ANALYTICS EDUCATION

ADVANCED FINANCE & RISK ANALYSIS SKILLS

3day | 24hr professional workshop

OVERVIEW

Forecasting, simulation, real options and optimization techniques are increasingly popular tools that provide Financial Analysts with analytic power well beyond the traditional toolset. Through workshops, case examples and practical crystal ball learning models, participants will actively learn and practice essential skills and techniques to obtain accurate estimates from subject matter experts, test & validate planning assumptions, leverage historical data in planning/estimating scenarios, assign a probability of realizing an objective, maximize benefits using optimization, etc.

TARGET AUDIENCE

People who have previous experience with simulation and Excel modeling, including: Business Analysts, Managers, Executives and Consultants.

This workshop is designed for both the beginner and advanced financial analyst and we will fully cover the A to Z of applying risk analysis techniques. – A must for executives, managers, consultants and analysts who can't afford to be wrong!

WORKSHOP CONTENT

MODULE 1 – ENHANCING THE MODELING PROCESS WITH SIMULATION

Why is Risk Analysis critically important in today's world?

- Challenges in corporate finance
- The flaw of averages
- Understanding risk analysis key concepts and definitions
- Workshop: What does 90% confidence really mean?

Modeling vs. Simulation

- Overview and history of Monte-Carlo Simulation
- Advantages and Disadvantages of simulation
- How and Where simulation and risk analysis can have a positive impact on the organization

The Modeling Process

- Understanding how the modeling process works in the business
- Obtaining and using historical or published data
- Discussion on using the Monte-Carlo Method for properly scoping the need, building assumptions and establishing model constraints with Subject Matter Experts
- Workshop: Using risk analysis to develop a New Compensation Model

Using and Configuring Crystal Ball for Risk Analysis: Toolbar, Basic Terminology, Sampling (Latin HyperCube vs. Monte-Carlo), Reporting and Data Extraction

MODULE 2 – BUILDING AND RUNNING MODELS

Essential Statistics For Risk Modeling

- Workshop: Understanding how probabilities work with the DICE model
- Basic probability statistics (Mean, Standard Deviation, Kurtosis, Skewness)
- Overview of principal distributions and when to use them

How to analyze existing models to apply risk analysis: Tornado Charts and One Way Sensitivity Analysis to identify inputs with the greatest impact

Working with Distributions and Model Inputs

- Best practices for defining model inputs in Excel and selecting the right distribution
- Making sure your model behaves correctly using correlation
- Workshop: Portfolio Allocation Model

Defining, Analyzing and Communicating results to the business

- Setting up model outputs and visualizing results and charts (Sensitivity, Forecasts, Assumptions and Overlays)
- Establishing Confidence Intervals and configuring precision control to optimize the number of trials
- Generating simulation result reports & documentation
- Techniques to effectively and simply communicate your analysis to your peers, clients and superiors
- Question handling

Risk identification and Assessment using Simulation

- Interpreting Forecasts and Sensitivity Analysis
- Identifying Risks and Potential Mitigation Strategies
- Model Calibration using Risk Management Mitigation Solutions
- Workshop: ROI Analysis and business growth analysis using historical data to build ROI Scenarios and compare them using Overlay Charts (DuPont Model)

MODULE 3 – INCORPORATING HISTORICAL DATA AND TRENDS INTO YOUR MODEL

Correlation and Regression

- What are correlations and their impact on results
- Overview of regression and its basic applications, including LogReturns
- Workshop: How to calculate rank correlation and use it to correlate model assumptions
- Aggregate Assumptions

Data/Distribution Fitting

- How to fit a distribution using historical data
- Analyzing fit results and selecting the RIGHT distribution for both univariate and multivariate data.

Time-Series Forecasting

- Overview of the components and applications of time-series forecasting
- Time-series projections using to easily incorporate Seasonality, Smoothing algorithms, Growth Projections using historical data
- Workshop: Projecting Next Year's Sales

MODULE 4 – OPTIMIZATION AND SCENARIO MODELING

Simulation Optimization

- Introduction to Simulation- Optimization with OptQuest
- Everyday Optimization applications and examples
- How does Simulation Optimization Work

Portfolio Optimization Techniques : With the help of several integrated financial models, this workshop will provide financial analysts with a complete understanding of why, where and how to apply spreadsheet forecasting, simulation, real options and optimization within their analyses.

- *Project Portfolio Selection:* Use OptQuest to pick the best projects based on Organizational Budget Constraints
- *Portfolio & Resource Allocation Optimization:* Allocate resources or budgets among various investments to maximize NPV or ROI or minimize risk or expense.
- *Modeling Efficient Frontier* Analysis to optimize risk against benefit for projects and investments. (Portfolio Allocation)

Decision Tables to compare complex 2 dimensional problems

- *Workshop:* Inventory Options
- Creating 3D solution plots

MODULE 5 – ADVANCED DECISION MODELING TECHNIQUES

Decisions under uncertainty:

- Overview of Bayes' Theorem and its analytical applications
- Bayes applied to medical testing
- Workshop: How to improve profitability with additional information
- Bayes applied to Quality Control

Value of Information

- How much should you invest to collect additional information using Hubbard's VOI approach with a UNIFORM rule.
- Perfect versus imperfect information
- Using VOI to constrain or optimize portfolios

Decision Trees

- Overview of decisions trees
- Methodology for documenting strategic options using decision trees
- Conventional NPV versus Expanded NPV
- Workshop: Using Bayes Theorem and Decision Trees to decide whether to hire a reserves expert (oil and gas / mining) or not and the decision's impact on NPV

Real Options Analysis

- Overview or Real Options Theory
- Discounting Assets over time using lattices
- Workshop: Integrated DCF and valuation using a 2 Phased Sequential Real Option

BENEFITS

At the end of this 3 day workshop, participants will be able to:

- Understand and apply Monte-Carlo simulation and optimization in their day-to-day activities
- Make better and more informed decisions
- Quickly build effective models or customize existing ones with Crystal Ball
- Apply simple and effective simulation risk analysis techniques
- Pick and manage project more effectively
- Use historical data to forecast future revenues and how to use those forecasts to create better predictive Discounted Cash Flow (DCF) models
- Perform a DCF analysis and determine ROI on a specific project using Monte Carlo simulation to identify and evaluate risk and uncertainty in your model
- Apply real options techniques to accurately account for the impact of positive uncertainty in estimating your project's value
- Use a portfolio optimization model where the efficient allocation of resources is analyzed to improve the quality of your business decisions.

CLASS IS ALSO AVAILABLE FOR THE FOLLOWING PACKAGES

ORACLE CRYSTAL BALL

FRONTLINE solvers

PALISADE partner

VOSE SOFTWARE RISK SOFTWARE SPECIALISTS