Professional Project Analysis: Managing Risk & Uncertainty

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Introduction:

The decision to invest in new capital projects starts with critical decisions during the conceptual phase of new projects or the expansion of existing operations. The decision-making tools used to analyze project risk under conditions of uncertainty will help companies to determine the probability of success or loss and will drive the decision to invest in the new venture.

Of paramount importance, therefore, is the systematic and comprehensive evaluation of potential investments, and the development of detailed cash-flow analyses to determine as accurately as possible, the expected returns to the organization under varying conditions of uncertainty over the expected productive life of the project.

Who Should Attend?

The Professional Project Analysis: Managing Risk & Uncertainty training course is designed for:

- Project Team Leaders
- Risk Management Team Leaders
- Production Engineers
- Cost Engineers
- Financial Staff

It is also beneficial to all those responsible for or involved in project appraisal and planning, risk analysis, financial decision-making, project execution and ongoing business operations.

Course Objectives:

By attending the Professional Project Analysis: Managing Risk & Uncertainty training course, delegates will learn how to:

- Use qualitative and quantitative methods to assess the exposure of the project to particular risks in real and measurable terms

- Perform a detailed financial appraisal of potential capital projects to ensure consistent and reliable decision-making processes
- Understand and apply the principles and methods of modern economic engineering
- Apply the fundamentals of discounted cash flow analysis to project evaluations
- Determine the Internal Required Rate of Return of the project as the basis for sensitivity analyses to establish the risk exposure to the organization
- Apply the concept of Expected Monetary Value to compare various alternatives

This unique training course will significantly enhance the skills and knowledge of delegates. It will improve their ability to quantify risks in order to ensure a more consistent decision-making process, thereby producing vastly better results in economic projections.

Course Contents:

Module 1 - Fundamentals of Decision Analysis & Engineering Economics
Description:

Day One will cover the process of Project Management Decision Analysis and explore the fundamental tools of Project Engineering Economics

Key topics:

- What is Project Management Decision Analysis?
- Risk and Uncertainty on projects
- Identifying all possible outcomes
- Identifying key decision-making factors
- Fundamental tools of engineering economics
- Time Value of Money
- Simple and Compound Interest
    - Future value of a present sum
    - Present value of a future sum
- Appraisal Methods – Discounted Cash Flow Projections
- Net Present Value Analysis (NPV)
- Comparing Projects with Equal and Unequal Lives

Module 2 - Rate of Return (IRR), Cost of Capital and Cost-Benefit Analysis
Description:

Day Two will cover Internal Rate of Return computations as a basis for determining the risk profile of a project, and will examine how to determine the Cost of Capital and Benefit-Cost Ratios of projects

Key topics:

- Determining the Internal Rate of Return (IRR)
- IRR for a Single O&G Project
- Incremental Analysis
- Estimating the Cost of Capital for a Project
    - The Cost of Debt Capital
    - The Cost of Equity Capital
- Weighted Average Cost of Capital (WACC)
    - Financial Gearing (Structuring)
- Estimating the Benefit-Cost Ratio for a Single Project
- Comparing Mutually Exclusive Projects Using Incremental Benefit-Cost Ratios

Module 3 - Financial Project Risk Analysis
Description:

Day Three will cover the application of economic and financial principles to the risk management process by performing three-point scenario analyses to determine the most probable outcomes expressed in financial terms

Key topics:

- Overview of the Risk Management Process
- Detailed Risk Quantification and Prioritization
- Risk Quantification and Expected Monetary Value
- Scenario Planning
    - Best case scenario
    - Base case scenario
    - Worst case scenario

- Developing Risk Mitigation Strategies
- Implementing Mitigation Strategies
- Decisions Under Conditions of Uncertainty
- Multiple Option Decisions
- Combining Risk and Cash Flow Analyses
    - Minimizing Probability
    - Minimizing Impact and Consequences
- Calculating the Expected Monetary Gain or Loss

Module 4 - Risk Scenario Planning - Case Study & Application
Description:

Day Four will cover the more advanced application of Risk Scenario Planning to project cash flows based on three-point scenario analyses of risk impact projections

Key topics:

- Cash flow projections – Tunnel Case Study
    - Base Case Scenario
    - Best Case Scenario
    - Worst Case Scenario
- Risk Profile EMV Calculation before Mitigation
- Identification of Risk Triggers & Probability
    - Plotting the Event Probability
- Identification of Risk Receptors & Impact
    - Plotting the Financial Impact
- Combined EMV Risk Profile before Mitigation
- Developing Probability Mitigation Strategies
- Developing Impact Mitigation Strategies
- Replotting the Projected Risk Profile after Mitigation
- Examining the J-Curve to Derive the Most Economic Mitigation Point
- Final Risk EMV and Project Feasibility Calculations after Mitigation

Module 5 - Cash-Flow Modelling and Project Decision Analysis
Description:

Day Five will cover detailed Financial Modeling as a basis for long-term project appraisal and management to ensure projects success

Key topics:

- Preparing Cash Flow Projections
- Incremental Costs and Benefits
- Working Capital Requirements and Operating Costs
- Forecasting Cash Flows
    - How to Deal with Inflation
    - How to Deal with Uncertainty and Risk
- Risk Premiums
- Pessimistic and Optimistic Forecasts
- Opportunity Costs and Sunk Costs
- Determining the Economic Life of a Project
- Quantifying the Effects of Inflation
    - Effects of Inflation on Working Capital
    - Effects of Inflation on Taxation
    - Effects of Inflation of Cost of Capital
- Variable Inflation Rates Over the Life of the Project
- Relevant Cash Flows over Differing Time Horizons
- Depreciation
    - Straight-Line Method
    - Declining Balance Method
- Interest, Insurance, and Tax Costs
- Corporation Tax Rates & Taxable Profits
- Capital Allowances
- Incorporating Tax in Cash Flow Models