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Effective Business Decisions Using Data Analysis

15 July - 2 August 2024

Singapore

Effective Business Decisions Using Data Analysis

course code: M1046 From: 15 July - 2 August 2024 Venue: Singapore - course Fees: 8250 Euro

The Course

Every professionals strives to make quality decisions. Quality decisions result from a careful and thorough evaluation of relevant information. Often such information is generated through statistical manipulation of data, but few professionals possess quantitative reasoning skills to meaningfully and validly interpret such statistical findings themselves or question the interpretations given by others.

The lack of quantitative analytical skills can potentially limit a professionals effectiveness to make quality decisions.

This program aims to develop an appreciation of the role of quantitative methods in management decision making and thereby empower professionals with an additional decision making skill.

The Goals

This series of interactive, practice-orientated workshops examines the use of data and data analysis techniques to:

- Support strategic initiatives
- Inform on policy formulation
- Direct operational decision making

By the end of this 5-day interactive training program, delegates will be able to:

- Appreciate the role of Data Analysis as a Decision Support tool
- Explain the scope and structure of the discipline of Statistics
- Understand the importance of data quality in data analysis
- Select an appropriate Data Analysis methodology to apply to specific management situations
- Apply a cross-section of Data Analysis tools and techniques
- Meaningful interpret statistical output to inform decision making
- Critically assess statistical findings with confidence
- Interact meaningfully and with confidence with Data Analysts
- Initiate with confidence their own Data Analysis projects

The Process

To make the learning experience more beneficial, delegates are strongly encouraged to:

- Bring their own laptops with Excel capabilities (plus the Data Analysis add-in)
- Provide at least one Excel spreadsheet of a sample database of typical data from their workplace

These databases will provide the basis for regular discussions throughout the program about their use in decision making and will also be used for possible further analysis using the statistical methods covered during the program.

The workshops themselves will be highly interactive. It includes traine

learning process and workshops with delegates acquiring hands-on exposure by processing both their own database and trainer-supplied sample databases using both Excel and statistical software called NCSS - Number Cruncher for basic and higher-level statistical analyses.

Throughout, delegates will be required to assist with the interpretation of statistical findings and consider their management implications.

The Benefits

Delegates will acquire or upgrade their quantitative reasoning skills which could give them a competitive advantage over those who do not possess these analytical insights. It will also have the benefit of raising a delegate's confidence in using statistical evidence to support their decision making.

The Results

On return to your workplace, you should be able to apply your analytical skills and understanding of statistical techniques to practical situations to the benefit of your personal performance as a manager and to the organization as a whole through being able to provide verifiable evidence to support strategic and operational decision making.

The Core Competencies

As a professional, you will:

- upgrade your quantitative reasoning skills in decision making
- build confidence in your decision making abilities using quantitative findings
- develop hands-on skills in using Excel to generate appropriate statistical findings
- recognise situations where applying statistics can enhance a decision process
- perform computer-based statistical analyses in practice to add value to decisions
- learn to meaningfully interpret management reports of a statistical nature
- develop critical assessment skills to test the validity of statistical findings
- be competent to initiate statistically-oriented projects
- develop interaction skills with statistical analysts

Benefits of Attendance

In brief, this program aims to empower you:

- To apply statistical thinking and methods to unleash the power of information in data
- To elevate your analytical skills to perform more effectively as a manager

The Programme Theme

Throughout the programme, delegates will be encouraged to reflect on how / where the various statistical / modeling methods could be practically applied in management areas within their work domain.

The Programme Content

Setting the Scene and Observational Decision Making

- Setting the Quantitative Scene
- The Decision Support Role of Quantitative Methods in Management
- "Thinking Statistically" about Applications in Business Practice
- The Elements and Scope of Quantitative Management
- Data and the importance of Data Quality

Exercise and Discussion 1:

"Within your work decision area, how could Data Analysis enhance your decision making capabilities?"

- Observational Decision Making - Using Excel's Exploratory Data Techniques "Given the inherent variability in data, there is a need to profile it to understand it"

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Using Excel to Paint a Picture of your Data

- Summary Methods Using Tables and Graphs to Profile Data
    - (One-way, Two-way and Multi-way Pivot Tables)
    - (Graphic Displays and Breakdown Analysis)
- Numeric Descriptors
- (Central (and non-central) locations; Dispersion; Distribution Shapes)
- (Graphical summary using Box plots)

Exercise and Discussion 2:

Case Studies (Cadillac and Sappi): Use Exploratory Data Analysis methods in Excel to analyse and gain insights into the management problems of each organization.

Discussion: How relevant are any of these exploratory data approaches to your work domain? In what way(s) can they be used?

Statistical (Inferential) Decision Making - by harnessing Uncertainty

- Using sample evidence to address management issues through statistical inference"
    - How to measure and quantify Uncertainty (using Probability Distributions)
    - The importance of Sampling
    - Statistical Decision Making methods
    - (Approaches: Confidence Intervals and Hypothesis Testing)
    - (Techniques: z- and t-statistics, Analysis of Variance, Chi-Square)
- Addressing Practical Management Issues
- Estimation; Testing for Differences; Multiple Sample Comparisons)

Exercise and Discussion 3:

Case-based exercises will be used for each Statistical Decision Making scenario. The statistical findings will be generated by Excel and emphasis will be placed on their valid interpretation and implications for managers.

Discussion: How relevant are any of these inferential approaches to your work domain? In what way(s) can they be used?

Predictive Decision Making - Using Models to Build Relationships

- "Statistical models exploit statistical relationships between measures to prepare forecasts and make predictions".
- The Value of Statistical Modelling
- Modelling Approaches
- (Regression Models, Time Series Analysis; Autoregressive Models)

Exercise and Discussion 4:

Case-based exercises will be used for each Predictive Decision Modelling scenario. The statistical findings will be generated by Excel and NCSS and emphasis will be placed on their valid interpretation and implications for managers.

Discussion: How relevant are any of these predictive modeling approaches to your work domain? In what way(s) can they be used?

Data Mining - A brief Overview

Potentially valuable knowledge for strategic gain is imbedded in organizational databases. Data Mining can be used to "mine" these large (terabyte-size) databases to extract value for competitive advantage. An explanation of how data mining techniques work and what kinds of business problems each one can solve is provided.

- An Overview of Data Mining
    - Definition; the Data Mining process; data preparation)
- Data Mining Functions
- (Prediction / Estimation / Classification / Descriptive)
- Purpose; Methodology; Interpretation; Likely Applications)
- (Cluster Analysis; Discriminant Analysis)
- (Logistic Regression; Classification Trees; Neural Networks)
- (Market Basket Analysis; Customer Relationship Management (CRM)
- Overview of Selected Data Mining Techniques (analysis by NCSS)
- Descriptive Modeling (Segmentation Strategies)
- Predictive Modeling (Classification; Estimation; Prediction Strategies)
- Typical Applications

Exercise and Discussion 5:

Case-based exercises will be used for each Data Mining technique. Emphasis will be placed on their valid interpretation and implications for managers.

Discussion: Is there potential for the use of Data Mining in your work domain? In what way(s) can it be used?

Decision Analysis for Management Judgement

Using Decision Models to structure / evaluate complex decision scenarios

- Multi-Criteria Decision Modelling (Illustrations of Two Practical Tools)
    - SMART (Simple Multi Attribute Rating Technique)
    - AHP (Analytical Hierarchy Process)

Workshop Review Session

- Presentation:
    - Review further analyses and insights gained on delegates' databases
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Discussion

- "How to integrate statistical thinking into the work domain"
- "Focus on an action plan for each delegate to take back to his/her organization

Evaluation and Closure