BT1101: Introduction to Business Analytics
AY 2022/23 Semester 2
Tutorial 1 Assignment: Overview to Business Analytics/Value Generation with Analytics
Submission Deadline: Friday, 3 Feb 2023, 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 and Sustenir 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: National Step Challenge & Healthy365 by Health Promotion Board

Healthy 365 is a mobile application by the Health Promotion Board (HPB) Singapore that aims to encourage users to adopt a healthier lifestyle. Through the use of gamification and rewards, users are encouraged to sign up for in-app challenges (such as the National Steps Challenge) to earn Healthpoints that could be redeemed for various rewards.

In this tutorial, we will examine the motivation for the HPB initiative, namely the National Steps Challenge (NSC) and Healthy 365, the role technology and analytics play in this initiative, the values generated by this initiative and any challenges that may be faced.

Below are two research articles that have been published on the results of the National Step Challenge. If you do not understand the statistical analyses and results sections, you may skip them for time being and focus instead on the motivation, implementation and results of the initiative to better understand the problem context and to answer the tutorial assignment questions below.

- Chew, L., Tavitian-Exley, I., Lim, N. *et al.* Can a multi-level intervention approach, combining

behavioural disciplines, novel technology and incentives increase physical activity at population-level?. *BMC Public Health* **21**, 120 (2021). https://doi.org/10.1186/s12889-020-10092-x.

- Yao J, Lim N, Tan J, Matthias Müller A, Martinus van Dam R, Chen C, Tan CS, Müller-Riemenschneider F. Evaluation of a Population-Wide Mobile Health Physical Activity Program in 696 907 Adults in Singapore. J Am Heart Assoc. 2022 Jun 21;11(12):e022508. doi: 10.1161/JAHA.121.022508.

You may feel free to do any further research and/or download the app or interview people who have used or are using the app to better understand the problem context.

In your tutorial submission, do cite any references you used in your answers.

a) Who are the two main key stakeholders of this HPB initiative? In three to four sentences, describe the values generated for each of the stakeholders. (4 marks)

b) What data is being collected from the participant as part of this initiative or behaviour-change intervention? (2 marks)

c) Based on the two research articles above, what form(s) of analytics (i.e. descriptive, predictive, prescriptive) has/have been used in this initiative? Briefly describe how each form of analytics has been used, citing an example from the references where possible. (2 marks)

d) What data quality issues or challenges are there in this initiative? (2 marks)