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Decision-Making Theories and Models

A Discussion of Rational and Psychological Decision-Making Theories and Models: The Search for a Cultural-Ethical Decision-Making Model

Arnaldo Oliveira

Abstract

This paper examines rational and psychological decision-making models. Descriptive and normative methodologies such as attribution theory, schema theory, prospect theory, ambiguity model, game theory, and expected utility theory are discussed. The definition of culture is reviewed, and the relationship between culture and decision making is also highlighted as many organizations use a cultural-ethical decision-making model.

The study of decision-making processes is not recent. It has been evolving with contributions from a number of disciplines for over some 300 years. Such contributions have ranged from providing mathematical foundations for economics to routine applications in many areas such as finance, medicine, military, and even cybernetics. As a result, decision theories have embodied several prevalent concepts and models, which exert significant influence over almost all the biological, cognitive, and social sciences (Doyle & Thomason, 1999). New emerging theories of decision-making have been somewhat eclectic, as they demand a multidisciplinary approach to understand them. An example of this comes from Kay (2002) who affirmed that it is essential to comprehend the nature and origins of human intuitions to understand the intricacies of decision making.

Decision and behavior may be the core characteristics of decision-making phenomena. They involve the process of human thought and reaction about the external world, which include the past and possible future events and the psychological consequences, to the decision maker, of those events. The essence of decision making seems to integrate both the beliefs about specific events and people's subjective reactions to those events. For instance, decisions are responses to situations and may include three aspects. First, there may be more than one possible course of action under consideration. Second, decision makers can form expectations concerning future events that are often described in terms of probabilities or degrees of confidence. Finally, consequences associated with possible outcomes can be assessed in terms of reflecting personal values and current goals.

However, besides integrating beliefs and expectations, the analysis of the decision processes also entails the breakdown of a choice dilemma into a set of smaller issues, so each problem can be dealt with separately. Thus, the decision analysis provides a formal mechanism for reintegrating the results later, and then a course of action could be provision-

ally selected. When implementing this model of choice analysis, decision makers must be clear and explicit about their judgments in order to review the analysis process for detecting the reasons why a particular strategy was selected, which Keeney (1982), for example, called the divide and conquer orientation of decision analysis.

The decision-making phenomenon has been a frequently studied topic by several areas of human knowledge. According to Hoch, Kunreuther, and Gunther (2001), although more than three decades of systematic research on decision science have provided insights on a variety of issues, many areas of the decision making field still need to be uncovered. For example, for many organizations the current decision-making models may not be the best fit because they generally omit the element culture from the process. Thus, the purposes of this paper are first to review the literature on normative, rational decision models and descriptive, psychological decision theories, and then to discuss the role of culture in the process of making decisions.

Analysis

Rational Decision Making

Descriptive and normative decision-making theories possess distinct characteristics and follow specific methodologies for selecting a course of action. Normative, or rational, theories of decision making are based on fundamental axioms. If these established principles can be accepted, then it is possible to derive a normative theory of choice. However, descriptive, or psychological, paradigms highlight the importance of psychological elements influencing on how to reach a decision. Descriptive models use cognition to explain decision making, whereas normative theories consist of rationalistic components that indicate how decision makers should decide.

In rational decision-making models, decision makers analyze a number of possible alternatives from different scenarios before selecting a choice. These

scenarios are weighed by probabilities, and decision makers can determine the expected scenario for each alternative. The final choice would be the one presenting the best-expected scenario and with the highest probability of outcome. Normative processes of decision explain how decision makers employ a particular set of alternatives to solve problems (Goodwin & Wright, 1998; Hoch, Kunreuther, & Gunther, 2001).

However, Hoch et al. (2001), who also affirmed that people rarely adhere to logical models of choice, suggested that variations in human behavior might not find any theoretical basis in normative models. They noted that these oscillations in behavior patterns are more identifiable when uncertain and unexpected scenarios influence decision makers to disregard probabilities as well as to follow the normative process in rather unusual ways.

In economic theory, for example, the rational decision-making methodology leads to the selection of an alternative after completing a simple three-step process of (a) analyzing the feasibility of the alternative, then of (b) pondering the desirability of the alternative, and finally (c) choosing the best alternative by combining both desirability and feasibility (Rubinstein, 1998). However, this type of decision-making model lacks analytical elements. Further, if decision makers rank one alternative above another, they would tend to rank them identically in other occasions in which these possible choices would be available.

Rationality has been defined as the compatibility between choice and value. Rational behavior seeks to optimize the value of the outcomes focusing on the process of choosing rather than emphasizing the selected alternative. A study done by Neumann and Morgenstern for example (as cited in Hastie & Dawes, 2000) demonstrated that when decision makers follow rational methodologies, it is possible to derive numbers that represent personal values, which are termed utilities. As a result, alternatives with probabilistic consequences should be selected according to the magnitude of their expected utility, or value. In other words, an alternative "X" would be always selected rather than choice "Y" whenever the expected utility of X is greater than that of Y.

The Expected Utility Theory could be interpreted in two ways: analytically and synthetically. According to the analytic view, choices represent revealing preferences, which are defined as implying utilities, whereas in the synthetic examination, decision makers evaluate both utilities and probabilities, and the integration of these judgments leading to a decision. In the analytic view, decision makers first observe what to choose, and then they infer what they should have expected, whereas the synthetic process occurs when decision makers discover what they want, how to achieve it, and what actions to implement and choices to make. Game theory, for example, is structured in a way that decision makers consider which solutions other people would pursue before determining what strategies to implement for selecting an alternative. The options, probabilities, and outcomes are supposedly precise. However, although possible outcomes depend on possible alternatives for all the decision makers involved in the game, the interaction of the different parties is unimportant.

Psychological Decision-making Models

Stein and Welch (1997), who discussed whether either rational or cognitive models explain decisions about war and peace, compared both the normative and descriptive decision-making models. They observed that cognitive psychology provides tools for analyzing simple rules people use when reacting to intricate and poorly structured dilemmas. Although they affirmed that

neither a single cognitive theory of choice nor a dominant decision rule prevail, they noted the existence of filters and simplifying mechanisms through which people process information and interpret their surrounding environments. The influence of these filters and simplifying mechanisms on the decision-making process always presents contextual and individual variances. As a result, these deviations may lead to conflicting expectations about judgment and behavior, which have not yet been explained by any of the decision theories. Although cognitive psychology has not posed a factual challenge to rational models by offering a general and compatible decision-making theory, it has been able to explain at some extent why people may deviate from rational behaviors. One of these explanations, for example, is based on the principle that people's set of beliefs, or culture, might influence and corrupt the information processing.

Attribution theory: schemata, heuristics, and bias

One product of cognitive psychology is the Attribution Theory. Several authors (Fiske, 1986; Iyengar, 1991; Iyengar & McGuire, 1993; Kelley, 1972; Lau & Sears, 1986; Reder & Anderson, 1980; Schank & Abelson, 1977; Thorndyke & Hayes-Roth, 1979; Walker, 1988) highlighted the importance of schemata in determining how people interpret new information based on their preexisting beliefs. A clear definition of schemata was given by Geva and Mintz (1997) who put it into context:

A schema is a working hypothesis about some aspect of the environment and may be a concept of the self (self schema), other individuals (person schema), groups (role schema), or sequences of events in the environment (scripts) (Fiske and Taylor 1991, p. 140; Fiske 1986). In addition to using them to organize their interpretations of their environments, people use schemata to develop scripts for action. (p. 73)

Once schemata is formed there will be resistance to change. In the Schema Theory, change is proportional to the rate at which new information is made available. As people are exposed to information incompatible to their preexisting beliefs, they may incorporate these new values into their schemata, which might lead to gradual change and adjustment in the future.

Another important element of the Attribution Theory is heuristics, which consists of rules people use to test their schemata and facilitate the processing of information. Heuristics can be perceived in several ways; however, they are frequently observed in three areas: availability, representativeness, and anchoring. The availability heuristic explains how people relate ambiguous information to their schemata. The heuristic of representativeness indicates the process by which people tend to exaggerate similarities between one episode and prior events. The heuristic of anchoring reveals how people misestimate the magnitude of an incident when comparing it with a reference point (Geva & Mintz (1997).

An important criticism of this theory is that heuristics and cognitive biases may result in attribution errors. For example, heuristics could impair the process of rational revision and judgment, which may lead decision makers to misinterpreting new information. In terms of cognitive biases, the egocentric bias, for instance, induces individuals to amplify their own roles as determinants to the actions of other people. The proportionality bias may also direct individuals to misread the intentions of others based on the apparent costs and repercussions of their actions. Although these heuristics and biases have been studied in laboratory only, they can still generate debatable predictions about inference and estimation in real situations. These potential dissimilar interpretations between in vitro results and

in vivo probable outcomes have obstructed the integration of these processes into the general theories of decision making and severely constrained their analytical importance. In addition, future research should examine the links between heuristics and biases and determine which of them will prevail when two or more are able to predict different responses. In other words, so far cognitive models have been unable to establish a hierarchy among biases and heuristics and to specify why, how, and when one dominates the other (Geva & Mintz, 1997; Lebow & Stein, 1993).

The theory of choice

In order to have explanatory and predictive power, any theory could be assessed by how well it can be judged by the usefulness of its assumptions, whether it specifies its scope conditions, and how clear it limits its logical coherence. For instance, Stein and Welch (1997) supported such a thought as they wrote:

The fundamental assumptions of psychological theories are realistic in the sense that they accord with empirical evidence, although some questions arise with respect to how well psychological theories travel from the laboratory to the real world. More problematic, psychological theories generally do not specify their scope conditions. In addition, they are often logically inconsistent with one another (Lebow and Stein 1989; Simon 1985; cf. Jervis 1986, pp. 327-328; Tetlock and Levi 1982, p. 73). (p.58)

Prospect theory

According to Hogarth, (1994), Prospect Theory has two main elements: A value function that works similarly to the utility function in the Expected Utility Theory and a decision weight function to analyze the weights that are attached to the probabilities of choice. Thus, doubtful alternatives are evaluated through a methodology similar to the Expected Utility Theory. The value function presents three main characteristics: (a) people implicitly evaluate outcomes in terms of gains or losses, (b) individuals are more sensitive to variations between outcomes the closer they are to a reference point, and (c) people experience losses and gains with different levels of intensity. Although there are a number of other implications of the value function of the Prospect Theory, the same vague conclusions might stimulate different perceptions of gains or losses when reference points are changed. As a result, because of these dissimilar perceptions, choices might be more difficult to predict. The decision-weight function depicts how individuals implicitly weigh probabilities that link choices to outcomes by super estimating small probabilities and misevaluating larger probabilities.

The ambiguity model

Prospect Theory speculates that people identify the exact probabilities connecting choices to results. However, it is worthy to note that Hogarth (1994) introduced a new insight by affirming that choice is affected by the perception of ambiguity as people tend to be unclear about the probabilities of events that could affect outcomes. As Hogarth aptly exemplified: "When considering the decision to insure against theft of one's automobile, for example, how many of us know the precise probability of theft occurring in a given period?" (p. 101). Both the Prospect Theory and the Ambiguity Model offer insights for the comprehension of how decision making may occur under uncertainty in a number of situations. In Prospect Theory, deci-

sion phenomena are related to alternatives that are attached to losses or gains based on a specific reference point, whereas in the Ambiguity Model, decision making evolves through a multi perspective evaluative process.

After having examined several decades of research on the psychological, interactive, and temporal aspects of decision making, Hoch et al. (2001) observed that the emerging field of Behavioral Game Theory has provided new insights on the negotiation process and which actions people take to select a mutually acceptable solution. In terms of descriptive decision-making approaches, they analyzed how individuals make decisions and how they could make better ones. Corroborated by the principles of Prospect Theory, at the collective level, the Normative Theory of choice offers a cost-benefit analysis similar to the Expected Utility Theory. Decision makers determine the impact of the expected utility and the costs and benefits of a particular alternative. Thus, people who might be affected by these specific alternatives generally make decisions based on normative models.

Finally, following the assumption that there is a relationship between decision making and social behavior, Hershey and Asch (2001) discussed three characteristics that inflict a direct impact on behavioral phenomena in decision making. According to them, individuals tend to value alternatives that offer early reassurances, the ability to avoid or delay making difficult trade-offs is greatly sought, and humans often pursue changing one's mind. These phenomena have implications not only for broader societal decisions but also for managerial assessments.

Culture and Decision-making

Both rational and psychological decision-making models have people as their central element either as decision makers or as the ones who are affected by decisions. If such assumption is pertinent, then culture might play a role in the decision-making process. However, to suggest that culture could be an element in any decision-making equation, first it is sine qua non to review some key concepts of culture and decision making and a possible relationship between them.

Culture

The concept and definition of culture have been well documented in the literature, and scholars have provided a number of interpretations to the term. Several authors formulated a broad definition for culture describing it with different terms such as basic assumptions, feelings, beliefs, values, behaviors, and so forth (Adler, 1991; Hofstede, 1997; Lewis, 1992; Schein, 1992; Trompenaars, 1994). For instance, Benedict (1959) defined culture as the cannons of choice. Kluckhohn and Strodtbeck (1961) introduced the concept of value orientations to explain the phenomenon of culture. Sapir (1977) suggested that culture is an unconscious system of meanings. Hall (1992) proposed that culture is a silent language because different cultures present dissimilar perceptions about time, space, ownership, friendship, and agreements. Trompenaars (1994) suggested that culture directs people's actions. He affirmed that "culture is man-made, confirmed by others, conventionalized, and passed on for younger people or newcomers to learn. Culture provides people with a meaningful context in which to meet, to think about themselves, and to face the outer world. Schein (1992) defined culture as "A pattern of shared assumptions that the group learned as it solved its problems of external adaptation and internal integration, that has worked well enough to be considered valid and, therefore, to be taught to new members as

the correct way to perceive, think and feel in relation to those problems" (p. 97). Triandis (1972) viewed culture as a social phenomenon that builds a shared-knowledge structure, gives meaning to incoming stimuli, and guides outgoing reactions. He suggested that values surface unclear guidelines that might induce behavior.

Decision making

On the decision-making arena, a number of authors (Geva & Mintz, 1997; Hastie & Dawes, 2000; Higgins & Bargh, 1987; Hogarth, 1994; Meneghetti & Seel, 2001; Stein, & Welch, 1997) have discussed the importance and influence of beliefs, values, and behavior in the decision-making process. Similarly most authors affirmed that the triad beliefs, values, and behavior has been frequently associated with and affected by culture (Benedict, 1959; Hall, 1969; Hofstede, 1997; Kluckhohn & Strodtbeck, 1961; Lewis, 1992; Sapir, 1977; Schein, 1992; Trompenaars, 1994; Triandis, 1972).

Decision and behavior could be the main elements of decision-making phenomena, which involve the processes of thinking and reacting to the external world stimuli. Culture teaches preferences in life and manifests itself in how people behave, think, and believe. Higgins and Bargh (1987), for example, who studied several decision-making models, found that culture, which they called filters and simplifying mechanisms, helps people to process information and interpret their surrounding environments. Hogarth (1994) affirmed that individuals are assumed to evaluate outcomes in terms of gains or losses and are more sensitive to variations between outcomes according to their reference point, or what Higgins and Bargh called schemata. Because of its broadness, the concept of culture helps to describe the complex and rank-ordered principles influencing the thinking- and-taking-action process that continually occurs when people seek for solutions. Although every one at all times is pursuing answers for a limited number of common problems, there is a limited variability in solutions for problems, and all alternatives and solutions are present in all societies at all times, but they are differentially preferred.

A brief analysis of the literature shows a relationship between culture and decision-making. Because organizations have faced increasing new challenges in the 21st century, managerial leaders may need to follow decision-making processes that ingrain sustainable development concepts in both strategic and operational planning, which have demanded the adoption of an adaptive decision-making model. One basic assumption of such a model is that ethical and moral, cultural, values inherently belong to it.

A Cultural Ethical Model of Decision-making

Not too many authors discussed decision-making models that incorporate culture and other specific elements such as ethics, moral, and, stakeholders. However, Tecker, Bower, and Frankel (1999), for example, proposed a decision-making model represented by a knowledge-based approach to policy governance for the American Society of Association Executives. According to them, the model is a system that leads to what the called consultative leadership. Although this method makes information available for individuals and groups to make decisions, there is a strong ethical analysis that needs to be done before any decision can be made. Tecker et al. proposed four critical questions must precede any decisions:

1.What it is known about the needs and expectations of (a) the organization's members, (b) prospective members, (c) key

stakeholders, and (d) customers that is relevant to this decision?

2.What it is known about the capacity and strategic position of the organization that is relevant to this decision?

3.What it is known about the current realities and evolving dynamics of organization's members, industry or profession that is relevant to this decision?

4.What are the ethical implications of these choices?

The ability to deal with real-life ethical dilemmas is necessary in the complex business environment. Another important contribution in terms of dealing with cultural-ethical issues in decision making was made by Meneghetti and Seel (2001). They have proposed a decision model that helps to deal with ethical dilemmas. Ethical dilemmas may contribute to the possibility of making wrong or right decisions. However, their dichotomic nature might be understood after the identification of some general characteristics. According to Meneghetti and Seel, an ethical dilemma possesses five traits: (a) it is difficult to specify, (b) it has a particular context, (c) it may not be evident, (d) it involves several stakeholders, and (e) it combines people's lack of knowledge with their inability to make the right decision. Their model offers, what they called, a non-prescriptive four-step process for analyzing an ethical dilemma and making an ethical decision. However, the authors also recommended that the terms values, ethics, and morality be well defined before analyzing the model. According to them, value is a strong held belief and attitude about what is wanted. There are two types of values: Those that are private and called moral values and those that are public and termed ethical values. Moral values have a primary impact on people's personal lives and are influenced by culture, religion, and family. For example, a moral value could be what people think about drinking alcohol. Ethical values are universally accepted beliefs about right and wrong. For instance, an ethical value could be what people consider honesty.

Discussion

Cultural diversity is not a transitory condition that enables the planning on the assumption of mutual understanding. Conversely, a number of studies (Brake, Walker & Walker, 1995; Hall, 1992; Hofstede, 1997; Maddox, 1993; Trompenaars, 1994) have shown that cultural diversity is a continuous phenomenon that occurs when people from different cultures think, communicate, and behave based on their core values. Culture is also a complex intermix of determinants. Although the so-called national culture influences people's behaviors, other strong elements such as family, gender, profession, religion, and so forth help to mold an individual's cultural profile.

The current literature have supported the premise that culture dictates the way individuals and groups solve their problems because it influences how people think, behave, and communicate (Hall, 1992; Hofstede, 1997; Kluckhohn & Strodtbeck, 1961; Schein, 1992; Trompenaar, 1994). Each culture has its own set of core values and basic assumptions, which compound a framework of cultural orientations. However, to deal with cultures and stakeholders' differences effectively, it is necessary to acquire cultural competence, which is a concept that helps overcome the natural barriers imposed by the explicit components of a culture in order to comprehend its underlying basic assumptions. Once cultural competence is learned, it is possible to reconcile the stakeholders' potential cultural differences.

However, to understand a group's culture and predict its behavior, it is imperative to comprehend its deeper issues as they represent the dimensions of a culture and are what make it dis-

tinguishable from other cultures. Several studies (Adler, 1991; Brake, Walker & Walker, 1995; Hofstede, 1997; Schein, 1992; Trompenaar, 1994) provided conceptual models that elucidate the essential components of a culture and propose cultural orientations to business practices. However, the decision-making science lacks a reliable theoretical model that elucidates a potential central role of culture in the decision-making process. In addition, current decision-making models that embrace culture do it only marginally by highlighting a few cultural aspects such as ethics and values.

Conclusions

Many areas of human knowledge have extensively researched decision-making theories. The literature has shown that choice and behavior represent the core characteristics of decision-making phenomena and involve the processes of thinking and reacting. A decision is a response to a situation and comprehends judgment, expectations, and evaluation.

Descriptive and normative theories propose distinct assumptions to explain the decision-making process. Descriptive, psychological decision theory focuses on how individuals decide, whereas normative, rational decision theory elucidates how decision makers should decide. Psychological theories have uncovered basic principles people use when dealing with problems. Rational methodologies explain how decision makers analyze a number of different outcomes from each alternative scenario for selecting a final choice.

Psychological decision-making models suggest the existence of special mechanisms through which people process information and interpret their surrounding environments. Such mental processes are based on the principle that people's beliefs and values might influence their information processing. These beliefs and values are termed schemata and comprise concepts of self, other individuals, and script.

Rational decision-making models establish a weighing mechanism between choice and value. Rational methodologies lead to the optimization of the outcomes by emphasizing the process of choosing rather than on what is chosen. A certain alternative is always selected whenever its expected value is greater than that of other potential choices.

Both descriptive and normative decision-making theories

conceptualize and discuss the meanings of value, beliefs, and behavior. A number of studies have focused on the investigation of culture, and a consensual definition of culture has also embodied the concepts of value, beliefs, and behavior. Culture provides the elements for individuals to solve their problems of external adaptation and internal integration. Once a solution works and is considered legitimate, it is taught to others as the correct way to identify, think, and act in relation to those problems. Culture dictates preferences in life and manifests itself in the way people behave, think, and believe. Decision-making phenomena also involve human judgment processes about the macro and microenvironments in constant relation with people's values and beliefs. Therefore, decision-making processes possess a strong cultural component that might influence the decision style, perception, and attitudes of decision makers.

Decision-making models for analyzing ethical dilemmas and making ethical decisions have been proposed. However, it is essential that the definitions of values, ethics, and morality could embrace the multicultural perspective of every stakeholder involved in and by the process of making a decision. Therefore, decision-making models should provide a comprehensive framework for evaluating ethical dilemmas based on the stakeholder's cultural orientations. Uncovering cultural differences and reconciling seemingly opposing values are the axis of such an ethical-cultural decision-making model.

Recommendations

The literature has shown that cultural diversity is not a transitory condition, but a continuous phenomenon. However, to deal with distinct cultural orientations and stakeholders' differences effectively, it is necessary to acquire cultural competence. Once cultural competence is learned, it is possible to reconcile the stakeholders' potential cultural differences. Organizations should consider the inclusion of culture as an important element of their decision-making process. Although, decision making and culture have been extensively discussed in the literature, studies investigating the relationship between the two subjects are still necessary. It is still unclear how culture may affect any decision process. Therefore, empirical research examining the applicability and effectiveness of such interaction is indispensable.

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Author

Oliveira, Arnaldo. Arnaldo Oliveira practiced trauma medicine for over 10 years. He holds a Master of Arts in Organizational Change, Hawaii Pacific University and a Ph.D. in Management, Capella University. Currently, he is a graduate student in Oriental Medicine at the Institute of Clinical Acupuncture and Oriental Medicine in Honolulu, Hawaii. Dr. Oliveira has been researching alternative therapies for cancer at Lam Clinic, Inc. in Honolulu. He is the Program Director of the Voll-Lam School of Energy Medicine and Editor in Chief of the Pacific Journal of Energy Medicine. Contact: (808) 457-1957 and ao@vollam.org