BT1101: Introduction to Business Analytics
AY 2022/23 Semester 1
Tutorial 1 Assignment: Overview to Business Analytics/Value Generation with Analytics
Deadline: Monday, 29 Aug 2022, 9am

Instructions:

- Prepare the answers for Part 1 for discussion during the tutorial session in week 3.
- Type your answers to question 2 using Microsoft Word and save your file as "T2-[matric no].docx" (e.g. T2-A12345.docx) and upload it to CANVAS.
- Answers should be succinct and clearly explained. Please cite any references used in your answers.
- Answers to Part 2 will be discussed during the tutorial session in week 4.

Part 1: High-Tech Farming in Singapore

The recent Covid-19 pandemic has shown the importance of Singapore to reduce its reliance on imports for food. The '30 by 30' (https://www.ourfoodfuture.gov.sg/30by30) goal of producing 30% of our nutritional needs locally by 2030 is one of the goals in the Singapore Green Plan 2030 (https://www.greenplan.gov.sg/). To overcome our land and resource constraints, some of our farmers have turned to technology and innovative ways to increase production. Here is a video of how Singapore farms use Artificial Intelligence (https://www.youtube.com/watch?v=qOGsz-rUx6E) (Source: CNA insider).

In this question, we will look at Red Dot Farm (http://ieatishootipost.sg/red-dot-farm/) a local vegetable farm supplying pesticide-free vegetable to Redmart.

a) Known as a smart farm, Red Dot Farm uses sensors to collect data about the condition of the farm. What data is collected from the various sensors on the farm and why is the data important for growing vegetables?

b) How could analytics be used by Red Dot farm to improve i) farm yield (i.e., how much the farm can produce) ii) vegetable production (i.e. how much the farm should produce) and distribution to consumers?

c) Besides Red Dot Farm in Singapore, other local farms like VertiVegies (https://www.vertivegies.farm/) and Sustenir (https://sustenir.com/) are also leveraging on technology and analytics to produce vegetables for the Singapore population. How do such methods of vegetable farming create value for consumers and society?

d) What are some potential challenges of applying high tech and analytics to farming in Singapore?

Part 2: Carbon Emission Data and Analytics

As the world confronts more frequent and consistent extreme weather events, businesses and governments are feeling greater pressure to respond to climate change. Businesses are tracking and reporting their carbon emissions and setting bold targets as part of their corporate sustainability reporting. This has resulted in a recent explosion of the carbon management system market valued at $10.9 billion in 2020 and projected to reach $19.8 billion in 2026.

In this tutorial, we will explore how businesses can track and use their carbon emission data, the challenges they are facing and the role technology and analytics can play in addressing the challenges and also in helping to address climate change issues in general.

Below are some articles and videos that you may find useful to better understand the problem context and to answer the tutorial assignment questions below. You may need to do further research on terminologies or concepts that you are unclear about (such as what is carbon footprint, Scope 1 or 2 or 3, etc.) or if you would like to understand the companies or context better. In your submission, do cite any references you used in your answers.

- "Why Tracking Carbon Emission is Suddenly a Billion Dollar Opportunity", CNBC, Sept 15 2021 (https://www.youtube.com/watch?v=X11xoGeX0s8)

- "What is a carbon footprint – and how to measure yours", National Geographic, June 24 2022 (https://www.nationalgeographic.com/environment/article/what-is-a-carbon-footprint-how-to-measure-yours)

- "How to Analyse the Carbon Footprint of Your Company", Planetly, April 7 2021, (https://www.planetly.com/articles/how-to-analyse-the-carbon-footprint-of-your-company)

- "Why carbon tracking and reporting is necessary to hold corporations accountable" Green Biz, Jan 7 2021 (https://www.greenbiz.com/article/why-carbon-tracking-and-reporting-necessary-hold-corporations-accountable)

- "Plan A: Helping Companies with Carbon Accounting", Green Means Business, Aug 11, 2021 (https://www.youtube.com/watch?v=gEKEscKq7n4). Plan A is the first software that enables businesses to monitor and reduce their emissions. In this interview, the CEO of Plan A explains how Plan A helps companies with their carbon accounting by collecting data, visualizing it and suggesting how companies can improve their environmental performance.

a) How do software services provided by companies like Plan A and Planetly help businesses in tracking their carbon footprint? (3 marks)

b) One of the key concerns with carbon emission data is the data quality. Briefly describe what is the data quality concern. (3 marks)

c) Describe in two or three sentences one way in which Plan A uses data analytics to address the data quality issue discussed in part (b). (1 mark)

d) Briefly describe an example of how each of the 3 types of analytics (i.e. descriptive, predictive, prescriptive) can be applied to carbon emission data to help companies in taking effective climate action. (3 marks; 1 mark for each type of analytics)