**CC4 – Business Strategy and Analytics**

**CA 2 – Business Analytics**

This individual CA uses analytics to interpret data sets to assist in solving business problems. Using the business data provided, you will write Python code to generate analytic-based results related to four analytics problems. These Python results will be used to provide assist management in relation to specific business problems. You will also provide a description of each main analytical code (as #annotated descriptions in the Jupyter Notebook) that was used to solve the analytics problems.

This CA involves:

(1). Developing Python code to query 4 datasets to answer specific business problems;

(2.) Describing the main analytical tools/measures used in solving the 4 business problems.

(2.) Writing a report that interprets the Python findings for each of the 4 business problems.

**Deliverables:**

1. 1 word document (report) structured around the following headings*:*

* Analytics Problem 1 - Interpretation of Findings
* Analytics Problem 2 - Interpretation of Findings
* Analytics Problem 3 - Interpretation of Findings
* Analytics Problem 4 - Interpretation of Findings

1. Four Python files with the code and a description of the code/analytic measures

(Descriptions should be written as annotations in the appropriate area of the python code).

**Marking Structure**

Description of analytical measures 20%

Python Coding 40%

Interpretation of findings in relation to business problem 40%

**CA Mark: 50%**

**Due Date: Fri, 7th January, 2022 (Midnight)**

**Submission:** *Blackboard (Turnitin) -1 report document.*

**Email***: All 4 Python togther (.ipynb files) to:* [*tim.mcnichols@iadt.ie*](mailto:tim.mcnichols@iadt.ie)

Use any research materials and sources available to support the information in your report.

All materials used must be properly cited and referenced using APA style. For style details refer to: \\Sideshowbob1\lecturers\Tim McNichols\CC4\CA Referencing Information

**Analytics Problem 1:**

Amazine Ltd. needs the following business information based on their sales.

Using the data, ***amazine\_sales.csv***, answer the following:

*(displaying only relevant columns and include any visualisations/plots where possible)*

1. Clean up the data by dropping any rows with missing values.
2. List the Top 5 salespeople in Sales according to each segment.
3. Calculate the Total Profit (Sales – Cost) for each product. Show the sum of ‘Total Profit’ for each region (highest first).
4. Using groupby, display the top 3 sales for each category and subcategory.
5. Using a pivot table, show the sum and mean of ‘Sales’ in terms of Total Profit and Category and Shipped.
6. Find San Francisco phone sales of more than $40 that were sold by Patrick O'Donnell in 2018.
7. Any sales visualisation (graph) that you think would help the Amazine management to interpret their sales data better.

***Report*: Explain how the information from each task can help support sales management decisions.**

**Analytics Problem 2:**

Amazine Ltd. needs to target visitors to their website who are more likely to convert to a sale. Using the data, ***online\_purchase.csv***, which shows data of the users’ interaction with the website, answer the following:

1. Which of the website interactions are highly correlated with a user’s likelihood (propensity) to purchase?
2. Which of the website interactions are highly correlated with a user’s likelihood (propensity) to repeat purchase the item?
3. Predict how likely new customers are to purchase based on a new test model (also test the accuracy of the model).
4. Based on real-time use of your model, decide whether a prospect has a propensity to purchase for **each** column (of your model) clicked.
5. Plot any graph (*or add extra code*) that you think would help Amazine management interpret their click behaviour data.

***Report*: Discuss how each of the items above can be used to improve support for website interactions.**

**Analytics Problem 3:**

Amazine Ltd. needs to determine what ‘series’ to recommend to other customers.

Using the data, ***series\_viewed.csv***, which shows the list of series viewed, answer the following:

1. When a customer views a series, we need an affinity score (for all series) to recommend other items to the customer.
2. Analyse the data to create an item list (for all series) that you can recommend to the user in order of preference (include the name of the series, price, producer & rating).
3. Include any extra code (*or plot any graph)* that you think would help Amazine management interpret their click behaviour data.

***Report*: Discuss the importance of recommendations and how the Amazine management can use this information to support their customers.**

**Analytics Problem 4:**

Amazine Ltd. wants to understand the viewing patterns and associations for Prime users. Using the data, ***prime\_viewing.csv***, which lists all the ‘shows’ viewed based on the Prime users’ ID, answer the following​:

1. What were the 10 most popular shows in Prime (based on ‘support’)?
2. Display all the combinations of the ‘show’ sets (viewed together).
3. Identify the ‘shows’ most likely to be viewed by the same user ID (based on ‘confidence’).
4. List the top 3 combinations of ‘shows’ viewed together with the same ID as opposed to separate transactions (based on ‘lift’).
5. Display the top 7 combined ‘shows’ in one user viewing (based on 'lift').
6. Include any extra code (*or plot any graph)* that you think would help Amazine management interpret their viewing pattern or association.

***Report*: Discuss how each item above can be used to improve the Prime user offering.**

**Learning Outcomes**

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| --- | --- | --- | --- | --- | --- | --- |
|  | **Excellent** | **Very good** | **Good** | **Satisfactory** | **Weak** | **Inadequate** |
| *Interpret the findings of analytical tools when applied to a specific business problem* | Excellent interpretation of the code and findings related to the three business problems with no major errors/omissions | Very good interpretation of the code and findings related to the three business problems with very few major errors/omissions | Good interpretation of the code and findings related to the three business problems with little evidence of errors/omissions | Adequate interpretation of the code and findings related to the three business problems with some major errors/omissions | Weak interpretation of the code and findings related to the three business problems with many major errors/omissions | Limited or no interpretation of the code and findings related to the three business problems with substantial errors/omissions |
| *Describe analytical and non-analytical measures used in Business Performance Management* | Excellent description of the analytics and non-analytics used for business performance management with no major errors/omissions | Very good description of the analytics and non-analytics used for business performance management with very few errors/omissions | Good description of the analytics and non-analytics used for business performance management with little evidence of errors/omissions | Adequate description of the analytics and non-analytics used for business performance management with some major errors/omissions | Weak description of the analytics and non-analytics used for business performance management with many major errors/omissions | Limited or no description of the analytics and non-analytics used for business performance management with substantial errors/omissions |