

Business Analytics and Data Visualisation

Business Report - Semester 1, 2024

Your business report is an analysis of ASX-listed companies from various industries. The data from over 700 companies has been downloaded from S&P Capital IQ database for you and can be summarized as follows:

Column A: Company Name

- The company name and ticker symbol for that company in parentheses after the name

Column B: Exchange: Ticker

- This is the unique identification symbol for a publicly traded company stock (shares)

Column C: Exchange

- The primary listing or main stock exchange where trading of the company's shares takes place

Column D: Industry Classifications

- Industry in which the company undertakes its activities

Column E: Total Debt

- The latest annual total debt from the balance sheet of the company in AUD

Column F: Total Equity

- The latest annual total equity from the balance sheet of the company in AUD

Column G: Revenue

- The latest annual revenue from the income statement of the company in AUD

Column H: Cost of Goods Sold

- The latest annual cost of goods sold from the income statement of the company in AUD

Column I: Gross Profit

- The latest annual gross profit from the income statement of the company in AUD

Column J: Selling and Marketing Expense

- The latest annual selling and marketing expense from the income statement of the company in AUD

Column K: Net Income

- The latest annual net income from the income statement of the company in AUD

REQUIRED

You need to address the following questions as part of your **written report** to the ASIC Board of Directors.

1. Is there a significant difference in the average total debt between two of the industries? For the purpose of this question you can select the sample of companies in the dataset from two separate industries to compare (please choose two industries with $n > 50$).
2. Disregarding companies that have zero net income, do companies from all industries with higher than average net income also have lower than average total debt? For this question remove companies with zero net income before analyzing the data.
3. Is there a significant difference in the revenue amongst the healthcare, energy and materials industries companies.

SUBMISSION AND LATE SUBMISSION

Your business report is due on the date and time identified in the Unit Outline

- There are two components of your business report that need to be submitted: written report and Excel working file. You should use the following naming convention:
"YourStudentID_LastName_Data_Excel.docx"
- The written report must be submitted at the Turnitin Assignment submission point. This allows checking to prevent plagiarism. Further information about Turnitin can be found on the university website:

[Link to Student information about Turnitin](#)

There is no assignment coversheet for the written report. You should put **your name**, **student ID** and **email address** in the header of the written report. Please convert your written report to a PDF before you submit to the Turnitin link on Blackboard. You should use the following naming convention: "**"YourStudentID_LastName_Report.pdf"**

- The location of Blackboard submission points for the written report is "Assessments>

Assessments 2: Business Report [40%]"

- Penalty for Late Submission: Please note the penalties that apply to late submission are explained in your Unit Outline for this unit. Make a special note that penalties like 5% or 10% apply to the total marks for the assessment. For example, a 5% penalty for submitting up to 24 hours late means losing 5% of 40 marks, or 2 marks. A 10% penalty per day after that means losing another 4 marks per day in this case. The penalty is not measured from your final score.

FUTHER INSTRUCTIONS

- The report covers hypothesis tests from Module 5 to Module 8. However, Module 4 which contains data collection and sampling, should be also discussed in your report.
- The report should have the following structure: ***Introduction, Statistical Analyses*** (where you perform hypothesis tests for each of the four questions) and ***Conclusions*** (where you summarize the findings and discuss the limitations).
- Your report should also include technique identification and any underlying assumptions required (with checking for the required assumptions).
 - Why do you use a particular technique? Consider the types of data – quantitative, qualitative or ranked? How many samples? Are these samples independent?
 - What are the underlying assumptions? Have you checked the assumptions?
 - Checking for normal distribution will be done by observing the histogram and discuss its shape.
 - If the histogram does not show normal distribution for the sample, you keep doing the test with the underlying assumptions, but need to discuss this as one of your limitations in the overall conclusion.
- The parameter of interests and populations must be clearly defined.
- Checking normal distributions by observing histograms. Histograms are obtained from Excel. Excel automatically produce the histogram with gap (default at 150%). You need to reduce the gap to 0% to improve the appearance of the histogram (right click to the histogram, then choose *Format Data Series*, then reduce the *Gap Width* to 0%). Students can see the following video recording for creating a histogram in Excel

[Link to recording of histogram methods](#)

- For each of the tests, you need to state your hypothesis (Hint: The problem re-worded as a Null and Alternate Hypothesis), perform at 3 significance levels (1%, 5% and 10%), and state the decision to reject or accept the null hypothesis at each of the three significance levels.
- This is a **computing** assignment. You are expected to use Excel to perform relevant tests (t-test or F-test). Descriptive statistics can also be obtained from Excel.
 - In the report, you need to describe the procedure of obtaining relevant tests.
 - The results obtained from Excel are presented in the report. The tables must be clear to read. Each must be performed for three levels of statistical significance (1%, 5% and 10%). Please condense all the results from testing the three significance levels into one table only.
 - For *t*-tests, Excel reports the results for one-tailed **and** two-tailed tests. You need to report only the critical value of one-tailed test **or** two-tailed test, but not both.
 - The following tests are not embedded in Excel: testing for the difference between two proportions, and chi-square test.
 - You can use Excel for calculations based on textbook formulae, then find critical values from Appendix A of the textbook.
- The report (including tables, calculations and histograms) must **not exceed 3,000 words and text must be formatted, with: 1) 1.5 line spacing; 2) Arial font; 3) 12 pitch; and, 4) 2cm left/right/header/footer margins**. It is a requirement to use these text and page formatting settings. Any work that exceeds the 3,000 word limit will not be marked, and for this purpose counting starts with the first word on page 1 and includes all work in the report, including tables and references.
- The following marking criteria will be applied for each of your answers to the three questions in the “Required” section above:
 - Technique identification: why should you use a certain technique?
 - Define the populations and parameters of interest
 - Checking the conditions of the chosen technique: If a certain condition is not met, you keep doing the test as usual but need to discuss the limitation in the **Conclusions**
 - Following the steps for a hypothesis testing situation will be required to answer the three questions above, for example:
 - Describe the procedure to obtain the relevant tests

- Present Excel results in table
- Clearly mention the test statistic, rejection region
- Decision to reject or accept the null hypothesis must be referred to all 3 significance levels, that is, 1%, 5% and 10%.

Mark Allocation:

Please refer to the marking rubric available later in semester for how the 40 marks is allocated for your Business Report. In advance, we can advise that you will have 10 marks awarded for formatting and presentation, with 10 marks per question for correctly analyzing and answering the three questions (3x10 marks). This gives a total of 40.

END OF BUSINESS REPORT GUIDE