ASSIGNMENT

ON

CHOICE AND INTERPRETATIONS OF TECHNIQUES
FOR SOLVING AGRIBUSINESS DECISIONS

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SUBMITTED TO

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JUNE, 2017
INTRODUCTION

When running an agricultural business, making the right decisions can lead to success, while making the wrongs can result to failure. With so much riding on each decision, it's important that thoughtful consideration is put into each one that needs to be made. To help them, many agribusiness leaders go through a thoughtful decision-making process.

While there are a wide variety of decision-making techniques and tools, many tend to revolve around the same key principles of figuring out the decision that needs to be made, considering and researching the options and reviewing the decision once it's been made.

Decision-making is regarded as the cognitive process resulting in the selection of a belief or a course of action among several alternative possibilities. Every decision-making process produces a final choice, which may or may not prompt action. Decision-making is the process of identifying and choosing alternatives based on the values and preferences of the decision-maker.

Problem analysis

It is important to differentiate between problem analysis and decision-making. Traditionally, it is argued that problem analysis must be done first, so that the information gathered in that process may be used towards decision-making.

Characteristics of problem analysis

- Problems are merely deviations from performance standards
- Problems must be precisely identified and described
- Problems are caused by a change from a distinctive feature
- Something can always be used to distinguish between what has and hasn't been affected by a cause

- Causes of problems can be deduced from relevant changes found in analyzing the problem

- Most likely cause of a problem is the one that exactly explains all the facts, while having the fewest assumptions.

The University of Massachusetts-Dartmouth outlines seven basic steps in effective decision-making. The steps they advise to take are:

1. **Identify the decision to be made:** After realizing that a decision must be made, you then go through an internal process of trying to clearly define the nature of the decision you must make.

2. **Gather relevant information:** Most decisions require collecting pertinent information. Some information must be sought from within yourself through a process of self-assessment, while other information must be sought from outside books, people and a variety of other sources.

3. **Identify alternatives:** Through the process of collecting information, several possible paths of action or alternatives will probably be identified. In this step of the decision-making process, it is necessary to list all possible and desirable alternatives.

4. **Weigh evidence:** In this step, information and emotions to imagine what it would be like if carried out each of the alternatives to the end. It is necessary to evaluate whether the need identified in Step 1 would be helped or solved through the use of each alternative.
5. **Choose among alternatives:** Once you have weighed all the evidence, you are ready to select the choice that seems to be best suited to you.

6. **Take action:** Some positive actions can now be taken, which begins to implement the alternative already chosen.

7. **Review decision and consequences:** In the last step, the result of your decision is experienced and evaluation as to whether or not the problem identified in step 1 has been "solved". If it has, staying with this decision for some period of time is necessary. If the decision has not resolved the identified need, repeating certain steps of the process in order to make a new decision is advised.

**Decision-Making Tools and Techniques**

While the basic principles might be the same, there are dozens of different techniques and tools that can be used when trying to make a decision. Among some of the more popular options, which often use graphs, models or charts, are:

a. **Decision matrix:** A decision matrix is used to evaluate all the options of a decision. When using the matrix, create a table with all of the options in the first column and all of the factors that affect the decision in the first row. Users then score each option and weigh which factors are of more importance. A final score is then tallied to reveal which option is the best.

b. **T-Chart:** This chart is used when weighing the plusses and minuses of the options. It ensures that all the positives and negatives are taken into consideration when making a decision.
c. **Decision tree**: This is a graph or model that involves contemplating each option and the outcomes of each. Statistical analysis is also conducted with this technique.

d. **Multivoting**: This is used when multiple people are involved in making a decision. It helps whittle down a large list options to a smaller one to the eventual final decision.

e. **Pareto analysis**: This is a technique used when a large number of decisions need to be made. This helps in prioritizing which ones should be made first by determining which decisions will have the greatest overall impact.

f. **Cost-benefit**: This technique is used when weighing the financial ramifications of each possible alternative as a way to come to a final decision that makes the most sense from an economic perspective.

g. **Conjoint analysis**: This is a method used by business leaders to determine consumer preferences when making decisions.

h. **Brainstorming**: It is a combination of group problem-solving and discussions. It works on the belief that the more the number of ideas, greater the possibility of arriving at a solution to the problem that is acceptable to all. It starts with the group generating ideas which are then analyzed, with action points based on the discussions.

For instance, if you have received a new e-learning project and are thinking of a strategy to implement in the course, you can follow this technique. Gather a group of instructional designers in a conference and let them first analyze the inputs. After that, you can collect ideas from each of them and take the final
Factors that Influence Decision Making

There are several important factors that influence decision making. Significant factors include past experiences, a variety of cognitive biases, an escalation of commitment and sunk outcomes, individual differences, including age and socioeconomic status, and a belief in personal relevance. These things all impact the decision making process and the decisions made.

Past experiences can impact future decision making. Juliusson, Karlsson, and Garling (2005) indicated past decisions influence the decisions people make in the future. It stands to reason that when something positive results from a decision, people are more likely to decide in a similar way, given a similar situation. On the other hand, people tend to avoid repeating past mistakes (Sagi, & Friedland, 2007). This is significant to the extent that future decisions made based on past experiences are not necessarily the best decisions. In financial decision making, highly successful people do not make investment decisions based on past sunk outcomes, rather by examining choices with no regard for past experiences; this approach conflicts with what one may expect (Juliussson et al., 2005).

In addition to past experiences, there are several cognitive biases that influence decision making. Cognitive biases are thinking patterns based on observations and generalizations that may lead to memory errors, inaccurate judgments, and faulty logic (Evans, Barston, & Pollard, 1983; West, Toplak, & Stanovich, 2008). Cognitive biases include, but are not limited to: belief bias, the over dependence on prior knowledge in arriving at decisions; hindsight
bias, people tend to readily explain an event as inevitable, once it has happened; omission bias, generally, people have a propensity to omit information perceived as risky; and confirmation bias, in which people observe what they expect in observations (Marsh, & Hanlon, 2007; Nestler. & von Collani, 2008; Stanovich & West, 2008; see also West et al., 2008).

In decision making, cognitive biases influence people by causing them to over rely or lend more credence to expected observations and previous knowledge, while dismissing information or observations that are perceived as uncertain, without looking at the bigger picture. While this influence may lead to poor decisions sometimes, the cognitive biases enable individuals to make efficient decisions with assistance of heuristics (Shah & Oppenheimer, 2008).

In addition to past experiences and cognitive biases, decision making may be influenced by an escalation of commitment and sunk outcomes, which are unrecoverable costs. Juliusson, Karlsson, and Garling (2005) concluded people make decisions based on an irrational escalation of commitment, that is, individuals invest larger amounts of time, money, and effort into a decision to which they feel committed; further, people will tend to continue to make risky decisions when they feel responsible for the sunk costs, time, money, and effort spent on a project. As a result, decision making may at times be influenced by 'how far in the hole' the individual feels he or she is (Juliusson et al., 2005).

Some individual differences may also influence decision making. Research has indicated that age, socioeconomic status (SES), and cognitive abilities
influences decision making (de Bruin, Parker, & Fischoff, 2007; Finucane, Mertz, Slovic, & Schmidt, 2005). Finucane et al. established a significant difference in decision making across age; that is, as cognitive functions decline as a result of age, decision making performance may decline as well. In addition, older people may be more overconfident regarding their ability to make decisions, which inhibits their ability to apply strategies (de Bruin et al., 2007). Finally, with respect to age, there is evidence to support the notion that older adults prefer fewer choices than younger adults (Reed, Mikels, & Simon, 2008).

Age is only one individual difference that influences decision making. According to de Bruin et al. (2007), people in lower SES groups may have less access to education and resources, which may make them more susceptible to experiencing negative life events, often beyond their control; as a result, low SES individuals may make poorer decisions, based on past decisions.

Over and above past experiences, cognitive biases, and individual differences; another influence on decision making is the belief in personal relevance. When people believe what they decide matters, they are more likely to make a decision. Acevedo and Krueger (2004) examined individuals' voting patterns, and concluded that people will vote more readily when they believe their opinion is indicative of the attitudes of the general population, as well as when they have a regard for their own importance in the outcomes. People vote when they believe their vote counts. Acevedo and Krueger pointed out this
voting phenomenon is ironic; when more people vote, the individual votes count less, in electoral math.

Decision Making Heuristics

Heuristics are general decision making strategies people use that are based on little information, yet very often correct; heuristics are mental short cuts that reduce the cognitive burden associated with decision making (Shah & Oppenheimer, 2008). Shah and Oppenheimer argued that heuristics reduce work in decision making in several ways. Heuristics offer the user the ability to scrutinize few signals and/or alternative choices in decision making. In addition, heuristics diminish the work of retrieving and storing information in memory; streamlining the decision making process by reducing the amount of integrated information necessary in making the choice or passing judgment (Shah & Oppenheimer, 2008).

As a result of research and theorizing, cognitive psychologists have outlined a host of heuristics people use in decision making. Heuristics range from general to very specific and serve various functions. The price heuristic, in which people judge higher priced items to have higher quality than lower priced things, is specific to consumer patterns; while the outrage heuristic, in which people consider how contemptible a crime is when deciding on the punishment (Shah, & Oppenheimer, 2008). According to Shah and Oppenheimer three important heuristics are the representative, availability, and anchoring and adjustment heuristics.
In decision making, people rely on a host of heuristics for convenience and speed. One important heuristic is the representative heuristic (RH), which is an extremely economical heuristics (Pachur, & Hertwig, 2006). In the event that one of two things is recognizable, people will tend to choose the recognized thing; utilizing or arriving at a decision with the least amount of effort or information (Goldstein & Gigerenzer, 2002; Hilbig & Pohl, 2008). Hilbig and Pohl remarked that it is difficult to research and answer definitively if an individual is using the RH alone, or if the person is using other information in drawing a conclusion. As a result, the research on the RH is mixed (Goldstein & Gigerenzer, 2002; see also Hilbig & Pohl, 2006). Goldstein and Gigerenzer provided seminal research on the RH. They maintained recognition memory is perceptive, reliable, and more accurate than chance alone; they argued less recognition leads to more correct decisions. On the other hand, according to Hilbig and Pohl, people often use additional information when utilizing the RH; that is, they do not rely solely on recognition along in decision making. Further, Hilbig and Pohl concluded that even when sound recognition was established, people use additional information, in conjunction with the RH.

Another highly researched heuristic is the availability heuristic. According to this heuristic, people are inclined to retrieve information that is most readily available in making a decision (Redelmeier, 2005). Interestingly, this is an important heuristic, as it is the basis for many of our judgments and decisions (McKelvie, 2000; Redelmeier, 2005). For example, when people are asked to read a list, then identify names from the list, often, the names identified are names of famous individuals, with which the participants are familiar.
(McKelvie, 2000). In the field of medicine, Redelmeier charged that missed medical diagnoses are often attributable to heuristics, the availability heuristic being one of those responsible. Redelmeier explained heuristics are beneficial as they are cognitively economical, but cautioned clinicians and practitioners need to recognize when heuristics need to be over-ridden in favor of more comprehensive decision making approaches.

The anchoring and adjustment heuristic is the foundational decision making heuristic in situations where some estimate of value is needed (Epley, & Gilovich, 2006). In this particular heuristic, individuals first use an anchor, or some ball park estimate that surfaces initially, and adjusts their estimates until a satisfactory answer is reached. For example, if a person were asked to answer the question, “In what year did John F. Kennedy take office?” the anchoring and adjustment heurist would be used. The person may start with a known date, such as the date he was shot, November 22, 1963; then make an estimate based on the known information (Epley, & Gilovich, 2006). The practical application of the anchoring and adjustment heuristic is in negotiations; people make counter offers based on the anchor that is provided to them. Epley and Gilovich explained often people tend to make estimates which tend to gravitate towards the anchor side, where actual values tend to be farther away from the anchor initially planted. Further, anchoring requires effort; such work is important in avoiding anchor bias.

After the Decision
After a decision is made, people experience a variety of reactions. In addition, present decisions influence future decision making. Several of the outcomes that may result from a decision are regret or satisfaction; both of which influence upcoming decisions.

Regret, feelings of disappointment or dissatisfaction with a choice made is one potential outcome of decision making. Interestingly, regret may shape the decision making process. According to Abraham and Sheeran (2003), anticipated regret is the belief that the decision will be result of inaction. Anticipated regret may prompt behavior; that is, when a person indicates they will do something, such as exercise, they may follow through with their intended decision, to avoid regret. Once the decision is made, the impact of the decision, if regret is experienced, will impact future decisions. People can often get consumed with examining the other options that were available; the path not taken (Sagi & Friedland, 2007).

Sagi and Friedland (2007) theorized people feel regret in accordance with how the decision was made; regret may be dependent on the number of options that were available during the decision making process; and how varied the options were may impact how regret is experienced after the decision was made. Through a series of experiments, Sagi and Friedland concluded that people feel remorse because they feel they were able to make a better choice by looking at more information, previously disregarded, and carefully weighing the pros and cons of each choice. In addition, regret is magnified when individuals revisit the other available options and considering what satisfaction
the other option would have brought them. Interestingly, people who are
dissatisfied with their decision feel obligated to embrace the decision, as a
means to reducing anxiety regarding the quality of the decision (Botti &
Iyengar, 2004; see also Gilbert & Ebert, 2002). For example, when a job
applicant does not get hired, he may restructure the experience, and find many
reasons that explain why he did not want to work for the company.

In addition to regret, individuals may also experience satisfaction with their
decisions. Satisfaction refers to how pleased the decision maker is with the
outcome of the decision. There are many things that impact levels of
satisfaction. Botti and Iyengar (2004) observed individuals prefer to make their
own decisions and believe they will be more satisfied with their choices;
however, when people are given only undesirable options, decision makers are
less satisfied than those who have had the choice made for them. Botti and
Iyengar posited the explanation for this phenomenon is that the decision
maker assumes responsibility for the decision made. As a result, if the available
choices are bad, they may feel as though they are responsible for making poor
choices.

Also fascinating, aside from heuristics, an important decision making strategy is
evaluating positive and negative aspects of choices. Kim et al. (2008)
discovered that when younger and older adults use this strategy, older adults
tend to list more positive and fewer negative aspects of each choice, and older
adults register more satisfaction with their choices when they use this
evaluative strategy. One interesting finding was when the participants did not
evaluate the options by listing the positive and negative features; there was no age difference in satisfaction (Kim et al., 2008).

As explained, future decision making is based on past decisions, as well as levels of satisfaction or regret (Abraham & Sheeran, 2003; Juliussen, Karlsson, & Garling, 2005; Sagi & Friedland, 2007). Even though there is evidence to support this notion, in many cases, particularly when the decision may be reversed, decisions may be based on the reversibility factor (Gilbert, & Ebert, 2002). Significant to individuals' satisfaction is that people are willing to pay a premium for the opportunity to change their minds at a later date (Wood, 2001). For example, catalogue shoppers purchase items in a two step process; first they decide to purchase the items, then once the items arrive, they decide if they will keep them. Gilbert and Ebert examined if people prefer making decisions that are reversible. They concluded that people do prefer to have the option to change their minds; although people's ability to change their minds actually inhibits their ability to be satisfied with their choice.

**An Innovative Decision Making Approach**

Decision making is a critical aspect to feeling successful and happy in life; decision making is at the root of all we do. It is important to develop effective decision making skills and strategies. Problem solving strategies include, but are not limited to brain storming, cost benefit analysis, written remediation plans, and an examination of possible choices (Wester, Christianson, Fouad, & Santiago-Rivera, 2008). The decision making process can be complicated and overwhelming. As a result, it is valuable for individuals to learn a model to
follow, that may be applied to everyday decisions, as well as life changing choices.

Krantz and Kunreuther (2007) posited that a goal and plan based decision making model is an effective and sound approach to take in decision making; in this model, the individual is encouraged to focus on goals, not happiness or usefulness. According to Krantz and Kunreuther, plans are designed to meet one or more goals. That is, people make plans to unconsciously or consciously meet the goals they have. And, some plans satisfy several goals. For example, people who attend a sporting event with a friend may be satisfying several goals; friendship and camaraderie, emotional stimulation from competitive sport, and potentially useful social knowledge gained from watching the game. In this model, goals are context dependent and plans are based on their ability to meet the goals. Essentially, in the goal/plan based model, the context provides the backdrop for the decision that needs to be made; goals and resources, influenced by the context, contribute to the development of plausible plans; while the decision making rules are implemented and influence the plan that is ultimately chosen. Krantz and Kunreuther apply this theory to the insurance business, but imply the theory may be appropriately applied to a variety of contexts.

Summary

Decision making is an important area of research in cognitive psychology. Understanding the process by which individuals make decisions is important to understanding the decisions they make. There are several factors that
influence decision making. Those factors are past experiences, cognitive biases, age and individual differences, belief in personal relevance, and an escalation of commitment. Heuristics are mental short cuts that take some of the cognitive load off decision makers. There are many kinds of heuristics, but three are important and commonly used: representative, availability, and anchoring-and-adjustment. After an individual makes a decision, there are several differing outcomes, including regret and satisfaction. Decisions that are reversible are more desired and people are willing to pay a premium for the ability to reverse decisions; though reversibility may not lead to positive or satisfactory outcomes. Cognitive psychologists have developed many decision making models, which explain the process by which people effectively make decisions. One innovative model is based on goals and planning. There is yet a lot of research to be conducted on decision making, which will enable psychologists and educators to positively influence the lives of many.

References


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