BN3373 – DATA ENVELOPMENT ANALYSIS

Module Number: BN3373

Module Title: Data Envelopment Analysis

Number of Aston Credits: 10

Total Number of ECTS Credits: 5
(European Credit Transfer)

Staff Member Responsible for the Module:

Dr Gary Simpson
Operations & Information Management Group

ABS Building, Room 270, Extension 3241
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Availability: Appointments can be made online
https://wass.aston.ac.uk/wass/pages/viewcalendar.page.php?makeapp=1&cal_id=72

or via group administrator, John Morley, ABS271, Extension 3236

Other Staff Contributing to the Module: None

Pre-Requisite(s) for the Module: BN1106 / BN1113
Business Decision Analysis

Module Learning Outcomes:

Upon successful completion of the module students will be able to:

- Describe how Data Envelopment Analysis (DEA) has been used as a method of comparative performance measurement.
- Identify the types of situations where DEA may be used.
- Formulate appropriate DEA models of performance.
- Use DEA to carry out comparative efficiency assessments.
- Interpret the information on comparative performance derived from DEA assessments.
- Write a clear business report on comparative performance analysis for a stakeholder.

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Module Content:

- Introduction to comparative performance measurement.
- Units of assessment.
- Measures of efficiency.
- Data Envelopment Analysis under constant returns to scale:
- A Graphical Overview, Input minimisation and Output maximisation
- Envelopment models and value based models.
- Allocative Efficiency
- Data Envelopment Analysis under variable returns to scale
- A Graphical Overview
- Envelopment models and value based models
- Scale Efficiency, Returns to scale and most productive scale size
- Assessing policy effectiveness and productivity change using DEA
- Incorporating Value Judgements in Data Envelopment Analysis
- Some extensions to basic DEA models.

International Dimensions:

Data Envelopment Analysis is used in the USA and Europe to evaluate and/or regulate utilities, heath care provision and education, examples will be used from these areas and other areas. Students are encouraged to used international data for their coursework.

Corporate Connections:

Case study material will be drawn from studies carried out by ABS staff for OFWAT and the DfES.

Links with Research:
Dr G Simpson is part of an active research group which uses DEA and related techniques in the assessment of efficiency. He has published in this area and is currently developing methods of using DEA for examining economies of Scope.

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Learning and Teaching Rationale and Methods

a) Method of learning – Lectures and tutorials.

The lectures are designed to introduce the topics and provide the direction for further reading. Tutorials will be designed for developing students' practical knowledge by analysing and discussing the cases studies the students have chosen for their coursework .The tutorials are held in a computer workshop to provide demonstrations of statistical and DEA software.
In both lectures and tutorials students are encouraged to participate by suggesting data sets to be examined, which provides continuous feedback on their progress. Two formative peer assessment tasks are used to guide students the first in locating suitable case studies and data; the second in graphical analysis of their data.

b) Duration

Lectures	10 hours
Tutorials	10 hours
Tutorial Preparation	10 hours
Peer Assessment tasks	6 hours
Coursework	40 hours
Background reading	24 hours
Total	**100 hours**

Ethical Approval:

This module does not require any primary research and no ethical approval will be necessary.

Assessment and Feedback Rationale and Methods

The assessment is via individual coursework (100%). Which requires students to analyse a case study and present their findings in a report. This enables the students to demonstrate their depth of their understanding, analytical skills and ability to identify the key factors in measuring performance and efficiency.

Written feedback on coursework assignments will be provided within the 6 week turnaround time specified. Students will be expected to take part in the discussions and will be given verbal feedback as the module progresses. Students are expected to take part in formative peer assessment tasks to provide further feedback on their progress.

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