990) coined the term bounded rationality to explain that although decision makers strive to be fully rational (to make the best or optimal decision), they are limited or constrained by a number of factors (Williams, 2002, p. 16):

- The absence of complete or perfectly accurate information.
- Scarcity of time and resources required to search for additional information and to formulate a comprehensive set of options.
- The inability to retain more than a small amount of relevant information in memory when addressing the problem.
- Limitations in intelligence and perceptual cognition that constrain the capacity to compute optimal outcomes.

2.3 The Informed intuition model:

Luthans adds a third model to the previous two models, known as the Intuition Model, where decision making relies on individual judgment, intuition, and reasoning based on practical experience rather than scientific knowledge (Harim, 2014). A manager's knowledge, experience, and understanding of responsibility for the outcome determine the accuracy of an intuitive decision (Khakheli & Morchiladze, 2015).

Managers and experienced decision-makers rely on their intuition in the decision-making process. This is frequently observed in practical life, based on a vast body of experience accumulated over years of experience.

Relying on intuition in decision-making is not necessarily independent of rational analysis of data. A decision-maker can rely on rational analysis of data in addition to using their intuition, thereby saving time and reducing research costs, especially in similar situations.

2.4 The bounded rationality model is an extension of the rational model from a behavioral perspective:

The bounded rationality model is considered an update to the rationality model, adding various behavioral factors related to decision makers, real-world environmental conditions, and the pressures they face during the decision-making process, such as time pressure, scarcity of resources and available information, and the high costs of examining all alternatives. This forces decision makers to seek a satisfactory solution rather than an optimal one.

2.4.1 Comparison between the rational model and the bounded rationality model:

We can rely on the comparison made by Williams (2002) in his article, with the addition of some steps such as analyzing alternatives, selecting the alternative, and evaluating the effectiveness of the decision, as shown in Table (1) Comparison between the rational model and the bounded rationality model.

Table (01): A Comparison between the Rational Model and the Bounded Rationality Model

Decision-Making Steps	Rational Decision-Making	Bounded Rationality
Problem Identification	The real problem is identifiable	The problem primarily reflects the decision-maker's concerns, understanding, and needs.
Specification of Criteria and Their Weights	All relevant criteria have been specified and appropriately weighted.	The set of relevant criteria is identifiable, and evaluation is influenced by self-interest
Generation of Alternatives and Evaluation	Identification of all alternatives, with all consequences understood and duly taken into account	A limited set of options is identified
Analysis of Alternatives	Analyze all alternatives, verify the information, and exclude poor options	The preferred option is accorded priority
Selection of an Alternative	Select the optimal alternative that achieves the objectives	The consideration stops at finding a "good enough" solution.
Implementation	All participants understand and support the solution	Politics, power, and self-interest influence the degree of acceptance of, and commitment to, the solution
Evaluation of Decision Effectiveness	Evaluate the extent to which the objectives have been achieved and the problem has been resolved	Certain biases such as overconfidence and the illusion of control—affect the evaluation of the decision

Source: Based on (Williams, 2002, p. 17).

2.4.2 Compatibility between the rational model and the bounded rationality model:

Behavioral finance researchers believe that the rational model can be modified to accommodate the vast number of uncertain situations. Therefore, we see the need to replace the rational model with a bounded rationality model as particularly compelling when studying situations involving decision-making under uncertainty and imperfect competition. This is because such situations have not been adequately addressed in classical theories and have not been given real weight. Statistical decision theory, which uses the idea of subjective expected utility, and other modern theories such as modern portfolio theory, on the one hand, have contributed tremendous conceptual clarification to these types of situations without satisfactorily describing actual human behavior in most cases (Simon, 1979).

Model construction under these conditions has taken two approaches. The first is to retain optimization but simplify it sufficiently so that the optimal solution is computable. The second is to construct satisfactory models that provide sufficiently good decisions with reasonable computational costs. By abandoning optimization, a rich set of real-world properties can be preserved in the models. Otherwise, decision makers can be satisfied either by finding ideal solutions for a simplified world, or by finding satisfactory solutions for a more realistic world. Neither approach generally dominates the other, and both have continued to coexist in the field of management science (Simon, 1979).

3. Results :

Although researchers and institutions may continue to debate the rationality of investors, the behavioral approach has, over the past few decades, proven its importance in explaining observed behavior. Researchers must recognize that persistent deviations from theoretical predictions are ineffective in explaining the factors influencing people's decision-making. From the theoretical examination of this topic, the following conclusions emerge:

Analogous to the influence of environmental factors both internal and external and the nature of the problem prompting the decision, the making of various decisions is shaped by the decision-maker's own behavior. By virtue of being human, the decision-maker is susceptible to a range of emotional and cognitive influences that affect the soundness of judgment and the rationality of thought.

In practical settings, the decision-making process is complex and subject to numerous factors and pressures. Understanding the psychological determinants that influence decision-making can help decision-makers and practitioners improve the quality of their choices, remain receptive to advice, and consider alternatives with objectivity and impartiality.

It is essential that decision-makers rely on principles of trade-off across alternatives and adopt scientific methods when making decisions or consult experts and research firms to mitigate the effects of emotional and cognitive biases.

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