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Decision Making Process and Ethics

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Abstract— Decision making is not such an easy thing to do as some would make out. Given any small to large scale project, managers and senior project teams are charged with making difficult decisions from options and supporting data that often inadequately informs and fails to provide a guaranteed successful consequence. Add to this the real-world stress and anxiety that comes with large investment in the project, promised investment returns on the successfully completed project, corporate reputation and the livelihood and employment of numerous subordinates and it is no surprise that these decision-makers often make no decision at all – the worst decision one could ever make.

Index Terms— Decision-Making, Decision Making Approaches, Decision Theory, Decision Tree, Economic Ethics, Expected Utility Theory, IT Management.

1 Introduction

Decision making is a characteristic necessary to have in all managers. Decision making is the most significant activity engaged by managers in all types of organisations and at any level [6]. People make decisions everyday and are usually less significant but managerial decisions or executive decisions that can have an affect on a large number of people are considered important. Unlike every day decisions that need no thinking which is mostly made unconsciously managerial decisions require deliberating. There are several managers at different levels of an organisation who makes decisions everyday. Each level is different from the rest in scope. Top management makes strategic decisions that may set the organisations market focus or a long-term goal. Middle management makes tactical decisions which could be about purchasing an expensive equipment and lower management makes operational or managerial decision that deals with day to day tasks and activities.The major decisions are made usually by top managers of large companies, politicians and scientists to name a few.

Compared to the simplicity in the actual action of making the decision which only takes a split second the impact of the outcome is at times immense. Decisions define the future of an organisation or the career of an individual. The resulting consequences can have an impact on the decision maker as well as the people or organisation affected by the decision. The consequence of a poorly made decision can have lasting affects on a business, a country or even the world. For example the issue of global warming according to IPCC (Intergovernmental Panel on Climate Change) is so critical that if a decision is not made today that it can have catastrophic consequences to the humanity in the future. This highlights the importance of making the right decision and the fact that if the right decision is not made then there can be huge negative consequences. The number of correct decisions a person makes often matters less than the relative value of those decisions [2]. All it takes is one right or wrong decision to permanently define the future.

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Due to the said reasons decision-making is a difficult task for the decision-maker. One would expect the that decisions should be logical and rational. The truth is that some of the important decisions are usually made by gut instinct. The effectiveness of gut instinct versus rationality in decision making is a subject of research and debate. The two approaches are the two opposing approaches of decision-making. The subject of decision-making has been widely developed over the years and a vast literature on decision-making is available [7]. On the rational side decision-making is formal and mathematical. Methods such as operations research, statistical analysis, computer programming and artificial intelligence has been developed and applied for decision-making. The study of the other approach is focused on behavioural and psychological aspects of decision-making. Ethics in decision-making is partly a focus of research in this area.

2 Decision-Making Process

As stated earlier, the actual decision-making could take only a fraction of a second but it is merely a part of a whole process. The process of decision making was first theorised by Condorcet in 1793 [8]. His theory of decision-making has three stages in which first the issue is examined then the issue or the problem is generalised into options and the final stage is the action of choosing an option. The most popular rational model of managerial decision making is credited to Hobert Simon who modified an earlier work on problem solving done by Johen Dewey in 1978 to make it suitable for decision-making for the context of organisations

[8]. Simon's model has four stages which are intelligence, design, choice and review. Since Simon, more models has been proposed. These models are all sequential models. Sequential models were criticised by Witte in 1972 who stated that the stages are performed in parallel rather than in a sequence.[8].
Much focus has been given to the latter part of decision making, the choice phase. This is the phase where the analysis and formal methods or instinct is applied. At this phase the pros and cons of the alternative options are weighed. Several formal models exist that assist to compare and judge the alternatives. To understand the outcomes of the choices some analysis methods has to be applied. Often used methods are decision matrix sometimes called as "pay-off tables" and decision trees.

3 Decision-Making Process

The theories of decision-making can be categorised in several ways. One approach is to divide decisions made under conditions of certainty where the cause/effect are clear. On the other hand there are situations where the degree of certainty is low. The third division is by the use of probabilities. When the cause/effect of the decisions are not very clear and straightforward, probabilities are used to assess the likelihood of a certain event happening. Probabilities can be used when information are available such as historic or market information. There can be situations where these information are not available and the decision has to be made under risk and uncertainty. The most dominating approach to decision-making under risk with known probabilities is the probability-weighted utility theory simply known as expected utility (EU) [8]. For decisions under uncertainty there are several models including maxi-min expected utility, reliability-weighted expected utility and Ellsberg's index.

3.2 Expected Utility Theory

Expected utility theory is a theory applied in situations where the probability estimates for the states of nature are available or obtainable. In expected utility theory each alternative choice or outcome is given a score or a utility. The likelihood or the probability of the outcome is represented as weights. The expected utility is the weighted sums obtained by adding the utility values of outcomes multiplied by their respective probabilities. Suppose if a decision is to be made whether to carry an umbrella or not when going out and the utility for carrying an umbrella is 15 if it rains and 15 if it does not and the utility for not carrying an umbrella is 18 if it rains and 0 if it does not. With the given utilities if the probability of raining is 0.1 then the expected utility of carrying an umbrella is 0.1x15 + 0.9x15 = 15. The expected utility for not carrying an umbrella is 0.1x0 + 0.9x18 = 16.2. In this case if the objective is to maximise expected utility then an umbrella should not be carried. In monetary matters the expected utility is used subjectively with monetary value as utility. The application of expected monetary value (EMV) criterion in decision-making is one such method. Though subjective utilities are used in monetary matters for risk analysis the main approach is to use objective utility.

In decision-making the factor of utility or monetary value alone cannot be used. Profit maximisation or utility maximisation can be viewed as immoral. Due to several social and moral considerations other factors need to be considered in good decision making. For instance, in a situation where one alternative course of event where the utility is the highest but with a very low probability of death then the decision to choose this alternative course will be morally wrong. As with the case of the US space shuttle Challenger which exploded in mid air just seconds after lift off, the inquiry into the disaster showed that the events that led to the disaster were due to bad decisions by the management. NASA's decision makers used the wrong approach to make the wrong decision. The closed-approach decision making within NASA prevented them from looking at alternatives which would have led to a reduced probability of disaster and high expectance of success. Their decision was a maximising decision. For the decision makers this seems like a small price to pay for the exploration of outer space. The cost of the bad decision was seven lives, millions of dollars and the reputation of NASA. In reality the rational model of decision making is totally inappropriate for managerial decisions in the real world [6]. With the drawbacks of the maximising behaviour, the decision makers may have to consider a less than maximum expectation.

3.3 Decision-Making Under Unknown

In cases where there aren't enough information to assess the probability of events posterior to a decision, such decisions require simple best-case worst-case judgement. Such cases usually require heuristic judgements. To analyse the decision, judgements are applied to all subsequent branches of the decision tree. Different cases require different approaches in branch selection to arrive at a decision.

The optimistic approach selects the branches where the outcome is the most optimistic. To state the most simple example, if a decision is to be made about buying a lottery ticket the best outcome is winning and the worst is losing. The optimistic approach is to buy the ticket hoping the outcome would be the best which is winning. In larger problems the subsequent branches of the decision tree are evaluated and the best of all outcomes is selected as the optimistic decision. The alternative of this is the pessimistic approach or the conservative approach. This is similar to optimistic approach but the only difference is that the worst-case is chosen instead of the best-case. For a problem in which the output measure is profit, the conservative approach would lead the decision maker to choose the alternative that maximises the minimum possible profit that could be obtained [1].

During the past several years we have seen examples of the optimistic approach or the maxi-max approach of decision making by major US companies which led to major bankruptcies. These major bankruptcies of big companies in the US created a chain reaction that caused the world economy to slow down. Referring to the recent economic crisis George DeMartino (2011) argues that "leading economists pursued a maxi-max decision rule" that led to "the intellectual bubble in economics and the financial bubble in asset markets were mutually reinforcing, and helped prepare the ground for the ultimate collapse" [5]. The recent major bankruptcies and the economic recession highlighted the importance of ethics in decision-making.

3.4 Ethics of Decision-Making

Simon who is one of the theorists who laid the foundations for the study of managerial decision making [3] advocated for the elimination of values in management sciences [7]. It is a difficult thing to establish a formal value system. Values have different meanings in different parts of the world and it is the society and environment that define the values. Intellectual virtue is gained by experience. Usually decisions does not require a process of evaluation from an ethical point of view. Mostly values are gained by experience and practical wisdom. The importance of ethics in managerial decision-making is clear. The outsiders and those who are affected from the decision makers decision, judges the decision maker from a moral point of view. The public perception of a leader or a manager in an organisation can affect the organisation as a whole. The public image can have an indirect affect on the profitability of a business or an organisation. For many years, corporate America has been marred by unethical decision making and scandalous behaviour. Indeed “ethical mistakes are responsible for ending careers more quickly and more definitively than any other errors in judgement or accounting” (Osland, Kolb, & Rubin, 2001, p. 102) [9].

4 Conclusion

Decision making happens daily in an organisation. Daily routine decisions don't require analysis, they are established procedures that is followed for some time. What is important is managerial decisions and strategic level decisions. The right decision-making process requires choosing the right method of analysis, weighing all the options or alternatives. A frequent phenomenon is bounded rationality. It is when the cognitive limitations and the limited availability of information causes the failure of the decision maker to reach the best alternative. A good decision maker is a person who is capable of using the right approach for the right purpose. A person who can understand the practical limitations of the purely rational approach and the importance of ethics in decision-making. Finally in situations of uncertainty the power of intuition cannot be overlooked.

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