

Exploring the History of Decision-Making

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Abstract

This article delves into the intricate realm of human decision-making, examining how individuals navigate the spectrum of choices in their lives. Aristotle's insights are used to analyze the different forms of decision-making, from actions rooted in ignorance to those driven by moral force. The article also addresses the interplay between probability and decision-making, delving into concepts like risk aversion and expected utility. The work of researchers like Daniel Kahneman and Gerd Gigerenzer is examined, showcasing the psychological intricacies involved in decision-making, such as the influence of emotions and cognitive biases, and the concept of antifragility by Nassim Taleb (Kahneman, 2011; Gigerenzer, 2008; Taleb, 2012). The article concludes by discussing the concept of tacit knowledge and its role in decision-making, along with acknowledging the enduring relevance of historical thinkers' insights in shaping our understanding of choice and uncertainty.

Introduction

Human existence is marked by an unceasing series of choices and subsequent actions. Reflect on this for a moment: any individual choose the breakfast, clothing, whether to cross on a green traffic signal, the items to purchase, vacation destinations, companions, life partners, even the decision to bring a new life into the world or opt for a certain profession, how to live and for what. (Yet, amid this cascade of choices, there exists a perplexing facet that defies clear understanding - the phenomenon of self-inflicted, premature exits from life, often referred to as suicide. The motivations and intricacies driving such decisions remain elusive to modern psychology).

Decisions arise in a spectrum of tempos, spanning from impulsive, instinctual choices to protracted determinations (Brown et al., 2018; see also Dinu-Biringer et al., 2016; Halamish & Liberman, 2017; Meissner et al., 2021; Nofsinger et al., 2018). These choices can range from easy to difficult, from trivial to monumental, from delightful to distressing, and from hasty to calculated, it can be a fateful decision, with some even abearing the weight of life and death. Hence, the trajectory of an individual's life is fundamentally influenced by the decisions undertaken. Regardless of the unforeseen twists and turns, each twist is an outcome of a choice made.

The enigma persists: how does one navigate decision-making? How is the choice made? The answer is multifaceted, as diverse as the individuals themselves. Astonishingly, despite the strides of scientific inquiry, the intricate machinery behind human decision-making continues to elude precise explanation (Weiss & Shanteau, 2021; see also Evans, 2021; Koechlin, 2020; Paradowski & Drażek, 2020; Szöllösi & Newell, 2020). To minimize errors, models for decision making are being developed (Doshi et al., 2020; Evans et al., 2020; Serrano et al., 2017; Shevlin & Krajbich, 2021; Upadhyay, 2021). Some models include utilizing artificial intelligence (Campbell et al., 2020; Farrokhi et al., 2020; Khan & Al-Badi, 2020; Kuziemski & Misuraca, 2020; Vincent, 2021). However, these models are not infallible. It is important to delve into the origins of decision making. Let us embark on a historical journey into this field. By exploring the historical context of decision-making and delving into the scientific discourse surrounding this research area, our objective is to tackle these questions and uncover meaningful answers.

Methodology

A research methodology for decision-making encompasses various approaches and stages, with a historical review providing insights into the development of decision-making methods. The key components of such a research methodology include:

- **Historical Literature Analysis:** Scrutinize historical literature on decision-making, examining works and studies from different time periods to identify significant trends and changes in approaches.
- **Analysis of Historical Events:** Explore specific historical events and the decisions made within them, investigating the factors and methods influencing decision-making across different eras.
- **Evolution of Technology and Information Systems:** Evaluate how technology and information systems have impacted decision-making processes, focusing on changes in data gathering, analysis, and reporting methods.
- **Study of Key Figures:** Examine key historical figures in decision-making, such as scientists, politicians, and business leaders, to understand their approaches and methods, contributing to a comprehensive perspective.
- **Comparative Analysis:** Compare different periods and approaches to decision-making, noting similarities and differences, and extracting lessons from the past for contemporary decision-making.
- **Critical Examination of Mistakes and Successes:** Analyze cases of successful and unsuccessful decision-making in history, dissecting the reasons for both failures and successes to identify valuable lessons for future strategies.
- **Explore the application of modern decision-making techniques** by examining historical approaches, including data analysis techniques and decision modeling.
- **Based on the conducted research, strive to synthesize historical data, trends, and lessons learned to formulate recommendations and conclusions.** This synthesis aims to provide insights applicable to contemporary decision-making practices.

This comprehensive research methodology allows for an in-depth exploration of the evolution of decision-making, leveraging acquired knowledge to develop more effective strategies in the present.

Research methodology in decision-making encompasses several crucial factors:

- **Sociocultural factors** play a pivotal role in decision-making across different time periods. The evaluation involves assessing how societal values, cultural characteristics, and social changes have influenced the processes of decision-making.
- **Analyzing institutional factors** entails studying the institutional structures that existed in various historical periods and understanding their impact on decision-making. This includes an examination of the roles played by the state, corporations, and other insti-

tutions in shaping the decision-making process.

- Adopting a systems approach involves studying the history of decision-making by considering the interaction of various elements and factors within the decision-making system over time.
- Examining changes in the understanding of risk and uncertainty entails exploring how perceptions and evaluations of risk in decision-making have evolved over time. This includes an analysis of methods employed to manage risk in different historical periods.
- Incorporating teaching cases and learning from errors involves using historical scenarios in educational curricula to teach decision-making. This includes an analysis of how educational institutions leverage historical data to cultivate decision-making skills in future leaders.
- Utilizing project-based modeling entails reconstructing historical events and decision-making processes. This approach aids in a better understanding of the dynamics of events and the various factors that influence decisions.
- Adopting a cross-disciplinary approach involves incorporating research methods from history, sociology, psychology, and other fields. This holistic approach aims to provide a more comprehensive understanding of the evolution of decision-making.
- Assessing the effectiveness of decision-making methods provides an opportunity to gauge the success of different approaches used in various periods. This evaluation seeks to identify which methods have been most successful and the reasons behind their efficacy.

In essence, the goal of research methodology in the history of decision-making is to cultivate a broad and profound understanding of the evolution of this process. The ultimate aim is to derive valuable lessons and recommendations applicable to contemporary decision-making practices.

Results

In our quest for insight, it is instructive to turn to the luminaries of antiquity, to Aristotle (1984), a paragon of profound contemplation. Within his work, Aristotle established a classification of actions, delineating a segment termed “Involuntary actions.” Within this category, Aristotle acknowledged the subject’s agency and capacity for choice. However, information concerning the factors that guide decision-making - encompassing the means and ultimate objectives - can undergo distortion, a distortion not attributable to any failing on the part of the individual. This distortion manifests in two distinct variants (Platonov-Polyakov, 2015):

1. One form of distortion is rooted in ignorance, exemplified by instances where individuals are misled or possess false information. In these scenarios, the action undertaken might differ from what the person intended to commit. Deciphering whether an individual has been ensnared by erroneous information or has opportunistically exploited it is challenging from an external vantage point. To address this, Aristotle introduces an internal benchmark: “regret.” This form of regret is not outwardly observable but hinges on the subject’s personal confrontation with the aftermath of their action. Essentially, Aristotle invokes the concept of conscience.
2. Distortions in the perception of information can emerge due to the subject’s pathologies. Aristotle alludes to conditions like madness, deafness, and blindness as contributors to actions “in ignorance.” It is conceivable that the afflictions experienced by the individual extend beyond the realm of the physical or encompass dimensions beyond the purely physical manifestations.

Actions of a mixed nature are those that occur “at a given time in a given circumstance.” While the origins of such actions lie within the individual, complete with the capacity for choice and access to relevant information, the contextual backdrop often mirrors the essence of force majeure. Yet, this compulsion does not manifest as physical coercion; it instead resonates as a

moral imperative. This moral force intricately propels individuals to meticulously construct their hierarchy of values. Thus, "in a storm one throws [one's possessions] overboard' or 'in the name of the great and beautiful one endures something shameful,' i.e., it is a choice that no one would make 'without regard to' the given circumstances - not preferable in itself." Nonetheless, Aristotle introduces a crucial caveat. He emphasizes scenarios in which individuals would rather endure the most extreme suffering than commit particular actions (Platonov-Polyakov, 2015).

Intentional actions, those consciously selected, constitute a distinctive subset within the realm of arbitrary actions. Aristotle directs his focus towards the intricate analysis of what he terms "conscious choice." This "conscious choice" is characterized by several key aspects (Platonov-Polyakov, 2015):

- The presence of reasoning.
- Orientation towards the means to the end and towards what 'depends on us and not always in the same way' and 'is realized in actions,' i.e., towards everything that we can change.
- Inclusion of vice or virtue.

It constitutes an action that is intricately built upon the foundational components of decision-making and choice. Decision-making itself entails a systematic process of "search and analysis," culminating in the identification of potential avenues. This process involves probing for means and methodologies, effectively rendering decision-making an inherently rational endeavor. Conversely, choice emerges as the outcome of this deliberation, a step beyond the rational realm. Aristotle acknowledges that choice can deviate from rationality, as individuals tainted by vice might opt for the wrong course. Vice and virtue are not inherent within the "search and analysis" stage. It pertains to the broader context of the individual's development, encompassing both intellectual and moral virtues, each serving as a prelude to individual deliberation.

Aristotle posits that in every specific instance of decision-making, an individual brings their entire life journey into play – not merely knowledge, but also skill sets, ingrained habits, and innate tendencies. Each decision undertaken becomes an embodiment and realization of the individual's essence. Consciously chosen actions extend their influence across the entirety of one's existence. As Aristotle observes, that mutual friendship thrives on conscious choice, while virtues serve as the foundations we consciously select (Platonov-Polyakov, 2015).

As an illustration, consider the notion of corruptness, which does not fall under the category of involuntariness, as it represents a consciously chosen state of ignorance. The "virtuous individual" continually finds themselves in the context of decision-making – perpetually navigating the process of making choices, steering clear of extremes. The societal role of an individual adept in the art of decision-making, a pinnacle exemplified by Aristotle's sage, holds paramount importance. This role remains irreplaceable by algorithms and directives, embodying the concept that "a virtuous individual is presumed to be a standard" in each specific circumstance (Platonov-Polyakov, 2015).

An illustrative example is well-known Pascal's "fear", in which he humorously confessed his apprehension of pure mathematicians, foreseeing the possibility of being reduced to a mere mathematical theorem. This issue has garnered significance among modern existentialists, who hail Pascal as one of their distant precursors (Streltsova, 1979). This sentiment encapsulates not fear – it delves into the inadequacy of mathematical understanding when applied to the intricate field of human cognition. The statement "Man is full of needs" serves as a prelude to this fragment. Even though mathematics represents the pinnacle of rational understanding, it falls short of capturing the entirety of human. The poignant observation by the eminent mathematician underscores the limitations inherent in purely rational comprehension, a realization that resonates more profoundly in the twentieth century.

According to Koziellecki (1978/1981), the investigation into decision-making emerged as a scholarly pursuit during the Second World War. This scholarly exploration was pioneered by Von Neumann and Morgenstern (1944), who published the seminal work 'Theory of Games and Economic Behavior.' In the subsequent edition, Von Neumann and Morgenstern (1947) introduced the theory of expected utility. The authors posited that the foundational concept of rational behavior,

characterized by the maximization of utility or profit, central to economic theory, demanded a more quantified approach. This was driven by the understanding that participants in a social exchange economy are distinct in that the outcomes of their actions are contingent not solely on marginalist models, but also on the decisions of others. Each participant seeks to optimize a certain function, with not all elements of this function falling under their direct control.

The notion of expected utility and its quantification revolves around two critical facets: probability (which encapsulates uncertainty) and utility. Attitudes towards a potential outcome are inherently intertwined with the concept of risk. For instance, individuals who strongly dislike taking risks might be willing to pay to evade engagement in lotteries – a manifestation of probability, uncertainty – and might opt for insurance instead. In 1948, mathematician Leonard Savage and economist Milton Friedman formulated a theory concerning attitudes towards risk (Friedman & Savage, 1948). Their examination delineated two distinct categories of people's attitudes: risk preference (applicable to situations like lotteries, gambling, and investments) and risk aversion (pertinent to scenarios involving insurance).

In the realm of risk aversion, the notion of the credible equivalent of a lottery assumes paramount significance. In this context, individuals find the credible equivalent of a fair lottery to be more valuable, meaning they are willing to pay extra to ensure a win in a just lottery. Such individuals place a lower value on the opportunity to participate in the lottery itself than they do on its credible equivalent. Conversely, someone who is inclined towards risk-taking assesses the chance to engage in a lottery as more valuable than its credible equivalent, and is willing to pay an additional cost for the privilege of participating in a fair lottery. The widespread prevalence of both lotteries and insurance underscores the universality of these traits across all people, regardless of factors such as nationality, race, religion, social standing, or class. This aspect demonstrates a common thread that transcends geographical and social boundaries.

At the core of the concept of probability resides a fundamental query: is uncertainty rooted within the individual (subjective probability, indicating the measure of belief in the likelihood of events) or is it an attribute of the external world (objective probability, wherein random events unfold)? It is postulated that due to human rationality, the subjective probability of an event or outcome is interconnected with objective probability and functions as a derivative thereof. As early as 1957, the American psychologist of Russian origin, Leon Festinger, introduced the theory of cognitive dissonance (Festinger, 1957). This framework highlights the tendency of individuals to engage in self-contradiction and, when faced with outcomes distant from their expectations, to recalibrate facts rather than altering their own perspectives. For instance, envision an investor who incurs losses due to a misguided decision. Research demonstrates that such an individual would more likely attribute the losses to the “irrationality” of the market rather than admitting personal error.

In 1969, O.K. Tikhomirov redefined cognitive psychology's principles through a groundbreaking monograph, revealing the incompatibility of thinking activity's structures with formal-logical frameworks (Tikhomirov, 1969). Tikhomirov introduced the entropy formula into the analysis of subjective uncertainty, which individuals surmount through intellectual strategies. In the realm of prospect theory developed by A. Tversky and D. Kahneman, subjective probabilities do not adhere to the axioms of objective probability functions (Kahneman & Tversky, 1979). For this theory, Kahneman was awarded the Nobel Prize in Economics in 2002 (Nobel Prize Outreach, 2002).

These investigations culminated in the emergence of theories commonly referred to as the theory of rational decision-making (Buskens, 2015) and the psychological theory of decision-making. The theory of rational decision-making is a subset of praxeology – the study of the rational behavior exhibited by individuals and groups. This theory outlines rational (optimal) approaches to solving specific problems, employing logical reasoning and selecting the best course of action devoid of emotional influences, entrenched dogmas, or biases, even in high-stress situations.

Nevertheless, the theory falls short of incorporating the specific attributes of decision-makers within distinct systems. Notably, crucial psychological variables such as cognitive limitations, learning capacities, and information processing speed are omitted when crafting optimal deci-

sions. This theory disregards the role of the decision-maker, which could diminish its practical value. Relying solely on rational choice while overlooking psychological variables and the inherent nature of the decision-maker's thought process raises valid concerns.

Psychological decision theory endeavors to address inquiries such as: How do individuals truly exercise their choices? How do they navigate tasks necessitating decision-making? Does their behavior align with the fundamental tenets of methodological rationality? Tadeusz Tomaszewski (1975), a Polish psychologist and creator of the theory of action, characterized psychology as a discipline that explores human activity while solving various tasks, making decisions, and executing them.

People grapple with a diverse array of tasks, frequently making decisions on an ongoing basis – often without conscious contemplation. This spectrum encompasses a range of decision levels, spanning from everyday choices to momentous ones. Intriguingly, individuals do not invariably employ logic, mathematics, rationality, utility, or statistics when making decisions across these different levels.

Decision Making encompasses the process of navigating uncertainty within human cognitive activities. This intricate endeavor involves analyzing and juxtaposing available alternatives and pathways towards achieving desired objectives, culminating in a judgment regarding the optimal course of action. The term "Decision Making" emerged in the 1960s within the realm of cognitive psychology, and its scope later extended to the broader domain of management theory. This expansion was closely tied to the development of algorithms capable of facilitating automatic decision-making by complex programmable systems, as well as its application in the realm of business consulting. Specialized scientific associations, such as the Society for Judgment and Decision Making and the International Society on Multiple Criteria Decision Making, engage in thorough interdisciplinary studies of decision-making. Journals like the "Journal of Behavioral Decision Making" and focused scientific conferences delve into the nuanced challenges associated with decision-making (Leontiev, 2017).

Choice, often perceived as the culminating step of Decision Making, transcends this role. While a finalized decision might be executed by an individual who was not involved in its formulation, choice is an ongoing life process. It encompasses not only discovering a decision but also assuming personal responsibility for it and its repercussions. Criteria for evaluating decision optimality are typically pre-established and unalterable, whereas criteria during the process of choice might evolve. This dynamic nature impedes the definitive optimization of profoundly significant life choices.

Kahneman's collaborative work reveals that individuals often rely on flawed models of intricate probabilistic processes and patterns when making decisions, leading to erroneous evaluations and predictions (Kahneman et al., 1982). The applicability of a wholly rational model of decision-making is severely constrained, and the role of emotional processes in decision-making can have positive implications. According to concept of Kahneman, the cognitive sphere's overall function hinges on two cognitive systems: one for deliberation and decision-making, the other for implementation those decisions. This framework introduces the concept of "heuristics" – mental shortcuts that introduce biases in information utilization, often referred to as "mind traps."

Gigerenzer argued that heuristics in human life serve not just, and perhaps not primarily, as "mind traps," but rather fulfill an adaptive function (Gigerenzer et al., 1999). He elucidates various other heuristics and connects their appropriate utilization to several indicators, primarily the level of predictive uncertainty associated with a task. Both the Tversky-Kahneman and Gigerenzer theories center on individuals basing predictions and judgments on their experiential knowledge. While these theories differ notably in their approach to representing uncertain conditions (through probabilities or frequencies), they both involve tying prediction and choice (decision or judgment) to the understanding and assessment of past events. However, these theories do not encompass the processes of anticipating and evaluating events that not only lie in the future but have not even been conceptualized by humans or mankind. It is to such events that N. Taleb

(2008) directed his attention, introducing the concepts of the “Black Swan” as an unpredictable event and “antifragility” as a foundation for grappling with uncertainty.

In contrast, back in the 19th century, J. Boole (1854) presented a concept of uncertainty along with a straightforward but profoundly significant remedy: “Probability is expectation founded upon partial knowledge. A perfect acquaintance with all the circumstances affecting the occurrence of an event would change expectation into certainty, and leave neither room nor demand for a theory of probabilities” (Boole, 1854, p. 244).

Drawing from the **dialogue between Taleb and Kahneman** at the New York Public Library on February 5, 2013 (Pleasemishandle, 2013).

Taleb developed the notion that uncertainty is detrimental to fragility, yet it thrives under the banner of antifragility. This principle applies to the willingness of entrepreneurs to embrace uncertainty; adventurers, for instance, cherish uncertainty as it unveils novel opportunities. Certain systems also reap benefits from randomness, a property deeply ingrained within them.

Kahneman countered by asserting that, for the most part, humans prefer stability over anti-fragility. Taleb, however, contended that increased complexity or magnitude amplifies an object’s fragility. In this context, decentralization diminishes fragility, rendering an object or system less susceptible to hazards like errors or destruction. Taleb offered an instance as an illustration: When a government is decentralized, it tends to accumulate numerous small errors. This can give the appearance of disorder, with these errors frequently making headlines in publications like the New York Times. While this might create apprehension and worry among people, a large, centralized government makes fewer mistakes due to smoother operations. However, the impact of these errors, when they do occur, can be significant and far-reaching. Taleb highlights that the repercussions of these two errors in the United States have endured for a decade. He cites the example of an individual who led the country into Iraq, resulting in a three trillion dollar cost, a figure that continues to rise. When you combine decentralization with mistakes, the impact is akin to small pebbles. While they may cause disruption, they are unlikely to lead to destruction (Pleasemishandle, 2013).

Kahneman expressed disagreement with Taleb’s critique of individuals attempting to predict economic trends but struggling with foreseeing major events like crises. In response, Taleb emphasized that protection against perilous incidents, such as airplane crashes, necessitates the ability to anticipate not just isolated occurrences but a sequence of events. Extrapolating this notion to a societal context leads to the imperative of constructing a framework that remains resilient even in the face of individual forecasting mistakes (Pleasemishandle, 2013).

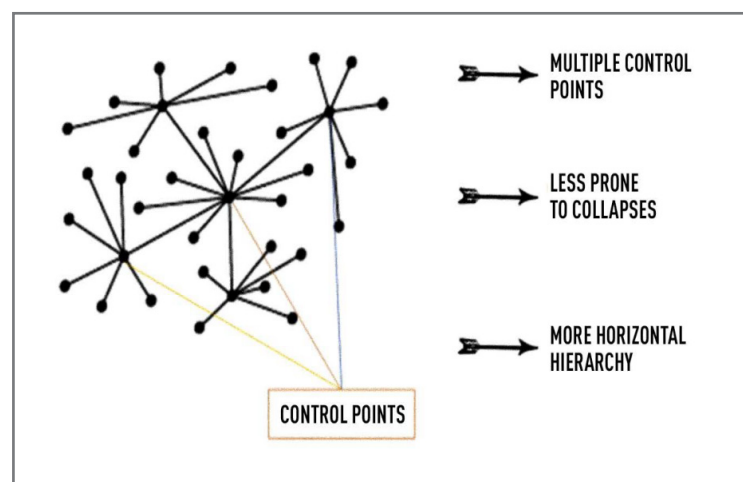


Figure 1. Decentralized systems

The author of “Antifragility,” Nassim Nicholas Taleb (2012), amalgamated methodological and psychological facets of risk comprehension, unveiling the concept of possibility within thought itself. This entails broadening cognitive horizons and daring to consider the inconceivable and

the unpredictable. Successful implementation of such a mindset enhances the capacity to navigate potential shifts in circumstances, consequently augmenting "antifragility." Taleb identifies an additional psychological quandary in conscientiousness. Namely, no one is more acquainted with a potential risk than the individual who has formulated the risky scenario (Pleasemishandle, 2013).

Hence, the role of conscientiousness—entailing the imperative of averting known risks—becomes pivotal. However, it is acknowledged that the stressors arising from risk factors cannot be altogether avoided. Excluding these stressors would render an individual within sterile conditions, unprepared for the proactive engagement necessary in confronting impending threats. Thus, control over uncertainty does not imply its elimination, reduction, or suppression, but rather entails readiness to confront the challenges posed by uncertainty. This readiness involves contemplating the unimaginable, embracing decentralization as a means to enhance antifragility.

The theories of O.K. Tikhomirov and Y.A. Ponomarev have divergent approaches to the correlation between the intuitive and logical systems. In Y.A. Ponomarev's framework, these systems manifest as modes of operation within a unified cognitive sphere. Both of these systems stem from distinct types of individual experiences, albeit both forms are acquired in an effective manner (Ponomarev, 1976). The distinguishing feature between Tikhomirov's concept and these two approaches lies in the incorporation of the idea of mediation, wherein the subject surpasses the confines of individual experience (Tikhomirov, 1969).

The notion of tacit (implicit) knowledge, propagated by R. Sternberg, a prominent American researcher in the realm of thinking and intelligence, has gained traction in modern psychology (Sternberg et al., 2002). This concept emphasizes the utilization of the subject's individual experience. In Sternberg's theory, the cognitive sphere's structure is delineated by a three-level concept. Notably, intuitive decisions aligned with practical thinking have been subjected to particular examination due to the challenge posed by synchronous intuitive thinking assumptions. Tacit knowledge is precisely employed by the subject as it is implied and assimilated within action.

Tacit knowledge is accompanied by several drawbacks, including (Gardner, 1998; Swan et al., 1999):

- Difficulty of Explanation.
- Imprecision.
- Varied Relevance: It might not hold significance for others.
- Tacit knowledge exhibits considerable variability.
- It is closely tied to specific contexts.
- It can hold excessive importance for individuals or groups.

In the many works of human inquiry, the wisdom offered by luminaries such as Aristotle, Pascal, and J. Boole endures as a timeless beacon. Their insights, meticulously forged across the epochs, continue to illuminate the intricate labyrinth of decision-making that humans traverse. This lineage of thought transcends eras, guiding us through the complexities of choice, uncertainty, and cognition. Yet, as our journey through time advances, modern psychology navigates an evolving landscape. Strikingly, it sometimes navigates within the confines of ignorance and pathology, navigating the depths of human behavior without a full comprehension of the conscious underpinnings.

Discussion

The evolution of decision-making throughout history reflects its adaptation to societal changes, technological advancements, and expanding knowledge. Presently, decision-making remains a pertinent and intricate field, necessitating the consideration of numerous factors and the adept balancing of interests, information, and values.

A crucial aspect within the history of decision-making is crisis response and risk management. Instances like financial collapses, natural disasters, or pandemics underscore the need for swift and well-informed decision-making. Response strategies, crisis planning, and risk management

emerge as pivotal components in this context.

In the contemporary landscape, technology has fundamentally altered the decision-making process. Information systems, big data analytics, artificial intelligence, and machine learning facilitate the automation of analysis and prediction, diminishing the human element in decisions and enhancing their quality. Decision-making is increasingly recognized as a vital competency in both personal and professional spheres, leading to a surge in training programs dedicated to imparting decision-making skills and fostering adaptability in today's world.

On the global stage, cross-border cooperation in the realms of economy and politics has intensified. International decisions are now commonplace, with entities like the European Union or BRICS deliberating and deciding on matters that impact member countries and the global community. Concurrently, decision-making methodologies continue to advance, incorporating systems thinking, agile approaches, design thinking, and other frameworks that consider the complexity and dynamism of the modern world.

The concept of Decision Making under Uncertainty acknowledges the challenge of obtaining all necessary data for real-world decisions. In such scenarios, decisions rely on estimating probabilities and leveraging expert knowledge. Techniques like scenario analysis and decision-making under partial information are employed to address uncertainty.

Group decision-making, involving consensus, voting, deliberation, and other methods, is a collaborative process where decisions are made collectively. While it allows for the utilization of diverse perspectives and expert knowledge, group decision-making faces challenges related to conflicts of interest and the influence of group dynamics.

Modern scientific discourse recognizes various divisions and types of decision-making, with particular emphasis on the following within the context of this article:

1. **Adaptive Decision Making:** Emphasizing flexibility and adaptability in rapidly changing environments, adaptive decision-making suggests that decisions should be capable of change and adjustment as new information becomes available and circumstances evolve.
2. **Strategic Decision Making:** Focused on achieving long-term goals and strategizing for future success, strategic decision-making involves analyzing trends, assessing the competitive environment, and evaluating the long-term consequences of decisions.
3. **Decentralized Decision Making:** In certain organizations and systems, decisions may be made at a more decentralized level, closer to where the problem occurs. While this approach can enhance agility and flexibility, it also places demands on coordination and control.
4. **Emotional Intelligence and Decision Making:** Recognizing the increasing importance of understanding and managing emotions, emotional intelligence plays a crucial role in decision-making. It contributes to areas such as interpersonal relationships, stress management, and decision-making that is oriented towards emotions and social contexts.

Each of these concepts and characteristics holds relevance and application in various aspects of life and work. Decision-making is a complex process that is context and task-dependent, requiring a combination of knowledge, skills, and intuition to achieve optimal results.

Conclusion

Decision-making is an intricate process involving the selection of a specific course of action or solution from a set of alternatives. This process can be either individual or collective, taking varied forms depending on the context (personal life, business, research, etc.). The key steps in decision-making include:

1. *Defining the Purpose.* Clearly articulating the purpose of decision-making is crucial. A well-defined purpose helps narrow down alternative choices and simplifies the decision-making process.
2. *Information Gathering.* Acquiring sufficient information about the alternatives is a piv-

otal step. The decision-maker's level of information greatly influences the likelihood of making an informed and effective decision.

3. *Analysis and Evaluation.* Analyzing the gathered information and evaluating it in relation to the decision objective is essential. This may involve weighing pros and cons, assessing risks, analyzing consequences, and more.
4. *Generating Alternatives.* Creating different solutions to achieve the goal is important. It is essential to look beyond initial ideas and consider a multitude of possible paths.
5. *Decision Making.* Choosing the best alternative, considering the analysis and the objective, is a critical step. Decision-making can occur through various methods, including intuition, formal models, and consultation with others.
6. *Implementing the Decision.* Once a decision has been made, implementation becomes necessary. This may involve developing an action plan, allocating resources, and putting the decision into practice.
7. *Evaluating the Results.* Evaluating the outcomes of the decision is crucial. This process helps determine the effectiveness of the chosen strategy, identify mistakes, and draw conclusions for future situations.
8. *Learning from Experience.* The decision-making process can be enhanced through learning from experience. Reflecting on previous decisions aids in improving future decision-making skills.

It is important to note that the decision-making process is not always linear and may involve iterations, especially when dealing with complex problems. Additionally, socio-cultural and ethical aspects should be considered in decision-making.

Declaration of Conflicting Interests

The author declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Funding

The author received no financial support for the research, authorship, and/or publication of this article.

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