

Review

Use of heuristics in decision making and the biases resulting from these heuristics

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The use of heuristics in decision making and the biases resulting from these heuristics has been a subject of debate among researchers long ago. Rational decision making has very much importance while studying heuristics. But sometimes due to cognitive and environmental factors, rationality of human beings becomes bounded and they rely on guess and hunches, thereby paving ways for biases to occur in decision making. The aim of this study is to examine the role of heuristics in understanding the dynamics of modern decision making. Critical analyses and argumentation was used throughout the study to analyze the data and to draw inferences. Critique of the research on heuristics in decision making was discussed. It was found that a better understanding of heuristics can improve modern decision making.

Key words: Heuristics, decision making, rationality, bounded rationality, cognitive and environmental factors.

INTRODUCTION

Modern organizations do nothing but perform the business of information, the basis of decision making and policy formulation. Decisions are made in certainty or uncertainty. The information rich decision makers make sharp, effective and timely decisions to remain competitive in accomplishing the goals. According to organizational experts, decision making is the science of management and use of heuristics in decision making and the biases resulting from these heuristics has been a subject of concern for academicians and researchers of this field. Rationality and creativity in decision making is the essence of effective and efficient management, while rational decision making is very much significant while studying heuristics. However, sometimes due to cognitive and environmental factors, rationality of human beings becomes bounded and they rely on short cuts that cause biases to occur in decision making, which leads towards failure of the decisions and decision makers. The main objective of this study is to examine the role of heuristics in understanding the dynamics of modern decision making.

in research to find out the hurdles in decision making to improve this process (Peters et al., 2007). The history of decision making starts from the times when people used to get help from stars to make decisions. With the passage of time, improvements in decision making process were made by different nations using different techniques like numbering, algebra, 'systematic empiricism', logic, inductive reasoning and scientific methods. Terminologies started developing from "Resource Allocation", "Policy Formulation" and finally to "Perfect Rationalism" (McCaughey and Bruning, 2010). Development in decision making was made in four areas of the subject which are: risk, group dynamics, technology, and instinct (Buchanan and Connell, 2006). Similarly, Bonner and Newell (2010) found that decisions are made either by analytical reasoning or by using heuristics (short-cuts). However, the major focus of researchers in studying decision making has been rationality (Over, 2004). Some questions arise here like: What do we mean by rationality? What is rational decision making? In the words of Over (2004), rational

HISTORY OF RATIONAL IN DECISION MAKING

Psychologists and decision scholars have been engaged

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decision making could be defined as “people and their mental states or processes and actions are rational when they meet the right cognitive standards”. In the light of this definition, we can rightly say that a rational decision is one which leads us to the possible maximum outcomes, by utilizing cognitive abilities. Furthermore, McCaughey and Bruning (2010) are of the view that to make rational decisions, it is necessary that one must have strong cognitive skills and information processing abilities. Now, what benefits can rational decisions bring? Goll and Rasheed (2005) assert that rational decision making practices affect firms’ performance and the organizations where managers make rational decisions that showed better performance. Hough and White (2003) share similar views; according to them, firms’ performance is affected by rational decision making.

EMERGENCE OF BOUNDED RATIONALITY

McCaughey and Bruning (2010) are of the opinion that even having expertise and sufficient information, decision makers are sometimes unable to make rational decisions because their cognitive abilities are influenced by different internal (mental) and external (environmental) factors, thus their decisions are bounded by these factors. McCaughey and Bruning (2010), while defining the bounded rationality, view it as “the situation where decision makers are limited in their abilities to search for a solution therefore, they ‘satisfy’, by choosing the first alternative that meets or ‘satisfies’ minimum criteria for solving the problem rather than continuing the search for the optimal solution”. Similarly, borrowing from the idea of Simon (1957) about bounded rationality, Todd and Gigerenzer (2003) concluded that due to mental and environmental factors, rationality of human is bounded. Earlier in 1998, almost same results were found by Chase et al. (1998). They argued that since human beings are unable to make rational decisions because of the complexity of the computing process, less cognitive tendency and limited information, there comes bounded rationality that affect the decision making ability.

Klaes and Sent (2003) studied that the concept of bounded rationality dates back to 1840 with the emergence of ‘limited intelligence’. Then passing through the phases of finite intelligence, incomplete rationality, limited rationality, administrative rationality and approximate rationality up to 1950, however, the concept of ‘bounded rationality’ was first introduced and discussed by Herbert Simon in 1957. Thereafter, Conlisk (1996) identified four reasons for studying bounded rationality in economics models, that is, availability of sufficient evidences showing its importance, proved models of bounded rationality, sufficient evidences proving that bounded rationality is convincing, and since economic decisions involve scarce resources, due deliberations and rationality are required. Other than these four reasons, Conlisk is of the view that it is studied because “It is

simply a fascinating thing to do”. Landa and Wang (2001) report that along with limited information processes and cognition, rationality of a man is bounded due to institutional, social and ecological constraints. Gigerenzer (1997) introduced four requirements for bounded rationality which include: (1) complex computation, (2) limitations of the task environments (3) limited cognitive resources and (4) satisfying strategy.

With this background and evidence from the literature, we can safely say that our judgment and decision making is bounded due to several factors like limited information, limited information processing ability, time, cost and cognition that may deviate the decision makers from rationality.

HEURISTICS IN DECISION MAKING

Gigerenzer (1997) observed that sometimes due to limited knowledge, cognitive and time constraints and complex computational activity of information, processing is hardly possible and we do not remain rational in our choices and judgments, hence we rely on short cuts in decision making. What we call these short-cuts in decision making is “Heuristics”. Gigerenzer and Gaissmaier (2011) defined heuristic as “a strategy that ignores part of the information, with the goal of making decisions more quickly, frugally, and/or accurately than more complex methods.” There is no agreement among the researchers about the use of heuristics. Some researchers like Gigerenzer (1997) find no relation between bounded rationality and heuristics and biases in decision making while others like Maqsood et al. (2004) claim that irrational decision making leads to the use of heuristics and biases which can have a negative impact on decision making of an individual. Moreover, Schooler and Hertwig (2005) found that forgetting also increases and aids the use of heuristic.

Tversky and Kahneman (1974) advocated that although use of heuristics help in predicting values in judgmental operations, however, sometimes these lead to errors in decision making. Similarly, Lau et al. (2001) assert that although heuristics are the source of biases in decision making, it sometimes can improve the decision making. Why do people make use of heuristics in decision making? To answer this question, Gigerenzer and Brighton (2009) identified three factors, that is, less information, complex computation to process information, and limited time, which limit the rational thinking and we use heuristics.

Likewise, Shanteau (1989) quoting Simon (1957) argued that while discussing limited rationality, ‘in order to make efficient and fruitful decisions, people rely on short-cuts (heuristics) due to cognitive limitations, limited information processing and lack of options’. Similarly, Todd and Gigerenzer (2003) while analyzing the use of heuristics in decision making argued that cognitive and environmental factors help in accurate use of heuristics in decision making.

As for types of heuristics, Tversky and Kahneman

(1974) have identified three types of heuristics in decision making, that is, representativeness, availability, and anchoring and adjustment heuristics. They defined representativeness heuristics as “when making a judgment about an individual (or object or event), people tend to look for traits an individual may have that correspond with previously formed stereotypes”.

Whereas they defined availability heuristics thus, “people assess the frequency, probability, or likely causes of an event by the degree to which instances or occurrences of that event are readily available in memory”. They are of the view that anchoring-and-adjustment involves “starting from an initial value that is adjusted to yield the final answer”. Yet, based on the previous studies, Gigerenzer and Brighton (2009) summarized ten heuristics, which include the recognition heuristics, fluency heuristics, take-the-best, tallying, satisfying, equality heuristic, default heuristic, tit-for-tat, imitate the majority and imitate the successful. Furthermore, Gigerenzer and Gaissmaier (2010) also identified almost same number of heuristics like Gigerenzer and Brighton (2009). Gigerenzer (2004: 68) defined recognition heuristics as, “if one of two alternatives is recognized and the other is not, then it infers that the recognized alternative has the higher value with respect to the criterion”. They further identified and defined fluency heuristics as, “if both alternatives are recognized but one is recognized faster, then it infers that this alternative has the higher value with respect to the criterion”. For them, to take the best heuristic is to

“choose the first alternative that comes to mind”. They put tallying and I/N heuristics under the umbrella of trade-offs heuristics and defined it as, “a class of heuristics that weighs all cues or alternatives equally and thus makes trade-offs”. Another class of heuristics as identified by them is one-reason decisions which they defined as, “a class of heuristics that bases judgments on one good reason only, ignoring other cues.” Dai et al. (2008) identified “value heuristic” which is employed by the people to, “judge the frequency of a class of objects on the basis of the subjective value of the objects”. Yeung and Soman (2007) identified the duration heuristic and defined it as, “the duration heuristic which refers to the tendency to evaluate services based on their duration rather than on their content.” Dham and Harries (2009) found another type of heuristics, that is, simple heuristics which was originally introduced by Gigerenzer and his colleagues in 1999. He defined it as, “simple heuristics embodies principles for information search, stop and decision making.” Based on the previous research, Schooler and Hertwig (2005) described fluency heuristics as, “it is less knowledge-intensive, inference strategy that can be applied to a two-alternative choice when both objects are recognized”. Yamagishi et al. (2007) discussed social exchange heuristics, and defined it as, “social exchange heuristic prompts people to cooperate in one-shot games once it has been activated.” Abrams (2007) identified three heuristics which are generic

signatures or detection, active heuristics and passive heuristics. According to him, “generic detection measures how similar an unknown object is to something already known to be malicious”, while passive heuristics “involve scanning a program and attempting to determine what the program is trying to do”. And active heuristics means “to buy a variety of names by different vendors.” He is of the opinion that synonyms of active heuristics used by researchers are “sandboxing”, “virtualization” or “emulation.” Gigerenzer (2004: 73) identified another heuristics and labeled it as “do what the majority do”, according to him, it is says that, “if you see that majority of your peers display a behavior, engage in the same behavior”.

From the foregoing discussion, it could be concluded that the use of short cuts can produce better results as compared to rationality but with the limitation that each heuristic is context bounded and is applied in specific environment, situation and conditions.

DISCUSSION

Critique and limitations of research

Decision making leads towards success or otherwise failure upon which the accomplishment of goals and objectives of an organization depend. Experts suggest use of decision science in making effective and timely decisions for which different models could be used. However, one cannot play down the role and importance of heuristics in decision making. Besides scientific models, large number of experts observed the frequent use of heuristics in successful decision making; therefore, it remains one of the major focuses of organizational and managerial research. Therefore, the use of heuristics in decision making has potential critique.

The major problem with the study of heuristics is that it is considered as study of errors. But in reality most of the times, it helps people to make right decisions in uncertain environment. Shanteau (1989) concludes that the research program on heuristics is criticized by researchers on several grounds for example: (a) “the tendency to overstate generality of results”, (b) “irrelevance of the research program to real world”, (c) “logic of the heuristics and biases approach”, (d) “selection bias of researchers” and (f) “context boundedness of heuristics”.

In this context, a big critique is made by Conlisk (1996) who asserts that the concepts of rationality and heuristics are studied because “it is simply a fascinating thing to do”. On the other hand, Chase et al. (1998) have noted that although rationality helps to make real time solutions to the problems, yet this concept is not flawless rather it has three problems of: (1) differentiating views of different scholars, (2) its blindness to context and contents, and (3) its unrealistic demands. Similarly, Gigerenzer and Gaissmaier (2011), while studying its negative aspects

argued that sometimes in situations like in small samples, it is hardly possible to make rational decision and relying on shortcuts can produce better results. They further added that heuristics is neither good nor bad, but its accurate use depends on the situations, therefore the concept of rationality sometimes seems suspected in favor of heuristics.

With this context, it can be concluded that research program on heuristics and decision making has also some potential critique and due to uncertain conditions, sometimes rationality in decision making is hardly possible and use of heuristics is unavoidable.

CONCLUSIONS

Since all the time, managers in one way or the other are engaged in decision making to meet organizational goals, it has always been a serious subject of research among the research community in order to improve the decision making process. Although rational decision making is highly recommended by researchers but due to certain cognitive and environmental constraints, rationality is hardly possible, so here comes the heuristics that rescue the manager worried for timely decision, thus dependence on short cuts pave way into management's psyche while making decisions. It implies that their rationality is bounded by these factors. Further, people rely on heuristics because of their limited information, time and cost constraints besides limited cognitive ability. The decision making capability of the management who runs organizations can be improved if they have understanding and mastery of the heuristics. West et al. (2008) found that to avoid the biases resulting from heuristics, logical and rational thinking is essential. Different heuristics could be employed in different situations. From the evidences of the literature, it can be concluded that beside the potential critique, use of heuristics is sometimes useful and its application depends on the situations in which decision is being made.

FUTURE IMPLICATIONS

Since there are diverse shortcuts used by decision makers and different researchers have identified different heuristics, future researchers can comprehend the heuristics discussed above and many others can investigate and summarize the biases resulting from these heuristics to develop a comprehensive model to be empirically tested and used for improvement of decision making.

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