
Optimisation, Forecasting and Risk Modelling for Executive Decisions Training Course

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Rome





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Programme Summary

Optimisation, forecasting and risk modelling for executive decisions is the subject of this five-day training course for managers who must justify resource, demand and investment choices with numbers, ending in a decision model pack for one business question. The programme moves from framing decisions and expected value, through forecasting and optimisation, to risk simulation, then to a worked decision model. Mars Training Centre UK delivers this programme in optimisation, forecasting and risk modelling for executive decisions.

The Business Case

When a budget, staffing level or stock position is chosen without a model, leaders cannot show why one option beats another or how far it can fail. Managers who quantify options, forecast with stated error and test the downside can defend choices to a board.

- Forecast Error: Narrows as demand projections are tested against history and error is reported with each figure.
- Resource Use: Improves as scarce capacity, budget and staff are allocated by an optimisation model.
- Decision Risk: Becomes visible as simulation shows the range of outcomes behind each option.

Principles and Evidence Base

- Decision analysis: Payoff tables, expected value and decision trees structure the choices examined in Sessions 1 and 5.
- Linear programming: Its treatment of limited resources and competing aims shapes the allocation models built in Session 3.
- Forecasting and regression: Their methods of projecting demand from history and drivers organise the work of Session 2.
- Monte Carlo simulation: Repeated random sampling of uncertain inputs underpins the risk modelling of Session 4.

Intended Participants

- Managers who prepare budgets and business cases and must show the numbers behind a recommendation.
- Operations and planning leads who allocate limited capacity, stock or staff between competing uses.
- Commercial and finance managers who forecast demand, revenue or cost for executive committees.
- Programme and portfolio leads who compare options under uncertainty and report risk to sponsors.

The programme serves manufacturing, retail, healthcare, logistics and public service organisations.



Learning Outcomes

1. Participants will be able to construct payoff tables and decision trees that compare options by expected value.
2. Participants will be able to evaluate forecast methods against historical data and report the error of each.
3. Participants will be able to formulate a resource allocation problem as a linear programme and interpret its solution.
4. Participants will be able to diagnose the main sources of uncertainty in a business case using sensitivity analysis.
5. Participants will be able to build a simulation of uncertain inputs and interpret the range of outcomes it produces.
6. Participants will be able to justify a recommended option to a management committee using model results.

Programme Structure

Day 1: Framing Executive Decisions with Quantitative Analysis

How is a management choice turned into a model that can be compared and tested?

- Decision Statement and Objective Definition
- Payoff Table Construction
- Expected Value Calculation
- Decision Tree Layout
- Value of Perfect Information

Day 2: Forecasting Demand and Cost

Which forecast method fits the pattern in the data, and how large is its error?

- Time Series Pattern Review
- Moving Average and Exponential Smoothing
- Simple and Multiple Regression
- Forecast Error Measures
- Forecast Method Selection Grid

Day 3: Optimisation of Limited Resources

How are scarce capacity, budget and staff allocated to give the best result?

- Linear Programming Formulation
- Constraint and Objective Mapping
- Spreadsheet Solver Set-Up
- Shadow Price Interpretation
- Transport and Assignment Models



Day 4: Risk Modelling and Simulation

How wide is the range of outcomes when inputs are uncertain?

- Uncertain Input Register
- Probability Distribution Selection
- Monte Carlo Simulation Set-Up
- Sensitivity and Scenario Tables
- Risk Profile Chart

Day 5: Applying Quantitative Models to One Business Question

Is the decision model ready to support a recommendation to a management committee?

- Applying the Session 1 Decision Tree to the Chosen Question
- Fitting the Session 2 Forecast to the Model Inputs
- Running the Session 3 Allocation Model on Real Constraints
- Testing the Session 4 Risk Profile Against the Recommendation
- Completing the Decision Model Pack

Methodology

The programme is built around data workshops. Participants work in small teams with an anonymised dataset from a retail, healthcare or logistics business, build each model in a spreadsheet and compare results with other teams. No programming is required.

- Suggested activity: Comparing three forecast methods on twelve months of demand data.
- Suggested activity: Allocating a fixed budget across competing projects with a solver model.
- Suggested activity: Simulating a project cost estimate and reading the range of totals.

Capstone Output

Each participant completes a decision model pack for one business question. It holds a decision tree, a forecast with its error, an allocation model, a simulation risk profile and a one-page recommendation. The pack is used to brief a management committee.

Frequently Asked Questions

Is optimisation, forecasting and risk modelling for executive decisions suitable for managers without a statistics background?

Yes. Optimisation, forecasting and risk modelling for executive decisions is set at managerial level and assumes comfort with spreadsheets, not advanced statistics or programming.



Which methods does optimisation, forecasting and risk modelling for executive decisions rest on in this training?

Optimisation, forecasting and risk modelling for executive decisions rests on decision analysis, linear programming, forecasting with regression and Monte Carlo simulation.

How is the decision model pack from optimisation, forecasting and risk modelling for executive decisions used at work?

You use the decision model pack to brief a management committee, justify a budget or resource choice and update the model as assumptions change.

How does optimisation, forecasting and risk modelling for executive decisions differ from a data visualisation programme?

Optimisation, forecasting and risk modelling for executive decisions centres on building models that compare options, while a data visualisation programme centres on presenting existing figures in charts and dashboards.