

# Risk Management in Assessing Feasibility of An Infrastructure Project

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**Abstract-** A comprehensive feasibility study is the basis for the decision makers to decide whether to support or reject the project. The result of a feasibility study shows the preferred solution which is technically and institutionally feasible, financially viable, socio- culturally acceptable and economically justified. A feasibility report is prepared to present an in-depth techno- economic analysis carried out on the projects and contains results of technical as well as economic evaluation of the projects so that the owner can take investment decisions and the projects can be properly planned and implemented.

**Keywords-** feasibility report, techno- economic analysis comprehensive feasibility study technically and institutionally feasible.

## I. INTRODUCTION

Feasibility report is prepared during the initial phase or definition phase of the project. Updating and validation of the feasibility report is required for implementation of the project. The project can be implemented as per the techno-economic stipulations made in the feasibility report. A feasibility report is prepared to present an in-depth techno-economic analysis carried out on the projects and contain results of technical as well as economic evaluation of the projects so that the owner can take investment decisions and the projects can be properly planned and implemented.

The viability of any project mainly depends on the following analysis:

1. Technical analysis
2. Financial analysis
3. Economic analysis
4. Ecological Analysis

Hence it can be very well understood that feasibility study is the base for the success of a project and the major part of this success lies in proper technical and financial analysis. For a construction project, it is very important to take into consideration the various risks involved in the project at various stages while assessing the technical and financial

feasibility of the project. The risks vary widely from sector to sector, project to project and stages to stages and it is to be identified by means of suitable qualitative technique. The potential impact and their probability of occurrence are to be evaluated and risk management has to be done accordingly. Thus, it is very important that detailed work should be done to identify means of risk management while detailing out the technical and financial analyses and hence formed the base for the thesis-work.

## II. IDENTIFY, RESEARCH AND COLLECT IDEA

All projects go through a series of distinct stages, or project cycle, between the initial idea for the project and the time when the project is completed. In general, the following stages can be identified in the project cycle.

### 1. The identification stage

The problematic situation that needs to be addressed by the project is identified. The needs, goals and purpose of the project are broadly identified.

### 2. The planning and preparation stage

During this stage alternatives for the project are analysed that are to address or mitigate the identified problematic. A project alternative is selected and a feasibility report for this project alternative is produced which explains in detail the rationale of the project.

### 3. The appraisal or approval stage

The approval stage is the stage where decision-makers, including financiers, determine whether or not the project will be implemented.

## III. WRITE DOWN YOUR STUDIES AND FINDINGS

Despite massive investment opportunities and India's effort to involve the private sector in infrastructure projects

through BOT scheme, private investment by BOT projects is not up to expected level. Some of the main reasons for this lukewarm response have been identified as a high criticality of risk in India as a developing country in private sector’s perception and inappropriate policies of government to attract private sector. The thesis analyses the stakeholders’ perception on the criticality of risks associated with BOT infrastructure project to identify the critical risks of the NH-222 Road Project, Ahmednagar, Maharashtra and the factors influencing criticality of risk. Considering the risk management of the project in practice, the primary aim should be to identify the key, critical, important risks in the project so that they can be analyzed and an appropriate response can be determined.

A questionnaire survey was conducted with the stakeholders of BOT infrastructure projects such as government officials, sponsors, lenders, contractors by Turner& Townsend, a global Consultancy. Using the results of this survey, the critical risks of projects and the significant factors influencing the criticality of risk in stakeholder’s perception have been also identified and discussed. The results of this part of analysis would be helpful to understand the most critical risks associated with the project as well as for the government to consider the policies to attract the private sector to invest in infrastructure projects.

1.Risk Identification

In general, the risks associated with the project are broadly grouped into two major categories,

- General risks
- Project-Specific risks.

General risks could be defined as factors related to the macro-environmental factors of the country such as the political environment, economic condition, the legal system, taxation, or fluctuations in currency exchange rate. These general risks can be therefore subdivided into

- Political risks
- Commercial risks
- Legal risks

Project-Specific risks can be controlled by the stakeholders. These risks can be best identified and analyzed when classified in accordance with the phases of a project cycle which are

- Development risks
- Construction risks
- Operating risks

Quantification of criticality of risk

The risk matrix is reproduced below.

|            |   | Consequence |    |    |    |    |
|------------|---|-------------|----|----|----|----|
|            |   | 1           | 2  | 3  | 4  | 5  |
| Likelihood | 1 | 1           | 2  | 3  | 4  | 5  |
|            | 2 | 2           | 4  | 6  | 8  | 10 |
|            | 3 | 3           | 6  | 9  | 12 | 15 |
|            | 4 | 4           | 8  | 12 | 16 | 20 |
|            | 5 | 5           | 10 | 15 | 20 | 25 |

Green: Low; Yellow: Moderate; Amber: Significant; Red: High

The risks that score the most points are likely to be those which most demand some form of control action and those risks which are assessed as “Significant” or “High” should be given particular attention

IV. CONCLUSION

- This case is an annuity model. In this model, the operator receives annuity payments semi annually. So traffic and revenue risk is eliminated for the concessionaire. Market analysis has already been done by MRDA to check the viability of the project. So the technical analysis is directly carried out
- After carrying out the technical analysis it has been deduced that it would have been a better option if the government has introduced ancillary infrastructure along the length of the project to increase the revenues by leasing the land than giving a grant of Rs.80.71 Cr
- The Net Present Value of the project comes to 117.33 crores which is positive. So the project falls under acceptance criteria for investment
- The payback period of the project is between the 6th and the 7th year
- Debt Service coverage ratio is found to be 1.6. So it is acceptable for the lenders
- The project is found to be subjected to various risks
- In the political risks, the private parties perceive that the risk due to poor decision making process of the government has high level of criticality. Even the public party gives a rating of significant level of criticality to this risk. So this is a considerable issue.
- In the commercial risks, interest rate risk and risk due to Government Restriction on Profit and Tariff have the high level of criticality according to the private parties.

- In the development risks, the private parties have rated the approval risks to have high criticality because it is beyond the construction consortium's control.
- In construction risks, cost overrun risk and cost escalation risk in the operating risks have high criticality.

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