

Quantitative Methods for Management

Introduction

Business decision making involves the analysis of the information available, which is frequently presented in the form of quantitative data. In this course, we use simple techniques to illustrate how the analysis of quantitative data can help the manager in the decision making process. The examples used cover various aspects of the business activity, such as human resources management, customer relationship management and sales forecasting.

Objectives

In this course, the student is expected to get experience in business-oriented quantitative analysis and familiarity with the elementary techniques of data analysis. The course takes advantage of the technical notes, cases and assignments to present a range of situations which illustrate how the quantitative analysis contributes to describe and predict customer and worker's behaviour.

Learning Outcomes

After taking the QMM course, students will be able to:

- Summarize a dataset.
- Define statistical concepts such as correlation or goodness of fit.
- Explain what a linear regression analysis is and apply it when it is appropriate.
- Choose the variables that are more appropriate for predicting purposes.
- Test significance in a linear regression context.
- Obtain sales forecasts using various methods.
- Design a data analysis in a big data context.

Competences

The students of this course will:

- Develop their capacity to understand and execute data analysis techniques to a variety of problems.
- Develop a capacity for handling, coding, transforming and processing information.
- Be able to apply the knowledge acquired and the problem-solving abilities developed to new and unfamiliar settings.
- Acquire enough confidence in data analysis to continue studying and learning on data analysis in an autonomous way.

Content

The main topics covered by this course are:

- Simple linear regression.
- Multiple linear regression.
- Forecasting with time series data.
- Classification.
- Sentiment analysis.
- Recommendation systems.

Methodology

The sessions are based on cases which show various applications of quantitative analysis in business. Each case has a companion Excel file with the corresponding data set. The students are expected to prepare the case before the class. To help them, a set of five technical notes, covering the topics mentioned above, is made available. The notes come with examples which are similar to the cases and assignments.

The discussion of the cases in the classroom is supported by statistical analyses performed with Excel. The regression and correlation analyses involved in the discussion of the cases are performed with Excel's Analysis ToolPak.

Evaluation

The evaluation is based on

- Class participation (1/4).
- Two individual assignments (2/4).
- One team assignment (1/4).

Professor's Biography



Prof. Inés Alegre

Assistant Professor of Managerial Decision Sciences

Prof. Inés Alegre holds a Ph.D. in Management by IESE Business School and a Master's degree in Industrial Engineering by the Universitat Politècnica de Catalunya (UPC). Before joining IESE, she was assistant professor at Universitat Internacional de Catalunya (UIC) and at Universitat Politècnica de Catalunya. She has collaborated at other institutions such as Universitat Pompeu Fabra (ESCI-UPF), ISM in Vilnius or the European Venture Philanthropy Association in Brussels.

She belongs to the Decision Analysis Department where she teaches courses related to quantitative methods and decision analysis. Her research and publications are focused on the area of social entrepreneurship, social businesses and crowdfunding. She has published several book chapters and research papers in addition of presenting her research at conferences such as the Academy of Management or EGOS.