

A Review of the Factors Affecting Strategic Choice from the Perspective of Bounded Rationality

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Abstract—This paper argues that bounded rationality is more in line with real-life situations than entirely rational. From the perspective of bounded rationality, by sorting out the influencing factors on the strategy selection, and taking decision makers as the center point, the influencing factors are divided into internal factors and external factors. Based on the theory of bounded rationality, this paper also reviews the influence which is finite rationality's different degrees of realization on the strategy choice. Through literature reading and systematic review, this paper proposes that the influencing factors of strategy choice include the following, the environment in which the decision maker is located, the sunk cost, the cognitive ability of the decision maker, and the preference of the decision maker, as well as the difference in the realization degree of bounded rationality of decision makers.

Keywords—*bounded rationality; entirely rational; strategic choice; influencing factors*

I. INTRODUCTION

In the new era of increasingly global economic integration, more and more companies have adopted go-out strategies to open up international markets. There are many strategies for companies to go out. The choice of strategy is often affected by many factors, such as environmental uncertainty, asymmetry of information, and so on. Because of these diverse factors, it is difficult for a completely rational hypothesis based on the hypothesis of "economic man" to conform to the real situation in the real world, which is also the practical significance of bounded rational research. In recent years, bounded rational decision-making has become more and more popular with scholars. An important research area is to help companies make more reasonable decisions through modeling [1]. However, the existing research affects the differences in decision characteristics between bounded rationality and entirely rationality. Especially from the perspective of the degree of realization of bounded rationality, there are very few achievements in analyzing the decision-making behaviors of decision makers. Through literature review, this article aims to find the key factors of bounded rationality and strategic choice, and reveal the influence mechanism of the degree of bounded rationality realization on strategic choice.

II. INTERNAL RELATIONSHIP BETWEEN BOUNDED RATIONALITY AND STRATEGIC CHOICE

The decision makers have many aspects of influence when making decisions. This article looks for the impact on strategy choice from the perspective of limited rationality. There are also many researches based on the perspective of bounded rationality at home and abroad. Through literature reading and collation, the main influencing factors of related research are classified. It is mainly expounded from two perspectives, on the one hand, it is related to the external factors of decision-making, on the other hand, is the influence of decision makers' own factors.

A. Impact of external factors for decision makers

- Environment for decision makers. Human activities are in the environment of society, so the influence of environment must be considered in the decision-making. Decision-making is a choice made by people based on their cognition, and cognitive processes are only applicable to one person, but most critical social processes are collectively organized and require a behavioral model to link the two [2]. Moro believed that most people would choose to imitate others to make decisions, in order to avoid risks and obtain expected benefits [3]. In addition, Xiaoli research suggests that decision-making is also affected by environmental complexity and uncertainty, and decision-makers cannot accurately use data to evaluate each alternative [4]. Shi et al believe that in reality, individual decision-making will also be affected by social acquaintances, and proposed a representation mechanism of the limited rational human decision-making process based on reinforcement learning [5]. Ohdescher et al. believe that under the increase of time pressure, by ignoring the least informative clues in the decision-making process, participants, to adapt naturally turned to the use of satisfactory strategies [6].
- Sunk costs. Sunk costs are also a factor that influences decision makers to make decisions. Sunk costs refer to the decision-making occurred before, but nothing to do with the final decision cost [7]. Kong et al. believe that consumers show sunk cost bias when making decisions. In addition, customers may dynamically display inconsistent beliefs about the extent to which they will discount sunk costs. Therefore, the inconsistency between sunk cost deviation and belief is an important

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factor that suppliers should carefully consider when choosing pricing scheme [8]. Fully rational decision makers can maximize their expected utility, but crucially, they ignore resource costs in determining the best course of action. Here, Ortega and Braun consider limited rational decision makers as thermodynamic machines in their research. Their physical state changes during calculation. Their behavior is controlled by the free energy function, which can balance the change in internal energy (as a proxy for utility) and change in entropy, these changes represent the computational costs caused by state changes. It was found that the problem of bounded rational decision-making could be redefined according to the well-known concepts in statistical physics, and it was proposed to formalize the theory of bounded rational decision-making information. Based on this, the decision maker weighed the expected utility and information processing cost [9]. The cognitive ability, the ability to process information, the experience and the personality of the decision-maker are all factors that influence the decision-making process.

B. The influence of decision makers' own factors

- Decision maker cognitive ability. The cognitive ability, the ability to process information, the experience and the personality of the decision-maker are all factors that influence the decision-making process. In reality, limited by the physical and psychological ability, people's actual decision-making behavior always inevitably has systematic deviation from the traditional rational hypothesis. The complexity of the decision, the emotions of the decision maker, and the memories of the consequences of the past decision, they will have a significant impact on current decision-making processes and outcomes. As a result, the choice of decision-making schemes deviates from the assumption of rational behavior, and the decision-making results violate the optimal principle [10]. Cognition is the process by which people acquire and apply knowledge, or process information. It is the most basic psychological process. Lieder believes that decision-makers attach importance to their time and limited cognitive resources, making the most efficient use of limited time, and focus on the decisive factors affecting the results and the most likely outcomes [11]. Memory or so-called experience often plays an important role in guiding human behavior in the real world, which is essential for individuals to make rational decisions. Research by Luo and others mentioned that memory or so-called experience usually plays an important role in guiding human behavior in the real world, which is essential for individuals to make rational decisions. Therefore, when studying the evolutionary behavior of participants with limited rationality, it is reasonable to assume that participants in the system have limited memory [12]. Ajjar suggests that decision makers may hold different beliefs and interpret their environments differently, even if they know each other's models and draw conclusions based

on the same evidence [13]. Lieder through study also think decision-makers through learning theory, and master the decision-making model, they can effectively improve the decision-making ability, and help them choose the optimal strategy [14]. Han believes that decision makers are different from decision computers, and are often affected by their own factors when making decisions. For example, CEOs with different educational backgrounds have different understandings of management and the management strategies they choose aren't the same [15]. Bos believes that in practical decision-making, due to the limited time and ability of decision-makers to process information, when the information and methods of decision-making are infinite, decision makers' sense of acquisition of information and decision methods will decrease as the number of acquisition increases [16]. In today's highly developed Internet, Longo believes that the acquisition of information has become extremely simple, but the difficulty of identifying, analyzing, and processing information has been greatly enhanced. Therefore, decision-makers in decision-making tend to ask professionals to assist them in making decisions [17]. Zhang proposed a new interval-valued intuitionistic fuzzy behavior decision-making method. And a ranking method based on prospect theory to determine the optimal scheme, which fully takes into account the behavioral characteristics of decision-makers in the decision-making process, such as reference dependence, sensitivity decline and loss aversion [18].

- Decision maker preference. In addition to the limitation of decision makers 'cognitive level, some scholars have conducted corresponding research on decision makers' preferences. Zhou and Lin believe that based on bounded rationality, if decision-making involves immediate returns, people tend to pursue immediate satisfaction, but if decision-making involves immediate costs, people will delay. When people make intertemporal decisions to weigh future returns and costs, current preferences and time inconsistencies will become more prominent. People will beyond the present, and their preference for future outcomes declines over time [19]. Fernando Payró believes that in each selection problem, she includes all options similar to the best available option in the selection set. As a result, she can mistakenly select the worse option because it is similar to the best option. The research will be mentioned in our process to explain as in the case of a given a set of individual project choose a package method, in this method, policymakers will be the best feasible projects and its complementary together [20].

III. THE REALIZATION DEGREE AND STRATEGY CHOICE OF DECISION MAKER'S BOUNDED RATIONALITY

The decision-making behavior of decision makers is influenced by many factors. Most of the existing studies are discussed from the internal and external factors that affect the

decision makers' bounded rationality, but few scholars focus on the theory of limited rationality itself to study the influence of strategy selection. How does bounded rationality itself influence the choice of a person's strategy? Although there are not many such studies, there are also a few research results.

A. Put forward the degree of realization of bounded rationality

In the literature reading, it is found that some scholars start from the theory of limited rationality to study the decision behavior of decision makers, and analyze the behavior of strategy selection from the perspective of the realization degree of limited rationality. The realization degree of limited rationality of decision makers was first proposed by professor Da-an He, a domestic scholar. He believes that there is a degree problem in limited rationality, and divides the degree of realization of limited rationality into three types according to the time factor, which are potential limited rationality, actual limited rationality, and immediate limited rationality. The different degrees of realization of bounded rationality affect the policy choice behavior of decision makers [21].

B. Bounded Rationality Affects Strategy Selection

Da-an He and Jun-wei Kang conduct an empirical analysis of decision-making behaviors under uncertain conditions, and divides the factors that affect decision-makers' behaviors into external and internal factors, and study the strategic choice behavior of bettors' decision makers in the lottery market by analyzing the degree of realization of the bounded rationality of the actors [22]. Ming-lai Mao and Tong Chen studied the project investment decision-making problem, they believed that the limited rationality problem was widespread in the project investment decision-making process, and believed that investors' investment in real life was constrained due to various reasons, such as incomplete investor knowledge. The difficulty of investor prediction, the incomplete possible action plan, the limited intelligence, and the decision makers are always subject to the constraints of time, space, energy, and other costs. Based on this, putting forward a normative decision theory that cannot explain the decision makers in real life, they cited professor Da-an He's model of limited rationality realization to study the application of project investment decision [23]. Guang-hai Li and Tong Chen taking into account the limited rational basis of project decision-making and behavioral deviation process variables in the process of studying actual project investment decisions, and formulated a theoretical model based on limited rational behavior decision, and proposed a method to measure the degree of limited rationality and behavior deviation. Proposed methods to measure the extent of limited rationality and behavioral deviation. After the unification of quantitative and qualitative indicators, a unified index relative superiority degree matrix was established. In this way, decision-makers can make optimization decisions through fuzzy optimization theory [24]. Ke Duan pointed out that corporate strategic decisions are affected by the degree of realization of bounded rationality. All efforts to achieve a degree of bounded rationality that matches the goals of the decision are made to minimize the mental cost of the decision process [25].

IV. SUMMARY AND DISCUSSION

Great achievements have been made in research on bounded rationality. Research on bounded rationality from countries, organizations, and individuals has provided a good theoretical basis. However, in today's fast-developing society, policy makers will inevitably put forward more new requirements for decision-making methods and adapt to the rapid changes of the times. In summary, three conclusions are made as follows.

First: most of the existing researches focus on investment decision-making and investment project evaluation, and tries to establish standards for programmatic decision-making to simplify the process of repeated decisions and reduce the cost of decision-making. But in reality, the decision-making environment is constantly changing and full of uncertainty, so it can be found how to establish dynamic standards that meet decision-making will be the focus of research.

Secondly: the existing research on the influence factor of bounded rationality, the main influence factor is the decision makers in their environment, policy makers preference, policymakers cognitive level, sunk costs. But most personal cognition and perception is defined as part of the fuzzy information, the more prominent psychological and preference in the role of decision making, the research of this field can be added more.

Third: most of the researches are based on the bounded rationality. Very little literature deals with bounded rationality itself to study the decision-making behavior of decision makers, or it can try to quantify the choice of strategy from the bounded rationality itself, that is, the extent to which bounded rationality is realized. It makes the study of economic theory come closer to reality, and will more accurately describe how decision makers can make better decisions under uncertain circumstances.

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