COIT20253 *Business Intelligence using Big Data*
Term 1 - 2023

Profile information current as at 07/05/2024 04:02 am

General Information

Overview

Big data is a popular term used to describe the exponential growth and availability of structured and unstructured data. In this unit, you will explore big data within the context of business intelligence. In this unit, you will learn concepts of business intelligence, alignment of big data to business intelligence and how big data technologies can be used in building organisational business intelligence. You will learn how big data is changing businesses and how organisations can take advantage of big data in decision making. You will learn how organisations are integrating non-traditional unstructured data with the traditional structured enterprise data to do the business intelligence analysis. In order to understand these, you will learn big data analytical tools and technologies to help solve authentic business problems and make effective business decisions.

Details

Career Level: *Postgraduate*
Unit Level: *Level 9*
Credit Points: *6*
Student Contribution Band: *8*
Fraction of Full-Time Student Load: *0.125*

Pre-requisites or Co-requisites

Prerequisites: COIT20250 e-Business Systems, COIT20245 Introduction to Programming and COIT20247 Database Design and Development. Anti-Requisites: If you have completed unit COIT20236 then you cannot take this unit. Important note: Students enrolled in a subsequent unit who failed their pre-requisite unit, should drop the subsequent unit before the census date or within 10 working days of Fail grade notification. Students who do not drop the unit in this timeframe cannot later drop the unit without academic and financial liability. See details in the Assessment Policy and Procedure (Higher Education Coursework).

Offerings For Term 1 - 2023

- Brisbane
- Melbourne
- Online
- Rockhampton
- Sydney

Attendance Requirements

All on-campus students are expected to attend scheduled classes – in some units, these classes are identified as a mandatory (pass/fail) component and attendance is compulsory. International students, on a student visa, must maintain a full time study load and meet both attendance and academic progress requirements in each study period (satisfactory attendance for International students is defined as maintaining at least an 80% attendance record).

Website

This unit has a website, within the Moodle system, which is available two weeks before the start of term. It is important that you visit your Moodle site throughout the term. Please visit Moodle for more information.

Class and Assessment Overview

Recommended Student Time Commitment

Each 6-credit Postgraduate unit at CQUniversity requires an overall time commitment of an average of 12.5 hours of study per week, making a total of 150 hours for the unit.

Class Timetable

Regional Campuses
Bundaberg, Cairns, Emerald, Gladstone, Mackay, Rockhampton, Townsville

Metropolitan Campuses
Adelaide, Brisbane, Melbourne, Perth, Sydney

Assessment Overview

1. **Written Assessment**
Weighting: 35%
2. **Presentation**
Weighting: 25%
3. **Project (applied)**
Weighting: 40%

Assessment Grading

This is a graded unit: your overall grade will be calculated from the marks or grades for each assessment task, based on the relative weightings shown in the table above. You must obtain an overall mark for the unit of at least 50%, or an overall grade of 'pass' in order to pass the unit. If any 'pass/fail' tasks are shown in the table above they must also be completed successfully ('pass' grade). You must also meet any minimum mark requirements specified for a particular assessment task, as detailed in the 'assessment task' section (note that in some instances, the minimum mark for a task may be greater than 50%). Consult the University's Grades and Results Policy for more details of interim results and final grades.

CQUniversity Policies

All University policies are available on the CQUniversity Policy site.
You may wish to view these policies:

- Grades and Results Policy
- Assessment Policy and Procedure (Higher Education Coursework)
- Review of Grade Procedure
- Student Academic Integrity Policy and Procedure
- Monitoring Academic Progress (MAP) Policy and Procedure – Domestic Students
- Monitoring Academic Progress (MAP) Policy and Procedure – International Students
- Student Refund and Credit Balance Policy and Procedure
- Student Feedback – Compliments and Complaints Policy and Procedure
- Information and Communications Technology Acceptable Use Policy and Procedure

This list is not an exhaustive list of all University policies. The full list of University policies are available on the CQUniversity Policy site.

Previous Student Feedback

Feedback, Recommendations and Responses

Every unit is reviewed for enhancement each year. At the most recent review, the following staff and student feedback items were identified and recommendations were made.

Feedback from Student evaluation

Feedback
Students were keen to learn new tools, especially tools for data visualisation and text analysis which are growing areas in business intelligence

Recommendation
Provide additional resources on tools to support student learning and enhance their skills

Feedback from Self and teaching team evaluation

Feedback
Inadequate real-life examples of Big Data business opportunities in Industry 4.0

Recommendation
Provide more real-life examples of big data technologies to enhance students' understanding of the application of Big Data in Industry 4.0

Unit Learning Outcomes

On successful completion of this unit, you will be able to:

1. Apply concepts and principles of big data to evaluate and explain how large volume of structured and unstructured data are managed in an organisation
2. Analyse critically and reflect on how organisations are including non-traditional valuable data with the traditional enterprise data to do the business intelligence analysis
3. Critically analyse and evaluate different big data technologies used for decision making in an organisation
4. Develop big data strategy for data-centric organisations to meet client requirements
5. Apply big data architecture, tools, and technologies for decision making and problem solving in the organisational context.

Australian Computer Society (ACS) recognises the Skills Framework for the Information Age (SFIA). SFIA is in use in over 100 countries and provides a widely used and consistent definition of ICT skills. SFIA is increasingly being used when developing job descriptions and role profiles.
ACS members can use the tool MySFIA to build a skills profile at
https://www.acs.org.au/professionalrecognition/mysfia-b2c.html
This unit contributes to the following workplace skills as defined by SFIA. The SFIA code is included:

- Research(RSCH)
- Data Management (DATM)
- Emerging Technology Monitoring (EMRG)
- Data Analysis (DTAN)
- Application Support (ASUP)
- Analytics (INAN)

Alignment of Learning Outcomes, Assessment and Graduate Attributes

— N/A Level • Introductory Level • Intermediate Level • Graduate Level ◦ Professional Level ◦ Advanced Level

Alignment of Assessment Tasks to Learning Outcomes

Assessment Tasks	Learning Outcomes				
	1	2	3	4	5
1 - Written Assessment - 35%	•	•			
2 - Presentation - 25%				•	•
3 - Project (applied) - 40%			•		•

Alignment of Graduate Attributes to Learning Outcomes

Graduate Attributes	Learning Outcomes				
	1	2	3	4	5
1 - Knowledge	○	○	○	○	○
2 - Communication	○	○	○	○	○
3 - Cognitive, technical and creative skills	○	○	○	○	○
4 - Research	○	○	○	○	○
5 - Self-management				○	
6 - Ethical and Professional Responsibility	○	○	○	○	○
7 - Leadership					
8 - Aboriginal and Torres Strait Islander Cultures					

Alignment of Assessment Tasks to Graduate Attributes

Assessment Tasks	Graduate Attributes							
	1	2	3	4	5	6	7	8
1 - Written Assessment - 35%	○	○	○	○	○	○		
2 - Presentation - 25%	○	○	○	○	○	○		
3 - Project (applied) - 40%	○	○	○	○	○	○		

Textbooks and Resources

Textbooks

COIT20253

Prescribed

Big Data: Understanding How Data Powers Big Business (2013)
Edition: latest (2013)
Authors: Schmarzo, Bill
Wiley
Indianapolis , Indiana , USA
ISBN: 978-1-118-73957-0
Binding: Paperback
COIT20253

Prescribed

Business Intelligence and Analytics: Systems for Decision Support 10th Global (2015)
Edition: 10th (2015)
Authors: Turban , Sharda & Delen
Pearson
Upper Saddle River , NJ , USA
ISBN: 9781292009209
Binding: Paperback
COIT20253

Supplementary

Next Generation Databases: NoSQL, NewSQL, and Big Data (2015)
Authors: Harrison, Guy
Apress Media
New York City , New York , USA
ISBN: 978-1-4842-1330-8
Binding: Paperback
COIT20253

Supplementary

Scalable Big Data Architecture: A practitioner's guide to choosing relevant big data architecture (2016)
(2016)
Authors: Azarmi, Bahaaldine
Apress Media
New York City, , New York, , USA
ISBN: 978-1-4842-1327-8
Binding: Paperback

View textbooks at the CQUniversity Bookshop

IT Resources

You will need access to the following IT resources:

- CQUniversity Student Email
- Internet
- Unit Website (Moodle)
- Oracle VM Virtual Box
- Hadoop (requires 16 GB RAM)

Referencing Style

All submissions for this unit must use the referencing style: Harvard (author-date)
For further information, see the Assessment Tasks.

Teaching Contacts

Meena Jha Unit Coordinator
m.jha@cqu.edu.au

Schedule

Week 1 - 06 Mar 2023

Module/Topic	Chapter	Events and Submissions/Topic
1. Introduction to Big Data 2. An Overview of Business Intelligence, Analytics, and Decision Support	1. Online Resources 2. Chapter 1 from Business Intelligence and Analytics: Systems for Decision Support. Authors: R Sharda, D Delen, E Turban	

Week 2 - 13 Mar 2023

Module/Topic	Chapter	Events and Submissions/Topic
1. Big Data Business Opportunities 2. Foundation and Technologies for Decision Making	1. Chapter 1 from Big Data: Understanding How Data Powers Big Business. Author: B. Schmarzo 2. Chapter 2 from Business Intelligence and Analytics: Systems for Decision Support. Authors: R Sharda, D Delen,E Turban	

Week 3 - 20 Mar 2023

Module/Topic	Chapter	Events and Submissions/Topic
1. Big Data Technologies: Overview of Hadoop; MapReduce; scripting language 2. Information Management and Business Reporting, Visual Analytics	1. Chapter 2 from Next Generation Databases: NoSQL, NewSQL, and Big Data. Author: G. Harrison 2. Chapter 4 from Business Intelligence and Analytics: Systems for Decision Support. Authors: R Sharda, D Delen, E Turban	

Week 4 - 27 Mar 2023

Module/Topic	Chapter	Events and Submissions/Topic
1. Next Generation Databases 2. Predictive Modeling: classification versus regression; evaluating predictive models and cross validation; algorithms for predictive modelling	1. Chapter 4, 5 & 6 from Next Generation Databases: NoSQL, NewSQL, and Big Data. Author: G. Harrison 2. Chapter 6 from Business Intelligence and Analytics: Systems for Decision Support. Authors: R Sharda, D Delen, E Turban	

Week 5 - 03 Apr 2023

Module/Topic	Chapter	Events and Submissions/Topic
1. Understanding Value Creation Process 2. Business Analytics, Text Analytics, Text Mining, and Sentiment Analysis	1. Chapter 7 from Big Data: Understanding How Data Powers Big Business. Author: B. Schmarzo 2. Chapter 7 from Business Intelligence and Analytics: Systems for Decision Support. Authors: R Sharda, D Delen, E Turban	

Vacation Week - 10 Apr 2023

Module/Topic	Chapter	Events and Submissions/Topic
Enjoy the break.		

Week 6 - 17 Apr 2023

Module/Topic	Chapter	Events and Submissions/Topic
Web Analytics, Web Mining, and Social Analytics	Chapter 8 from Business Intelligence and Analytics: Systems for Decision Support. Authors: R Sharda, D Delen, E Turban	**Assessment 1: Written Assessment** Due: Week 6 Friday (21 Apr 2023) 11:45 pm AEST

Week 7 - 24 Apr 2023

Module/Topic	Chapter	Events and Submissions/Topic
Creating the Big Data Strategy	Chapter 6 from Big Data: Understanding How Data Powers Big Business. Author: B. Schmarzo	

Week 8 - 01 May 2023

Module/Topic	Chapter	Events and Submissions/Topic
Big Data User Experience Ramification	Chapter 8 from Big Data: Understanding How Data Powers Big Business. Author: B. Schmarzo	

Week 9 - 08 May 2023

Module/Topic	Chapter	Events and Submissions/Topic
Identifying Big Data Use Cases	Chapter 9 from Big Data: Understanding How Data Powers Big Business. Author: B. Schmarzo	

Week 10 - 15 May 2023

Module/Topic	Chapter	Events and Submissions/Topic
Cloud Computing and Business Intelligence: emerging trends and future impacts of business analytics	Chapter 14 from Business Intelligence and Analytics: Systems for Decision Support. Authors: R Sharda, D Delen, E Turban	**Assessment 2: Presentation** Due: Week 10 Monday (15 May 2023) 11:45 pm AEST

Week 11 - 22 May 2023

Module/Topic	Chapter	Events and Submissions/Topic
Solution Engineering	Chapter 10 from Big Data: Understanding How Data Powers Big Business. Author: B. Schmarzo.	

Week 12 - 29 May 2023

Module/Topic	Chapter	Events and Submissions/Topic
1.Big Data Architectures 2.Big Data Reference Architectures	Online Resources Online Resources	**COIT20253 Assessment 3: Practical and Written Assessment** Due: Week 12 Friday (2 June 2023) 11:45 pm AEST

Review/Exam Week - 05 Jun 2023

Module/Topic	Chapter	Events and Submissions/Topic
No exam for this unit		

Exam Week - 12 Jun 2023

Module/Topic	Chapter	Events and Submissions/Topic

Term Specific Information

Unit Coordinator: Dr. Meena Jha
Room 2.09, Level 2; 400 Kent Street; Sydney NSW 2000
P +61 2 9324 5776 | X 55776 | E m.jha@cqu.edu.au

Assessment Tasks

1 Assessment 1: Written Assessment

Assessment Type
Written Assessment

Task Description
COIT20253 Assessment 1: Written Assessment

Due Date Week 6 Friday 11:45 PM AEST

Weighting: 35%

Assessment Task:
In this assessment, you are required to choose one of the following industries: Healthcare, Insurance, Retailing, Marketing, Finance, Human resources, Manufacturing, Telecommunications, or Travel. This assessment consists of two parts as follows:
Part A - You are required to prepare a report on how Big Data could create opportunities and help the value creation process for your chosen industry.
Part B - You need to identify at least one dataset relevant to the industry and describe what opportunities it could create by using this dataset.

In Part A, you will describe what new business insights you could gain from Big Data, how Big Data could help you to optimise your business, how you could leverage Big Data to create new revenue opportunities for your industry, and how you could use Big Data to transform your industry to introduce new services into new markets. Moreover, you will need to elaborate on how you can leverage four big data business drivers-structured, unstructured, low latency data, and predictive analytics to create value for the chosen industry. You are also required to use Porter's Value Chain Analysis model and Porter's Five Forces Analysis model to identify how the four big data business drivers could impact your business initiatives.

In Part B, among several open source and real-life datasets, you will identify at least one dataset that is relevant to the industry you have chosen. The dataset can be a collection of structured, unstructured, or semi-structured data. Using this dataset, you will first discuss how you chose this dataset among other datasets. Then, you will identify and present the metadata of the dataset. Using the chosen dataset, you will need to describe the opportunities it could create for the chosen industry.

The length of the report should be around 2500 words. You are required to do extensive reading of more than 10 articles relevant to Big Data business impacts, opportunities, and the value creation process. You need to provide in-text referencing of the chosen articles.

Assessment Due Date
Week 6 Friday (21 Apr 2023) 11:45 pm AEST
Assessment 1 is due on Friday of Week 6 at 11:45 PM AEST

Return Date to Students
Week 8 Friday (5 May 2023)
Within two weeks of submission

Weighting
35%

Assessment Criteria

You will be assessed based on your ability to analyse and reflect on how organisations are leveraging non-traditional valuable data (unstructured, real-time) with traditional enterprise data (structured) for business intelligence and value creation. The marking criteria for this assessment are as follows.

Part A (25 marks):

Executive Summary - 3 marks
Table of Contents - 1 mark
Introduction - 2 marks
Big Data Opportunities - 4 marks
Value Creation using Big Data - 4 marks
Porter's Value Chain Analysis - 4 marks
Porter's Five Forces Analysis - 3 marks
Conclusion - 2 marks
References - 2 marks

Part B (10 marks):

Dataset identification – 2 marks
Metadata of the chosen dataset – 3 marks
Business opportunities through the chosen dataset – 5 marks

Referencing Style

- Harvard (author-date)

Submission
Online

Submission Instructions
You must upload the written report to Moodle as a Microsoft Office Word file by the above due date.

Learning Outcomes Assessed

- Apply concepts and principles of big data to evaluate and explain how large volume of structured and unstructured data are managed in an organisation
- Analyse critically and reflect on how organisations are including non-traditional valuable data with the traditional enterprise data to do the business intelligence analysis

Graduate Attributes

- Knowledge
- Communication
- Cognitive, technical and creative skills
- Research
- Self-management
- Ethical and Professional Responsibility

2 Assessment 2: Presentation

Assessment Type
Presentation

Task Description
COIT20253 Assessment 2: Presentation

Due Date Week 10 Monday 11:45 PM AEST

Weighting: 25%

Assessment Task:

In this assessment, you will be presenting your big data strategy document by choosing an application of Big Data in one of the following industries: Healthcare, Insurance, Retailing, Marketing, Finance, Human resources, Manufacturing, Telecommunications, or Travel. You can choose the same industry as your Assessment-1. You will develop a strategy document for the business application of your choice using the dataset that you identified in Assessment-1 and deliver a

presentation based on this strategy document. You can choose a different dataset from what you have chosen for your assignment 1.

In the first step, you will come up with a targeted business strategy. You will then break down the business strategy into associate key business initiatives, followed by outcomes and critical success factors to support those business initiatives. Afterward, you will identify the specific tasks that need to be executed to support the targeted business initiatives. Next, you will identify the data sources required to support your business initiatives in addition to the datasets that you have chosen in Assessment-1.
Once you have completed the strategy document, you will turn the strategies into actions by identifying the Big Data analytics, business intelligence requirements. You will also specify how the data will be used to gain actionable insights that would help your business initiatives.
The process of creating the strategy document, and turning those strategies into actions, and the outcomes of the process should be clearly illustrated in your presentation.
The presentation will start from week 10 and continue till week 12. The presentation time of all students will be determined by the Unit Coordinator.

Assessment Due Date
Week 10 Monday (15 May 2023) 11:45 pm AEST
All presentation slides must be submitted on Moodle in Week 10 Monday at 11:45 PM AEST. The presentation will start from week 10 and continue till week 12.

Return Date to Students

The assessment marks will be released on the certification date.

Weighting
25%

Assessment Criteria
You will be assessed based on your ability to develop Big Data strategies for data-centric organisations to meet client requirements and to apply Big Data architecture, tools, and technologies for decision making and problem-solving. The marking criteria for this assessment are as follows.
Demonstrated Understanding of Strategy Document - 6 marks
Turning Strategies into Actions - 6 marks
Clarity, Consistency and Structure of Presentation - 3 marks
Use of Quality References - 3 marks
Visual Aids - 3 marks
Time Management - 2 marks
Quality Response to Questions - 2 marks

Referencing Style

- Harvard (author-date)

Submission
Online

Submission Instructions
You must upload the presentation file as ppt to Moodle unit site by the above due date.

Learning Outcomes Assessed

- Develop big data strategy for data-centric organisations to meet client requirements
- Apply big data architecture, tools, and technologies for decision making and problem solving in the organisational context.

Graduate Attributes

- Knowledge
- Communication
- Cognitive, technical and creative skills
- Research
- Self-management
- Ethical and Professional Responsibility

3 COIT20253 Assessment 3: Practical and Written Assessment

Assessment Type
Project (applied)

Task Description
COIT20253 Assessment 3: Practical and Written Assessment

Due Date Week 12 Friday 11:45 PM AEST

Weighting: 40%

Assessment Task:
This is an individual assessment. In this assessment, you are required to produce a report based on the Big Data strategy document you developed for Assessment-2(Presentation). You also need to analyse the datasets relevant to the business that you identified in Assessment 1 using big data tools and describe how the outputs of these tools could help you to create the Big Data Strategy.

At the beginning of the report, you will identify some Big Data use cases based on the Big Data strategies you developed for Assessment 2. In the following part, you will critically analyse different Big Data technologies, data models, processing architectures and query languages and discuss the strengths and limitations of each of them. You will also discuss different Big Data analytics and business intelligence tools that can be applied to the chosen datasets so businesses can gain actionable insights from Big Data. Moreover, you will discuss the Big Data technologies that you could use for data collection, storage, transformation, processing, and analysis to support your use cases.

You will also illustrate the Big Data technology stack and processing architecture required to support your use cases. You have to provide the rationale behind each of the choices you make. Finally, you will specify what user experiences you are going to provide to aid in decision-making. Your target audience is executive business people who have extensive business experience but limited ICT knowledge. Hence, they would like to be informed as to how new Big Data technologies that you have applied to the datasets could benefit their business. Please note that a standard report structure, including an executive summary, must be adhered to.

The main body of the report should include but not be limited to the following topics:
1. Big Data Use Cases
2. Critical Analysis of Big Data Technologies
3. Big Data Architecture Solution
The length of the report should be around 3000 words. You are required to do extensive reading of more than 10 articles relevant to the chosen Big Data use cases, technologies, architectures, and data models. You will need to provide in-text referencing of the chosen articles. Your assessment report must have a Cover page (Student name, Student Id, Unit Id, Campus, Lecturer, and Tutor name) and a Table of Content (this should be MS-Word generated).

Assessment Due Date
Week 12 Friday (2 June 2023) 11:45 pm AEST
The assessment is due on Friday week 12 11:45 AEST.

Return Date to Students

Marks of this assignment will be released on the certification date.

Weighting
40%

Assessment Criteria
You will be assessed based on your ability to critically analyse, use and evaluate different Big Data technologies and to apply Big Data architecture, tools, and technologies to support Big Data use cases. The marking criteria for this assessment are as follows.
Executive Summary - 3 marks
Table of Contents - 2 marks
Introduction - 2 marks
Big Data Use Cases - 3 marks
Critical Analysis of Big Data Technologies - 8 marks

Use of Big Data tools on the dataset - 5 marks
Critical analysis on the output - 8 marks
Big Data Architecture Solution - 3 marks
Conclusion - 3 marks
References - 3 marks

Referencing Style

- Harvard (author-date)

Submission
Online

Submission Instructions
You must upload the written report to Moodle unit site as a Microsoft Office Word file by the above due date.

Learning Outcomes Assessed

- Critically analyse and evaluate different big data technologies used for decision making in an organisation
- Apply big data architecture, tools, and technologies for decision making and problem solving in the organisational context.

Graduate Attributes

- Knowledge
- Communication
- Cognitive, technical and creative skills
- Research
- Self-management
- Ethical and Professional Responsibility

Academic Integrity Statement

As a CQUniversity student you are expected to act honestly in all aspects of your academic work.

Any assessable work undertaken or submitted for review or assessment must be your own work. Assessable work is any type of work you do to meet the assessment requirements in the unit, including draft work submitted for review and feedback and final work to be assessed.

When you use the ideas, words or data of others in your assessment, you must thoroughly and clearly acknowledge the source of this information by using the correct referencing style for your unit. Using others' work without proper acknowledgement may be considered a form of intellectual dishonesty.

Participating honestly, respectfully, responsibly, and fairly in your university study ensures the CQUniversity qualification you earn will be valued as a true indication of your individual academic achievement and will continue to receive the respect and recognition it deserves.

As a student, you are responsible for reading and following CQUniversity's policies, including the **Student Academic Integrity Policy and Procedure**. This policy sets out CQUniversity's expectations of you to act with integrity, examples of academic integrity breaches to avoid, the processes used to address alleged breaches of academic integrity, and potential penalties.

What is a breach of academic integrity?
A breach of academic integrity includes but is not limited to plagiarism, self-plagiarism, collusion, cheating, contract cheating, and academic misconduct. The Student Academic Integrity Policy and Procedure defines what these terms mean and gives examples.

Why is academic integrity important?
A breach of academic integrity may result in one or more penalties, including suspension or even expulsion from the University. It can also have negative implications for student visas and future enrolment at CQUniversity or elsewhere. Students who engage in contract cheating also risk being blackmailed by contract cheating services.

Where can I get assistance?
For academic advice and guidance, the Academic Learning Centre (ALC) can support you in becoming confident in completing assessments with integrity and of high standard.

What can you do to act with integrity?

Be Honest
If your assessment task is done by someone else, it would be dishonest of you to claim it as your own

Seek Help
If you are not sure about how to cite or reference in essays, reports etc, then seek help from your lecturer, the library or the Academic Learning Centre (ALC)

Produce Original Work
Originality comes from your ability to read widely, think critically, and apply your gained knowledge to address a question or problem