MIS770 Foundation Skills in Data Analysis – Trimester 1, 2024
Assessment Task 2 – Analysing of Employee Survey Data – Individual

DUE DATE:	**Week 9, Wednesday, 8th May 2024, by 8:00pm (Melb time)**
PERCENTAGE OF FINAL GRADE:	**30%**
WORD COUNT:	**1200 Maximum number of words or equivalent**

Description

Purpose

This assignment task is aligned to the learning outcomes GLO1 & ULO1 and skills GLO4 & ULO2, ULO3 required in applying the ideas and concepts introduced in Modules 1 and 2. You will undertake Descriptive Statistics, Probability Theory, and Inferences to transform raw data into information and knowledge using appropriate data analysis techniques covered in these Modules. You are also required to prepare a business report that analyses a given dataset and interprets the results to demonstrate an understanding of the specific business problems posed, and that offers conclusions and recommendations that address these problems. You need to use plain language to report pertinent findings in a fair, neutral, and transparent manner, and present compelling evidence to support your findings. By completing this task, you will encounter some examples of the application of data analysis within an organisation, test your understanding of the material presented in the relevant topics, and your ability to analyse data, and effectively communicate your results in a language best suited to the target audience/business professionals.

Context/Scenario

You play the role of Jordan Wong, a data analyst at GKJ Pty Ltd, a fictitious consulting company operating in both local and international markets. In this instance, your role includes analysing a variety of employee data in order to assess the potential impact of generative Artificial Intelligence (AI) on the current job landscape. You are often required to report the outcomes of your analysis to senior managers at the company who have little or no knowledge of data analysis.

Your company has previously commissioned you, Jordan Wong (Data Analyst), to develop a survey to comprehensively assess and understand the potential impact of generative Artificial Intelligence (AI) on the existing job landscape within GKJ Pty Ltd. You have received 400 completed surveys from employees who were randomly selected from GKJ's workforce of 2500 individuals. Now, in order to obtain a better understanding of the attitudes and perceptions of employees towards the integration of generative AI in the workplace, its implications on their roles, and their preparedness, concerns or reservations they may have about the impact of generative AI on their roles, your CEO (Chris Pine), wants you to process and analyse the data set and then answer several questions. The questions you need to answer are contained in the following memorandum.

Chris Pine, the CEO of the company, has written to you regarding the employee survey. His memo to you is reproduced on the next page. Chris does not have an analytics background, so it's important that you utilise "plain, easy to understand language" in your answers. If you believe you need to include any technical terms, then you must explain these in a clear and succinct manner using layman's terms.

Memorandum

Date: 17th April 2024
To: Jordan Wong, Data Analyst, GKJ Pty Ltd.
From: Chris Pine, CEO, GKJ Pty Ltd.
Subject: Analysis of Employee Survey Data

Dear Jordan,

Can you please carry out an analysis of the recent Employee Survey data (contained in the file EmployeeSurvey2024.xlsx) and prepare a report containing answers to the following questions.

Q1. Summaries of key variables of interest

Can you please provide me with separate summaries of the following variables, just by themselves? In other words, please investigate each variable individually without reference to any other variable in the dataset.

(a) "AnnualSalary" – What was your annual salary for the previous year?
(b) "SkillPreparedness" – Do you feel adequately prepared with the skills required to work alongside generative AI technologies?

Q2. Exploring relationships between two variables

(a) I am interested in exploring potential relationship between annual salary ("AnnualSalary") and employees' work experience ("WorkExperience") in consulting firms, such as those similar to GKJ Ltd. Traditionally, it's presumed that as work experience increases, so does income. But in order to assist us with future budgeting, I seek to validate if this assumption still holds. Therefore, I'd like you to establish from your sample data if there is any relationship between these two variables.
(b) I'm also interested to establish if there is a relationship between gender ("Gender") and an employee's expectations regarding the impact of generative AI ("AIImpactExpectations") on their day-to-day tasks and responsibilities.
(c) Additionally, it would be beneficial to ascertain whether an employee's age ("Age") associates with their concerns about potential job displacement ("JobDisplacementConcerns") due to the introduction of generative AI.

Q3. Estimating employee measures

(a) To assist the organisation's future budget planning, I would like you to estimate the number of hours our employees, as a whole, work per week ("WeeklyWorkload") - the traditional 40-hour workweek may no longer apply.
(b) As you would realise, employee involvement in the decision-making process related to the integration of generative AI in the organisation has a direct effect on a company's culture and productivity. Therefore, I'm interested to know if you can estimate the proportion of all employees who rate 'Very Inclusive' for the organisation's inclusivity in considering their input on integration of generative AI decisions ("InclusivityRating").

Q4. Insights highlighted by industry report

(a) I read a report recently that indicated that the annual salary ("AnnualSalary") of an individual working for a company like ours was $75,000. I'd like to think that we were paying our staff more than this figure. Is there any evidence to suggest that this is the case?
(b) Another aspect highlighted pertains to the efficacy of organisations' initiatives aimed at preparing employees for the integration of generative AI in our industry, which are crucial for employees in adapting to the changes brought about by generative AI. The report suggests that less than 50% of employees perceive their organisations' initiatives as very effective. Can you verify this claim using our employee survey data ("InitiativeEffectiveness ")?

Q5. Future Surveys

Finally, I am concerned that the random sample of 400 of our 2,500 employees is too small to provide accurate results as this seems hardly enough data. If we ever decide to survey our employees again, I would like to be able to:

(a) calculate approximately the average annual salary ("AnnualSalary") we are paying our staff to within $2500, and

(b) estimate the proportion of employees that are very prepared ("SkillPreparedness") with the skills required to work alongside generative AI technologies to within 3%.

Therefore, how many employees would we need to include in the next survey to satisfy both of these requirements?

I look forward to your response,
Chris

Specific Requirements

Before attempting the assignment, make sure you have prepared yourself well. At a minimum, please read the relevant sections of the prescribed textbook and review the materials provided in Modules 1 and 2.

Report Requirements

- Your report must have a cover sheet containing your personal particulars and the Unit details, an executive summary, introduction and conclusion.
- Your report should be no longer than 4 pages excluding cover sheet, and you should NOT include any visualisations (i.e., Charts and Tables), or Appendices in the Report.
- The Charts/Graphics and Tables you create are only to be placed in the Data Analysis file (i.e. the Excel spreadsheet) and not reproduced in the report.
- Your report is meant to be a stand-alone document. That is, it should be able to be read without looking at the data analysis. To this end, do not refer to the visualisations as "as you can see from Figure 1 etc". You need to interpret your data analysis visualisations for Chris in the report.
- Suggested Word formatting for the report: Single-line spacing; no smaller that 10- point font; page margins approx. 25mm, and good use of white space.
- Set out the report in the same order as in the originating Memorandum from Chris, with each section (question) **clearly** marked.
- Use plain language and keep your explanations succinct. Avoid the use of technical or statistical jargon. As a guide to the meaning of "Plain Language", imagine you are explaining your findings to a person without any statistical training (e.g., someone who has not studied this unit). What type of language would you use in that case?
- Marks will be lost if you use unexplained technical terms, irrelevant material, or have poor presentation/organisation.
- All Microsoft Excel output associated with each question in the Memorandum is to be placed in the corresponding tab in the file **EmployeeSurvey2024_yourstudentid.xlsx**

Data Analysis Instructions/Guidelines

In order to prepare a reply to Chris's memorandum, you will need to examine and analyse the dataset **EmployeeSurvey2024.xlsx** thoroughly.

Chris has asked a number of questions and your data analysis output (i.e., your charts/tables/graphs) should be structured such that you answer each question on the separate tab/worksheet provided in your Excel document. There are also three extra tabs in **EmployeeSurvey2024.xlsx** called CI, HT and SS and you should use the various templates contained in these tabs in your "Confidence Interval", "Hypothesis" and "Sample Size" answers.

In order to effectively answer the questions, your data analysis output needs to be appropriate. Accordingly, you'll need to establish which of the following techniques are applicable for any given question:

- Summary Measures (e.g., descriptive statistics, Inc. outlier detection, percentiles).
- Comparative Summary Measures (i.e., descriptive statistics, outlier detection and percentiles for multiple values of a variable).
- Suitable tables (such as a frequency distribution) and charts or graphics (such as histograms, box plots, pie charts, bar/column charts, polygons) that will illustrate more clearly, other important features of a variable.
- Scatter Diagrams (used to visually establish if there is a relationship between two numeric variables).
- Cross Tabulations (sometimes called contingency tables), used to establish the relationships (dependencies) between two categorical variables (see Additional Materials under Topic 2 – Creating Cross Tabulations in Excel using Pivot Tables).
- Confidence Intervals. You can assume that a 95% confidence level is appropriate. We use confidence intervals when we have no idea about the population parameter we are investigating. Additionally, we would use confidence intervals if we were asked for an **estimate**. You should use the relevant Excel templates provided in the dataset and copy them to the applicable question tab.
- Hypothesis Tests. You can assume that a 5% level of significance is appropriate. We use hypothesis tests when we are testing a **claim**, a **theory** or a **standard**. You should use the relevant Excel templates provided in the dataset and copy them to the applicable question tab.
- Sample size calculation: You can assume that a 95% confidence level is appropriate. You should include comparisons for 90% and 99% and a recommendation for the appropriate sample size.
- To answer some questions, you may need to make certain assumptions about the data set we are using. Mention these in your data analysis, where relevant. There is no need to mention this in the report.

Note: There is an appendix at the end of each chapter of the prescribed textbook which describes the basic Excel steps associated with that topic. Chapters 1 to 9 are applicable for this assessment.

Learning Outcomes

This task allows you to demonstrate your achievement towards the Unit Learning Outcomes (ULOs) which have been aligned to the Deakin Graduate Learning Outcomes (GLOs). Deakin GLOs describe the knowledge and capabilities graduates acquire and can demonstrate on completion of their course. This assessment task is an important tool in determining your achievement of the ULOs. If you do not demonstrate achievement of the ULOs you will not be successful in this unit. You are advised to familiarise yourself with these ULOs and GLOs as they will inform you on what you are expected to demonstrate for successful completion of this unit.

The learning outcomes that are aligned to this assessment task are:

Unit Learning Outcomes (ULOs)		**Graduate Learning Outcomes (GLOs)**
ULO1	Apply the fundamentals of quantitative reasoning to solve real-world problems	**GLO1:** Discipline knowledge and capabilities: appropriate to the level of study related to a discipline or profession
ULO2	Manipulate and summarise data that accurately represents real world problems	**GLO4:** Critical thinking: evaluating information using critical and analytical thinking and judgment
ULO3	Interpret and appraise statistical output to assist in real-world decision making	

Submission

You must submit your assignment in the Assignment Dropbox in the unit CloudDeakin site on or before the due date. Email submissions **will not** be accepted. Your completed assignment should be submitted in two separate files:

- Report (Part A): A word document of no more than 4 pages (excluding title/cover page) that must **not** to contain any charts/tables/graphs. (Note: **Do not** submit a pdf document in lieu.). Please name your word document **EmployeeSurvey2024*_yourstudentid*.docx**
- Data Analysis (Part B): An Excel document containing separate tabs/worksheets with charts/tables/graphs for each question. Please note that all interpretations should be presented in your "Report" and the Excel document should only contain your intermediate analysis and final output. Please name your Excel document **EmployeeSurvey2024*_yourstudentid*.xlsx**

Submitting a hard copy of this assignment is not required. You must keep a backup copy of every assignment you submit until the marked assignment has been returned to you. In the unlikely event that one of your assignments is misplaced you will need to submit your backup copy.

Any work you submit may be checked by electronic or other means for the purposes of detecting collusion and/or plagiarism and for authenticating work.

When you submit an assignment through your CloudDeakin unit site, you will receive an email to your Deakin email address confirming that it has been submitted. You should check that you can see your assignment in the Submissions view of the Assignment Dropbox folder after upload and check for, and keep, the email receipt for the submission.

Marking and feedback

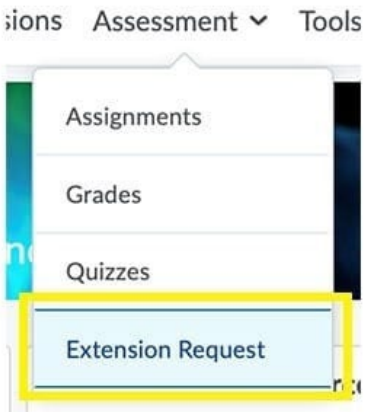
The marking rubric indicates the assessment criteria for this task. It is available in the CloudDeakin unit site in the Assessment folder, under Assessment Resources. Criteria act as a boundary around the task

and help specify what assessors are looking for in your submission. The criteria are drawn from the ULOs and align with the GLOs. You should familiarise yourself with the assessment criteria before completing and submitting this task.

Students who submit their work by the due date will receive their marks and feedback on CloudDeakin 15 working days after the submission date.

Extensions

Extensions can only be granted for exceptional and/or unavoidable circumstances outside of your control. Requests for extensions must be made by 12 noon on the submission date using the online Extension Request form under the Assessment tab on the unit CloudDeakin site. All requests for extensions should be supported by appropriate evidence (e.g., a medical certificate in the case of ill health).



Applications for extensions after 12 noon on the submission date require University level special consideration and these applications must be submitted via StudentConnect in your DeakinSync site.

Late submission penalties

If you submit an assessment task after the due date without an approved extension or special consideration, 5% will be deducted from the available marks for each day after the due date up to seven days*. Work submitted more than seven days after the due date will not be marked and will receive 0% for the task. The Unit Chair may refuse to accept a late submission where it is unreasonable or impracticable to assess the task after the due date.
Note: * 'Day' means calendar day for electronic submissions and working day for paper submissions.
An example of how the calculation of the late penalty based on an assignment being due on a Wednesday at 8:00pm is as follows:

- 1 day late: submitted after Wednesday 11:59pm and before Thursday 11:59pm– 5% penalty.
- 2 days late: submitted after Thursday 11:59pm and before Friday 11:59pm – 10% penalty.
- 3 days late: submitted after Friday 11:59pm and before Saturday 11:59pm – 15% penalty.
- 4 days late: submitted after Saturday 11:59pm and before Sunday 11:59pm – 20% penalty.
- 5 days late: submitted after Sunday 11:59pm and before Monday 11:59pm – 25% penalty.
- 6 days late: submitted after Monday 11:59pm and before Tuesday 11:59pm – 30% penalty.

- 7 days late: submitted after Tuesday 11:59pm and before Wednesday 11:59pm – 35% penalty.

The Dropbox closes the Wednesday after 11:59pm AEST time.

Support

The Division of Student Life provides a range of **Study Support** resources and services, available throughout the academic year, including **Writing Mentor** and **Maths Mentor** online drop ins and the SmartThinking 24 hour writing feedback service at **this link**. If you would prefer some more in depth and tailored support, **make an appointment online with a Language and Learning Adviser**.

Referencing and Academic Integrity

Deakin takes academic integrity very seriously. It is important that you (and if a group task, your group) complete your own work in every assessment task Any material used in this assignment that is not your original work must be acknowledged as such and appropriately referenced. You can find information about referencing (and avoiding breaching academic integrity) and other study support resources at the following website: http://www.deakin.edu.au/students/study-support

Your rights and responsibilities as a student

As a student you have both rights and responsibilities. Please refer to the document ***Your rights and responsibilities as a student*** in the Unit Guide & Information section in the Content area in the CloudDeakin unit site.

Marking Rubric

	Poor	Needs Improvement	Satisfactory	Good	Very Good	Excellent
Executive summary (Marks: 10)	0 points Does not communicate any of the main findings of the analysis in an accurate or useful way, or the findings are basic. 0 – 2.9 Marks	3 points Explains some main findings of the analysis accurately and enables reader to draw a few conclusions. 3 – 4.9 Marks	5 points Explains most of the main findings of the analysis accurately and enables reader to draw some reasonable conclusions. 5 – 5.9 Marks	6 points Explains nearly all main findings of the analysis accurately and enables reader to draw mostly reasonable conclusions. 6 – 6.9 Marks	7 points Provides detailed and accurate descriptions of the most important features of the analysis along with appropriately qualified conclusions. 7 – 7.9 Marks	10 points Provides outstanding descriptions and reaches conclusions that are carefully considered and insightful. 8 – 10 Marks
Data Analysis (Marks: 40) This part relates to the various visualisations in the form of charts, tables & graphs, templates, etc. created which formed the basis of response to the question posed. Excel document	0 points Uses irrelevant or inappropriate techniques to analyse the data, or the Data Analysis and visualisation tools were used to analyse the data but in an incomplete or inaccurate manner. A very poor presentation of the analysis, or the analysis does not follow principles of good graphical display. 0 – 15.9 Marks	16 points Uses some appropriate data analysis and visualisation tools to analyse the data but there are many errors in the analysis. The presentation of the analysis needs improvement. 16 – 19.9 Marks	20 points Uses appropriate data analysis and visualisation tools to analyse the data but there are several errors in the analysis. The presentation of the analysis is satisfactory. 20 – 23.9 Marks	24 points Uses appropriate data analysis and visualisation tools to analyse the data but there are some errors in the analysis. The presentation of the analysis is of a respectable standard. 24 – 27.9 Marks	28 points Comprehensive analysis of the data using appropriate techniques, but there are some minor errors in the analysis. Uses data visualisations to understand patterns in data. The analysis is well organised and follows principles of good graphical display. 28 – 31.9 Marks	40 points Skilful and comprehensive analysis of data using many different techniques. Uses data visualisations to produce novel insights. An excellent presentation of the analysis. 32 – 40 Marks
Report (Marks: 40) This part is the written response to the questions posed. Word document	0 points Does not communicate any of the main findings of the analysis in an accurate and/or useful way, or the interpretation and communication of findings is at a basic level. The written communication is unprofessional or difficult to follow and contains numerous errors. 0 – 15.9 Marks	16 points Explains some of the main findings of the analysis accurately which only enables the reader to draw a few reasonable conclusions. The written communication is not very easy to follow and/or it contains too many errors. 16 – 19.9 Marks	20 points Explains most of the main findings of the analysis accurately and enables the reader to draw several reasonable conclusions. The written communication is clear and easy to follow but it contains minor errors. 20– 23.9 Marks	24 points Explains nearly all of the main findings of the analysis accurately and enables the reader to draw mostly reasonable conclusions. The written communication is clear and easy to follow and generally free of errors. 24 – 27.9 Marks	28 points Provides detailed and accurate descriptions of the most important features of the analysis along with appropriately qualified conclusions. The written communication is professional, easy to follow and has a good structure. 28 – 31.9 Marks	40 points Provides outstanding descriptions and conclusions that are carefully considered and insightful. The written communication is very professional, logical and easy to follow. 32 – 40 Marks
Overall Assignment Presentation (Marks: 10)	0 points No attempt has been made to follow the assignment Requirements/ Instructions/ Guidelines. Poorly presented 0 – 2.9 Marks	3 points Little attempt has been made to follow the assignment Requirements/ Instructions/ Guidelines. Unsatisfactorily presented 3 – 4.9 Marks	5 points Majority of the assignment Requirements/ Instructions/ Guidelines have been followed. Satisfactorily presented 5 – 5.9 Marks	6 points Nearly all of the assignment Requirements/ Instructions/ Guidelines have been followed. Good presentation 6 – 6.9 Marks	7 points All of the assignment Requirements/ Instructions/ Guidelines have been followed. Very good presentation 7 – 7.9 Marks	10 points All of the assignment Requirements/ Instructions/ Guidelines have been dealt with meticulously. Faultless assignment presentation 8 – 10 Marks