



**InnoVision Executive Education**

**Decision Model  
Building Using Data  
Analytics**



# Decision Model Building using Data Analytics

**Module Name: Decision Model Building Using Data Analytics**

**Duration:** 18 Hours

## **Learning Outcomes**

- I. Successful Participants of this module should be able to make a judicious selection of analytical tools appropriate to the problem at hand, informed by the knowledge of theory and based on experience.
- II. Express vague ideas precisely in mathematical terms, when appropriate, so that mathematical and statistical methods can be used to bring clarity to questions in other areas of inquiry.
- III. Develop Analytical & Reasoning Skills in analyzing data and to build effective models and compare models to select best performing model.
- IV. Discover new methodologies in the emerging field of analytics, especially those methodologies that have been tried and tested in the domain of business decision making.
- V. Communicate mathematics and statistics in a clear, organized, and inspiring way, using a variety of media in ways that are appropriate for the audience.

## **Brief details about the module**

Staying in tune with trends in businesses is the cornerstone of the success of any organization, leaders in management education base their course evolution and programs with a close monitoring of the business environment. Decision-making through capturing and analysing data is a mega trend that is disrupting the traditional approach to business, catapulting smaller and new businesses to challenge established players. This module will introduce participants to some of the most widely used predictive modeling techniques and their core principles. This module attempts to form a solid foundation of predictive analytics, which refers to tools and techniques for building statistical or machine learning models to make predictions based on data. Participants will learn how to carry out exploratory data analysis to gain insights and prepare data for predictive modeling, an essential skill valued in the business. The module will facilitate participants learn how to summarize and visualize datasets using plots & present results in a compelling and meaningful way.

## Topics Covered

- I. Introduction to Business Analytics
- II. Evolution of Business Analytics
- III. Scope of Business Analytics
- IV. Data for Business Analytics Decision Models
- V. Problem Solving and Decision Making
- VI. Predictive Modeling
- VII. Stages and process of predictive analytics
- VIII. Learning by Example: Building and Running a Process Flow
- IX. Orange Introduction. Getting started with Orange Data workflows.
- X. Widgets and channels Loading your data Visualisation
- XI. Pre-processing & Cleaning Data
- XII. Build Decision Trees, Decision Tree
- XIII. Introduction; cultivating decision trees.
- XIV. Optimizing and complexity of decision trees; random forests.
- XV. Pruning; understanding additional diagnostic tools
- XVI. Imputations – Concept of different types of imputations, Rationale of imputations, Systematic distribution vs Estimation Methods
- XVII. Modeling Essentials: Regression
- XVIII. Introduction to Econometrics, multiple regression analysis, Concepts of Ordinary Least Square Estimate (OLSE) & Best Linear Unbiased Estimate (BLUE).
- XIX. Practical Examples in business
- XX. Assumptions of Regression
- XXI. Assessing model fit, Outlier Analysis, Dummy variables,
- XXII. Transformations, Interactions
- XXIII. Overview of classification techniques
- XXIV. Classification table & Accuracy measures for classification
- XXV. Chance accuracy and baseline accuracy Sensitivity / Specificity/Precision and Recall Lift Gain concepts
- XXVI. ROC AUC
- XXVII. Introduction to Logistic Regression model & assessing the overall fit.
- XXVIII. Interpretation & Hypothetical Illustrations
- XXIX. Non-Linear Models Neural Networks
- XXX. Build Neural Networks, Tune Model parameters.
- XXXI. Evaluate created Models assess them on different parameters.
- XXXII. Score the model on new data.
- XXXIII. Cluster Analysis Segmenting census data.
- XXXIV. Exploring and filtering Analysis data.

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- XXXV. Setting cluster tool options.
- XXXVI. Creating cluster with the cluster tool.
- XXXVII. Specifying the segment count.
- XXXVIII. Exploring segments; profiling segments
- XXXIX. Nearest neighbor algorithm and clustering
  - XL. Comprehensive Case study using Kaggle Dataset

## Reference Books

- I. Business Analytics – The Science of Data Driven Decision Making by U Dinesh Kumar, (BA) First Edition 2017 Wiley Publication
- II. Applied Predictive Analytics: Principles and Techniques for the Professional Data Analyst By Dean Abbott Wiley First Edition (2014)
- III. The Business Analyst's Handbook by Howard Podeswa Cengage (2009)
- IV. Modeling Techniques in Predictive Analytics: Business Problems and Solutions with R, Revised and Expanded Edition by Thomas W. Miller Pearson Education
- V. Applied Predictive Analytics: Principles and Techniques for the Professional Data Analyst by Dean Abbott, Pearson Education
- VI. Marketing Data Science: Modeling Techniques in Predictive Analytics with R and Python by Thomas W. Miller Pearson Education