

Assessing The Role Of Project Risk, Risk Level On Project Success And Their Interaction

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ABSTRACT

This huge world involves with lots of high levels of risks and complexities, which are drawbacks for human being lives but from other hand they are necessary conditions for future growth, progression and development in any field. In engineering and managerial fields especially in Project Management, Construction Management, Construction Technology and Project management, so on and so forth risk and complexity is one of the most important part of any project which is able to effect on the other parts of project or even completely destroy the project. Project risk is defined as a "measure of the probability and consequence of not achieving a defined project goal" and as project managers increasingly has to deal with higher levels of uncertainty, risk management has become a generic area in most projects. Risk management planning is a knowledge which helps project managers to overcome to any risk with any level. This paper tries to define project risk, risk level, different levels of project risk, effect of project risk on project success, and interaction between risk level and risk management planning to be able to assess their direct and indirect relations with each other. But nobody can reject this reality that risk even in positive and negative is inseparable part of any project and risk management practices needs to be studied and known at any future.

KEY WORDS: Project Risk, Risk Level, project success, Project management, Risk Management Planning

1. INTRODUCTION

The global business environment involves high levels of risk and complexity, which is a necessary condition for future growth and development. In particular, managers have to cope with several types of risk, including technological [1, 2], insurance-related [5], financial [3, 4], environmental safety [6], and regulatory [7]. As a result, risk management is a critical consideration in many business areas, which impacts profitability, efficiency, and sustainability [8, 10].

Risk management is particularly important in the project management area, as this discipline involves many organizational functions and their related risks [11]. In addition, projects usually possess high levels of uncertainty derived from their compressed schedules, inadequate or uncertain budgets, designs that are near to the feasible limit of achievable performance, and frequently changing requirements [9]. For example, Huchzermeier and Loch [12] identified five types of uncertainty in projects:

1. Market payoff,
2. Project budget,
3. Product performance,
4. Market requirements, and
5. Project schedule.

Consequently, project risk management is considered a core area in the literature [13, 15] and as a result, many new tools have been introduced to manage uncertainty in practice [16].

Due to its importance, one would expect project risk management practices to be not only state of the art, but also highly effective. However, some recent studies have raised concerns regarding the effectiveness of risk management tools in the project environment [17, 18]. The objective of this article is to further assess the effectiveness of current risk management practices to reduce project risk.

At the outset, it must also be stated that this paper focuses on the project planning phase due to the following reasons:

1. Project management literature suggests there are heterogeneous managerial approaches required for different project phases, hence each project management cases should focus on only one distinct phase to increase salience [19],
2. Planning is a critical phase in project management [20, 21] and a critical tool for uncertainty reduction [9], and
3. Most risk management practices are performed during the planning phase of a project [9, 14].

Project planning is defined as the establishment of a set of directions provided in sufficient detail to inform the project team of exactly what must be done, when it must be done, and what resources to use to produce the expected results of the project successfully [13]. Planning also involves the product concept's specifications to be translated into design plans, [22] as well as commercial scale

and distribution. It has been found that project managers invest more effort in planning when the perceived level of risk is higher, and these endeavors improve project success [18].

2. PROJECT RISK MANAGEMENT PRACTICES

This paper tries to assess the impact of risk level on project success and the moderating effect of risk management planning on this relationship.

A project is defined as any series of activities and tasks that have a specific objective to be completed within certain specifications, have defined start and end dates, and funding limits [9]. As project managers increasingly have to deal with higher levels of uncertainty, risk management has become a generic area in most project management books and in relevant professional associations [9, 14].

Within this context, project risk is defined as a "measure of the probability and consequence of not achieving a defined project goal " [9]. As risk in projects cannot be fully eliminated, Chapman and Ward [23] have defined "risk efficiency" as the minimum risk level for a given level of expected performance. Risk management dynamically minimizes risk levels by identifying and ranking potential risk events, developing a response plan, and monitoring actively during project execution [14].

As risk management is highly developed in project management, most organizations have a formal policy for project risk management [24], as well as supportive analytical tools [9, 16]. These analytics include risk identification tools (e.g., influence diagrams, cause and effect diagrams), risk analysis tools (e.g., probability and impact grids, event tree analysis, expert judgment), risk response tools (e.g., influence-predictability matrix, risk response planning chart, project risk response

planning), and risk evaluation tools (e.g., decision tree analysis, portfolio management, multiple criteria decision-making tools). Some of software packages for project risk management are also available, including PERT-Master Project Risk, PERT Master Risk Expert, and Predict [25]. Most of these tools focus on risk planning processes, risk identification, analysis, and response development [14].

Despite the popularity of risk planning tools, some drawbacks with current risk planning practices have been identified in the literature in recent years.

3. RISK LEVEL, PROJECT SUCCESS AND RISK MANAGEMENT PLANNING

High level of project risk is perceived to become a problem [14] that project managers try to resolve throughout the entire project management process. Organizations spend significant funds and resources in risk management based upon the commonly held belief that high risk levels are an obstacle to success but certainly their approach is toward success of the project [9].

Most studies have analyzed project risk planning efforts and project success with limited consideration of project risk level. Of note, Zwikael and Sadeh [18] found that for different levels of project risk, project managers decide to invest varying levels of effort in risk planning, which increases monotonically with perceived project risk. As a result, it is considerable focus is on the moderating effect that risk management planning has on risk levels and project success.

Risk management planning is a potential moderating variable in exploring the relationship between risk level and project success. Risk management planning includes the identification, scoring, and ranking of risk events that even may hinder project success, as well as the development of a mitigation plan.

The use of risk planning practices can represent the importance of risk management, as perceived by project managers. As can be seen in major important projects, most project managers use risk management tools.

Projects with higher levels of risk succeed less than projects with lower levels of risk and correlations that are there between risk level and project success measures were low and insignificant. This fact proves that risk levels do not directly affect project success in all project scenarios, which leads project managers and even researchers in these fields to further investigate whether a moderating variable may influence this relationship.

In other section this paper assesses that whether different levels of risk management planning moderate the negative impact risk has on project success. As a result, the interaction between risk level and risk management planning is significant for the project success measures (cost overrun, project performance, and customer satisfaction). Moreover, risk management planning does not always impact project success, as it depends upon the level of project risk.

4. CONCLUSIONS

Risk management practices moderate the effect of project risk on project success in multiple project scenarios. Although risk levels reduce project performance, effective risk management planning will moderate this relationship. Projects with higher levels of risk succeed less than projects with lower levels of risk and correlations that are there between risk level and project success measures were low and insignificant. Even there are high risk projects that are completed more successfully than projects with low levels of perceived risk.

Projects involve risk by nature. As it is known, the level of perceived risk varies among industries and countries. Reducing the level of risk is extremely important in projects, and indeed it is suggested that project managers

often use risk management planning practices. Moreover, risk management planning efforts are effective only when the level of project risk is medium-to-high. In projects with low risk levels, risk management planning is ineffective and may be unnecessary. This indicates that project managers who oversee high risk projects preferentially invest more planning effort in an attempt to cope with risk.

Finally, among risk levels, risk planning, and project success in various project contexts found in the literature the following results briefly can be obtained:

1. The level of project risk varies across countries and industries.
2. Project risk is negatively correlated with project success level.
3. Risk management planning moderates the relationship between levels of project risk and project success.

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