Data Analysis Techniques

18 – 22 March 2018   Muscat / Sultanate of Oman

Course Overview

Organizations need to make business decisions more quickly and accurately than ever before. Basing these decisions on data and best practice analysis techniques and less on gut feel or "the way we have always done things" is how today's corporate management is demanding information. A solid foundation of data analysis for business decision making is a critical skill you should have regardless of whether your motive is to obtain or sustain a competitive advantage or simply better steward your resources to serve customers. In this course, you will learn to use data analytics to create actionable recommendations, as well as identify and manage opportunities where data-based decisions can be used to change the way you do business.

This course provides many of the common data analysis tools used to gather, analyze and adapt your data to feed business decisions. You do not need heavy Excel or data analysis experience. This course includes introductory exercises on Excel add-ins, standard deviation, random sampling, and an introduction to pivot tables and charts. These exercises will show you how to effectively demonstrate basic data analysis functions and reporting in Excel or Google Spreadsheets. We will simplify math jargon and complex symbols and equations to concentrate on what your data can tell you and your organization. In addition, you will learn how to present to those executives, managers and subject matter experts who need to quickly make decisions that drive your organization.

What You'll Learn

- Terms, jargon, and impact of business intelligence and data analytics

- Scope and application of data analysis

- Impact of analytics on gaining competitive advantage and decision support

- Measure the performance of and improvement opportunities for business processes

- Need for tracking and identifying the root causes of deviation or failure

- Basic principles, properties, and application of probability theory and the normal distribution

- Introduction to different methods for summarizing information and presenting results including charts

- Statistical inference and drawing conclusions about the population

- Sample sizes and confidence intervals, and how they influence the accuracy of your analysis

- Forecasting and an introduction to simple linear regression analysis

- Interpret your results and draw sound and relevant conclusions on business

- Methods and algorithms for forecasting future results and to reduce current and future risk

- Process improvement and analysis skills

- Where powerful reference material exists and how to leverage to enhance your decision-making

Course Outline

1. Course Introduction

   - Logistics, materials, and course expectations

   - Agile and integrated (A&I™) set of tools and best practices

   - References and resources

2. Introduction to Data Analysis and Analytics

   - Definition and history

   - Current technology, the growing availability of data, and increasing challenges

   - Applications for gaining competitive advantages

3. Rethinking the Value and Usage of Data

   - The impact of vast volumes of available data especially for decision making

   - Data difficulties and limitations: ROI vs. effort/expense, incomplete and inconclusive data

   - Dealing with data uncertainty

   - Getting real value out of your data: The data continuum

   - Effective and responsible data ownership

   - Advantages and disadvantages of qualitative and quantitative data types

   - Solutions and best practices to transform the way your organization accesses and uses data

   - Organizing the entire organization's data for maximum efficiency using easily available tools

   - Taking advantage of the expertise of the entire organization

4. Introduction to Data Mining and Data Warehousing

   - Data Mining concepts and application

   - Application benefits of data warehousing

5. Data Distribution and Variance

   - Decision making under uncertainty

   - Probability

   - Data distribution

   - Variance

   - Standard deviation

6. Information Needs

   - Operational and executive information classes

- Key functional transactions and documents
- Map information needs to underlying data
- Executive information needs and the balanced scorecard
- Role of the business analyst and data analyst
- How to use simple pivot tables in Excel or Google Sheets to analyze and present your data
- Tracking and managing business process performance
- Learning from data

7. Data Exploration Concepts and Methods
   - Basic concepts
   - Descriptive measures of a sample
   - Histograms
   - Statistical hypothesis and inference
   - Dependence and correlation
   - Moving beyond data and decision uncertainty - managing risk

8. Forecasting
   - Forecasting methods and models
   - Time series analysis
   - Linear regression
   - Establishing trends and business cycles (i.e., seasonality)
   - Selecting independent variables for predictive models including regression techniques

9. Review, Best Practices, and Next Steps
   - Data analysis and transformation
   - Best practices revisited
   - Next steps options