

Chapter-2

Risk Management: The Concept, Approach and Methodology

Introduction

It is essential for effective management control that all significant risks and uncertainties in a project are systematically identified, quantified, analyzed, owned, acted upon and monitored by the management team to maximize the likelihood of successful achievement of objectives within budget and schedule targets. Risk management is a means of dealing with uncertainty – identifying sources of uncertainty and the risks associated with them, and then managing those risks such that negative outcomes are minimized (or avoided altogether), and positive outcomes are capitalized upon.

In highlighting the one-off, change-inducing nature of projects, this definition indicates that projects carry with them an inherent degree of uncertainty that requires attention as part of an effective project management process. The roots of this uncertainty are worth clarification. Chapman [2] has indicated that one obvious source of uncertainty and risk in the execution of a project is “the large-scale use of new and untried technology”. Chapman [2] also indicates that such sources of risk frequently become the prime motivator for the introduction of, and careful attention to, formal risk management processes (RMPs).

Definitions of risk

“The implications of the existence of significant uncertainty about the level of project Performance achievable”

Project risk

‘Combination of the probability of an event occurring and its consequences for project

Objectives’

Risk management

“Systematic application of management policies, procedures and practices to the tasks of establishing the context, identifying, analyzing, evaluating, treating, monitoring and communicating risk”

Risk management process

A source of risk is any factor that can affect project performance, and risk arises when this effect is both uncertain and significant in its impact on project performance. It follows that the definition of project objectives and performance criteria has a fundamental influence on the level of project risk. Setting tight cost or time targets makes a project more cost or time risky by definition, since achievement of targets is more uncertain if targets are “tight”. Conversely, setting slack time or quality requirements implies low time or quality risk. However, inappropriate targets are themselves a source of risk, and a failure to acknowledge the need for a minimum level of performance against certain criteria automatically generates risk on those dimensions [2]. Therefore, the setting of clear objectives and performance criteria which reflect the requirements of all relevant parties, is clearly an important initial *step in project risk management*.

Sources of Risk

External

These may be associated with global conditions in political and regulatory areas and markets. Generally, external sources of risk encompass factors which are beyond the control of the project team and/or the organization(s) involved. These may include legislative requirements with regard to safety or the protection of consumers or the environment. Such regulations govern the operation of companies and enterprises, non-compliance with which lead to legal obstacles, or unofficial political demonstrations that can harm an organization's project operations and reputation. The public uproar and protest against Shell Oil over the proposed sinking of the Brent Spar oil platform in the North Sea showed the potential for damage to corporate PR. The Sea Empress oil spill in February 1996 ruined 190km of Welsh coastline in a valued conservation area. The authorities showed they had teeth when they fined the Milford Haven Port Authority £4 million. Damage to your project can be serious.

Internal

Internal sources of risk are within the control of the project team and/or the organisation(s) involved. These include risks arising as a result of project design or human behaviour. Corporate dispute, communication failure and technology failure, can all harm the project. Human performance, skills availability, capability and motivation are essential factors that contribute to the success of the project. The project leader should have the skills to exercise consistent risk management in order to keep the project on track.

Risk Management

Risk management is an organized means of identifying and measuring risk and developing, selecting, and managing options for handling

these risks. Several tools are available to assist in the management of risk in technical areas. These tools can help the project manager to understand the danger signals that may indicate that the project is off track, and prioritize corrective actions as necessary.

According to the Project Management Institute Body of Knowledge (PMBOK) [3], there are

Three definitions of risk management:

- Risk management is the formal process by which risk factors are systematically identified, assessed, and provided for
- Risk management is a formal, systematic method of managing that concentrates on identifying and controlling areas or events that have a potential for causing unwanted change
- Risk management, in the project context, is the art and science of identifying, analyzing, and responding to risk factors throughout the life of a project and in the best interest of its objectives.

Risk Management Process:

Four key stages are evident from the literature regarding project risk management. These are :

- Risk Identification
- Risk Quantification
- Risk Response
- Risk Control

The identification stage:

The **identification stage** is concerned with identifying any issue(s) that could jeopardize the success of the project in question. This is followed by an assessment of that issue (which may involve quantification of the risk posed), following which the issue might be rejected as insignificant, or if it is significant it might be referred up

or down in the management structure for discussion and appropriate action (denoted by the Escalate/Delegate decision point. For any remaining risks, containment plans (risk mitigation plans) should be developed and added to the main plan, and contingency plans invoked if containment fails – risk response stage. Associated with containment and contingency plans is the control stage in which the containment of identified risks is monitored and mechanisms are employed which will trigger the execution of the contingency plan, should it become necessary.

Risk Quantification

Once risks have been identified a simple mathematical approach can be used to quantify them. This involves assigning each risk two values on an appropriate scale. One value relates to the likelihood of the risk's manifestation and the second value relates to its impact on the project. The first is a measure of how likely the thing is to go wrong, the second is the effect it will have on the project. By multiplication of the two values you get a weighting for each risk. This information can be tabulated to produce what is often called a risk register.

Risk Response and Control

The ultimate purpose of risk management is one of risk mitigation, taking appropriate actions to achieve the project's objectives by revising the project's schedule, budget, scope, or quality. Appropriate actions are the techniques we select to respond to the risks [4]. The final phases of risk management involve establishing specific plans to mitigate the risks and, most importantly, the identification of fall-back plans and the dates by which those plans must be implemented. The management of risk demands an active process of regular risk reviews and the commitment to actually enact the fall-back plan and adopt its

deadline. The situation must not be allowed to drift so that deadlines pass and no positive action is take.

Mitigation

Mitigation strategies are plans and mean devised in order to reduce the impact of the risk, prevent its occurrence, avoid it altogether, or to determine whether or not contingencies need to be put in place to compensate for the risk should it occur. During project execution, risk mitigation is aimed at the implementation of the previously identified mitigation strategy. Risk control also includes the estimation and calculation of the risk exposure, in financial terms, caused by the impact of the risk on the project, with due consideration of the moderating effect of the mitigation strategy.

Contingency

Contingency can be thought of as the antidote to risk. The project manager who can insert a lot of contingency will bear very little residual risk. Contingency is most often associated with schedule and cost dimensions because projects will inevitably encounter difficulties there. Many things that occur simply require more time and money than planners think. For instance, whenever you must interact with other people, obtaining your boss's approval perhaps, their schedules constrain you. You will not have instant access, and a delay will occur. External items that are key to the successful operation of a new product can often be a source of unexpected problems or delay. For example, interface hardware or sample data sets for computer programming projects, frequently do not arrive when expected or in the condition promised. Work done at remote locations often takes longer than work done in your own organization's facilities because things like copying machines or other support resources are simply not as conveniently available. If your project involves hiring people, it

takes time to train them and make them effective workers on the job. These and other tasks, some of which are included in the following list, make it important to build in schedule and cost contingency.

References

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