**Sales & Revenue Forecasting for a Retail Business**  
*(Using Power BI & Time Series Forecasting)*

**1. Project Overview**

Retail businesses rely on accurate sales forecasting to optimize inventory, staffing, and financial planning. This project aims to predict future sales using historical data and analyze key factors influencing revenue trends.

**2. Problem Statement**

The objective of this project is to develop a sales forecasting model for a retail business using historical data. The key goals include:

* Predicting weekly sales trends for better decision-making.
* Identifying seasonal patterns and the impact of external factors such as holidays, fuel prices, and economic indicators.
* Providing actionable insights through interactive dashboards.

**3. Dataset Description**

The dataset used for this project is the Walmart Sales Forecasting Dataset from Kaggle, which includes:

* **Sales Data:** Weekly sales across different stores and departments.
* **Store Data:** Details such as store size and type.
* **Feature Data:** Economic indicators, including fuel prices, CPI, and unemployment rates.
* **Holiday Data:** Flags indicating whether a given week contained a holiday.

**4. Methodology**

**Data Processing & Cleaning**

* Merged sales data with additional features like fuel prices and holidays.
* Handled missing values and ensured consistent date formatting.
* Aggregated data at weekly and store levels for forecasting.

**Time Series Forecasting (Using Prophet)**

* Implemented the Facebook Prophet model to forecast future sales.
* Considered holidays as an external regressor to improve accuracy.
* Evaluated forecast accuracy using Mean Absolute Error (MAE) and calculated forecast accuracy percentage.

**Power BI Dashboard Development**

* Designed interactive visuals to present actual vs. forecasted sales.
* Analyzed store-wise and department-wise sales trends.
* Compared sales performance between holiday and non-holiday periods.
* Included forecast error analysis to measure prediction accuracy.

**5. Key Insights & Findings**

* **Sales Trends Over Time:** Sales fluctuated seasonally, with higher sales during holiday periods.
* **Impact of Holidays:** Significant spikes in sales were observed during major holidays.
* **Forecast Accuracy:** The final model achieved an accuracy of ~90.16%, improving from an initial 63%.
* **Store & Department Performance:** Some stores consistently outperformed others, influenced by store size and location.

**6. Power BI Dashboard Snapshots**

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**7. Conclusion & Recommendations**

* **Holiday promotions** should be optimized, as they drive significant revenue.
* **Store-level sales insights** can help in better inventory planning.
* **Forecast accuracy** is strong (90.16%), but incorporating additional factors (weather, promotions) may further refine predictions.
* The model successfully provided insights into sales patterns and forecasts, aiding in data-driven decision-making.
* Future improvements could involve advanced models & external economic indicators.