Faculty of Information Technology (FoIT)

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Superstore Sales & Profit Analysis - A Data-Driven Approach

1. Introduction

The report describes a data exploration project proposal based on real business case in the retailing sector. Through a Business Intelligence (BI) tool, we will aim at analysing an in-depth sales data that would be used to generate insights in order to make strategic business decisions. The project is a simulation of a data-driven solution to some of the most typical business problems and issues.

2. Business Questions & Problems

Problem Statement: The Superstore retail company seeks to know more of its sales performance and profitability on various product turnover, regions and through the passage of time. To enhance business strategy, the company should determine industry trends, areas that have performed well and what potential introductions can serve the company.

2.1. Business Questions:

- Compare Sales and profitability in relation to product category (Technology, Furniture and Office Supplies)?
- What are the patterns and an analysis of how sales have changed over time and are we experiencing any seasonal change?
- What geographical areas, and which cities, are generating the highest sales and profit, and which are possibilities to grow?

3. Dataset Selection & Pre-processing Plan

Dataset Identification: It should be noted that the project was created using the "Superstore Sales & Profit Analysis" dataset, which is a popular free business analysis data set, regularly found on such sites as Kaggle. These data include **Jan 2, 2014 until December 30, 2017** sales, profit, order, and customer information.

3.1. Pre-processing Plan

To make sure that the dataset is clean and can be analyzed, the list of steps that will be followed includes:

- **Data Cleaning:** check and delete any duplication.

- **Missing Values:** Find and manage any missing values of key column. Based on the quality of the lost data, we will be able to miss values or delete the records.
- **Data Type Conversion:** Convert date fields to a consistent format for accurate time-series analysis.
- **Standardization:** Do not allow the errors of aggregation and filtering all categorical data should be standardized (Region and Category).

4. Analysis & Visualization Plan

4.1. Analysis Approach

The mixed method that will be employed consists of both the summary statistics and descriptive analysis to discover trends and distributions. This will encompass consolidating information to arrive at the total sales and profit per category, region and city.

4.2. BI Tool

We are going to develop the interactive dashboard of this project based on Google Looker Studio.

4.3. Dashboard Visualizations:

The nifty visualizations to be included in the dashboard comprise of visualizations that will provide answers to the business questions as follows:

- **Sales by Category (Bar Chart):** A bar chart is used to make a visual comparative analysis of sales of the three key product lines based on total sales over the three-year period: Technology, Furniture, and Office Supplies. This will assist on question #1.
- **Sales Over Time (Line Chart):** Time-series line chart to enable the visualization of sales during the period between 2014 and 2017. This will aid us in the discovery of seasonal trends and the overall sales performance, in answer to question 2.
- **Sales by Region (Pie Chart):** Displaying the percentage of the sales that were achieved by each of the four regions (West, East, Central, and South) respectively. This will address question #3.

- **Sales by City (Ranked List/Table):** The table or the ranked list is used to show the top 10 cities based on total sales. This will give question number 3 a granular detail.
- **Profitability by Category (Bar Chart):** A bar chart to compare the overall profit produced by each category of product. The visualization is imperative when it comes to comprehending not only sales volume, but also profitability in question number one.

4.4. Interactivity Plan:

The following interactive types of filters will be included in the dashboard so that the user can play around with the data:

- **Region Filter:** To see sales by a region.
- **Category Filter:** To examine sales of a specific category of product.
- **Date Range Filter:** To narrow down and target on certain times.

5. Expected Insights & Recommendations

5.1. Expected Findings

- We anticipate that we can discover that Technology products are the highest selling category in regards to total sales.
- In accordance with the data, the West and East markets are the main revenue generators and are significantly better than the Central and South ones.
- We expect sales to be not steady along the year, but have large peaks and dales all over the year.

5.2. Proposed Business Actions & Strategies

- **Targeted Market Expansion:** The company should move towards; Targeted market expansion Targeted marketing and sale The firm needs to devise targeted premium market and sale to improve upon the underperforming markets such as the Central and South.
- **Profitability Analysis:** Analyze the profit margins for different product categories. When Technology products enjoy a lower profit margin that the sales volume they produce, the organization should look into sourcing or pricing strategies to boost the total profitability.

- **Inventory & Marketing Optimization:** The time-series analysis enables the company to know the seasonal sales trends and, therefore, optimize its inventory and marketing campaigns to meet the times when the peak demand was reached.

6. Timeline

- **Week 1:** Project proposal submission, dataset sourcing, and initial data exploration.
- **Week 2:** Pre-processing and cleaning of the dataset.
- **Week 3:** BI tool familiarization, data analysis, and dashboard creation with the specified visualizations.
- **Week 4:** Interpretation of findings, formulation of business recommendations, and drafting of the final report.
- **Week 5:** Final review and submission.

7. Reference

- Superstore Dataset. (n.d.). Kaggle. Retrieved from https://www.kaggle.com/datasets/vivek468/superstore-dataset-final