IB9YC-15 Data Driven Decision Making

26/27

Department
Warwick Business School
Level
Taught Postgraduate Level
Module leader
Joshua Fullard
Credit value
15
Module duration
10 weeks
Assessment
60% coursework, 40% exam
Study location
University of Warwick main campus, Coventry

Description

Introductory description

The need and ability to gain insights from large data sets using statistical methods, optimisation techniques and predictive models is increasing – often referred to as Business Analytics. In the last 5-10 years, Behavioural Science research has also grown immensely, with many organisations looking to implement behavioural insights as part of their key strategic goals. This module combines these perspectives by considering the analytical techniques managers use today, illustrated by how they have underpinned out increasing understanding of human behaviour.

The module will explore behavioural science insights into consumer and market behaviour, leadership, negotiation, effective team management and organisational culture. The analytics perspective will cover a balance of descriptive, predictive, and prescriptive analytics, involving visualisation, forecasting, data mining techniques and optimisation. This cross-disciplinary training in business models, quantitative methods and data science prepares the manager for today's work in complex data-driven business situations.

Module web page

Module aims

The overall aim of the module is to equip students with the ability to understand the various

contentions in using data to inform managerial decisions. Both to perform basic/intermediate analytics and also become critical consumers of results to inform their practice.

Outline syllabus

This is an indicative module outline only to give an indication of the sort of topics that may be covered. Actual sessions held may differ.

Lessons 1-5 introduce the two disciplines that are brought together in the module: data sciences and behavioural sciences. Why each has become more important in business today is described and what managers need to know about each. Lessons 6-10 then introduce big data and coding with R. They offer a series of worked examples of how data science is used to underpin data-driven decision-making by managers.

Lesson 1. Introduction: how the module combines the broad field of data analytics with examples of its application in behavioural science. How the module will be assessed.

Lesson 2. Behavioural Science Primer: what you need to know about behavioural science for this module. Core concepts of behavioural science and it's rise in importance over recent years. Classic and current examples.

Lesson 3. The Evidence behind Behavioural Science: examples of the data and analysis that lies behind popular behavioural science concepts. Examples where conclusive evidence has been hard to obtain.

Lesson 4. Business Analytics Primer: why the discipline of business analytics has risen in importance over recent years. How what we want to know is complex and the data we need to analyse has become vast and diffuse. Core principles and techniques in data-driven decision-making.

Lesson 5. Understanding bias & heuristics: What people do may not be rational and can reflect the biases we all have or heuristics we use. Biases in what we expect, towards risk, in how we learn and how we expect different factors to interact.

Lesson 6: Using R for data science. Introducing data.frames as critical for data science and the elementary building blocks that make R so powerful.

Lesson 7: Machine learning for regression. Key concepts such as overfitting and splitting data into training and test datasets. Models that overfit the noise in training data make worse predictions in new, unseen test data.

Lesson 8: Machine learning for Classification. Making categorical predictions for new test cases.

Lesson 9: Unsupervised learning. Unsupervised learning is different: there is no ground truth with which to supervise learning. We have lots of variables, but no one variable is our target.

Lesson 10: Neural networks and network analytics. Understanding the basic concepts of how to get a neural network to learn and get the intuition behind backpropagation

These lessons feature multiple practical exercises, which will allow students to test and apply your growing coding skills with R.

Learning outcomes

By the end of the module, students should be able to:

- Describe the different types of data available to managers (including relational data)
- Explain the differences between heuristics and biases
- Explain the rules to handling data and appropriate sample selection.
- Distinguish between correlation and causation and demonstrate how this impacts decision making
- Critically evaluate data to inform policy/ operational/ strategic decision making

Indicative reading list

Reading lists can be found in Talis

Research element

Students will engage with a body of knowledge, forming critical opinion of suitability and applicability, and balancing different perspectives. Students will learn to be evidence-based, seeking rigour, reliability and repeatability in any analysis they undertake.

Subject specific skills

Evaluate the most appropriate solution for managing missing data/incomplete datasets

Employ a data visualisation tool/application to simplify the handling of data

Choose appropriate data presentation methods to maximise communication of results

Prepare time series analysis/ panel data analysis

Transferable skills

Written communication

Study

Study time

Type	Required
Online learning (scheduled sessions)	10 sessions of 1 hour (7%)
Other activity	20 hours (13%)
Total	150 hours

Type	Required
Private study	48 hours (32%)
Assessment	72 hours (48%)
Total	150 hours

Private study description

Private study to include preparation for lectures and own reading

Other activity description

10 x 2 hr face-to-face workshops

Costs

No further costs have been identified for this module.

Assessment

You do not need to pass all assessment components to pass the module.

Assessment group D2

	Weighting	Study time	Eligible for self-certification
Assessment component			
Individual assignment Individual assignment 2500 words	50%	36 hours	Yes (extension)
Reassessment component is the same			
Assessment component			
Class participation	10%	7 hours	No
Reassessment component is the same			

Assessment component	Weighting	Study time	Eligible for self-certification
Centrally-timetabled examination (On-campus) Written Examinations	40%	29 hours	No

- Answerbook Green (8 page)

Reassessment component is the same

Feedback on assessment

via myWBS

Past exam papers for IB9YC

Availability

Courses

This module is Core for:

- Year 1 of TIBS-N2N3 Postgraduate Taught Management