INMR89 Big Data in Business

Spring Term 2022

Coursework assignment specification

1. Introduction

This module is assessed 100% through this coursework assignment.

You must submit an **individual report** that incorporates the Big Data strategy, including the problem analysis, value proposition, technology solutions design and feasibility assessment, etc., to address the problem situation given. The report should not exceed **20 pages of A4** with a minimum font size of 10, **including** tables and diagrams/illustrations but **excluding** references and appendices.

The report is expected to be based on the team activity that is carried out throughout the term. Each team must give a **presentation** in the final week that makes a pitch for the proposed solution. While the solution development is carried out through the team activity, the report must be written individually, and it should not exhibit any evidence of collusion in writing.

The report must be submitted through Turnitin via Blackboard by the specified deadline.

2. The Problem

One of the following three options should be selected:

Option A:	*Big data analytics to combat global pandemics*
Option B:	*Creating business value from environmental data*
Option C:	*Enhancing local council services through big data analytics*

Option A: Big data analytics to combat global pandemics

The Covid-19 pandemic has significantly impacted the way we live and work, revealing both the vulnerability and resilience of our society. It has created many uncertainties and needs for adapting and evolving the way in which we carry out our everyday lives. There are concerns about the capacity of healthcare systems, impacts on education when pupils and teachers need to work from home, containing the spread of viruses, etc. At the same time, it also demonstrated how the use of data plays a significant role in setting policies and determining people's behaviour. Your proposal should develop new services, using big data analytics, to combat any aspects of living and working under a pandemic. It is not restricted to Covid-19 but could address any similar pandemics in the future.

You may find the following websites interesting or helpful:

- Office for National Statistics – Coronavirus (Covid-19) (https://www.ons.gov.uk/peoplepopulationandcommunity/healthandsocialcare/conditionsanddiseases)
- WHO – Coronavirus disease (COVID-19) pandemic (https://www.who.int/data)
- Coronavirus at Worldometer (https://www.worldometers.info/coronavirus/)

- Sheng, J., Amankwah-Amoah, J., Khan, Z. and Wang, X. (2020), COVID-19 Pandemic in the New Era of Big Data Analytics: Methodological Innovations and Future Research Directions. *British Journal of Management*. https://doi.org/10.1111/1467-8551.12441

Option B: Creating business value from environmental data

Around the world, scientists are carrying out research into the environment, collecting and analysing a large amount of data. These include environmental monitoring data, satellite data, sensor data, etc. These generate valuable scientific knowledge and insights. Such projects are often expensive and often funded by public bodies, and data collected are often not used beyond scientific research. If businesses can find value in the data, such data can be used to generate income which can further fund scientific research. You are to propose a way to create business value from such environmental data by developing innovative use of data and its analytics. Your proposal should be attractive to businesses so that they will be willing to pay for the service or to invest in the initiative. Your focus is on the environmental data but the proposed solution may involve other publicly available data, for example, by combining environmental data with other data to create a new service.

You may find the following websites interesting or helpful:

- NERC Data Catalogue Service (http://data-search.nerc.ac.uk/)
- European Environment Agency (https://www.eea.europa.eu/data-and-maps)
- UK Data Service (https://ukdataservice.ac.uk/)
- Office for National Statistics (https://www.ons.gov.uk/)

Option C: Enhancing Local Council Services through big data analytics

Local councils in England provide local government services that include education, transport, planning, fire and public safety, social care, libraries, waste management, trading standards, rubbish collection, recycling, Council Tax collections, housing and planning applications. Local councils routinely collect data. Some of these are for statutory reporting requirements (i.e., required by law) and some are for operational reasons. Due to the wide range of services and activities local councils are engaged in, there is a wide variety of data that is potentially available. As such there are opportunities to enhance or innovate the services provided by local councils by making effective use of the data through analytics and data-driven decision making. Local councils are facing many challenges which include cuts in central government funding, ageing population, environmental issues, housing crisis, etc. It is anticipated that by applying big data analytics, innovative solutions and services can be developed to tackle the issues and improve the quality of life among the residents.

You may find further information on services provided by local councils below:

- Local Councils and Services (https://www.gov.uk/browse/housing-local-services/local-councils)
- Local Government Association (https://www.local.gov.uk/)
- Reading Borough Council (http://www.reading.gov.uk/)
- Wokingham Borough Council (https://www.wokingham.gov.uk/)

Relevant sources of information on issues and initiatives surrounding local councils include:

- Local Government Information Unit (https://www.lgiu.org.uk/)
- The King's Fund – health and social care (https://www.kingsfund.org.uk/)
- Nesta (https://www.nesta.org.uk/, in particular https://www.nesta.org.uk/data-visualisation-and-interactive/)

Some data sources that can potentially be useful:

- Public Health Profiles (Public Health England) (https://fingertips.phe.org.uk/)
- Nomis - official labour market statistics (https://www.nomisweb.co.uk/)
- CACI Acorn – consumer data (needs registration) (https://acorn.caci.co.uk/)

3. Your task

Your task, to be addressed in a team, is to propose an innovative solution to the problem above by making use of big data analytics and related technologies. This may not be just about using a large amount of data (volume) but other aspects of big data such as variety and velocity, as well as relevant analytics approaches. There must be clear beneficiaries of the solution proposed, such as students and businesses (depending on the problem selected and stakeholders identified). The proposed solution is expected to be made available **within the next two years** but can include expectations for its future evolution.

Your solution must include the following, which should be included in the report.

1. *Problem situation and domain analysis* – you should provide the analysis of the problem situation to be addressed to identify the scope and focus, and carry out the domain analysis, e.g., stakeholder analysis, organisational analysis, strategy analysis, etc., as appropriate.
2. *Value proposition* – you should provide the value proposition, making clear the stakeholder(s) for whom the value(s) is(are) generated by the proposed solution.
3. *Business model* – you should develop a business model that will support your proposed solution, e.g., by using the Business Model Canvas.
4. *Technical solution design* – you should provide the technical design of the proposed solution, e.g., how to collect and manage the data, what analytics will be performed, how the solution will be made available to targeted users, etc.; you should critically approach this to ensure that the proposed solution and its elements are justified.
5. *Feasibility demonstration/analysis* – you should demonstrate the technical and operational feasibility of the proposed solution; the solution **does not have to be implemented or working**, but it should demonstrate that it can be made to work with a reasonable technical competence and effort; you should also consider various systems and tools that are introduced during the course to demonstrate the feasibility through, e.g., example scenarios and mock-ups. This should also assess how the proposed solution would work in practice (operational feasibility), e.g., any issues in gathering, managing, analysing, etc., the data suggested.
6. *Professional and ethical issues* – you should assess the professional and ethical issues that need to be considered for the proposed solution.

The elements above are expected to be addressed through the team activity and should be part of the final presentation.

In addition to the above, the report should include:

7. *Critical evaluation* – you should provide a critical evaluation of the analysis and proposed solution

The report should also ensure that it is professionally structured and formatted, e.g., there should be introduction and conclusion, as well as references and appendices as appropriate. This is reflected in the assessment of the quality of report in terms of consistency, logical argumentation, coherence, flow, style and structure.

4. Marking scheme

The team presentation is not assessed but formative feedback is provided during the presentation which should be considered for the final report.

The marking scheme for the report is based on the following criteria. Refer to the Assignment Brief for the assessment rubric for each criterion.

- Problem situation and domain analysis
- Value proposition
- Business model
- Technical solution design
- Feasibility demonstration/analysis
- Professional and ethical issues
- Critical evaluation
- Quality of report