CMPG322 – Applied assignment A (2023)

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| **Submission date**: 14/08/2023 | | | | | | | |  |
| **Name & surname:** | **Bernard Swanepoel** | | | | | | |  |
| **Student number:** | **39909476** | | | | | | |  |
| **Name of your business:** | | | | | | | |  |
| **“ByteBazaar”** | | | | | | | |  |
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| Instructions | | | | | | | |  |
| 1. This document serves as a portfolio report relating to changes in your business. Enter the required information at the top of this report. | | | | | | | |  |
| 1. Open the accompanying Excel file, click on “Enable macros”; select the approximate of your business’ venue; click on “Generate data”. **Important**: click on “Save as” and save this file as an “.xlsx” file to prevent your problem values from changing when you reopen or make changes to the file. 2. Use the Excel file for your calculations and decision structures and submit it together with this report. 3. Save your report as <studentno>.docx and the Excel file as <studentno>.xlsx. submit both files. 4. When you have completed this report, go to your virtual business student page. Add a comment stating which (if any) investors you have attracted, what decision you made after about the venue, and the sales forecast for September. | | | | | | | |  |
| Complete: | | | | | | | |  |
| 1. Read the problem description in Excel. You find three people interested in investing in your business. Identify the decision criterion for each investor and use it to help them decide which investment to make. Create a **decision** **table** in Excel. | | | | | | | | (1) |
| * 1. Abraham is very **conservative** and tries to avoid risk. | | | | | | | |  |
| Decision criterion to use: | | **Minimax-regret** | | | | | | (1) |
| What decision do you suggest? | | | | | | Choose **preferred stocks** with a value of R6600. | |  |
|  | | | | | | | | (1) |
| * 1. Barbara believes there is **only an 11%** chance of success. | | | | | | | |  |
| Decision criterion to use: | | **Maximin** | | | | | | (1) |
| What decision do you suggest? | | | | | | To choose **corporate bonds** with a value of **R12100.** | |  |
|  | | | | | | | | (1) |
| * 1. Carlos suspects there is a 60% chance that the market will be **favourable** for your new business. | | | | | | | |  |
| Decision criterion to use: | | **Hurwicz** | | | | | | (1) |
| What decision do you suggest? | | | | | | Should choose **preferred stocks** with a value of  **R28600** assuming we use the **60/40** split. | |  |
|  | | | | | | | | (1) |
| * 1. Carlos is willing to pay R5000 for you to get additional information about the market before investing. Calculate the expected value of perfect information. What do you suggest? Explain your answer. | | | | | | | |  |
| The value of **EVPI** is **R3300,** it is worth it for Carlos to pay for the additional information because of additional information falling under **R5000**. | | | | | | | | (2) |
| 1. In the economic wake of the Covid-19 pandemic, the rates for your business’s venue have increased. You have to decide whether to stay at the existing venue and pay the increased rates, or to move to a venue farther away from the central business district and pay lower rates. You have the option of doing a market survey to determine if your customers will keep supporting your business at the new venue. The market survey will cost you a maximum of R2000. Create a **decision tree** in Excel (you may use QM). | | | | | | | | (6) |
| Based on the expected value of sample information, what will you do? Explain your answer. | | | | | | | |  |
| The best choice to make is to not do the **market survey** and to stay at the current venue because of it maximizing profit with the given risk for good support and bad support. | | | | | | | | (2) |
| 1. You are unsure if your decision about the venue was the right one but you’ve made it now. To calm your nerves, you want to make a forecast of the sales for next month. | | | | | | | |  |
| * 1. In Excel, create a line graph for profit and add a trend line (plot the data, right-click on the graph and add a trendline). | | | | | | | | (2) |
| Complete: Equation for the trend line? | | | **Y = 4575x +199580** | | | | | (1) |
| MSE = | | | **324244700** | | | | | (1) |
| MAD = | | | **14513.33333** | | | | | (1) |
| September forecast = | | | | **245330** | | | | (1) |
| * 1. Considering the Covid-19 pandemic, you feel that the forecast may be inaccurate because the economy is starting to recover. Use an exponential smoothing model with trend and determine whether the combination of (α = 0.2; β = 0.8) will give a better forecast than (α = 0.8; β = 0.2). Complete: | | | | | | | |  |
| MAD(α=0,8; β = 0,2) = | | | | | **18307.49827 == 18307.50** | | | (1) |
| MAD(α=0,2; β = 0,8) = | | | | | **16568.83757 == 16568.84** | | | (1) |
| Which combination produces a more accurate forecast? | | | | | | | The mad with a=0.2 and b=0.8 will produce a more accurate forecast. | (1) |
| * 1. Which model, between the trend line and exponential smoothing with trend, would you rather use? Explain your answer. | | | | | | | |  |
| I would use the trendline because of it having a value of 14513.33 which is the smallest value between the forecast options MAD values and is considered beter for this scenario because of being smaller. Being smaller means, it has the least error. | | | | | | | | (4) |
| **Total:** | | | | | | | | **[30]** |