Report on Data Analytics Tasks

Introduction

This report documents the completion of three data analytics tasks performed using tools such as Power BI and Python. These tasks showcase the ability to clean, analyze, and visualize data to derive actionable insights.

Background

In a competitive digital landscape, analyzing and interpreting data is critical for informed decision-making. These tasks were designed to address specific analytical challenges, leveraging tools to build dashboards, calculate metrics, and extract meaningful patterns from datasets. The tasks focused on enhancing skills in data transformation, visualization, and reporting.

Learning Objectives

- Develop proficiency in data cleaning and transformation.

- Gain expertise in using Power BI for creating interactive dashboards.

- Learn to calculate measures and create visualizations to identify trends.

- Strengthen problem-solving skills by addressing specific analytical challenges.

Activities and Tasks

Task 1: Pie Chart for Total Clicks Breakdown

- **Objective**: Build a pie chart to represent the proportion of total clicks (URL clicks, user profile clicks, and hashtag clicks) for tweets with more than 500 impressions.

- **Key Activities**:

- Cleaned data and filtered tweets with over 500 impressions.

- Created a pie chart with drill-down capabilities to analyze click types.

- Validated the accuracy of data cleaning and visualization.

Task 2: Calculated Columns and Measures

- **Objective**: Create calculated columns and measures for in-depth analysis.

- **Key Activities**:

- Added calculated columns to extract day, week, and month from timestamps.

- Defined measures to calculate engagement rates and impression-to-click ratios.

- Prepared datasets for creating advanced visualizations and insights.

Task 3: Dual-Axis Chart for Media Views and Engagements

- **Objective**: Create a dual-axis chart to display media views and engagements by the day of the week for the last quarter.

- **Key Activities**:

- Filtered data based on specific criteria such as time intervals and tweet content.

- Grouped data by day of the week and calculated aggregate metrics.

- Built a dual-axis chart and highlighted significant spikes in interactions.

Skills and Competencies

- Data Cleaning and Transformation: Applying filters, removing invalid data, and creating derived columns.

- Visualization Techniques: Designing pie charts, dual-axis charts, and conditional formatting.

- Data Modeling: Developing calculated columns and measures for advanced analysis.

- Problem-Solving: Addressing challenges like filtering data by multiple criteria and visualizing complex metrics.

Feedback and Evidence

Feedback received highlighted the effectiveness of the visualizations in conveying insights. Evidence includes:

- Cleaned datasets used for analysis.

- Screenshots of Power BI dashboards.

- Code snippets for data transformations.

Challenges and Solutions

1. **Challenge**: Filtering data by specific time intervals and content conditions.

   - Solution: Used Power Query in Power BI to define custom filters and transformations.

2. **Challenge**: Highlighting significant spikes in interactions.

   - Solution: Implemented conditional formatting and created additional measures to identify outliers.

3. **Challenge**: Creating drill-down capabilities in charts.

   - Solution: Configured hierarchies in Power BI for interactive exploration.

Outcomes and Impact

- Created dashboards that effectively visualize trends and patterns.

- Improved understanding of using calculated measures for deeper insights.

- Enhanced ability to handle real-world datasets with complex requirements.

Conclusion

The successful completion of these tasks demonstrates the ability to clean, analyse, and visualize data for actionable insights. These projects reinforced skills in Power BI, data transformation, and visualization while addressing real-world challenges. The outcomes highlight the critical role of data analytics in supporting strategic decisions.