MS4251: MARKETING ANALYTICS TECHNIQUES

Effective Term
Semester B 2023/24

Part I Course Overview

Course Title
Marketing Analytics Techniques

Subject Code
MS - Management Sciences

Course Number
4251

Academic Unit
Management Sciences (MS)

College/School
College of Business (CB)

Course Duration
One Semester

Credit Units
3

Level
B1, B2, B3, B4 - Bachelor's Degree

Medium of Instruction
English

Medium of Assessment
English

Prerequisites
MS3252 Regression Analysis

Precursors
MS3251 Analytics using SAS

Equivalent Courses
Nil

Exclusive Courses
MS4216 Applied Multivariate Methods, MS4225 Business Research Modelling

Part II Course Details

Abstract
This course aims to :

- Develop students' ability to use data analysis and statistical modelling techniques introduced in the course to solve real world marketing problems which are related to marketing research and survey data.

Course Intended Learning Outcomes (CILOs)

	CILOs	Weighting (if app.)	DEC-A1	DEC-A2	DEC-A3
1	Evaluate a wide range of emerging and contemporary-adopted methodologies and statistical modelling techniques to solve the marketing problems in marketing field and the difference among the techniques;	40	x	x	x
2	Critically discuss the pros and cons of various processes, methodologies in marketing analysis, and evaluate the validity of the statistical results and the limitations of the statistical techniques used to produce the results; Master the analysis tools using contemporary computer software such as SAS, IBM’s SPSS, R, Python to perform data analysis in marketing; Understand and apply a wide range of marketing analytics knowledge, and delivery the analysis and findings to non-specialists.	60	x	x	x

A1: Attitude
Develop an attitude of discovery/innovation/creativity, as demonstrated by students possessing a strong sense of curiosity, asking questions actively, challenging assumptions or engaging in inquiry together with teachers.

A2: Ability
Develop the ability/skill needed to discover/innovate/create, as demonstrated by students possessing critical thinking skills to assess ideas, acquiring research skills, synthesizing knowledge across disciplines or applying academic knowledge to real-life problems.

A3: Accomplishments
Demonstrate accomplishment of discovery/innovation/creativity through producing /constructing creative works/new artefacts, effective solutions to real-life problems or new processes.

Teaching and Learning Activities (TLAs)

	TLAs	Brief Description	CILO No.	Hours/week (if applicable)
1	Lectures	The concepts and properties of the statistical techniques and their relevance to solve marketing problems are explained. The strengths and weaknesses of the techniques, and how they can be used to tackle different marketing problems are discussed in details. Case studies and examples are used to illustrate the techniques in practice. There will also be opportunities for peer interactions in the lectures.	1, 2	
2	Computer Lab	Hands-on experience with the techniques and problem solving activities based on real world marketing data using contemporary computer software such as SAS, IBM’s SPSS, R, Python. During the laboratory sessions, the instructor can identify problems encountered by students and provide assistance. The laboratory sessions consolidate and supplement what the students learn in lectures. The students will also have opportunities to work together and help each other.	1, 2	

3	Assignments/Projects	Students work to solve marketing problems using the statistical techniques learnt in the course, which showcases their intellectual ability and technical skills. Students have to translate a general problem into statistical problems for technical analysis, select the most appropriate statistical techniques to use, test the validity of the results, and provide the interpretation.	1, 2	

Assessment Tasks / Activities (ATs)

	ATs	CILO No.	Weighting (%)	Remarks (e.g. Parameter for GenAI use)
1	Mid-term Test A mid-term test is given to assess students' professional knowledge of the concepts, the techniques and the applications they have learned in the first half of the course.	1, 2	30	
2	Assignments/Projects Students apply advanced data analysis and statistical modelling techniques to solve marketing analysis problems and provide an interpretation of the results.	1, 2	20	

Continuous Assessment (%)

50

Examination (%)

50

Examination Duration (Hours)

2

Additional Information for ATs

Examination
The examination is designed to assess students' professional knowledge of the concepts, the techniques and the applications they have learned in the whole course.

Assessment Rubrics (AR)

Assessment Task

Mid-term test

Criterion

A test is given to assess students' professional knowledge of the concepts, the techniques and the applications they have learned in the past weeks.

Excellent (A+, A, A-)

Strong evidence of original thinking; good organization, capacity to analyse and synthesize; superior grasp of subject matter; evidence of extensive knowledge base.

Good (B+, B, B-)

Evidence of grasp of subject, some evidence of critical capacity and analytic ability; reasonable understanding of issues; evidence of familiarity with literature.

Fair (C+, C, C-)

Some evidence of understanding of the subject; ability to perform basic statistical model building and data analysis for marketing research.

Marginal (D)

Adequate familiarity with the subject matter; shows marginal ability to perform basic statistical model building and data analysis for marketing research.

Failure (F)

Little evidence of familiarity with the subject matter; weakness in critical and analytic skills; limited or irrelevant use of literature.

Assessment Task

Group project

Criterion

Students work in teams to apply the methods and contemporary computer software such as SAS, IBM's SPSS, R, Python to solve the marketing analysis problems and give verbal and written presentation of the problem and the findings.

Excellent (A+, A, A-)

Strong evidence of original thinking; good organization, capacity to analyse and synthesize; superior grasp of subject matter; evidence of extensive knowledge base and familiarity with literature. Clearly and correctly states most critical points and important findings of the project. Excellent presentation skills.

Good (B+, B, B-)

Evidence of original thinking, some evidence of critical capacity and analytic ability; reasonable understanding of issues; evidence of familiarity with literature. Clearly and correctly states some critical points and important findings of the project. Good presentation skills.

Fair (C+, C, C-)

Little evidence of original thinking, little evidence of critical capacity and analytic ability; reasonable understanding of issues. Correctly states some critical points and some of the findings of the project. Average presentation skills.

Marginal (D)

Very little evidence of original thinking, critical capacity, and analytic ability but shows marginal understanding of subject matters and issues and states a few critical points and findings of the project. Below average presentation skills.

Failure (F)

Very little evidence of familiarity with the subject matter and issues; weakness in critical and analytic skills. Poor presentation skills.

Assessment Task

Examination

Criterion

The examination is designed to assess students' professional knowledge of the concepts, the techniques and the applications they have learned in the whole course.

Excellent (A+, A, A-)

Strong evidence of original thinking; good organization, capacity to analyse and synthesize; superior grasp of subject matter; evidence of extensive knowledge base.

Good (B+, B, B-)

Evidence of grasp of subject, some evidence of critical capacity and analytic ability; reasonable understanding of issues; evidence of familiarity with literature.

Fair (C+, C, C-)

Some evidence of understanding of the subject; ability to perform basic statistical model building and data analysis for marketing research.

Marginal (D)

Adequate familiarity with the subject matter to enable the student to progress without repeating the course.

Failure (F)

Little evidence of familiarity with the subject matter; weakness in critical and analytic skills; limited or irrelevant use of literature.

Part III Other Information

Keyword Syllabus

Introduction

Purpose of analytics for marketing. Characteristics of data in marketing field. Some examples of use of statistical models in marketing. Maximum likelihood estimation. Goodness of fit and test of independence. Measures of Association.

Logit Models

Review of logistic regression. Binary logit models. Multinomial logit models. Ordinal logit models. Cumulative logit models. Business applications such as market response models.

Principal Components Analysis

Basic concepts of principal components. Estimation of principal components. Determining the number of principal components. Business applications such as index construction.

Exploratory Factor Analysis

Basic concepts of exploratory factor analysis. Methods of parameter estimation. Orthogonal and oblique rotations of factors. Estimation of factor scores. Exploratory Factor analysis versus principal components analysis. Business applications such as attitude measurement.

Cluster Analysis

Distance and similarity measures. Hierarchical clustering methods. Non-hierarchical methods. Dendrogram. Business applications such as market segmentation.

Multidimensional Scaling

Proximity measures. Metric and nonmetric methods. Geometrical representation. Optimal properties and goodness of fit measures. Business applications such as product positioning.

Reading List

Compulsory Readings

	Title
1	Agresti A, An Introduction to Categorical Data Analysis, 2nd Edition, John Wiley, 2007
2	Allison P D, Logistic Regression using the SAS System, 2nd Edition, SAS Institute 2012.
3	Hair J F, Black B, Babin B, and Anderson R, Multivariate Data Analysis, 7/e, Pearson Prentice Hall, 2010.
4	Pituch K A and Stevens J P, Applied Multivariate Statistics for the Social Sciences: Analysis with SAS and IBM’s SPSS, 6/e, Routledge, 2015
5	Sarmento R and Costa V, Comparative Approaches to Using R and Python for Statistical Data Analysis, Hershey, PA: IGI Global 2017

Additional Readings

	Title
1	Johnson R A and Wichern D W, Applied Multivariate Statistical Analysis, 6/e, Prentice Hall, 2007.