

# Project Analysis: Tools & Techniques for Managing Risk & Uncertainty

*Munich (Germany)*

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UK Training

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# Project Analysis: Tools & Techniques for Managing Risk & Uncertainty

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## Introduction

Large capital-intensive projects across all major industries require substantial investments that carry significant risks. These risks span the entire lifecycle of the project, from initial acquisition and exploration to the long-term operation and maintenance of the organizational assets. Effective project analysis and management play a crucial role in determining whether to proceed with such ventures, ensuring that decisions are data-driven and based on sound risk assessment.

During the exploration phase of a project, whether it involves new development or expanding an existing operation, it is critical to evaluate various factors using advanced project analysis techniques. The goal is to assess risks under conditions of uncertainty and determine the likelihood of success or loss. This analysis forms the foundation for making informed decisions on whether to move forward with development or abandon the initiative.

Comprehensive and systematic project analysis and evaluation are essential for minimizing uncertainties and maximizing potential returns. By creating detailed cash-flow analyses, businesses can better predict the financial outcomes over the project's lifecycle, especially under fluctuating conditions. Accurate cash flow projections that account for both capital expenditures CAPEX and operational expenditures OPEX are key to long-term success.

The unfortunate reality is that a significant number of large-scale projects fail to meet budget expectations, often leading to higher-than-planned expenses and strategic shortfalls. These failures frequently result from a lack of development planning and project analysis. Without the use of modern project analysis methods and financial planning tools, organizations risk missing their financial and strategic goals, potentially incurring substantial losses.

## Course Objectives

This course is designed to equip participants with essential skills in project analysis and management, focusing on decision-making tools and techniques to help organizations thrive in large capital-intensive environments. By the end of this course, participants will be able to:

- Master project analysis processes to manage investments in large-scale projects effectively.
- Understand how to do project analysis and present findings to key stakeholders.
- Manage project cash flow and develop strategies for mitigating financial risks.
- Perform uncertainty analysis and measurement uncertainty analysis to forecast and control potential future scenarios.
- Identify key project success factors and strategies to maximize returns on capital investments.
- Integrate financial strategies into overall project risk management plans.

## Course Outlines

### Day 1: Fundamentals of Decision Analysis and Project Profitability

A graphic of a chessboard with several chess pieces (a king, a queen, a rook, and a pawn) on it. The board is white and black, and the pieces are gold and silver. The text 'UK Training PARTNER' is overlaid on the board.

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- Introduction to project management decision analysis.
- Understanding the importance of project analysis in the business case.
- Exploring the relationship between risk, uncertainty, and project decisions.
- Overview of project analysis methods, including option analysis and the identification of key decision factors.
- Learning the fundamentals of engineering economics with an emphasis on the time value of money and discounted cash flow projections.

## Day 2: Cash-Flow Modelling and Project Decision Analysis

- Techniques for financial modelling and project evaluation.
- In-depth understanding of Internal Rate of Return IRR computations and the risks associated with it.
- Analyzing project-specific contexts for informed decision-making.
- Introduction to the scope of work and stakeholder analysis as part of the project analysis process.

## Day 3: Cost of Capital and Risk Modelling

- Estimating the cost of capital for projects and understanding the balance between CAPEX and OPEX.
- Learning how to calculate the Benefit-Cost Ratio BCR and manage dis-benefits.
- Applying risk modelling techniques in practice to forecast risk impacts and assess opportunities, sunk costs, and salvage values.

## Day 4: Expected Value Concept and Sensitivity Analysis

- Mastering the expected value concept and fundamental probability theories in uncertainty analysis.
- Conducting quantitative project risk analysis and using semi-quantitative techniques like the bow-tie process.
- Utilizing sensitivity analysis tools such as tornado diagrams and simulation processes like PERT to define and analyze variables.

## Day 5: Decision Trees, Risk Responses, and ROI Analysis

- Delving into decision tree analysis, including the development and solving of decision trees for project evaluations.
- Crafting effective risk responses and evaluating their relevance.
- Understanding and applying ROI analysis techniques to measure and present the return on investment for capital projects.

### conclusion

This project analysis course provides a structured approach to navigating the complexities of large capital investments, emphasizing the importance of project analysis in making strategic decisions. By mastering project analysis techniques and integrating them into the planning and execution stages, participants will be better equipped to manage risks, optimize cash flow, and drive successful project outcomes.

By the end of the course, participants will understand what is project analysis, why it is crucial, and how to apply the right types of project analysis to ensure project success amidst uncertainty. With a comprehensive understanding of project analysis and planning, participants will have the tools to make sound investment decisions and mitigate risks effectively.

The logo for UK Training Partner features the text 'UK Training' in a smaller, black sans-serif font above the word 'PARTNER' in a large, bold, black sans-serif font. The text is positioned over a background of a chessboard with several chess pieces (a king, a pawn, and a knight) in gold and silver, set against a backdrop of concentric white circles.

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