Making Right Decisions in IT Project Management

Intaver Institute Inc.
303, 6707, Elbow Drive S.W.
Calgary, AB, T2V0E5, Canada
tel: +1(403)692-2252
fax: +1(403)259-4533
sales@intaver.com
www.intaver.com

Several years ago a telecommunication company want to offer a shared web hosting solution to their clients. Shared hosting required a tool to manage accounts, access to webmail, and other functions. The company made a decision to develop their own applications instead of purchasing or modifying available off-the-shelf software. The development of these applications took longer and cost more than originally planned. In addition, major improvements to satisfy new customer requirements were required. At this point company still had choice to use off-the-shelf software, but did not because of the investment that they had made in its own system. Currently, the cumulative development and maintenance costs of this system is several times higher than if the company had made the decision to go with off-the-shelf software at the start of the project.

Project managers are continually making decisions at different stages of projects: it is a central part of their job description. Some decisions are strategic: they are usually made during initiation of the project and significantly affect future courses of action. Other project decisions may not be so important, and it is possible to make some corrective actions in the even something goes wrong.

The Role of Decision Science

What needs to be done to help project managers to improve their decisions? How do people process huge amounts of information? How do they evaluate and select alternatives? How do they assess and interpret probabilities of potential events or risks? Decision science, as a part of overall management science, is trying to answer these and other questions. Decision science is a unique discipline because it is based on two seemingly unrelated related knowledge areas: psychology and statistics. Psychology of judgment and decision-making helps to identify specific mental patterns people are using to come up with certain decisions. Statistical methods are used as a part of decision analysis to provide an aid to the decision-makers.

In recent years decision analysis has become a practical tool in many disciplines. Companies routinely base their major investment strategies on the results of decision analysis. Moreover, in some industries, such as oil and gas or pharmaceutical, companies will never proceed with the major projects without comprehensive formal decision analysis. For example, if an oil company has a number of prospects, decision analysis will help to identify those which need to be developed first taking into account potential uncertainties in estimates of oil reserves. Decision science is used for analysis of mergers and acquisitions, capital investment, reorganization, new product development, and in other areas. Governments are using decision analysis for policy decisions. For example, the US Government is using decision science to decide whether strategic oil reserves should released be based on an analysis of potential disturbances in oil supplies. Lawyers are using decision analysis for the assessment of complex litigations with the uncertain outcomes. Decision analysis helps medical professionals make correct diagnoses and prescribe a most effective treatments.

Good decision analysis includes risk analysis, which is actively used in many areas including project management. Many organizations are establishing a formalized risk management process, which has proved to be very efficient practice. Various methodologies and tools to support decision-making are widely used in project management. It includes project scheduling and portfolio management tools and techniques, qualitative and quantitative cost and schedule risk analysis, as well as project performance measurement.

Still many project managers remain unfamiliar with some important concepts of decision analysis, particularly related to the psychology of judgment and decision-making. If project managers have a basic understanding of human mental processes, it will help them to avoid psychological traps and improve their decisions.

Psychological Traps

Psychological traps are caused by our innate cognitive biases or heuristics which often cause us to misinterpret reality. In 2002, Daniel Kahneman was awarded the Nobel Prize in economics "for having integrated insights from psychological research into economic science, especially concerning human judgment and decision-making under uncertainty." According to the theory he developed together with Amos Tversky, people are using heuristics or "rules of thumb" to provide a correct judgment. These heuristics are essentially certain simplification strategies or mental "shortcuts". In many cases such heuristics work reasonably well. However, in some causes they provide predictable faulty judgment or cognitive bias. One of such "rule of thumb" is called the *availability heuristic* in which decision makers assess the probability of an event by the ease in which instances or occurrences can be brought to mind. For example, project managers sometimes estimate the task success rate based on similar tasks that have been previously completed. If they make judgments based on the most or least successful tasks they remember, their estimates may be biased towards the most easily remember occurrences and be inaccurate. Another heuristic is *anchoring*. It refers to the human tendency to remain close to an initial estimate. For example, if project manager started thinking about revising the duration for an activity that had an original estimate of five days, the anchoring heuristic causes the analysis to stay close to the original estimate. Therefore,

that even after the analysis is completed, the revised estimate will remain close to the original anchoring estimate. There are a number of other important psychological phenomena project managers should be aware of, including selective perception, biases in estimation probabilities and risks, psychological issues related to group decisions.

The knowledge of the illusion does not guarantee that project manager's decisions will not be subject to these illusions. In other words, even though project manager might know of potential psychological traps, he could still fall into them. The solution is to use analytical tools such as computer software, forms, or templates, which can provide a rational balance to subjective human decision-making processes. One such example is tools for the statistical analysis of historical project data as part of project portfolio management solution. If the project manager has an access to comprehensive set of data related to previous activities, the estimation of future similar activities will be more accurate. It will help to mitigate negative impact of availability or anchoring heuristics.

Practical Recipes

Decision analysis can be very efficient if analytical tools are not use sporadically, but as an intrinsic part of the workflow or the process. Decision analysis processes are based on extensive research and proven to be an effective way to improve the quality of decisions. The process starts with the decision framing, which includes identification of a problem or opportunity, assessment of a business situation, generation of alternatives, and identification of risks and uncertainties. The next step is modeling the situation. Using the mathematical model, quantitative analysis such as Monte Carlos schedule risk analysis can be performed to determine which alternative or strategy can bring better results based on selected criteria. The final step is deciding on a course of action, allocating resources, and implementing the plan. The process can be repeated to correct the original decisions if new information has become available.

Comprehensive, continuous, and consistent processes will definitely help with making strategic decisions: making major investments, purchasing new product, selecting major partners, or choosing development platforms. But what about decisions that project managers face must make on a regular basis? The answer is that project managers must always remember a few simple decision analysis rules regardless of how important the decision:

1. Always remember and think about most important potential mental traps in project management and try to avoid them.
2. Always try to properly understand the problem or opportunity by answering five simple questions:
    a. What do you want to achieve?
    b. What is the business situation: what can be done and what cannot be done?
    c. How can you measure the success of the process or activity?
    d. What alternatives do you have? Always remember "No alternatives, no Decisions".

e. What are the uncertainties pertaining to this particular business situation?

3. Use quantitative methods such as Monte Carlo schedule risk analysis as required. These methods could be as advanced as you can properly interpret, but should always directly related to the problem or opportunity.

To a certain extent these rules represent a sort of thinking "culture" that project manager should possess to make a good decisions. Project manager should not rush to a decision by applying known mental "shortcuts". Instead, he or she should use a logical analysis based on proven techniques to make a the most rational choice. It takes some knowledge and practice, but it will pay off. Wrong decisions are costly.

It is important to remember that using decision analysis techniques does not guarantee that a decision will be one hundred percent correct. However, applying proper techniques of information analysis and thus mitigating negative impact of heuristics and biases could significantly improve quality of the decision.

This decision analysis process appears to be straight forward, but some project managers and in many cases executives still believe that intuitive or "gut feel" approach to decision making is the best way to go. They should remember that mental "shortcuts" were "programmed" in our mental machinery thousands years ago and exist in most decision-making regardless of profession, nationality, or position. "Gut feel" approach may successfully work in many cases, but fundamental limitations in our mental machinery may lead to biases, and consequently wrong decisions. Furthermore, making sound decisions by taking a little extra time applying decision analysis methods to your projects will save you much more time and money than what will be lost due to hasty decisions.