DSC2008 Business Analytics – Data and Decisions

**Lecturer**  :  Assoc Prof Quek Ser Aik (Decision Sciences)
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**Tutors**  :  Assoc Prof Quek Ser Aik
                TBA

**Session**  :  Semester I, 2012/2013

**Description**

Business decisions are often made under uncertainty. In the modern business environment, technological advances facilitate the collection of huge amounts of data which can potentially improve the decision making process. Successful businesses make use of Business Analytics and Business Intelligence, which are fundamentally based on quantitative statistical methods, to identify patterns and trends in their data which eventually lead to insightful projections and realistic predictions.

This module introduces students to the fundamental concepts of statistical inference such as confidence intervals and hypothesis testing, as well as to statistical tools useful in business analysis, such as regression analysis and time series analysis.

**Objectives**

This module is co-designed and is intended to be co-taught by the Department of Decision Sciences in the NUS Business School and the Department of Statistics and Applied Probability in the Faculty of Science to draw upon the relevant expertise from the two departments.

The module provides all BBA students a common statistical grounding for Business Analytics upon which specialization may be built depending on each student’s chosen major.

In keeping with the principles of Rigor and Relevance for Business Analytics I, students are expected to acquire the following knowledge and abilities.

**Rigor**

Building on the foundations of probability from Business Analytics – Models and Decisions, the module will cover fundamental concepts of the following business analytic tools:
1) Data summarization: pivot table;
2) Statistical inference: sampling distributions, confidence intervals and hypothesis testing;
3) Regression analysis: linear and multiple regression, regression diagnostics and model building;
4) Time series analysis: smoothing, regression-based models, ARIMA models and forecasting;
5) Clustering and marketing segmentation: K-means method.

Emphasis will be made on how, what and why certain tools are useful and, and what their ramifications would be when used in practice.

Relevance
Module content makes use of examples that are based on current events and timely business topics. Adopting the Plan/Do/Report problem-solving approach, worked examples show students how to clearly define the business decision to be made and plan which method to use, do the business analysis with data-based numerical evidence and necessary graphical displays, and finally report their findings and recommendations to the decision maker. This approach is reinforced using case study projects involving real data in which students investigate a business-related question or make a business decision. This module also makes active use of the Excel spreadsheet and common statistics packages.

Course Outline

1) Exploring and Collecting Data (Week 1)
2) Statistical Inference (Week 2-4)
3) Regression Analysis: Linear Regression (Week 5-6)
4) Multiple Regression: (Week 7)
5) Time Series Analysis (Week 8-11)
6) Basic Cluster Analysis (Week 12)

Reading List

Compulsory reading:

   Norean Sharpe, Richard de Veaux, Paul Velleman
   Perason (International Edition)

2. Reading Package [RP]

Weightage of Assessment
CA Components:
  Tutorial Assignments (2 sets)  20%
  Case Assignments (2 sets)      20%
  Class Participation            20%
  Final Examination (Open Book)   40%