Assessment Brief 1

Academic year 2023/24, TERM I

Course	MADSC102 Unlocking the Power of Big Data (3 ECTS)
Instructor	Ernesto Tejeda

Participation in all assessment activities stated in this document is required. An overall course total of 70 points is required to pass the course. Due dates and times are always in Geneva time.

Assessment 1		
Details	Due date and time	Weight of course total
Main task Task 1.1: Preliminary Analysis Assessment type: Written assignment Description: Preliminary Analysis at StarTech Solutions involves collecting, cleaning, and conducting initial analysis of data, including describing the data collection process, analyzing customer behavior, and identifying market trends from January to September 2023.	22 Oct. 23 23:59	40%
Main task Task 1.2: Strategic Recommendations Assessment type: Written assignment Description: Task 1.2 involves providing strategic recommendations for StarTech Solutions based on the Big Data analysis conducted for the period of January to September 2023, encompassing inventory optimization and actionable, data-driven insights for marketing and product development strategies.	10 Nov. 23 23:59	60%

INSTRUCTIONS

Project Overview

Project Title: "Optimizing Marketing Strategies with Big Data at StarTech Solutions"

Project Description: StarTech Solutions, a technology company, has been operating in the market for several years. However, it has yet to fully harness the potential of its accumulated data to enhance its marketing and product development strategies. In this project, we aim to leverage Big Data analytics to optimize various aspects of the company's operations.

Challenge: For the purpose of this exercise, we will focus on data records from January to September 2023. StarTech Solutions seeks to gain a deeper understanding of its customers, anticipate market trends, and enhance inventory management within this specific timeframe.

Project Objectives:

- Customer Insights: Utilize Big Data analytics to analyze customer behavior and enhance customer segmentation from January to September 2023.

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- Market Trend Identification: Identify market trends and opportunities for product development through data analysis during the specified period.
- Inventory Optimization: Implement Big Data-based forecasting models to optimize inventory management and reduce operational costs within the chosen timeframe.

Project Tasks:

- Data Collection and Cleaning: Gather historical sales data, customer information, and inventory data for StarTech Solutions from January to September 2023. Clean and prepare the data for analysis.

- Customer Behavior Analysis: Apply Big Data analytics techniques to understand customer behavior, including purchasing patterns, product preferences, and demographic segmentation for this timeframe.

- Market Trend Identification: Use predictive analytics on the data to identify market trends and product development opportunities during the specified period.

- Inventory Optimization: Utilize Big Data-based forecasting models to optimize inventory management and reduce operational costs within the chosen timeframe.

- Strategic Recommendations: Based on the findings from the Big Data analysis for the period of January to September 2023, present strategic recommendations for improving StarTech Solutions' marketing and product development strategies.

Expected Outcomes: The project is expected to provide StarTech Solutions with a deeper understanding of its customers, more effective marketing and product development approaches, and more efficient inventory management, all within the specified timeframe. Additionally, the project will demonstrate the value of Big Data in shaping strategic decision-making during this critical period.

TASK 1.1

In Task 1.1 of the project, you will focus on the initial stages of data collection, cleaning, and preliminary analysis. The table containing data for the preliminary analysis can be accessed at the following link:
https://docs.google.com/spreadsheets/d/1Yj_dJjQSSqkqjxBJeuqIbKe2Si6IDjIUfuVJu7gWINs/edit?usp=sharing

Your submission for Task 1.1 should include the following components:

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- **Data Collection and Cleaning:** Provide a detailed description of the data collection process. Include any challenges encountered during data collection and how you addressed them. Present the cleaned and prepared dataset for analysis.

- **Customer Behavior Analysis:** Utilize Big Data analytics techniques to analyze customer behavior, including purchasing patterns, product preferences, and demographic segmentation for the period from January to September 2023. Present your findings and insights in a clear and organized manner.

- **Market Trend Identification:** Use predictive analytics on the data to identify market trends and potential opportunities for product development during the specified period. Present your findings and insights, along with any data visualizations that support your analysis.

Below, you'll find the structured framework for your document:

Task 1.1: Preliminary Analysis Submission

Cover Page:

- School Logo
- Course Title
- Course Code
- Instructor's Name
- Your Name
- Student ID
- Submission Date
- Project Title: "Optimizing Marketing Strategies with Big Data at StarTech Solutions"

Introduction:

- Context of Data-Driven Decision-Making
- Introduction to StarTech Solutions
- Significance of Task 1.1: Preliminary Analysis
- Scope and Focus on Data from January to September 2023
- Objectives of Task 1.1
- Overview of the Document

Section 1: Data Collection and Cleaning

Subsection 1.1: Data Collection Process

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- Provide a detailed description of how data was collected for StarTech Solutions during the period from January to September 2023.
- Include information about data sources, methods, and any challenges encountered.

Subsection 1.2: Data Cleaning and Preparation

- Explain the steps taken to clean and prepare the collected data for analysis.
- Discuss any data cleansing techniques applied to address issues such as missing values, outliers, or inconsistencies.

Subsection 1.3: Cleaned Dataset

- Present the cleaned and prepared dataset in a clear and organized format.
- Consider using tables, charts, or visualizations to illustrate key aspects of the dataset.

Section 2: Customer Behavior Analysis

Subsection 2.1: Overview of Customer Behavior Analysis

- Provide an introduction to the analysis of customer behavior.
- Explain the significance of understanding customer behavior for StarTech Solutions.

Subsection 2.2: Purchasing Patterns Analysis

- Analyze purchasing patterns within the dataset for the specified period.
- Present findings related to the frequency and types of purchases made by customers.

Subsection 2.3: Product Preferences Analysis

- Explore customer preferences for products during the same period.
- Present insights on which products were popular among customers.

Subsection 2.4: Demographic Segmentation

- Conduct demographic segmentation analysis based on available data.
- Present insights regarding customer demographics, if applicable.

Section 3: Market Trend Identification

Subsection 3.1: Predictive Analytics for Market Trends

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- Describe the methods and techniques used for predictive analytics on the data.
- Explain the importance of identifying market trends for StarTech Solutions.

Subsection 3.2: Identified Market Trends

- Present the market trends identified during the analysis.
- Include data visualizations or charts to support your findings.

Subsection 3.3: Opportunities for Product Development

- Discuss potential opportunities for product development based on the identified market trends.
- Provide recommendations for leveraging these opportunities.

Conclusion.

- Summarize the key findings and insights from Task 1.1.
- Highlight the importance of the preliminary analysis for StarTech Solutions' marketing and product development strategies.

References:

- List any sources or references used in the analysis.

Appendices (if applicable):

- Include any supplementary materials, additional data visualizations, or detailed tables that support the analysis.

FORMAT

Your submission must meet the following formatting requirements:

- Number of files for submission: 1
- Required file format for main submission: PDF
- Additional file format for additional deliverables: PDF
- Additional file requirements: No

Other details:

- Font: Arial
- Font size: 11

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- Spacing: 1.5
- Number of words: No limit.

All refencing and citations require **Harvard referencing style**.

TASK 1.2

In Task 1.2 of the project, you will focus on providing strategic recommendations based on the findings from the Big Data analysis conducted for the period of January to September 2023. Your submission for Task 1.2 should include the following components:

- **Inventory Optimization:** Describe the Big Data-based forecasting models you implemented to optimize inventory management and reduce operational costs within the chosen timeframe. Present your recommendations for inventory optimization.

- **Strategic Recommendations:** Based on the insights and analysis conducted in Task 1.1, present strategic recommendations for improving StarTech Solutions' marketing and product development strategies. Your recommendations should be actionable, data-driven, and supported by evidence from your analysis.

Below, you'll find the structured framework for your document:

Task 1.2: Strategic Recommendations Submission

Cover Page:

- School Logo
- Course Title
- Course Code
- Instructor's Name
- Your Name
- Student ID
- Submission Date
- Project Title: "Optimizing Marketing Strategies with Big Data at StarTech Solutions"

Introduction:

- Recap of the Project's Context
- Brief Overview of the Previous Task (1.1)
- Significance of Task 1.2: Strategic Recommendations
- Objectives of Task 1.2

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- Overview of the Document

Section 1: Inventory Optimization

Subsection 1.1: Inventory Forecasting Models

- Describe the Big Data-based forecasting models implemented for inventory optimization during the period from January to September 2023.
- Explain the choice of models and their relevance to StarTech Solutions' inventory management.

Subsection 1.2: Recommendations for Inventory Optimization

- Present your recommendations for optimizing inventory management based on the analysis conducted.
- Provide actionable strategies to reduce operational costs and improve inventory efficiency.
- Support your recommendations with evidence from your analysis.

Section 2: Strategic Recommendations

Subsection 2.1: Marketing Strategy Enhancement

- Based on the insights and findings from Task 1.1, offer strategic recommendations for enhancing StarTech Solutions' marketing strategies.
- Ensure that your recommendations are data-driven and directly address the identified market trends and customer behavior.

Subsection 2.2: Product Development Strategies

- Provide recommendations for product development that align with the market trends and customer preferences identified in Task 1.1.
- Offer actionable strategies to capitalize on opportunities for product improvement and innovation.

Conclusion:

- Summarize the key strategic recommendations presented in Task 1.2
- Emphasize the potential impact of these recommendations on StarTech Solutions' operations and competitiveness.

References:

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- List any sources or references used in the development of your recommendations.

Appendices (if applicable):

- Include any supplementary materials or data visualizations that support your recommendations.

FORMAT

Your submission must meet the following formatting requirements:

- Number of files for submission: 1
- Required file format for main submission: PDF
- Additional file format for additional deliverables: PDF
- Additional file requirements: No.

Other details:

- Font: Arial
- Font size: 11
- Spacing: 1.5
- Number of words: No limit.

All refencing and citations require **Harvard referencing style**.

LEARNING OUTCOMES

1. Reflect on the value that big data and business intelligence can bring to businesses.
2. Characterize the main properties of big data and how these can affect strategic business decisions.
3. Investigate how companies are/may be using big data and predictive analytics in marketing and new product development.
4. Critically analyze the key concepts and principles of operations and technology management that need to be implemented to support value creation.

ADDITIONAL INFORMATION

The table containing data for the preliminary analysis can be accessed at the following link: https://docs.google.com/spreadsheets/d/1Yj_dJjQSSqkqjxBJeuqIbKe2Si6IDjIUfuVJu7gWINs/edit?usp=sharing

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ASSESSMENT CRITERIA

Rubric: written assignment

Criteria	Accomplished (A)	Proficient (B)	Partially proficient (C)	Borderline (D)	Fail (F)	Weight on grade
Problem identification	The business issue has been correctly identified, with a competent and comprehensive explanation of key driving forces and considerations. Impact on company operations has been correctly identified. Thorough analysis of the issue is presented.	The student correctly identified the issue(s), taking into account a variety of environmental and contextual drivers. Key case information has been identified and analyzed.	The student correctly identified the case (issues), considering obvious environmental/contextual drivers. There is evidence of analysis, but it lacks depth.	The student correctly identified the issue(s) but analysis was weak. An absence of context – the work is basically descriptive with little analysis.	The student failed to correctly identify the issue(s); analysis was incorrect or too superficial to be of use; information was misinterpreted.	30%
Information gathering	The student showed skill in gathering information and analyzing it for the purposes of filling the information gaps identified. Comprehensive and relevant.	Relevant information gaps were identified and additional relevant information was found to fill them. At least two different types of sources were used. The student demonstrates coherent criteria for selecting information but needs greater depth.	The student correctly identified at least one information gap and found relevant information, but which was limited in scope. Some evidence of sound criteria for selecting information but not consistent throughout. Needs expansion.	An information gap was identified and the student found additional information to fill it. However, this was limited in scope. Weak criteria for the selection of necessary information.	Information was taken at face value with no questioning of its relevance or value. Gaps in the information were not identified or were incorrect.	20%
Conclusions	The student evaluated, analyzed, synthesized all information provided to create a perceptive set of conclusions to support the decisions and solutions.	The student evaluated, analyzed and synthesized to create a conclusion(s) which support decisions and solutions.	The student reached conclusions, but they were limited and provided minimal direction for decision-making and solutions.	The conclusion was reasonable but lacked depth and would not be a basis for suitable strategy development.	The student formed a conclusion, but it was not reasonable. It was either unjustified, incorrect or unrelated to the case in hand.	25%

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Solutions	The student used problem solving techniques to make thoughtful, justified decisions about difficult and conflicting issues. A realistic solution was chosen which would provide maximum benefit to the company. Alternative solutions were explored and ruled out.	The student used problem solving techniques to make appropriate decisions about complex issues. Relevant questions were asked and answered. A realistic solution was chosen. Alternatives were identified, explored and ruled out.	The student used problem-solving techniques to make appropriate decisions about simpler issues. The solution has limited benefit but does show understanding of implications of the decision. Alternatives were mentioned but not explored.	The student used problem solving techniques to make decisions about simpler issues but disregarded more complex issues. Implications of the decision were not considered. Alternatives were not offered.	The student formed a conclusion, but it was not reasonable. It was either unjustified, incorrect or unrelated to the case in hand.	25%