**Bike Store Performance Analysis Project Report**

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**1. Data Source :**

[**https://github.com/ShaidHasanShuvo/Bike\_Stores/blob/main/Bikestore%20dataset.xlsx**](https://github.com/ShaidHasanShuvo/Bike_Stores/blob/main/Bikestore%20dataset.xlsx)

**2. Description:**

This project focuses on analyzing sales data from a bike store. The dataset contains detailed information about orders, including customer details, locations, order dates, product information, revenue, and sales representatives.

The goal of this analysis is to extract valuable insights regarding customer purchasing behaviors, product performance, and store profitability, ultimately supporting data-driven decision-making to improve sales strategies and market positioning.

**3. Objectives:**

The key questions that guide the analysis:

* What are the Top 10 Cities that have Highest Revenue?
* What are the Percentages of Store States regarding Revenue?
* What are the most popular products in terms of units purchased?
* What is the Top popular product in terms of revenue generated each year?
* What is the Distribution of Revenue generated each year?
* Who are the Top Customers contributed to Highest Revenue each year?
* What are the months that have the maximum revenue?
* Which sales representatives and stores are top performers?
* What seasonal trends can be observed in the sales data?

**4. Data Analysis Phases:**

**Data Cleaning and Exploration**

* **Data Cleaning**:
  + No missing values
  + No duplicates
  + Order dates were converted into a standard format.
  + Mapping states from abbreviations to clarified ones.
  + Renaming column ‘sales\_rep’ to ‘sales\_representative’.
  + Converting numeric month values (1-12) to month names (January-December).
* **Exploratory Data Analysis (EDA)**: Initial exploration included identifying product categories, customer demographics, and regions.

**Feature Engineering**

* New features were engineered based on existing columns to enhance the analysis.
  + **Order Month and Year**: Extracted from the order date to analyze sales trends over time.

**Data Visualization using Python and Tableau**

* **Revenue Trends**: Line plots showed how revenue evolved over time across different regions.
* **Product Performance**: Bar charts and pie charts illustrated the top-performing products and categories in terms of sales and revenue.
* **Geographical Insights**: A map visualization was used to show sales concentration across different cities and states.

**5. Insights:**

Based on the data analysis and visualizations, the following insights were drawn:

* **Top Cities:** The most popular cities contributed to Highest Revenue were “Mount Vernon”, “Ballston Spa” and “San Angelo”.
* “**New York**” has achieved the highest percentage of Total Revenue followed by “**California**”.
* **Regional Sales Trends**: States like “**California**” and “**Texas**” showed the highest sales volumes, with a marked increase during summer months.
* **Top Products**: The most popular products in terms of units purchased were “**Trek Slash 8 27.5 – 2016**”, “**Trek Conduit+ - 2016**”, “**Trek Fuel EX 8 29 – 2016**” and “**Surly Straggler 650b – 2016**”. However, “**2016**” year has the lowest revenue distribution across the other years.
* **Top Products Per Year**: The most popular products were “**Trek Domane SLR 9 Disc – 2018**”, “**Trek Domane SLR 6 Disc – 2017**” and “**Trek Slash 8 27.5 – 2016**”. These contributed significantly to overall revenue each year.
* **Top Customers**: The popular customers who contributed the most regarding revenue were:
  + Pamelia Newman **in 2018**
  + Melanie Hayes **in 2017**
  + Dorthea Walker **in 2016**
* **Sales Representatives Performance**: Sales representatives like “**Kali Vargas**” and “**Venita Daniel**” consistently outperformed others, particularly in “Santa Cruz Bikes” and “Baldwin Bikes” stores, contributing to higher overall average revenue.
* **Seasonal Patterns**:

- Sales spiked during holiday seasons and warmer months like “**April**”, “**January**” and “**March**”, particularly in outdoor-oriented product categories.

- Sales **increased** steadily until **2017**, followed by a progressively larger decline through **2018**.

**6. Recommendations and Conclusion:**

Based on the insights, the following recommendations are proposed:

* **Product Focus**: Increase marketing efforts for Cruisers Bicycles and Mountain Bicycles in high-performing regions such as California and Texas to maximize sales.
* **Seasonal Promotions**: Launch targeted promotions during holiday seasons and warmer months to take advantage of peak purchasing periods.
* **Sales Training**: Provide additional training and resources to underperforming sales representatives and replicate the strategies of top performers like **Kali Vargas**.
* **Stock Optimization**: Align inventory levels with regional and seasonal demand to prevent stock shortages during peak times.
* **Addressing Sales Decline in Winter**: Implement additional offers and discounts on bike categories, particularly from June to December, as these winter months in 2018 showed the lowest revenue.
* **Bundling Offers:** Create product bundles (bikes with accessories or maintenance services) at a reduced price to encourage larger purchases.
* **Early Bird Offers:** Provide early-season discounts in June to boost sales before the typical decline begins.
* **Flash Sales:** Host flash sales or “one-day only” events during low-revenue months to create urgency and drive immediate purchases.