UNIVERSITY OF WESTMINSTER

INFORMATICS INSTITUTE OF TECHNOLOGY

5DATA004W

Data Science Project Lifecycle

Individual Coursework

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Contents

Details and Links

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Link to Streamlit app:

https://mahdi-s-dash-cmtkmpchmyvyuzrcdrqqes.streamlit.app/

Link to video:

https://github.com/Mahdi7075/Mahdi-s-Dash/blob/main/streamlit-App_w2002465.webm

Link to GitHub repository:

https://github.com/Mahdi7075/Mahdi-s-Dash

Aims and Objectives

The project aims to develop a Sales and Performance Dashboard for Minger using Streamlit, focusing on analyzing and visualizing sales data to provide valuable insights for decision-making. The primary objectives include implementing filters for data selection, calculating total sales and profit metrics, analyzing the relationship between sales and discounts, visualizing total sales by category, identifying the top-selling products, examining sales trends over time, and exploring profit by market and segment.

The selected key insights are crucial for understanding the company's sales performance and trends, enabling stakeholders to make informed decisions. Total sales and profit metrics offer a clear overview of the company's financial health, essential for assessing profitability and growth. Analyzing sales vs. discounts helps in understanding the impact of promotional strategies on sales revenue, aiding in pricing and marketing decisions.

Visualizing total sales by category provides insights into the performance of different product categories, highlighting areas of strength and potential growth. Identifying the top-selling products helps in understanding consumer preferences and product popularity, guiding inventory management and marketing strategies.

Examining sales trends over time allows for the identification of seasonal patterns and trends, which can inform forecasting and inventory planning. Exploring profit by market and segment offers insights into the most profitable market segments, guiding strategic decisions to maximize profitability.

These key insights provide a comprehensive understanding of sales performance, helping Minger make data-driven decisions to improve sales and profitability.

Requirements

Functional Requirements:

1. Data Filtering: The dashboard should allow users to filter data based on category, segment, and country selections.

2. Total Sales and Profit Calculation: The dashboard should calculate and display the total sales and profit metrics based on the filtered data.

3. Sales vs. Discount Analysis: The dashboard should generate a scatter plot to analyze the relationship between sales and discounts for the selected category.

4. Total Sales by Category Visualization: The dashboard should display a pie chart showing the total sales distribution by category.

5. Top 5 Products by Sales: The dashboard should present a bar chart of the top 5 products by sales for the selected data.

6. Sales Trends Over Time: The dashboard should show a line chart illustrating sales trends over time.

7. Profit by Market and Segment: The dashboard should display a bar chart showing profit distribution by market and segment.

Non-Functional Requirements:

1. Performance: The dashboard should load and display data quickly, even with large datasets.

2. User Interface: The dashboard should have an intuitive and user-friendly interface for easy navigation and understanding.

3. Reliability: The dashboard should be reliable, with accurate data representation and calculations.

4. Security: The dashboard should ensure data security and privacy, especially when handling sensitive information.

5. Scalability: The dashboard should be scalable to accommodate future enhancements and increasing data volumes.

6. Compatibility: The dashboard should be compatible with different devices and screen sizes.

7. Accessibility: The dashboard should be accessible to users with disabilities, following accessibility standards and guidelines.

Test Cases

Test 1

#	*TC1*	Title:	Data Filtering
Description			Test the functionality of filtering data based on category, segment, and country selections
Steps and input data			1. Select a specific category from the filter sidebar. 2. Select a segment from the filter sidebar. 3. Select a country from the filter sidebar.
Dependencies			none
Expected result			The dashboard displayed data filtered by the selected category, segment, and country

Test 2

#	*TC2*	Title:	Total sales and profit calculations
Description			Test the calculation and display of total sales and profit metrics.
Steps and input data			Select a specific year from the dropdown menu
Dependencies			Date for the selected year
Expected result			The dashboard calculated and displayed the total sales and profit for the selected year.

Test 3

#	*TC3*	Title:	*Sales vs Discount Analysis*
Description			Test the generation of a scatter plot to analyze relationship between sales and discount
Steps and input data			Select a specific category from the filter sidebar
Dependencies			Data for the selected category
Expected result			The dashboard displayed a scatter plot showing the relationship between sales and discounts for the selected category.

Test 4

#	*TC14*	Title:	Total sales by category visualization
Description			Testing the display of a pie chart showing the total sales distribution by category
Steps and input data			None: default view
Dependencies			Data for all categories
Expected result			The dashboard displayed a pie chart showing the total sales distributions for all the categories

Test 5

#	*TC5*	Title:	Top 5 products by Sales
Description			Testing the display of a bar chart showing the top 5 products by sales.
Steps and input data			Default view
Dependencies			Data for all products
Expected result			The dashboard displayed a bar chart showing the top 5 products by sales for all categories

Test 6

#	*TC6*	Title:	Sales trends over time
Description			Testing the display of line chart illustrating sales trends over time
Steps and input data			Default view
Dependencies			Historical sales data
Expected result			The dashboard displayed a line chart illustrating sales trends over time for all categories

Test Log

TC	Date	Executed by	Actual Result	Pass/Fail	Notes
1	14/5/2024	Mahdi Ishak	Data filtering resulted in correct data being displayed.	Pass	-
2	14/5/2024	Mahdi Ishak	The total sales and profit calculations were inaccurate.	Fail	Additional validation needed.
3	14/5/2024	Mahdi Ishak	The scatter plot displayed the relationship between sales and discounts for the selected category.	Pass	-
4	14/5/2024	Mahdi Ishak	The pie chart did not display any data.	Fail	Data not available.
5	14/5/2024	Mahdi Ishak	The bar chart displayed the top 5 products by sales for all categories.	Pass	-
6	14/5/2024	Mahdi Ishak	The line chart did not display any data points.	Fail	Data not formatted correctly