

# RISK ANALYSIS FOR PROJECT MANAGEMENT

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## Abstract

This paper illustrates various activities, where identification of risk is a primary task before its actual occurrence whereas proper plan can be done and executed to handle the risk during project period and complete the project successfully. The study has been done to find out the common risk, during project. The study was based on data, having experiences of 5 to 20 years from various fields contributing in different project phases. During survey it was found that 72% of respondents think that the budget and resource provided for project are probably sufficient, with margin. It may not be 100% realistic but can be managed with some addition efforts. Budget is complete financial estimation of the cost required for each and every task to achieve the goal or success of the project over project life cycle. 60% of respondents believe that timeline provided by the institute for the project is not enough to compete the scheduling and planning of the project. According to 80% respondents some of equipment/parts having lead time high and may cause delay. 58% of the respondents think that if the project team locations are multiple it leads to issues related to communication. 64% people think that within their organisation lesson learnt from past experience and identification of risk defines process availability. Risk Analysis can become a tool during planning phase. Identification of risk and understanding the impact is an important activity. It will help to plan judiciously and manage the risk so that it can be minimised and success of project can be achieved. The value at risk measures the potential loss in value due to risk at project phase. Risk can lead to extra cost, time, equipment's and failure of the project. Risk assessment has great role to play while in planning at various project phase. With the help of the outcome of the study, the plan for risk reduction can be done in advance.

**Keywords:** Project Risk Analysis, Budget, Resources, Time line, Communication, Scope definition, Lesson learnt

## INTRODUCTION

Risk is an unanticipated circumstance, which may lead to drastic impact on the project that can either be inimical or unfavorable for the success of the project. Effects of the risk may be of any kind. It may adversely affect the budget, scheduling, planning, manpower, Technology or the major processes adopted in the system of the business scenario, risk has been considered as a major threat for business. In the contemporary business scenario where technology is changing all most every day, tools, equipments are getting obsolete, new demands from customers result in stress and challenges for any organisation. Therefore risk analysis can be one of the most critical tool to reduce, time line issue or over budget issue. A bit of additional effort and better communication which may lead to a result. This tool can be used to provide direction or solutions to various problems at every stage of the project stage.

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Below are the main advantages of risk analysis for project

- Project rationalisation
- Cost reduction
- Defining activities or task priority, support from top management
- Analysing the project plan and making changes to reduce risk associated with project activities
- Developing process for coordination, communication and controlling.

Objective of study/ research:

- To verify risks across multiple functions and business units that will help to manage risk related to cost-effectiveness, communication, budget and resources during entire project phase.
- To understand appropriate ground to make flawless decision considering identified risks related to time line, planning of long lead components.

Limitation of study:

- The target respondents were restricted to the employee of automotive industries.
- The analysis provides the overall idea of risk and not the solution.

## REVIEW OF LITERATURE

1. Rubin, 2014 *"To understand why the risk analysis is essential in project Management process"*

The research process explains risk analysis carried out by two main tools: Fish bone diagram and risk matrix. Study explains regarding an event organised and aims to have good turnaround of spectators to make even successful. Risk analysis is necessity for project management and using proper risk analysis which result in proving direction, tool for making project successful. It gives understanding chances of occurrences and which affect it will be on project. Proper measure can be taking with prioritising the task or activities to achieve max possibility of success the project.

2. Severian (2014) *"To understand risk management and evaluation within the project"*. The research process/design is carried out in detail starting from analysing risk with help of project management triangular theory and risk management stages. The research simple is done on utilisation of allocated resources. Clarifications about the projects and how they are managed under the influence of pressure "triple constraints" time - cost objectives, known as the "iron triangle" or "golden triangle". In the process of risk management is made an overview of the steps through which it is achieved mainly emphasizing the importance of identifying risk. One of the methods commonly used in qualitative risk assessment is the impact probability matrix. Detail clarification of project and how are managed in influence of pressure. Three major constrains are time, cost and objectives analysed using of probability impact matrix or risk matrix.
3. Renuka, Umarani and Kamal (2014) *"Critical risk factor in life cycle of construction projects"* .Research process explains the method used for study is knowledge map

represent in the risk source affecting the project success. It indicates both non-engineering and engineering risks. Risk in construction project has been identified using life cycle of the construction projects. Critical risk factor identification by researchers in various construction projects. Some of the finding are like design change, Lack of availability of resources, Inflation, Country Economic Condition and rules and regulation etc. Explanation of the critical risk factors & its contribution explained in risk assessment techniques. Knowledge map development and importance for risk assessment. There is still a wide gap between theory and practice and it will be implemented in all industries and all country or region.

4. Junior ,Carralto, J Technol Manag Innor. ( 2013) " *Impact of Project Risk Management on Project Performance: an Empirical Study*". The goal of this study is to comprehend the impact of risk management on project performance. Further it aims to investigate the degree of diffusion of risk management practice in companies. By means of a survey involving 415 project management professionals, it was possible to establish a chart to analyze the theme of risk management in projects.

Impact of Project Risk Management on Project Performance and supported in theory it was possible to understand which factors condition project risk management and the perception of success. Detail idea of comprehend the impact of risk management on project performance. it aims to investigate the degree of diffusion of risk management practice. This research showed the limitations inherent to the methodological choices adopted for the field research. It is limited to certain locations and industries.

5. North, Rev. sci. tech. Off int. Epiz., (1995) " *The limitations, definitions, principles and methods of risk analysis*". The study has been involved in decisions and risk analysis relating to the regulation of toxic chemicals and similar threats to public health and the environment. Study talk about risk analysis, animal health and trade', indicate that the community working to harmonize the regulation of veterinary biological has already acquired a sophisticated knowledge of risk assessment. Study contains a number of lessons for future applications of risk analysis in the field of veterinary biological. If the risk is near the borderline of acceptability, the analysis might help to identify the most important input factors. Insights on which factors are most important may lead to modified proposals with reduced risk.. Risk analysis can be import input for project team to revisit the proposals and do the fine tune to avoid risk.

## METHODOLOGY

Study on ensuring adequate and timely risk identification was done. The sooner risks are identified, the sooner plans can be made to mitigate or manage them. Assigning the risk identification process to a contractor or an individual member of the project staff is rarely successful and may be considered a way to achieve the appearance of risk identification without actually doing it.

The sample size was 50 and relevant data was collected through questionnaire which was presented to different concerned personals in different capacities.

In the pilot study the scale was small for preliminary study in order to evaluate feasibility, time, adverse events, and effect size. This was an attempt to predict an appropriate sample size and

improve upon the study design prior to performance of a full-scale research project. It was done sharing few Sets of questions and better analysis was done for understanding.

Null hypothesis ( $H_0$ ) – Project risk across multiple function and business unit will not be reduced or managed in terms of terms of score of project, overall planning and scheduling on an organization level.

Alternative hypothesis ( $H_1$ )- Project risk across multiple function and business unit can be reduced or managed in terms of score of project, overall planning and scheduling on an organization level.

Primary data collected afresh, for the first time, directly by the researcher, thus original in character. Primary data collected through sets of questions in the questioner

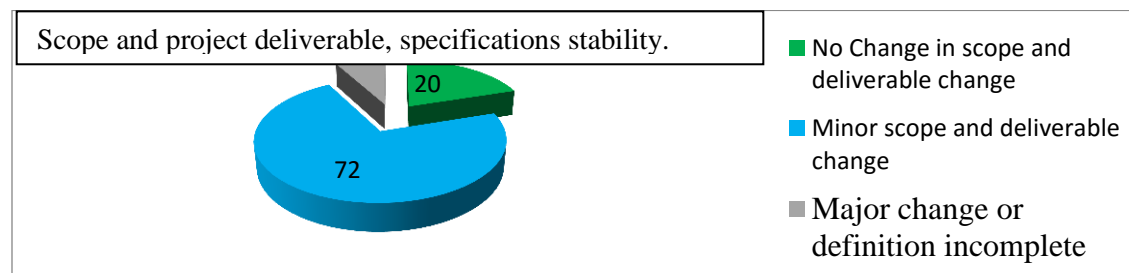
Secondary data which have been collected and compiled for another purpose were also incorporated in the study. Data which are primary at one time may be secondary at another time. Journals and online sources were used for collecting secondary data.

Data analysis is (form of fig) presented in form of tables. Statistical tools were been a to analysis the data and to formulate hypothesis.

## RESULTS AND DISCUSSION

**Table 1:** Scope and project deliverable, specifications stability.

| S.No | Respondents                           | N=50 | Percentage |
|------|---------------------------------------|------|------------|
| 1    | Change is unlikely                    | 10   | 20%        |
| 2    | Minor score deliverable change        | 36   | 72%        |
| 3    | Major change or definition incomplete | 04   | 08%        |



**Fig-1** Scope and project deliverable, specifications stability

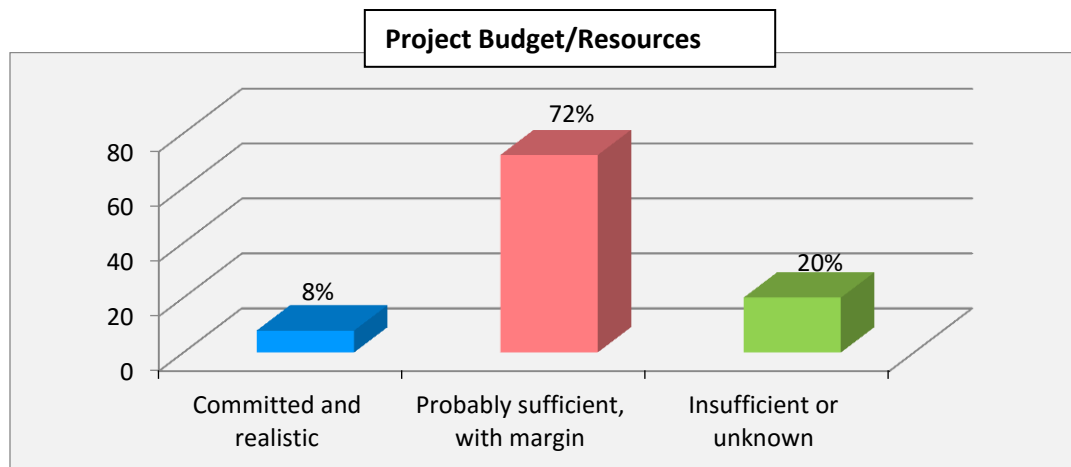
**Discussion:** The above table and Pie chat clearly states that 72% of respondents think Scope and project deliverable, specifications stability are likely to change and definition of requirements are

incomplete. Respondents think all the inputs related to project planning, budgeting, scheduling, time line including lesson learnt from pervious project have to be made available. At every stage of project, deliverables can be measured and expected result should align project objective.

20% of respondent think that there will be a small change in scope and project deliverable and specifications stability. The category holding perception that changes are likely or definition is incomplete constitutes 8% of the least sample space.

**Table 2:** Project Budget/Resources

| S.No | Respondents                      | N=50 | Percentage |
|------|----------------------------------|------|------------|
| 1    | Committed and realistic          | 4    | 08%        |
| 2    | Probably sufficient, with margin | 36   | 72%        |
| 3    | Insufficient or unknown          | 10   | 20%        |



**Fig-2** Project Budget and resources

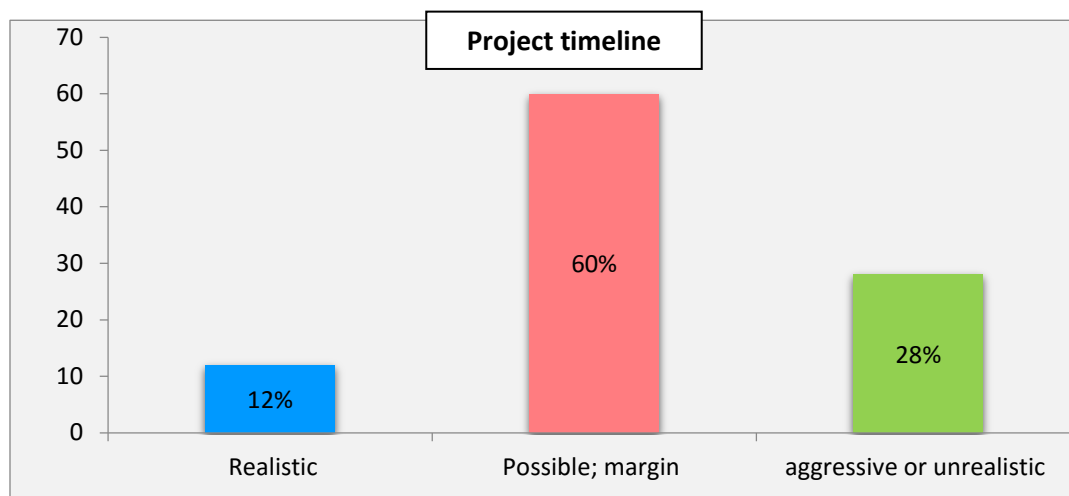
**Discussion:** The above table and chart show that respondents which constitute 72% of sample, feel the budget and resource provided for project probably sufficient, with margin. It may not be 100% realistic but can be managed with some addition effort. Budget is complete financial estimation of cost required for each and every task to achieve the goal or success of project over project life cycle. It is indicator for all costs which will require performing the planned activities or tasks in project phases.

Respondents which constitute 20% of sample feel that during project, budget and resources are always insufficient. In other words both budget and resources are unknown to many of the project team members.

Only small numbers of respondents, who constitute 8% of sample size feel that in an organisation's budget and resources are realistic and committed.

**Table 3:** Project Time line

| S.No | Respondents                      | N=50 | Percentage |
|------|----------------------------------|------|------------|
| 1    | Realistic                        | 4    | 08%        |
| 2    | Possible; margin                 | 36   | 72%        |
| 3    | Overly aggressive or unrealistic | 10   | 20%        |



**Fig-3** Project time line

**Discussion:** The above table and chart show that respondents who constitute 60% of sample feel that project time line is possible but marginal. They also feel that the given time line for project is not realistic which may lead to risk for the project. Each and every project can be having different gates, millstones which define project time line sheet. Time line indicates basic guidance about which task to perform and when according to the objective of the project. Time line sheet is therefore a tool which clearly defines communication, related to all important

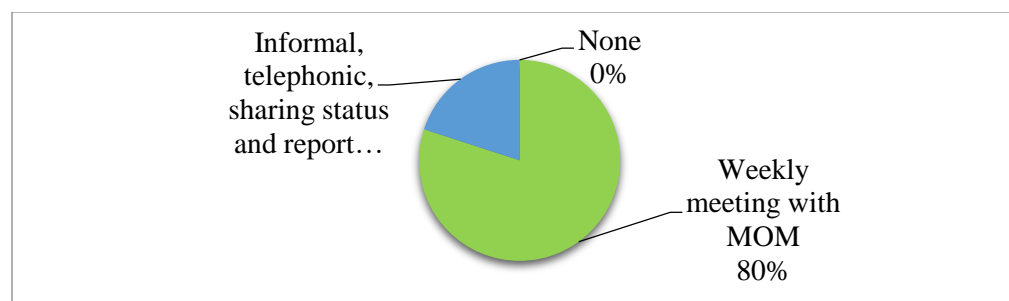
expected activities or task to accomplish a particular milestone. It helps the team to provide direction as to what is our next expected deliverables and when it has to be performed.

Respondents who constitute 28% of sample feel that the time line provided in project phase is very aggressive and unrealistic too. If the time line is unrealistic that may lead to the risk of missing important millstones and result in project delay. Only 12% of respondents think that most of the time the project time line defined is realistic and it will lead to a successful execution of the projects.

**The result rejects the null hypothesis which states that "Project risk across multiple function and business unit will not be reduced or managed in terms of scope of project, overall time line, planning and scheduling on an organization level". Hence other H1 hypothesis can be accepted.**

**Table 4:** Project communication

| S.No | Respondents                                     | N=50 | Percentage |
|------|---|------|------------|
| 1    | Weekly meeting with MOM report                  | 40   | 80%        |
| 2    | Informal, telephonic, sharing status and report | 10   | 20%        |
| 3    | None  | 0    | 0%         |



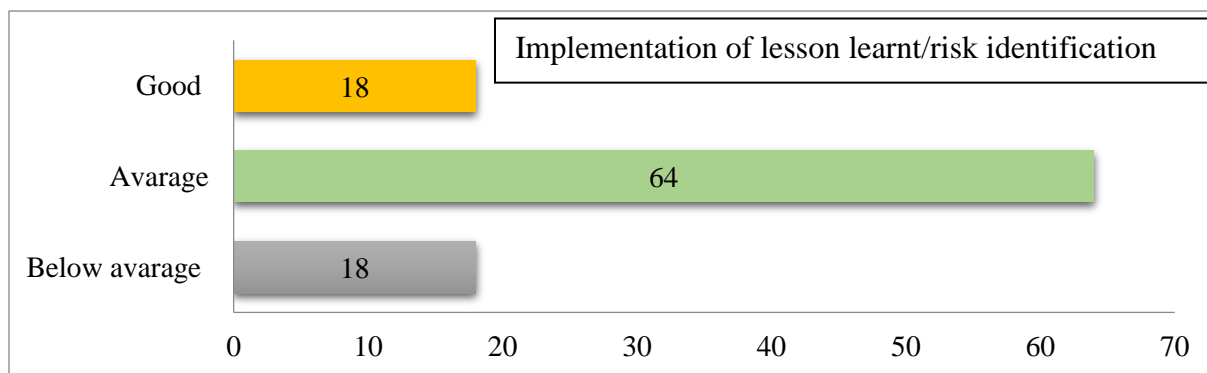
**Fig-4** Project communication

**Discussion:** The above table and graph clearly show majority of respondents who constitute 80% of sample are from the organisation where communications happen frequently by way of weekly meeting with MOM report. Communication is a very important element for the successful completion of the project. Communication is the back bone for project management. So maximum respondents belong to organisations where there are good processes of communication. 20% of samples are from the organisation where there are informal or long-distance connections and reporting. Generally those projects always have challenges where there

are no well-defined communication systems. In such cases complete project activities are on high risk. As per sample no one believes that there is no communication in project management.

**Table 5:** Implementation of lesson learnt/risk identification

| S.No | Respondents   | N=50 | Percentage |
|------|---------------|------|------------|
| 1    | Below average | 9    | 18%        |
| 2    | Average       | 32   | 64%        |
| 3    | Good          | 9    | 18%        |



**Fig-5** Implementation of lesson learnt/risk identification

**Discussion:** The above table and graph clearly show majority of respondents who constitute 64% of sample, are from the organisation who believe that there is hardly any lesson learnt for the previous project handled and there is no availability of defined processes for identification. As per the understanding from majority of the respondents, informal lessons are learnt and identification of risk might be there.

Surprisingly, 18% of the respondents clearly say that there is no system which are accountable for lessons learnt from the last project. This means that the issues and challenges faced during last project were not taken into consideration while planning the new project. Even the process to identify the risk for the new project was hardly available.

Only 18% of the respondents believe that there is system or process available who help to identify risk as well as implementation of lessons learnt from previous projects.



## CONCLUSION

Risk across all the departments and units which are involved which get their directions for reduction and management of the potential risk can be dealt without any extra cost on organisational level.

To understand appropriate ground to make flawless decision consider identified risks.

According to hypothesis (H1)- Project risk across multiple function and business unit will be reduced or managed in terms of score of project, overall time line, planning and scheduling on an organization level.

Majority of respondents think that the project scope, project deliverables and specifications stability are likely to change and if definition is incomplete it will lead to issues related to planning and scheduling towards success of the project.

Time line is an important factor for the entire project and as per the feedback, 72% of the respondents think that the Questionnaire can be a major issue at every stage of the project as every activity is linked. 2% of the sample feels that the budget and resources provided for the project are probably sufficient for the marginal. However 20% of sample feel that project budget and resources are always insufficient and that can be one of the reasons for failure.

Respondents also feel that a significant importance can be given to equipments/parts and then to the timing provided by the organisation. They felt R&D always consumes more time than as expected

Majority of respondents think that whenever there are multiple location project, communication, decision making and coordination become bottle neck in the success of the project, however there might be issues related with the flow of communication, instructions and decision.

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