**BSB123 Data Analysis**

**Research Report Assessment**

**Semester 1, 2022**

**Due Date: 11:59 Sunday 5th June**

The data for the Assignment can be found in the file **Research Report Universal Exports.xlsx** on Blackboard

**The Problem**

Universal Exports is an import / export company that employs thousands of people Australia wide. Management recently hired an external research firm, Real Consulting, to look in to a range of human resource issues including employee performance, hiring practice, remuneration and satisfaction.

Real Consulting randomly selected 150 employees across divisions. As part of the process the employees were asked to carry out a series of three tests based around (a) firm procedures, (b) general knowledge and (c) a general intelligence test. All employees were then awarded a score out of 225 with each component being out of 75. To measure satisfaction, all employees were also asked about their desire to stay or if they were actively looking elsewhere (Intention to Leave). To ensure a degree of consistency across the sample all employees selected held at least a Bachelors Degree.

Information on the 150 employees is given in the file **Research Report Universal Exports.xlsx**. The table below provides an example (it is not the full data set) of the results for the first 10 employees along with other data collected.



Variables included are:

* Income – Employees annual income ($000)
* GPA – GPA standardised to a result out of 4.0 to account for different grading systems.
* Part A – Score on the Firm Procedures component of the test (Mark out of 75)
* Part C – Score on the General Intelligence test (Mark out of 75)
* Test Total Result – sum of the three parts (Mark out of 225)
* Age – Employee age in years
* Years Employed – Years employed at company
* Leaving Intention – Employees were asked if they were actively seeking alternative employment
* Higher Degree – (1 for Masters or Above, 0 for Bachelors only)
* Gender – (1 for Male and 0 for Female)
* Work Division (Operations, Admin, Marketing, Finance, Senior)

As an employee of Real Consulting you have been asked to conduct and initial analysis of the data and provide a report to Universal Exports on the a range of questions covering employee performance, remuneration (income) and satisfaction.

**Incomes**

The first question of interest is how employees are being paid and whether or not that reflects the correct attributes of the employees. In particular there is substantial information available that female employees tend to be paid less than their male counterparts.

1. Using descriptive statistics and appropriate graphical methods compare income levels of male and female employees. Use the full range of descriptive statistics to tell highlight the relative income levels and distribution and point out any interesting or unusual features.

(7 Marks)

1. Conduct a test at a 5% level of significance to determine if there is any difference in income levels between male and female employees. Are the results of this test consistent with what you identified in Q1? How would the result differ if you wanted to specifically test if the average income of males was higher than that of females?

(7 Marks)

1. Conduct a regression analysis where you regress income on gender? How do the results of that regression compare to what you found in Q1 and 2?

(4 Marks)

1. Undertake a full regression analysis to determine which factors affect income. In doing so make sure you:
* Adjust your data where necessary to convert qualitative variables to dummy variables. If you are unsure how to do this for the Divisions variable ask your tutor.
* Conduct a correlation analysis to determine which variables to include in the first instance
* Run regression on all variables you have identified
* Conduct all tests necessary to identify the strength and validity of the model
* Identify any changes to the variables to be included (e.g. should any be removed)
* Run the final model, testing it fully and interpreting all results

(17 Marks)

**Satisfaction**

1. Real consulting has indicated there may be an issue with employee satisfaction if more than 10% of employees are considering leaving. Conduct a test at the 1% level of significace to determine if more than 10% (0.1) of all employees have expressed an intention to leave.

(5 Marks)

1. Construct a contingency table comparing leaving intention with work division. Does this data indicate there may be problems with any division in particular – i.e. is leaving intention independent of work division? Which division(s) appear to be most at risk.

(5 Marks)

**Work Performance**

1. Construct a confidence interval for the average score on Test A for Males and a separate confidence interval for the average performance of females. Compare the two intervals and indicate what this means for whether or not there is any difference in performance between the two.

(5 Marks)

1. Consider the two variables GPA and Test Results A. Draw a graph and calculate an appropriate statistic to determine if there is a strong relationship between the two. What does this say about using GPA when hiring in relation to how well candidates may understand work practices at Universal Exports.

(4 Marks)

**Summary Report**

1. Write a brief report to Universal Exports describing what you have found in **non-technical** language. The report can be no longer than 200 words. Include information on any areas of concern you have found in your analysis.

(6 Marks)

**(60 Total Marks)**

In answering all questions:

* Make sure you include any assumptions that are necessary.
* Wherever possible conduct tests to back up your answers or use of procedures.
* Ensure that you include any relevant Excel results as part of your analysis.

**Submission Instructions**

* You should submit your response to as a **single pdf document** saved in the format: *Studentname\_BSB123report.pdf*.
* Submit your Excel file with the document saved as *Studentname\_BSB123report.xlsx*. This file will not be looked at unless clarification is needed on information provided in the pdf.
* Submit your assignment through the link in Blackboard
* After uploading your research report files, it is your responsibility to go back into the TurnItIn submission item to check that your report was properly uploaded. Make sure that you record all details in the submission receipt. I recommend taking a snapshot on your phone for records.
* If you encounter any technical problem during submission, you are strongly advised to email me your attempt before the due date and time.
* ***This assessment is due by 11:59pm on Sunday 5th June. Late submissions without approval will attract the usual QUT penalties.***
* For more information go to: https://qutvirtual4.qut.edu.au/group/student/study/assignments/submitting/late-assignments-and-extensions