

Business Intelligence - EBUS3030

2023 Assignment 2

Assignment Outcomes

This assignment requires multiple outputs to be created to exhibit your understanding of business intelligence/data analysis through an example of 'real world' questions, comparable to what you may be asked of you as you become an IT professional.

Key outcomes to be delivered are Data Modelling/ETL to get the data in a usable format, Output of your analysis, Report summarizing your findings and a presentation to the class of your work. The presentation is expected to concentrate more on your findings/recommendations as if it were a situation where you are presenting the response to the CEO. Remember that the statistics and answers you obtain must provide information and they will be used as a basis for your business intelligence suggestions and recommendations to the CEO and the Board of BIA Incorporated.

Assignment Question

The CEO of 'BitsAndBobs' Australia, Bill Smotherington, has been speaking to the Corporate Sales Executive and had heard about some recent work you had completed for Jenny Landers at the Newcastle branch. He and thought you might be able to assist them with some problems they have.

"I've heard that you helped Jenny recently with understanding more about the operations at our Newcastle branch. I like the report indicating the huge amount of money wasted when providing discount to operations. I realize that the 12.5% does not apply to all transactions, but it is still a huge amount wasted for no apparent benefit. I was also impressed with your ideas of promoting specials of lesser-sold items, potentially reducing stock of those items that we had to hold on shelf. I do like the ideas of holding a monthly "best salesperson - \$'s earned, total transactions made, and most goods sold" at each of our branches – we could put up their respective photos each month at the local branches, and perhaps give a prize at the end of the year for each of the 3 categories also..

Normally we would apply such changes at one of our branches to see the effect it had on sales, and then take appropriate action with the rest of our branches. However, as I am a risk-taker to be a profit-maker, I think in light of your earlier report to Jenny, I will take more drastic action. I am thinking about cutting the discount out entirely in all stores and putting in a marketing promotion that accrues "points" for our registered customers, with one point for every dollar spent at our stores. We could then email each registered customer each month with their point total, and they can use this to buy special items. I would claim this entirely as my own scathingly brilliant idea, however I seem to recollect large supermarkets doing something similar, but different.

I would now like your help to get a handle on the whole business in Australia. As you are aware, the Newcastle office is just 1 of 10 sites we have across Australia. Unfortunately, sales in some items have dropped across the country in recent years and we are currently running at a loss.

We need to consider consolidating our company offices in Australia. We need to reduce costs for the longevity of the company as a whole. I need you to get some numbers together around the performance of our 10 offices, so that I can factor this information into any decision regarding which office (or offices) we might consider closing.



I would like a summary of recent numbers and some trend analysis as well please. It would be great if you could also project sales for the next 12 months for each office as well. It would be helpful if you could indicate the 3 most popular and 3 least popular items in each of our stores, as well as the worst performing items for the company as a whole.

I would also like to see the top salespersons in all 3 categories, taking into account all branches (i.e., the 'best of the best') for the past year.

Replacing discount by a marketing points promotion is just a thought at the moment, so I would also like you to analyze the past year's data to see how much we would benefit by neglecting discount on the past year's transactions and finding out how much we would need to set aside if we gave customers 1 point for every \$1 they spent at our stores. We will say initially that a customer needs 250 points to get a \$1 credit on items in the future.

As you can imagine, this is a very sensitive topic so, as part of your response I want you to provide the justification as to which office we may close. Our decision will upset some people and I want to make sure we have all the background information on hand. If you can provide a Ranking of offices based on your analysis that would be wonderful.

.... I believe you started to bring together a data store of this information from the Newcastle branch, can you expand that and load all of the sales information for all offices and complete your analysis."

Assignment Deliverables

Using the data file provided in Excel and notes about the data (*Assignment 2 – data.xlsx*), you are required to complete the following elements as part of the assignment:

- Data Model/Data Load Process
 - Data Model, appropriate data attributes and cleaned data.
 - Provide an overview of the data model & ETL process completed to get the data ready for analysis (including identification of any anomalies found, methods of cleaning them and the overall effect of cleaning on the final business analysis)
 - Ensure you record any assumptions you have made as part of this component and your reasoning behind the assumption.
- Analysis including any predictive work undertaken and recommendations to Management:
 - In your report, provide the SQL and raw output of your base analysis for top salespersons, best performing stores, best and worst performing items, etc.
 - Provide workings of the predictive work you completed for the trending & prediction on future sales.
 - Ensure you record any assumptions you have made as part of this component and your reasoning behind the assumptions. This includes answers to any relevant questions put to management (your lecturer) during workshops.
- Business recommendations to management (with justifications) based on your analysis:
 - This can also include business initiatives that are backed up by benefits and costings.
 - Provide the business analysis and recommendations derived from your Core Analysis work, with benefits and costings of things like dropping the discount, adopting a 1 point per \$1 spent marketing strategy, possibility of closing a store, etc.
- A dashboard that allows quick comparisons between the sites to be undertaken as well as containing at least one element of 'predictive' analysis.
 - You may use either Excel and pivot tables to provide a dynamic view of the dashboard, or you can use Power BI to construct your dashboard.
 - You should present your dashboard in your presentation and, if you used Excel and pivot tables for the dashboard, display its dynamic nature.
- Executive Summary & Presentation in response to business question.
 - Provide an Executive report:
 - Your Executive report should include a short Executive brief/summary that presents a clear concise response back to the CEO question about possible downsizing of operations including evidence/justification (not to exceed 1.5 pages).
- Conduct a group presentation as if it is to be consumed in a formal boardroom meeting.
 - Your presentation is worth 15% of the assignment mark. Take note of the comments from your last presentation. Remember to present to what is relevant to your audience (Senior Management) and not technical specialists. Use graphs where appropriate and only tables for detail.
 - Use your dashboard to answer some of the business questions.
 - You should time your presentation to be between 10-15 minutes (timing will be assessed so learn to present relevant material only), leaving an additional 5-10 minutes for questions.
 - Every group member must present and share out the workload of preparing for the presentation.

Breakup of assignment Marks

Assignment Component	Percentage Allocation
Data Model/ETL	10%
Core Analysis & Prediction	30%
Executive Summary/Evidence	5%
Dashboard	20%
Business Recommendations (backed by evidence from your analysis, and any other business initiatives backed up by costings and benefits)	20%
Presentation	15%

NB: As part of your response, you should also specifically include any assumptions/external information you have made/used throughout the process as well as any quality processes/checking you have completed or limitations you discovered. The assumptions will not be included in the marking but may allow us to understand and (perhaps) moderate our interpretation of your results, even if they are not correct.

Key Documents Required & Format

Similarly to Assignment One, you are required to upload all files in a single zip file (including any presentation items for the team delivery within the lab) to the Assignment Two Canvas folder and the Word Report to TurnItIn in Week 12 – Your lecturer will post exact details of submission times and requirements on Canvas. You may submit all items electronically, but you need to hand a paper copy of the Team Cover Sheet, signed by all members of your team, at the presentation. Work will not be marked if you have not handed in a signed team sheet.

A detailed marking guide is available on Canvas.