

602 Data Analysis for Managers

Introduction

602 DATA ANALYSIS FOR MANAGERS provides an introduction to data analysis for managers and business decision-makers. A range of statistical tools for organising, presenting, analysing and interpreting business data is presented. The focus of the subject is on the various methods and analytical tools available to business executives operating in a global business environment. The objective is for students to understand the essence of modern data analysis, with an emphasis on collaborative problem-solving through exploration of actual business problems and data.

Software

Microsoft Excel 97 or higher. The textbook includes a CD-ROM containing Excel add-ins and Excel files that will be used throughout the subject. The Excel files on the CD-ROM include example, problem and case study files. The Excel add-ins contained on the CD-ROM include

- StatPro Statistical add-in
- DecisionTools™ add-in from Palisade Corporation

Who should attend

- Managers wishing to improve their quantitative and analytical skills
- Executives involved in information collection and data-mining
- Analysts seeking to refresh their knowledge and gain a broader perspective of statistical methods
- Decision makers who need to make sense of general spreadsheets and databases

Learning objectives

Upon completion of this subject, students should be able to

- identify and select appropriate statistical techniques for practical data analysis
- analyse and interpret the results obtained from a range of statistical techniques
- apply the input from statistical analysis to business decision-making
- present the results of data analyses and explorations to a professional audience

Delivery method

The subject is delivered online over a 12-week period, with an assigned Professor acting as mentor. The class will comprise students from different countries and industry backgrounds. Practical case studies and discussions help to stimulate learning and knowledge exchange, while an examination at the end of the subject will help students review and apply the knowledge and skills learnt.

Assessment

Case analyses (team and individual)	45%
Discussion board activities	30%
Final examination	25%

Prerequisites

None

Syllabus

Segment 1: Introduction

Students are introduced to the syllabus, the resources and communication tools available within the course.

Segment 2: Descriptive Statistics

Students learn to synthesise, interpret and make accurate decisions using the available data in our information-rich business environment. Data analysis provides a comprehensive set of statistical tools to perform these tasks. The segment distinguishes between qualitative and quantitative variables, identifying variables with different measurement scales. Students apply, create and interpret visual representations of data, as well as calculate and interpret numerical descriptions of data using Microsoft Excel.

Segment 3: Probability and Uncertainty

Students learn to make effective decisions in the face of risk and uncertainty. The segment explains the basic concepts associated with probability and uncertainty, in the business context. Students apply the concepts of probability to analyse business problems where risk and uncertainty are involved. Specifically, the segment explains how probabilities can be assigned to events, using probability calculations and probability trees.

Segment 4: Probability Distributions

The segment describes the possible outcomes for a random variable and their associated probabilities. The mean or expected value and the variance are described in detail. Students learn to apply the concepts of probability distributions to analyse business problems. Specifically, students learn to identify random variables and distinguish between discrete and continuous probability distributions; calculate the expected value and variance of a discrete probability distribution; and use Excel to perform calculations for binomial and normal distributions.

Segment 5: Sampling Methods, Distributions and Estimation Procedures

Students are introduced to the various techniques of random sampling. The segment explains the concepts of sampling distribution and the central limit theorem. Students learn to develop confidence intervals for a mean or proportion, enabling the interpretation and communication of results of confidence interval calculations.

Segment 6: Hypothesis Testing

The segment covers the process of hypothesis testing based on the results of sampling experiments. Students learn to interpret and make business decisions on the basis of results obtained from hypothesis tests. Specifically, students learn to develop appropriate hypotheses associated with business decisions, while understanding the types of errors that typically occur in the process. Students also learn to identify appropriate hypothesis tests for a given business problem, using Microsoft Excel.

Segment 7: Regression Analysis

Students are introduced to simple and multiple linear regression analysis, which quantifies the relationship between independent and dependent variables. The segment describes the basic principles of simple and multiple regression. Using Microsoft Excel, students learn to build and analyse regression models. In particular, students learn how to evaluate the assumptions of the model and how to interpret and communicate the results of regression analysis.

Required textbook

Albright, S., W. Winston and C. Zappe. *Data Analysis and Decision Making with Microsoft Excel* (3rd ed). California: Thomson Learning, 2006.

Global Faculty

Subject Authors

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Subject Reviewer

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U21Global

U21Global subjects are created by acknowledged experts in their field, usually senior academics who have strong understanding of postgraduate requirements. The subject content is further reviewed by academic specialists who appraise the subject from an independent perspective, ensuring a high-quality, professional product.

602 DATA ANALYSIS FOR MANAGERS was created for U21Global by **Jayavel Sounderpandian**, Professor of Quantitative Methods at the School of Business and Technology at the University of Wisconsin-Parkside, US and **Jason Fitzsimmons**, Lecturer in Business Statistics at the Queensland University of Technology, Australia. Dr Sounderpandian has taught operations management and business statistics since 1983. He has consulted for many businesses, including non-profit organisations like the US Naval Dental Research Institute. His teaching and research have garnered him several awards for excellence. Dr Fitzsimmons, who has a PhD in Physics and an MBA from Queensland University of Technology, researches mainly on entrepreneurship and marketing of new technology and innovations.

The subject was reviewed by **Habibullah Khan**, Associate Professor at U21Global. He taught at the National University of Singapore from 1982 to 2004. Prior to that, he taught at the Jahangirnagar University, Bangladesh. His research areas include development economics and policy analysis, social and cultural economics, economies of the Association of Southeast Asian Nations (ASEAN) and newly-industrialised economies, and the economics of tourism and recreation. He has consulted widely with international organisations, including the World Bank and the ASEAN Secretariat. Dr Khan holds a PhD in Economics from the University of New South Wales, Australia and an MA from Dhaka University, Bangladesh.

Professors

Students' progress will be guided by dedicated Adjunct Professors based around the world. They provide an international perspective and impart knowledge through a wealth of experience in their field of specialisation. Our Adjunct Professors will help students make sense of the information to enable students to transform the information into knowledge and creative solutions.



Marc HUMBERT

Marc Humbert is Professor of Quantitative Methods and Information Technology at Grenoble Ecole de Management in France, where he has taught since 1984. He is also Associate Dean for eLearning and Innovation, having served as Associate Dean of Faculty from 1993 to 2001. Dr Humbert was a research engineering at the computer aided design department of Philips Centre for Information Technology. His research interests include the impact of Information Technology on Management and eLearning. He is the author of a textbook on database management and has contributed chapters to several books. Dr Humbert earned his doctorate in Computer Science from ENSIMAG, the leading French institution in the area.



Yoong Sin LEE

Yoong Sin Lee has taught at the University of Malaya, the University of Toronto, the National University of Singapore, and the Nanyang Technological University, Singapore. His teaching and research interests are in statistical methods, computing, actuarial science, financial mathematics and financial security for old age. Dr Lee's industry experience is mainly with the insurance industry in Singapore. He has also been involved in consultancy in data analysis relating to marketing and retail forecasting. Dr Lee has published extensively in the fields of statistics, actuarial science and insurance. He is a Fellow of the Casualty Actuarial Society. Dr Lee holds an MSc and a PhD in Statistics from the University of Toronto, and a BA from the University of Malaya.



Humayon DAR

Humayon Dar is Lecturer at the Department of Economics, Loughborough University, UK. The focus of his research is Islamic banking and finance and the economies of Muslim countries. He is involved in a number of projects in banking and finance, which includes serving as Director of Charity Bank, a London-based bank for extending finance to the voluntary sector in the UK and elsewhere. Dr Dar is also an in-house consultant for Deutsche Bank London. He has published extensively in academic and professional journals, and has worked on several consultancy projects. Dr Dar has a PhD in Economics from Cambridge University, UK.

AFFILIATED UNIVERSITIES

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Korea University



Lund University



McGill University



National University of Singapore



Shanghai Jiao Tong University



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