

Final Assessment - Question Paper

Semester	202310	Division	Business
Assessment title in Syllabus	Final Assessment	Program	Business Analytics
Version	1	Number of pages	5

Course Code	BNA 3003		
Course Title	Business Analytics Application		
Assessment Weight	30%	Date	

Student Declaration: Academic Integrity Statement

In accordance with the HCT Academic Integrity Policy

- Students are required to refrain from all forms of academic integrity breaches as defined and explained by HCT.
- A student found guilty of having committed acts of academic integrity breach(es) will be subject to the relevant sanctions as outlined by HCT.

إفادة النزاهة الأكاديمية

- وفقاً لسياسة كليات التقنية العليا للنزاهة الأكاديمية
- على الطلبة الالتزام بلوائح وقواعد النزاهة الأكاديمية، كما هو مبين وموضح في السياسات والإجراءات الخاصة بكليات التقنية العليا.
 - في حالة ارتكاب الطالب أي شكل من أشكال الإخلال بالنزاهة الأكاديمية، سيتعرض إلى العقوبات الموضحة في السياسات ذات الصلة.

This assignment is entirely my own work except where I have duly acknowledged other sources in the text and listed those sources at the end of the assignment. I have not previously submitted this work to the HCT, or any other entity. I understand that I may be orally examined on my submission.

Student Signature: _____

INSTRUCTIONS:

- DO NOT open this question paper until you are instructed to do so.
- This is a closed-book exam.
- All questions must be answered.

MATERIALS PERMITTED:

- Pen, pencil, eraser, ruler, color pencils
-

MATERIALS PROVIDED:

-

Student Name : _____

Student HCT ID : _____

For Examiner's Use Only

Section No.				Total	%
Marks Allocated					
Marks Obtained					

Chatbot (e.g. ChatGPT) statement

This submission does not allow you to use any AI tool to complete. Any breach of this requirement will be treated as a

plagiarism attempt and shall be subject to the HCT Academic Integrity Policy.

INSTRUCTION: Use the R-Studio the following tasks:

- Answer all questions
- Paste R script within the answer and all results should be shown.
- Submit your answer as a pdf file in the link available in blackboard ASD-non-FWA-Project.

Strategic Analysis for SNS Hypermarket's Market Expansion

Introduction: SNS Hypermarket, a prominent player in the retail industry, is facing challenges posed by an expanding market and intensified competition. To make informed decisions in this dynamic environment, they have enlisted our expertise to analyze their business data and identify the best strategies to pursue. This case study delves into the analysis of the provided dataset, 'superstoreXX.csv,' containing 200 records of sales data. Our objective is to determine which products, geographical regions, product categories, and consumer segments SNS Hypermarket should target, and conversely, which they should avoid.

Dataset Description: The 'superstoreXX.csv' dataset comprises sales records with various attributes that we will analyze to make data-driven recommendations. Key attributes include:

1. Order ID: A unique identifier for each sales transaction.
2. Product ID: A unique identifier for each product.
3. Product Name: The name of the product sold.
4. Category: The product category (e.g., electronics, furniture, office supplies).
5. Sub-Category: A subcategory that further classifies the product.
6. Sales: The total sales revenue generated by the transaction.
7. Quantity: The quantity of the product sold.
8. Discount: The discount applied to the transaction.
9. Profit: The profit generated from the transaction.
10. Customer Name: The name of the customer.
11. Region: The geographical region where the sale occurred.
12. Segment: The customer segment (e.g., consumer, corporate, home office).

Analysis and Recommendations: To assist SNS Hypermarket in making strategic decisions, you will conduct a comprehensive analysis of the dataset.

Part 1

20 marks

Before working with the dataset, make sure to load the necessary libraries for data manipulation. Install these libraries if you haven't already using `install.packages()`. Explore the SNS dataset and its attributes attached by answering the followings:

1. Read the attached dataset csv file into R. Ensure that you specify the correct file path to access the data. To understand the data, perform the following tasks: (10 marks)

- a. Provides a quick **overview of the data records**.(2 marks)
- b. Examine **data structure**.(2 marks)
- c. **Summary Statistics**.(2 marks)
- d. **Describe and evaluate your findings**.(4 marks)

2. **Divide** the data into sub-data frames based on the geographical characteristics by breaking down the dataset into smaller, more focused subsets based on geographical attributes. Then, **analyze and describe** the data characteristics, allowing for more targeted analysis or exploration of specific regions or areas within the data. **The result should be evaluated and analyzed within the context of the business domain** (10 marks, 4 marks for code, 6 marks for results evaluation)

Part 2

20 marks

3. Utilizing the same dataset, recommend and apply two pre-processing methods. These methods can involve transforming data conversion from one data type to another. Suggest **TWO (2) attributes** that can be transformed for a better data analytics process. Provide a rationale for each proposed and executed technique **with results evaluation**. (10 marks: 5 marks each)

4. Within the context of the same dataset, recommend and apply **TWO (2) data cleansing strategies**, such as validating values and handling missing data. Please provide a detailed rationale for each suggested and specify the use of R for the implementation, making it clear which programming language to utilize, **with results evaluation** (10 marks: 5 marks each)

Part 3

60 marks

5. The senior management is keen on exploring sales patterns based on customer demographics. Please suggest and execute **TWO (2) descriptive analytics** and insights that include appropriate data distribution analysis and ggplot visualizations. The results should be shown, explained and evaluated within the business context. (20 marks: 10 marks each)

6. Propose and execute **TWO (2) descriptive analytics** and analytical insights providing a relationship between data attributes with class levels.

Provide a comprehensive description of the performed analysis. The results should be shown, explained and evaluated within the business context. (20 marks: 10 marks each)

7. Propose and implement a **predictive** analytics insight using **TWO (2)** algorithms that can be derived from the dataset, evaluate and explain them from a business perspective, emphasizing their practical significance. The results should be shown, explained and evaluated within the business context. (20 marks: 10 marks each)

END OF ASSESSMENT

The marks/grades are based on the provided instrument, using the following descriptors:

Grade: 0-6

Descriptor: Achievement that does not meet requirements.

Requirements:

- Lacks clarity in explanation.
- Demonstrates little understanding of the report/project content.
- Cannot answer fundamental questions related to the report/project.
- Answer lacks structure and coherence.
- Provides no evidence or weak evidence to support statements.

Grade: 6-7

Descriptor: Achievement that minimally meets the course requirements but may not meet the GPA requirements.

Requirements:

- Provides basic explanations but with some inconsistencies or errors.
- Demonstrates an understanding of the main ideas but struggles with details or nuances.
- Can answer fundamental questions but struggles with more complex inquiries.
- Provides some evidence to support statements but may not always be relevant or strong.

Grade: 7-8.5

Descriptor: Achievement that satisfactorily meets the course and GPA requirements.

Requirements:

- Provides clear explanations of the content.
- Demonstrates a good understanding of both main ideas and supporting details.
- Can answer both fundamental and some complex questions related to the report/project.
- Answer provided is structured and coherent
- Uses relevant evidence consistently to support statements.

Grade: 8.5-10

Descriptor: Achievement that is outstanding relative to the course and GPA requirements.

Requirements:

- Provides exceptionally clear and insightful explanations.
- Demonstrates a deep and comprehensive understanding of the report/project content.
- Can answer all questions, including complex ones, with depth and precision.
- Presentation is exceptionally structured, fluid, and engaging.
- Uses strong, relevant evidence consistently and skillfully to support statements.