

Subject Outline

Subject Name	Data Science and strategic Decision Making
Subject Code	MA5840
Study Period	SP86 2020
Study Mode	External
Campus	JCU Online
Subject Coordinator	Neil Fraser

We acknowledge the Traditional Owners of the lands and waters where our University is located and actively seek to contribute and support the JCU Reconciliation Statement, which exemplifies respect for Australian Aboriginal and Torres Strait cultures, heritage, knowledge and the valuing of justice and equity for all Australians.

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Pre-requisites

Before attending this course, you should have taken a college-level course in statistics (e.g. MA5820 Statistical Methods) that taught explanatory modelling, t-tests, ANOVA, distribution analysis, hypothesis testing, and regression techniques or have equivalent knowledge. Students should also have an understanding of the basics of computing, data management, different data types and some programming.

This subject outline has been prepared by Neil Fraser for the College of Science and Engineering, Division of DTES, James Cook University. Updated 05.10.2020.

Q1. This subject is offered across more than one campus and/or mode and/or teaching period within the one calendar year.	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
Q2. If Yes (Q1), the design of all offerings of this subject ensure the same learning outcomes and assessment types and weightings. The final grades will subject to scaling	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>

Subject Outline Peer Reviewer

Name	Ron White
Position	Associate Professor
Date Reviewed	

Staff Contact Details

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1 Subject at a glance

1.1 Student participation requirements

The JCU [Learning, Teaching and Assessment Policy](#) (4.3) indicates that, “a **3 credit point subject** will require a **130 hour work load** of study-related participation including class attendance over the duration of the study period, **irrespective of mode of delivery**”. This work load comprises **timetabled hours** and **other attendance requirements**, as well as **personal study hours**, including completion of online learning activities and assessment requirements. Note that “attendance at specified classes will be a mandatory requirement for satisfactory completion of some subjects” (Learning, Teaching and Assessment Policy, 5.10); and that additional hours may be required per week for those students in need of **English language, numeracy or other learning support**.

Key subject activities	Time	Day & Date	Room/Location
O Week	See schedule in JCU Ultra		
Weekly online subject materials & assessments Weekly Online Tutorials	Refer to JCU Timetable 2020		

For information regarding class registration, visit the [Class Registration Schedule](#).

1.2 Key dates

Key dates	Date
Census date	See 2020 Study Period and Census Dates
Last date to withdraw without academic penalty	See 2020 Study Period and Census Dates
Assessment task 1 [assessment type] [25 %]	Due [11:59 PM AEST Sunday of Week 3] Week 1 Release - Strategic Decision Scenario simulation
Assessment task 2 [assessment type] [35 %]	Due [11:59 PM AEST Sunday of Week 5] Week 3 Release Designing a Balance Scorecard
Assessment task 3 [assessment type] [5 %]	Due [Sunday Week 6 11.59pm AEST] Week 1 Release Reflective review
Assessment task 4 [assessment type] [35 %]	Due [11:59 PM AEST Wednesday of Week 7] Week 4 Release Literature Review

2 Subject details

2.1 Subject description

This subject is designed to provide an integrated knowledge for understanding and managing information resources, building basic business intelligent system, interpreting business statistics, and developing practical decision models. It will equip students with decision-making tools and illustrate their applications. Businesses typically collect large volumes of data with relative ease. However, data are often meaningless until they are analysed for trends, patterns and relationships and then become useful information. Acting on this useful information to develop solutions and support decision-making is a key business skill required by data scientists.

2.2 Subject learning outcomes

Students who successfully complete this subject will be able to:

- 2.2.1 Critically evaluate data and information as an organizational resource and identify issues in managing data/information/knowledge when faced with uncertainty ;
- 2.2.2 Identify how data is integrated as a strategy in different organisations based on strategic management theory
- 2.2.3 Review and assess different information architectures to identify where strategic data resides in organizations.
- 2.2.4 Apply graphical and numerical tools for organising, analysing, interpreting, and presenting data in a balanced scorecard
- 2.2.5 Apply analytical frameworks for organising, analysing, interpreting, and presenting data to formulate strategy and inform strategic decisions.
- 2.2.6 Run scenario-based models and frameworks for planning, decision making and control of business problems, interpret model results, and make recommendations to stakeholders
- 2.2.7 To critically examine different viewpoints and synthesize different materials around trust, leadership and communication to understand how these subjects relate to power and influence in an organisation.
- 2.2.8 Reflect on knowledge learned of theory and business practices for future learning and ongoing professional development.

These outcomes will contribute to your overall achievement of **course learning outcomes**. Your course learning outcomes can be located in the entry for your course in the electronic JCU [Course Handbook 2019](#) (see *Academic Requirements for Course Completion*).

2.3 Learning and teaching in this subject

- Week 1 introduces the strategic management process and how it links to Strategic decision-making
- Week 2 is devoted to external analysis techniques, frameworks and theory
- Week 3 is devoted to internal analysis techniques, frameworks and theory
- Week 4 Measuring Strategic Decision Outcomes
- Week 5 Improving Strategic Decision Making
- Week 6 Leadership, Trust and Communication

2.4 Student feedback on subject

As part of our commitment at JCU to improving the quality of our courses and teaching, we regularly seek feedback on your learning experiences. Student feedback informs evaluation of subject and teaching strengths and areas that may need refinement or change. Your **JCU Subject and Teaching Surveys** provide a formal and confidential method for you to provide feedback about your subjects and the staff members teaching within them. You will receive an email invitation when the survey opens. We value your feedback and ask that you provide constructive feedback about your learning experiences for each of your subjects, in accordance with responsibilities outlined in the [Student Charter](#). Refrain from providing personal feedback on topics that do not affect your learning experiences. Malicious comments about staff are deemed unacceptable by the University.

2.5 Subject resources and special requirements

This subject will use the following

Textbook [Amason, A., & Amason, A. C. \(2010\). Strategic management: from theory to practice.](#)
Chapter 1,3,4 and 8 Retrieved from JCU library

Weekly reading list

<https://rl.talis.com/3/jcu/lists/932BB682-C44B-69F4-B0BE-5B4A2B9547E6.html>

Video and case studies from Harvard Business Publishing Resources

Please Register for a student account with <https://hbsp.harvard.edu/registration>

3 Assessment details

3.1 Requirements for successful completion of subject

In order to pass this subject, you must:

- Achieve an overall percentage of 50% or more;

Assessment items and final grades will be reviewed through moderation processes (Learning, Teaching and Assessment Policy, 5.13-5.18). It is important to be aware that assessment “is always subject to final ratification and following the examination period and that no single result represents a final grade in a subject” (Learning, Teaching and Assessment Policy, 5.22.). This is designed to ensure the distribution of grades follows JCU policy.

Inherent requirements

[Inherent requirements](#) are the fundamental abilities, attributes, skills and behaviours needed to achieve the learning outcomes of a course while preserving the academic integrity of the university’s learning, assessment and accreditation processes. Students and prospective students must be able to demonstrate that they have acquired or have the ability to acquire the inherent requirements for their degree.

Reasonable adjustments may be made to assist students manage additional circumstances impacting on their studies provided these do not change the academic integrity of a degree. Reasonable adjustments do not alter the need to be able to demonstrate the inherent requirements of the course. Students who believe they will experience challenges completing their degree or course because of their disability, health condition or other reason should discuss their concerns with an Accessibility Services team member or a member of College staff, such as the Course Coordinator. In the case where it is determined that inherent requirements cannot be met with reasonable adjustments, the University staff can provide guidance regarding other study options.

3.2 Feedback on student learning

Feedback for students will be provided on some assessment items.

3.3 Assessment tasks

ASSESSMENT TASK 1: BROADBAND ANALYTICAL STUDY

Aligned subject learning outcomes	<ul style="list-style-type: none">• Identify how data is integrated as a strategy in different organisations based on strategic management theory (2.2.2)• Run scenario-based models and frameworks for planning, decision-making and control of business problems, interpret model results, and make recommendations to stakeholders (2.2.6)• To critically examine different viewpoints and synthesize different materials around trust, leadership and communication to understand how these subjects relate to power and influence in an organisation.(2.2.7)
Aligned professional standards/ competencies	Individual
Weighting	25%
Date	11:00 PM AEST Sunday of Week 3
Length	2500 words +/-10%
See Special Consideration, Supplementary, Deferred and Special Examinations Policy	

Assessment Instructions

On 21 May 2020, the ACCC released its ninth performance report for the Measuring Broadband Australia program.

https://www.accc.gov.au/system/files/MBA_Report%209_0.pdf

Average NBN download speeds by technology and plan were reported along with average hourly upload speeds – ADSL and NBN plans.

As part of a strategic performance review of [national broadband network](#) (NBN) commissioned by the current Minister of Communications a comparative statistical analysis has been requested to benchmark the NBN against other identified datasets to understand what an improved approach to benchmark reporting might be to inform three things

- strategic decision makers in the department making investment decisions to improve home broadband performance
- where technology network performance improvements could be made
- to re-build trust in the current performance reporting of NBN in the public domain

The minister is particularly interested in the UK as a benchmark given a similar NBN was built in the UK to improving home broadband performance over the same time period. The regulator in the UK (Ofcom) released a similar report to the ACCC based on a user panel approach.

https://www.ofcom.org.uk/__data/assets/pdf_file/0015/100761/UK-home-broadband-performance,-November-2016-Technical-report.pdf

Ofcom in the UK also released an interactive dashboard of their results and findings on Tableau

<https://public.tableau.com/profile/ofcom#!/vizhome/UKHomeBroadbandPerformanceReport/Story>

In this assessment you are to critically review and compare the two datasets, ask some strategic questions and see if you can provide some further insight to the minister commissioned report.

ASSESSMENT TASK 1: CRITERIA SHEET

- Section A (35%) - Discuss the differences between sampling methods, technologies reported and metrics affecting performance reported used in the two reports.
- Section B (35%) - Write a strategic question and provide an analytical summary answer using the comparative datasets from the UK and Australia. The strategic question is one that would be of interest to the minister and would form part of the commissioned report.
- Section C (30%) - Based on your analysis write a short Strategic Executive Summary of 500-750 words summarizing your findings and what potential recommendations you would make to the minister on where to invest, who to target that investment on and what changes to the performance reporting should be made.

ASSESSMENT TASK 2: BALANCE SCORECARD

Aligned subject learning outcomes	2.2.4, 2.2.5 and 2.27
Aligned professional standards/ competencies	n/a
Group or individual	Individual
Weighting	35%
Due date	11:59 PM AEST Sunday of Week 5

ASSESSMENT TASK 2: DESCRIPTION

This assessment task is to gauge how well you can apply relevant topics/concepts from the unit to a 'real-life' organisation.

Write and engagement plan and draft a design for a balanced scorecard in an organisation of your choice that includes both financial and non-financial measures based on its vision and mission. It should capture the critical value creation activities of skilled motivated organizational participants. While retaining an interest in short term financial performance it should reflect the superior long-term competitive performance of the organisation. It should be easy to read and signal to all employees the critical objectives that must be accomplished if an organisation's strategy is to succeed. Each metric needs to link back to a strategic question, requires a clear unambiguous definition and must be SMART (Week 4, Topic 4, Principle 4). The plan should include the organisation engagement to adopt the balance scorecard (e.g. the workshops, planned feedback and executive engagement over a planned timeframe).

Basic issues to be addressed MIGHT include (in no particular order):

- Brief overview of the organisation
- Does the Balance Scorecard articulate the strategic Vision and Mission?
- Does the Balance Scorecard benchmark the external environment adequately?
- Does the Balance Scorecard describe the internal environment of the organisation?
- Do the measures chosen in the balance scorecard look at the results from past efforts and also drive future performance?
- Are the measures chosen in the balance scorecard identified in a key with definitions, are they identified by external and internal sources?
- Are the measures chosen in the scorecard balanced between objective, easily quantified outcome measures and subjective, somewhat judgmental, performance drivers of the outcome measures?

ASSESSMENT TASK 2: Key Learning Objectives

- Apply graphical and numerical tools for organising, analysing, interpreting, and presenting data in a balanced scorecard (2.2.4)
- Apply analytical frameworks for organising, analysing, interpreting, and presenting data to formulate strategy and inform strategic decisions. (2.2.5)

ASSESSMENT TASK 2: CRITERIA SHEET

Criterion 1: Ability to interpret and analyse the organisation's situation with strategic questions

Criterion 2: Written engagement plan

Criterion 3: Ability to apply unit knowledge (i.e. theories, models, concepts, etc.) to analyse the specified organisation

Criterion 4: Ability to logically arrange and present the materials into a well-balanced scorecard across dimensions with a visual design that makes it easy to understand and links the long-term strategy and management of the strategy

Criterion 5: Thoroughness of research undertaken, extent of reading, collection of relevant data with acknowledgment of sources consulted, references used etc. including the bibliography and Key to terms

The assignment should include the following:

- Executive summary (one page, single-spaced)
- Brief introduction to the organisation and overview of topics or unit material applied in the assignment
- Analysis and visual presentation of balance scorecard (the bulk of the assignment)
- Conclusions/findings, together with any recommendations and lessons learned
- Appendices, (e.g. keys and definitions) not included in word count

ASSESSMENT TASK 3: PROFESSIONAL DEVELOPMENT REFLECTIONS

Aligned subject learning outcomes	2.2.8 ,2.2.3 and 2.2.1
Aligned professional standards/ competencies	Individual
Weighting	5%
Date	Sunday Week 6 11.59pm AEST
Duration	[6] hours
See Special Consideration, Supplementary, Deferred and Special Examinations Policy	

ASSESSMENT TASK 3: DESCRIPTION

Create a summary of your reflections and post it to the *Assessment 3: Professional development reflections* discussion forum including a URL to your Pebble+ page.

Only your 300-word summary will be graded.

Instructions:

Each week (in the weekly content) you will be provided with a reflection prompt. You will be asked to reflect on an aspect of the week in your e-portfolio (Pebble+) and relate it back to your own professional development. The weekly reflections, captured in your e-portfolio are not graded, but will assist you in writing the final graded summary.

In Week 6, summarise your learnings in 300 words describing your next steps for your ongoing professional development and share this summary to the *Assessment 3: Professional development reflections* discussion forum. We encourage you to also post a link to your Pebble+ page. This is optional.

ASSESSMENT TASK 3: Key Learning Objectives

Reflect on knowledge learned of theory and business practices for future learning and ongoing professional development. (2.2.8)

Assessment criteria:

Criterion 1: Depth of Reflection **(25%)**

Criterion 2: Required Components **(25%)**

Criterion 3: Structure **(25%)**

Criterion 4: Evidence and Practice **(25%)**

ASSESSMENT TASK 4: LITERATURE REVIEW

Aligned subject learning outcomes	2.2.7
Aligned professional standards/ competencies	N/A
Group or individual	Individual
Weighting	35%
Due date	11:59 PM AEST Wednesday of Week 7

ASSESSMENT TASK 4: DESCRIPTION

Data and literature reviews are used in academia to establish a critical baseline understanding of the academic research that has already been published on a particular topic. A data and literature review explores both types of sources on a given topic in order to investigate, compare and evaluate available material on the topic. It is also useful for the researcher to examine a range of other resources other than published academic research such as practitioner literature, public commentary (e.g. blogs, wikis) and publications from privately funded organisations. A thorough examination of the literature will give the researcher a balanced and deep understanding of what has already been said about a particular topic or issue.

Task: 2000 words (+ or - 10%)

Your task in this assignment is to identify and explore the literature on a current issue of strategic importance to decision makers.

Your issue for this assignment is identifying **the key literature known about:**

“Power and influence of people in strategic decision making”

Learning outcomes

Related subject learning outcome:

- To critically examine different viewpoints and synthesise different materials around trust, leadership and communications to understand how these subjects relate to power and influence in an organisation. (2.2.7)

Rationale

This assessment task provides students with opportunities to:

- demonstrate knowledge and understanding of how to complete a literature about a current issue on data science;
- conduct critical research of ideas, data, concepts, terms and principles;
- critically analyse the data and literature both from academic and practitioner, and popular commentary; and analysis of key issues related to the issue;
- relate the issues in the research of scholarly, professional and other literature;

- extrapolate from the literature to include current and future issues that will impact the work and role of data scientists in an organisation.
- to demonstrate an emergent understanding of the role of the data scientists in strategic decisionmaking;
- to identify recent developments in this issue and the importance of data science in assisting strategic decision makers.

Assessment criteria:

Criterion 1: Student identifies and relates an information trend or issue to “Power and influence of people in strategic decision making” (20%)

Criterion 2: Student investigates a range of ideas and issues from the literature. (20%)

Criterion 3: Student relates the investigation of the literature to the role of the data scientist. (20%)

Criterion 4: Student applies and integrates critical analysis. (20%)

Criterion 5: Student demonstrates quality writing skills using appropriate conventions. (20%)

4 Submission and return of assessment

4.1 Submission of assessment

- All assessments are submitted through Learn Ultra.
- A cover sheet with student name and id should be attached to the assignment
- In the case where a disruption to studies application is approved, the student may be offered an alternative assessment or may receive a mark based on the percentage mark achieved by the student in one or more other assessment tasks, at the unit convenor's discretion.

Note that the [Learning, Teaching and Assessment Policy](#) (5.22.3) outlines a uniform formula of penalties that will be imposed for submission of an assessment task after the due date. **This formula is 5% of the total possible marks for the assessment item per day including part-days, weekends and public holidays.** After 20 days, the assessment item thus would be awarded 0 marks (i.e. $5\% \times 20 = 100\%$ of total possible marks in penalties).

4.2 Return of assessment

Feedback on marked assessments will be available in the Gradebook in Learn Ultra.

It is the responsibility of students to view their marks for each within-session assessment on Learn JCU within 20 working days of posting. If there are any discrepancies, students must contact the unit convenor immediately. Failure to do so will mean that queries received after the release of final results regarding assessment marks will not be addressed.

Please see [The Learning Centre website](#) for other important student information pertaining to plagiarism and referencing, examinations advice and student support services.

5 Subject calendar

Please note, the sequence of some topics may change due to staff availability, resourcing, or due to unforeseen circumstances.

Week/Date/Module		Topics Covered	e.g. Tutorial	Readings/Preparation	Relationship to Assessment
O	Orientation		Learning by the Case Method HBP		Learning by Case Method HBP
1	Introduction to Strategy and strategic Decision Making	<p>Topic 1: Why is data important in Strategic Decision Making?</p> <p>Topic 2: Making meaning of data and information</p> <p>Topic 3: Key Characteristics of Strategic decisions</p> <p>Topic 4: The Strategy Management Process</p>	<p>Discussion Board</p> <p>Rotating flip table</p>	<p>Amason, A., & Amason, A. C. (2010). Strategic management: from theory to practice. Chapter 3</p> <p>**Reading 2**: Rumelt, R. (2011). The perils of bad strategy. McKinsey quarterly. June.</p>	
2	External Analysis	<p>Topic 1: The strategic Planning Process and information</p> <p>Topic 2: External Analysis</p>	Open Data Padlet Tutorial	<p>Amason, A., & Amason, A. C. (2010). Strategic management: from theory to practice. Chapter 4</p> <p>Chapter 16 Data Warehousing Fundamentals for IT Professionals, Second Edition,</p>	Assessment 1: Online Simulation of data-driven strategic decision-making

Week/Date/Module		Topics Covered	e.g. Tutorial	Readings/Preparation	Relationship to Assessment
		Topic 3: Frameworks for external analysis		Wiley, Paulraj Ponniah (available online). Five Competitive Forces that Shape strategy http://www.ibbusinessandmanagement.com/uploads/1/1/7/5/11758934/porters_five_forces_analysis_and_strategy.pdf	
3	Internal Analysis	Topic 1: Why do internal Analysis? Topic 2: How to do internal analysis? Topic 3: Where to find Strategic Data Topic 4: The value of Strategic internal data		Amason, A., & Amason, A. C. (2010). Strategic management: from theory to practice. Chapter 5 Collis, D. & Montgomery, C. (1995). Competing on resources: Strategy in the 1990s. Harvard business review, 73(4), pp. 118-128. Prahalad, C.K. & Hamel, G. (1990). The core competence of the corporation. Harvard business review, May-June, pp. 79-91. Assessing Your Organization's Innovation Capabilities	Case Study: Digitization of an Industrial Giant: GE Takes on Industrial Analytics

Week/Date/Module		Topics Covered	e.g. Tutorial	Readings/Preparation	Relationship to Assessment
4	Measuring Strategic Decision Outcomes	<p>Topic 1: Making Strategic Decisions</p> <p>Topic 2: Measuring Strategic Decision Outcomes</p> <p>Topic 3: The Balanced Scorecard</p> <p>Topic 4: Building a Balanced Scorecard</p>	<p>Case Study: Apple Watch (A): The Launch</p> <p>Discussion Board or padlet post</p>	<p>Amason, A., & Amason, A. C. (2010). Strategic management: from theory to practice.</p> <p>Retrieved from JCU library Chapter 3</p> <p>Kaplan, R.S., & Norton, D.P (1993). The Balanced Scorecard measures that drive performance Kaplan</p>	Assignment 2: Designing a Balance Scorecard
5	Improving Strategic Decision Making	<p>Topic 1: Judgement and Uncertainty</p> <p>Topic 2: Decision traps</p> <p>Topic 3: Enhancing Strategic Thinking</p> <p>Topic 4: How might machines enhance Strategic Decisions?</p>		<p>Amason, A., & Amason, A. C. (2010). Strategic management: from theory to practice.</p> <p>Retrieved from JCU library Chapter 8 pg. 210-212</p> <p>HBR: Hidden Traps in Decision Making</p>	Assignment 3: Reflective Review

Week/Date/Module		Topics Covered	e.g. Tutorial	Readings/Preparation	Relationship to Assessment
6	Leadership, trust and Communications	<p>Topic 1: Strategic Leadership and Decision Making</p> <p>Topic 2: Building and Measuring Trust</p> <p>Topic 4: Believability of Data</p> <p>Topic 3: Communication Skills</p>	Shackleton Case Study	<p>**Reading 1**: The trusted Advisor David H Maister Charles H Green Robert M Galford 2000, The Free Press</p> <p>Jones, S. (2014). Why 'big data' is the fourth factor of production. FT.com. Retrieved from http://elibrary.jcu.edu.au/login?url=https://search.proquest.com/docview/1264627889</p> <p>Montgomery, C. A. (2012). How strategists lead. Retrieved from https://www.mckinsey.com/business-functions/strategy-and-corporate-finance/our-insights/how-strategists-lead</p>	Assignment 4: Literature Review