

# Feasibility Analysis & Risk Mitigation of Infrastructure Project – A Case Study on Irrigation Project- An Overview

Bhavana S. Olokar<sup>1</sup> Dr. M. M. Bais<sup>2</sup>

<sup>1</sup>Research Scholar <sup>2</sup>Assistant Professor

<sup>1</sup>Department of Construction Engineering & Management <sup>2</sup>Department of Civil Engineering

<sup>1,2</sup>Prof. Ram Meghe College of Engineering and Management Badnera- Amravati, India

**Abstract**— Investment in any construction project is able to give higher benefits besides the high risk and uncertainty. The uncertainty depends upon many factors. The influenced of the identified factors has to be evaluated and analysed towards the feasibility of the project. So, before carry out any investment on a project, the feasibility of project has to be done that gives figure of cash flow during the project duration. This can be one of the considerations for making the decision whether the particular project is feasible or not. Also for any construction project it is important to take into consideration number risk involve in the project at various stages while accessing the technical and financial feasibility of project.

**Key words:** Feasibility Study, Analysis, Risk Management, Risk Mitigation

## I. INTRODUCTION

Feasibility analysis is the basis for the decision making authority to decide whether to support or reject the project proposal at initial stage. Qualitative risk analysis determines the importance of addressing specific risks and guides risk responses. It helps to determine the likelihood and potential effect of the risks on the project objectives. It provides a quick and clear picture of risks and is easy to understand. The result of any feasibility study shows the preferred solution which is technically and institutionally feasible, financially viable, Socio-culturally acceptable and economically justified. A feasibility report is a part of Initial project report and detailed project report prepared to present an in depth techno-economic analysis carried out on the projects and contains result of technical as well as economic evolution of the projects so that owner can take investment decision and project can be properly planned and implemented. So a detailed technical and financial analysis is necessary for the feasibility study of the project.

Risk mitigation in infrastructure construction projects has been recognized as a very important management process in order to achieve the project objectives in terms of time, cost, quality and scope.

It provides support for attempts to gain better control over a project when it comes to time, cost, quality, scope and organization. It can help to promote progress of the activities within a project, instills confidence in the project, promote communication within the project and support the decision-making process within a project.

The contract documents are used as a tool to manage risk and client, contractors and investors need to establish risk management policy throughout the project life. It is concluded that clients, designers, contractor and government bodies must work cooperatively from the feasibility phase onward to address potential risks in time.

## II. LITERATURE REVIEW

The following are the previous research review based on feasibility analysis

Venkata Suresh Addepalli (2017), has conducted research on important factors a for price escalation and some of the innovative approaches and e-governance that can be put in place to integrate the Risk Management and cost management to better arrive at project “Estimate At completion”. He also discusses some of the monitoring and controlling actions that needs to be refined to constantly evaluate the Risks and in turn the project “Estimation at Completion”.

He studied that According to the Database of Infrastructure Projects in India (Infrastructure. gov.in), over 4.3 lakh was spent in the financial year 2016-17 alone. This amount roughly equates to 3% of the estimated GDP for the same period. From the Database of Infrastructure Projects in India, 104 completed projects in the energy sector that were completed in the past 5 year 68 projects required more money than initially estimated and the highest being 3.65 times than the initial planned estimate. Out of these 68 projects, 8 were beyond 100% over run and were eliminated in the analysis as they are considered as outliers.<sup>1</sup>

Swapnil Wani, S. Raji (2017), systematically study the impact of financial risk management in the Real Estate construction industry by gathering data regarding different financial aspects from concerned, reputed and responsible employers and employees engaged in handling financial activities and use a proper method for the analysis of this data and provide the findings. They also highlights the impact of two most important financial risk management tools namely hedging and insurance on the performance of the project. The results show the classification of each events considered in the questionnaire, as per their importance of curbing financial risk in the construction project.<sup>2</sup>

Krantikumar Mhetre, B. A. Konnur, Amarsinh B. Landage (2016), study the concepts of risk management and various risk analysis techniques to be used for the one stop solution for all types of hazards most likely to occur during any construction project lifecycle.

Concept of Risk Analysis and Management: Risk management is a process which identifies the project risks, analyse them, and determine the action s to avert the threat so many project. All steps in the risk management process should be included to deal with risks, in order to implement the process of the project.<sup>3</sup>

Sneha Khedekar, Dr. A. W. Dhawale (2015), focused on types of risks involved in the project, risk factors, risk management tools & techniques. Identification of risk of the project in terms of the total cost of the project has been divided under Technical, Financial, Socio political and Statutory cost centers.

They analysis part of risk management on the basis of several analysis techniques, checklists, risk register, expert view etc. Qualitative & Quantitative assessment is carried out for risk involved in project. This study is useful for analyzing large scale real estate projects in Maharashtra; also suggest mitigation steps for different categories of risks 1) to understand the large scale real estate projects and the growing need for same in Indian Scenario. 2) To Identify and analyze the various risks i.e. present and the future risks which may occur during the project construction and maintenance. 3) To prepare and recommend a checklist for identification of risks and their mitigation measures in the project under consideration.<sup>4</sup>

Chaitali S. Pawar, Suman S. Jain, Jalinder R. Patil (2015), they study some suggestion on mitigation of risks in construction projects, they identify and analysis the risk associated with infrastructure project. Based on a comprehensive assessment of conditions of contracts, this paper identifies risks and classifies them into eight types.

They study of the risk management in construction contract and aims to identify the key problems in critical areas of construction project, which have the potential to become major roadblocks in the progress of the project. In present work, a case study Flyover in Pune city of Maharashtra state, India, has been referred. The study identify, classify of various risks in a given set of contract documents of construction project, and on basis of qualitative risk analysis, suggests methods to mitigate risks in construction project.<sup>5</sup>

A.P Waghmare, S. S. Pimplikar (2012), they studied that Investment in construction project is able to give higher benefit beside of its high uncertainty. The uncertainty depends on many risk factors. The influence of the identified risk then has to be evaluated and calculated towards the project feasibility. Before investment, the feasibility of the project has to be done that gives figures of cash flow on the following years. This can be one of the considerations for making a decision whether this project is feasible or not. Risks that overshadow the construction project have to be calculated as an influential factor towards the failure of a project.<sup>6</sup>

### III. METHODOLOGY

Study of various literatures was done to carry out to understand the concept of risk management in construction industry. Study was carry out to understand the different aspect related to risk management to mitigate the risk in irrigation project. Detailed analysis will be done, for that purpose data is collected consist of contract documents. Also questionnaires are formed to carry out some data.

#### A. Feasibility Analysis

Analysis was be done on basis of assessment sheets. Assessment sheet was be prepared on the terms of risk assessment. Feasibility assessment shall be carried out on the basis of the technical data received form the Amravati irrigation department for the project.

The data received is in the term of hydrological data, reservoir planning location of site availability of material, availability of machinery required and schedule of project.

The main objective of feasibility analysis shall be focused on financial implication and outcomes of the project.

#### B. Risk Mitigation

The selection of the most appropriate option for treating risk involves balancing the cost of implementing of each option against the benefits derived from it. Where the large reduction in risk may be obtained with relatively low expenditure, such option should be preferred. Other options for improvement in particularly category may be uneconomic and judgment needs to be exercised as to whether they justifiable or not.

Risk mitigation shall be carried out on the basis of Fund delays, Price escalation, fund sanctioning, changes in laws, payment failure by government, change in government, Land acquisition, Breach of contract documents clearance from other government department, Work environment/condition, Loss of flora and fauna, loss of fertile land, rehabilitation and resettlement problem, Natural force majeure event. Direct/ Indirect political force majeure event, Performance risk, operation cost overrun, operation contractor default, design and drawing delays, Equipment failure, accidents and safety, Delay in previous activities, Administrative inactiveness and corruption.

Although as far as possible risk have been identified and analyzed followed by their mitigation strategies, still there will be many other risks as risk itself are the uncertain factors that affect project.

### REFERENCES

- [1] Vyankata Suresh Adepalli (2017), "Integrating of risk management and cost management to arrive at a realistic Estimate at completion", Project Management National Conference.
- [2] Swapnil Wani, S. Rani (2017), "Financial Risk Management of Construction projects", e-ISSN 2455–1392 Volume 3 Issue 9.
- [3] Krantikumar Mhetre, B. A. Konnur, Amarsinh B. Landage (2015), "Risk Management in Construction Industry", International Journal of Engineering Research (IJER) volume no. 5
- [4] Sneha Khedekar, Dr. A. W. Dhawale (2015), "Qualitative Risk Assessment and Mitigation Measures for Real Estate Projects in Maharashtra" Volume 3, Issue 4.
- [5] Chaitali S. Pawar, Suman S. Jain, Jalinder R. Patil, (2015) "Risk Management in Infrastructure Projects in India" International Journal of Innovative Research in Advanced Engineering (IJIRAE) ISSN: 2349-2163 Issue 4, Volume 2
- [6] A. P. Waghmare, Dr. S. S. Pimplikar (2012), "Risk Analysis in Feasibility Study of Road Construction Project: Case Study Construction of the Four Laning of Amravati – Talegaon Section Nh-6.", ISSN: 2248-9622 Vol. 2, Issue 3.
- [7] Yvonia N. Marowa, Goodwell Muyengwa, (2015) "Risk Assessment in Infrastructural Project", International Association for Management and Technology (IAMOT)
- [8] P. Jagadesh and Y. Suma (2017), "Evaluation and management of risks in construction projects,

International Journal of Engineering Researches and  
Management Studies, ISSN: 2394-7659.

