



CONCEPTUAL REVIEW OF HERBERT SIMON'S DECISION-MAKING THEORIES AND ITS APPLICABILITY IN CONTEMPORARY ORGANISATIONS

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Abstract

Herbert Simon introduced the concept of bounded rationality, which posits that individuals make decisions with constraints on their information and resources, and the concept of satisficing, which suggests that individuals aim to make decisions that are satisfactory rather than optimal. His theories on information processing in decision-making have significantly influenced various disciplines, including economics, psychology, computer science, and management sciences which were developed in two areas: administrative theory and human problem-solving. His approach emphasizes the importance of understanding and embracing the constraints of human rationality in practical decision-making. This study aimed to examine the principles of bounded rationality and satisficing, and its applicability in Contemporary Organisations, especially with the evolution of artificial intelligence (AI). The study recommends the leverage of collective intelligence by fostering environments where team members can share their mental models and experiences to enhance the quality of decisions. Also, Policy Making should utilize insights from behavioural economics, grounded in Simon's theories, to inform policy-making, especially in public administration. This can help in designing policies that are realistic and effective in achieving desired outcomes.

Keywords: Decision-Making, Bounded rationality, Administrative Man, Information Processing, Artificial Intelligence.

Introduction

Herbert Simon, a Nobel Prize laureate in 1978, was a renowned economist, political scientist, a professor at Carnegie Mellon University, and cognitive psychologist who was recognized for his contributions to decision making and behavioural economics. He extensively wrote about decision making in organizations and his work has had a profound impact on various subjects like as economics, psychology, computer science and management sciences. He also introduced the idea of bounded rationality, which posits that individuals make decisions with constraints on their information and resources and also created the concept of satisficing, which suggests that individuals aim to make decisions that are satisfactory rather than optimal (Galanou, et al. 2015).

Herbert Simon's decision-making theories emerged during a time when the field of economics predominantly relied on the notion of rational actors making optimal choices based on complete information. Contrarily, Simon posited that in reality, decision-makers operate under constraints of limited information, cognitive limitations, and time pressures. He proposed that individuals and organizations often seek a satisfactory solution rather than an optimal one, coining the term "satisficing." This concept of bounded

rationality acknowledged the imperfect and heuristic nature of human decision-making processes, paving the way for a more realistic and applicable understanding of human behaviour.

Simon has had a significant impact on the disciplines of economics, management, and psychology, also introducing the idea of procedural rationality, which suggests that individuals base their decisions on the methods they employ to assess options and make selections (Devi, et al. 2020) which prioritizes the decision-making process over the anticipated outcome. Simon's concept of bounded rationality offers a more realistic perspective on decision-making processes. It accepts that individuals have constraints of time and resources when making decisions, and it recognizes that they are not always able to be completely rational (Ding, et al. 2020). This approach is useful for comprehending how individuals truly make decisions in practical situations. While Bounded rationality can assist to understand why individuals occasionally make decisions that are not optimum because when individuals have restricted information and resources, they might not be capable of making the optimal decision (Battaglio, et al. 2019). Also due to constraints in information and resources, individuals may not be capable of making the optimal option as this might

result in unfavourable consequences, including opting for a less efficient solution to a problem or making a decision that leads to an overall loss. Additionally, Bounded rationality does not necessarily consider illogical behaviour, as individuals may not always exhibit complete rationality, but might nonetheless behave irrationally under certain circumstances because it does not consistently account for individuals' emotional or impulsive decision-making thought process.

By examining the principles of bounded rationality and satisficing, the article aims to illustrate how these concepts are applied in contemporary organizational settings and technological contexts. Additionally, the discussion will highlight the evolution of decision-making frameworks in light of Simon's contributions, while reaffirming its vital role in shaping effective decision-making strategies in an increasingly complex world and how such knowledge is applicable in the 21st century work environment.

Conceptual review

Herbert Simon and the origins of Information Processing

In the 21st century, Simon's insights remain remarkably relevant as the complexity and pace of decision-making continue to escalate. The digital age, characterized by an unprecedented volume of information and rapid technological advancements, poses new challenges and opportunities for decision-makers. The integration of artificial intelligence, big data analytics, and machine learning into decision-making processes echoes Simon's early recognition of the potential for technology to augment human cognitive capabilities. Moreover, contemporary organizational environments, marked by volatility, uncertainty, complexity, and ambiguity (VUCA), further necessitate the application of Simon's theories to navigate the intricate landscape of modern decision-making.

Within organization research, the study of information processing in decision-making can be traced back to Herbert Simon, a scientist focused on understanding problem-solving and decision-making processes. He revolutionized the field of economics by integrating psychological studies and introducing a more behavioural perspective to the analysis of human decision-making (Augier, et al. 2001). Simon's theories on information processing were primarily and extensively developed in two areas of research. The initial stream focused on administrative theory, highlighting hierarchically structured decision-making as the fundamental concept in the theory of bounded rationality. This concept was pivotal in establishing a

behavioural perspective on rational choice, as outlined in Simon's research in 1955 and 1956. While the phrase "information processing" was not explicitly used in the original *Administrative Behaviour* (1946) book by Simon, the concept and its key elements were evidently included.

Various authors (March, et al. 1958; Cyert, 1963) viewed the organization as an information-processing and decision-making mechanism. March et al. (1958) examined the communication needs and procedures necessary for efficient coordination. Their conclusion suggests that an organization's ability to sustain a complex network of activities is constrained by its ability to manage the necessary communication for coordination, while Cyert (1963) argued that there is need for more dependable information regarding how organizations obtain and share information, how authoritative decisions are made, and how these decisions are put into action within the organization.

Another area of Simon's 1956 study, focused on human problem-solving, symbol processing, and heuristic search. They recognized the individual decision-making process as a crucial unit of analysis. This idea emphasizes the difference between the real task environment and how a certain individual perceives the task to be completed. Simon (1996) further stated that simplifying the real world for decision-making purposes creates differences between the simplified model and reality, which in turn, can account for many organizational behaviour phenomena.

Simon's work encompasses two separate information-processing areas which are related to organizations and individual psychology. His research on organizational structure included a focus on human decision-making, and his work on individual cognition was integrated into his research on organizations (Konaté, et al. 2020). He proposed that the subgroup or organizational participation of members affects their shared mental models and selective perception, he proposes that shared representations or common maps in social contexts provide individuals with a collective understanding of a situation, which is influenced by a firm's formal organizational structure (Dong, et al. 2018). It is believed that the socio-cognitive aspects of organizational structure connect individual thinking with group decision-making.

Insight into Herbert Simon' Decision-Making Theories.

Aspiration levels and search are two key concepts in Simon's decision-making theory that van der Voet, et al. (2022) address in their paper "Decision-Makers' Generation of Policy Solutions amidst Negative

Performance". The authors contend that in complicated issues, the necessary answers must be developed and built rather than found through simple search. The behavioural framework is put to the test in this article by comparing it to threat rigidity theory expectations. In the context of juvenile care policy in Dutch towns, they find that negative performance information reduces the originality of policy options proposed by decision makers through a survey-experimental research approach. Accordingly, their analysis shows that reduced creativity in response to unfavourable budgetary feedback is caused by the processes of threat-rigidity hypothesis. The article offers an empirical test of solution generation, a key component of behavioural public administration theory that has not yet been experimentally proven.

The different types of Decision-making theories include the following:

1. **Rational Decision-Making Model:** This implies that decision-makers are rational and aim to maximize utility. The process includes recognizing the issue, creating options, assessing them, and selecting the best solution. Simon introduced a three-stage model for decision-making: Intelligence Phase (identifying the problem and collecting information), Design Phase (creating and assessing solutions), and Choice Phase (choosing the most suitable solution based on information and preferences).
2. **Bounded rationality:** Herbert Simon's theory of bounded rationality acknowledges that individuals have restricted information and cognitive abilities, leading them to make judgements based on their available knowledge and processing capabilities. He disputed the traditional economic concept of perfect rationality by proposing that humans may not always be able to make completely rational decisions because of cognitive constraints, thereby noting that Decision-makers operate under restricted rationality, making judgements based on available knowledge rather than analysing all conceivable options exhaustively.
3. **Satisficing:** Satisficing is a concept introduced by Herbert Simon which proposes that people usually select for the first satisfactory choice instead of extensively seeking the optimal alternative. Satisficing entails selecting a solution that meets the decision-maker's requirements adequately, rather than extensively seeking the best possible option. This strategy is more practical considering the limitations of time, cognitive resources, and available information.
4. **Administrative Man Model:** Simon proposed the idea of the "administrative man" as a more accurate portrayal of decision-makers. An administrative

individual does not adhere to the totally rational decision-making model but instead utilizes heuristics, rules of thumb, and satisficing methods in carrying out his duties.

5. **Organizational Decision-Making:** Simon's studies went beyond human decision-making to encompass organizational decision processes. He contended that organizations encounter complexity and ambiguity, causing them to utilize satisficing tactics rather than striving for optimal outcomes.

6. **Information Processing:** Simon highlighted the importance of information processing in decision-making. Decision-makers frequently utilize shortcuts or heuristics to streamline intricate situations due to the constraints of their cognitive capacities.

Herbert Simon's "Multi-Participant" Decision-Making Theory.

Administrative behaviour theory refers to how individuals operate within organizations. Herbert Simon is attributed with the theory, specifically his discoveries on organizational functioning that contradict traditional approaches. The Herbert Simon Decision Making Theory was introduced in his famous book, *Administrative Behaviour* in 1946. He emphasized that timely decisions are crucial as delays might have a detrimental effect on an organization's goals. Efficient decision-making is crucial in contemporary workplace management as managers, team leaders, and employees must consistently make logical and well-founded judgements on a daily basis. As a result of this, effective decisions, choices, and strategies contribute to achieving the general organizational objectives more effectively (Ciurea, et al. 2019). It assists organizations in adopting and implementing strategies to maximize growth in terms of the products and/or services they provide knowing that decisions influence actions.

Al-Hashimi, et al. (2022) present a comprehensive model in their symposium essay that combines strategic decision-making and implementation, using procedural rationality. Through the analysis of multi-source data on 170 strategic decisions in the public sector in Qatar, a context where research on strategic decision making is scarce, it has been discovered that there is a positive correlation between procedural rationality, participation, and constructive politics, and the effective execution of strategic decisions. Their study illustrates that effective decision making alone is insufficient to guarantee the achievement of intended objectives. It emphasises the importance of complementing decision making with effective

implementation processes, an area that has been significantly overlooked in the literature.

The general model of decision-making activities proposed by Herbert Simon is composed of several phases such as:

- a) intelligence,
- b) design of alternatives and models, and
- c) choice of a solution to be released for implementation.
- d) A fourth phase, the evaluation of the decision implementation impact and possibly to re-start the process, was later added to the model.

In collaborative decision-making, the Simon's process model can be adapted to multi-participant settings. provide the foundational principles that support decisions. Desirable goals assumptions are merged with factual assumptions to reach conclusions. Individuals in high-ranking roles base their decisions more on value considerations thereby making strategic judgements, whereas those in lower positions rely more on factual information thereby making operational decisions. Goals, although typically lacking specificity, can initiate a sequence of mean-ends chains. This involves creating a set of means to achieve the main goal, transforming each mean into a sub-goal, and then devising ways to accomplish the sub-goal, continuing this process until the means become specific actions. Each objective in the means-end hierarchy serves as both an end for the components below it and a means for the components above it.

Hansen et al. (2022) investigate the fundamental consequences of the behavioural model of performance-based learning. This concept, which is based on Simon's idea of bounded rationality, proposes that performance data has the ability to create organisational learning and guide public managers' choices about critical issues, organisational transformation, and priorities. After conducting two tests with managers employed in Denmark's public education system, the authors discovered that poor performance has an impact on problem focus but not on managers' intentions to explore for novel solutions. Additionally, they discover that low-performance signals strengthen preferences for modifications linked to performance but not for other types of adjustments.

Activities can only be assessed based on the aims they are meant to achieve. Goals can be assigned to various units, streamlining the decision-making process for participants. Suggests were made that an organization's

Herbert Simon's Theory of Admirative Behaviour

Simon (1976) explained how goal specificity and formalization impact rational behaviour in organizations. He disapproved of Fayol's and Taylor's clichés and assumptions about the "economic man," instead suggesting the concept of the "administrative man" who acts in his self-interest but may not fully understand his motivations, he is only aware of a limited number of decision options, and is willing to accept a satisfactory solution rather than seeking the best one. The individual differentiates between the choices made when joining or exiting an organization and the choices made when actively participating. (Battaglio, et al, 2019).

Organizations streamline decision-making by limiting the goals towards which actions are aimed. Goals

hierarchy can be seen as a solidified series of means-ends chains that provide uniformity in decision-making and activities across the organization. Perrow (1986) states that Simon's paradigm emphasizes limited control over participants through training, information, standard operating procedures, etc. -- focusing attention and conveying information.

Decision-Making and Problem Solving: Factors, Process and Execution

As posited by Devi et al. (2020), who extensively discussed the Problem-solving model through decision-making, they noted that it is crucial for organization and administration to outline strategies that can be utilized to uncover and develop choices in order to enhance decision-making and decision quality. Decision-making and issue resolution involve assessing situations, evaluating options, creating choices, and selecting the best course of action. Devi et al. (2020) further noted that Decisions making processes are majorly categorized into two types, which are;

Programmed decisions: these are decisions made utilizing simple operational procedures or other direct approaches. Organizations who devise unique techniques to manipulate these situations are highly effective for handling routine tasks such as employees requesting leave or authorization. When a similar situation occurs, the specific processes and procedures outlined by the programmed must be followed, and this occurs after a decision is made. Creating programmed routines helps establish norms, events, and policies that become organizational standards.

Non-programmed decisions: Non-programmed decisions are extraordinary and one-shot decisions. Unstructured decisions, unlike programmed decisions, are often managed by creativity and decision-making

processes. Unplanned decisions are characterized by their unique and unconventional outcomes, which arise from newly developed or unexpected challenges.

Devi et al. (2020) also submitted that one of the following conditions arises while decisions are made:

Certainty

- Decisions under certainty occur when a manager has prior knowledge of the outcome due to sufficient information.
- The management is aware of the available options, their convenience, and the conditions and repercussions associated with such decisions.
- There is a minimal risk of making a poor judgement in this scenario due to the low level of ambiguity.

Risk

- Most managerial decisions are made in risky conditions.
- A choice under risk occurs when a manager has limited knowledge to make a decision, leading to uncertainty about the repercussions. Probability evaluation is beneficial for managers in risky situations. This condition emphasizes the significance of a manager's experience and perception.

Uncertainty

- Decisions under ambiguity occur when the anticipated outcomes are unclear.
- There is a lack of awareness regarding all available options and their outcomes, even for those that are familiar.

From the explanations above, it is important for managers to establish specific expectations about the situations they find themselves in and to create a practical decision-making structure based on the given conditions. Uncertainty in situations necessitates the involvement of perception, judgement, and experience in the decision-making process which are not always consistent and reliable due to human perception.

Is the Herbert Simon proposed theories relevant in contemporary workplace?

From the review of extant literature, we can clearly say “Yes, Herbert Simon's proposed theories, particularly bounded rationality and satisficing, remain highly relevant today”. The different literatures underscore the enduring relevance of Simon's ideas, highlighting their application in various contemporary contexts, including organizational behaviour, artificial intelligence, and behavioural economics. As the complexity of decision-making continues to grow in the 21st century, Simon's insights remain crucial for developing effective strategies and systems to navigate this challenging

certainty, risk and uncertainty if objectives are to be met.

landscape. Some reasons why his theory remains relevant today are;

1. **Realism in Decision-Making:** Simon's views offer a more accurate portrayal of decision-making processes in both individuals and organizations in real-life scenarios. Bounded rationality recognizes the cognitive restrictions and limited information that decision-makers encounter, reflecting the real-world difficulties of decision-making in different situations. Al-Hashimi, et al, (2022) tested a model on 170 strategic decisions from senior executives in 38 Qatari public organizations. Their results showed that all realism dimensions positively impact the successful implementation and outcomes of strategic decisions, with successful implementation between procedural rationality, participation, and constructive politics. Van der Voet, et al., (2022) study also indicate that negative performance decreases the creativity of policy solutions in the absence of realism in decision making.

2. **Satisficing in Complex Environments:** Satisficing acknowledges that decision makers frequently select options that are deemed satisfactory rather than extensively seeking the best possible conclusion. Satisficing techniques are practical in complicated and dynamic contexts where perfect information is hard to come by, reflecting the decision-making process. Devi, et al. (2020) provides benchmarks about optimum performance by the system that can help to make better decisions, meet the challenges, and achieve the missions under the specific decision-making frameworks.

3. **Heuristics and Information Processing:** Simon emphasized the use of heuristics and simplifying methods in decision-making. In the current information-saturated setting, people and groups frequently depend on heuristics and shortcuts to efficiently handle large volumes of data. It is essential to grasp these cognitive shortcuts to understand decision-making processes. Joseph, et al, (2020) study proposed a roadmap for future research, emphasizing the role of cohesive information dissemination processes and organizational structure in decision-making and offering an ecological perspective of information processing. Also, Tunney, R. (2024) suggested in his book “Prospect Theory, and Heuristics and Biases” that man makes subjective judgements of probability and utility which sometimes differs from

their objective counterparts, resulting in decisions that deviate from the normative model.

4. **Complex Adaptive Systems:** Simon's thoughts are in accordance with the comprehension of decision-making in complex adaptive systems. Within these systems, agents with limited reasoning engage, adjust, and decide based on evolving surroundings. The flexible and problem-solving character of decision-making is an essential aspect of this viewpoint. Campitelli, et al. (2010) opined that integrating Simon's approach with current approaches could lead to more generalizable models, higher ecological validity, specification of cognitive processes, and better understanding of cognitive system characteristics and environmental contingencies.

5. **Human-centred Design:** Simon's focus on comprehending the human cognitive system and creating solutions that adhere to bounded rationality has impacted human-centred design methods in the field of design and innovation. Designers understand the significance of developing user-friendly and intuitive solutions that cater to human cognitive constraints. Candea, et al. (2016) suggested that the use of new Information Technology (IT) concepts in computer-supported group decision-making. It uses Information Decision Support System (IDS), an IT platform, to illustrate the methodology and evolution of this solution. They pointed out that this is mainly possibly through the interference of knowledgeable human decisions as IDS offer a collaborative environment for decision-making, allowing users to collaborate on individual and group sessions, avoiding complex training and user rejection.

Summary and Conclusion

In contemporary research, AI and machine learning have advanced significantly, enabling more sophisticated decision-making systems. These technologies often incorporate principles of bounded rationality and satisficing to handle large datasets and make decisions under uncertainty. For example, recommendation systems in e-commerce and automated trading algorithms in finance utilize heuristic approaches to process information and make decisions efficiently. Herbert Simon's theories on decision-making has significantly influenced different disciplines, such as economics, psychology, and organizational behaviour. His approach emphasizes the significance of comprehending and embracing the constraints of human rationality in practical decision-making. Simon's concept of bounded rationality is highly applicable in the 21st century, especially in the realm of artificial intelligence (AI). AI systems are becoming more advanced and intricate, allowing them

to make decisions that closely resemble human intellect. Nevertheless, the most sophisticated AI systems have constraints, like restricted data and processing capabilities. Therefore, they are still governed by the constrained rationality paradigm. Bounded rationality is also applicable in decision support systems. The purpose of these systems is to assist individuals in decision-making by offering them information and direction. Despite substantial advancements in the field of artificial intelligence since Simon's initial proposal, AI systems continue to encounter many of the limits noted by Simon. Although decision support systems have advanced, they are not capable of completely replacing human decision-making processes as these involves complex reasonings. The concept of bounded rationality is dynamic, not fixed therefore frontiers of reason may vary and grow as AI systems and decision support systems continue to evolve. Simon acknowledges the cognitive constraints of decision makers through the concept of bounded rationality, as proposed by March and Simon in 1958. Herbert Simon's theories remain relevant as they effectively illustrate the constraints and difficulties of decision-making in a manner that reflects the intricacies of real-world scenarios. Additionally, Simon aids in comprehending how the decisions made by numerous individuals within an organization can be aligned with the organization's overarching objectives. Simon's insights remain influential in current discussions on decision-making as our knowledge of decision science progresses.

Recommendations

The study proposes several recommendations for improving decision-making processes in today's organisations. These include;

- i. incorporating bounded rationality into decision support systems, developing heuristic-based AI models, establishing organizational training programs to educate workers on cognitive biases and limits in decision-making, promoting satisficing strategies, designing adaptive organizational structures, implementing collaborative frameworks, using collective intelligence, and applying behavioural economics to policy making processes.
- ii. Also, future studies should explore the integration of bounded rationality in AI and machine learning algorithms, hybrid models, the impact of heuristics in decision-making, and the role of cognitive limitations in organizational behaviour.
- iii. Empirical research should be conducted to study the usefulness of different heuristics in diverse decision-making situations, as well as cross-disciplinary

research to explore how heuristics are employed in various sectors such as finance, healthcare, and public policy.

iv. Adaptive strategies should be explored to allow for flexible decision-making in volatile, uncertain, complex, and ambiguous (VUCA) settings. Human-centred design should be explored to integrate Simon's ideas into design thinking approaches, and user experience research should be conducted to understand how constrained rationality influences users' interaction with technology.

v. Behavioural model testing should be conducted to determine its applicability and efficacy, and feedback mechanisms should be explored to understand how various forms of feedback mechanisms impact organizational learning and decision-making results.

By addressing these suggestions and exploring future research topics, researchers and practitioners can continue to expand the knowledge of decision-making processes and build on Herbert Simon's core ideas to navigate the complexity of the contemporary world.

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