Retail and Consumer Behavior Analytics for Optimized Marketing & Sales

1. Idea

Retail businesses need data-driven strategies to optimize sales, marketing spend, and pricing. This project integrates **retail sales data** and **consumer behavior insights** to:

- Analyze seasonal trends in sales.
- Evaluate marketing effectiveness on revenue growth.
- Segment customers based on shopping habits.
- Predict future sales and consumer trends using machine learning.

By leveraging big data frameworks (Hadoop/Spark), the project will uncover actionable insights for revenue optimization and personalized marketing strategies.

2. Dataset(s)

1. **Consumer Behavior & Shopping Habits Dataset** (416.61 KB) – Provides demographics, purchase history, discount sensitivity, and preferred shopping channels Consumer Behavior and Shopping Habits Dataset:

3. Planned Approach

1. **Data Collection & Preprocessing**: Clean missing values, normalize features and preprocess it using Hadoop.
2. **Feature Engineering**: Identify sales trends, high-demand products, and peak shopping seasons, Analyze marketing spend efficiency and segment customers using clustering
3. **Model Selection**: Use machine learning algorithms like Random Forest, Logistic Regression, or Neural Networks to train a predictive model.
4. **Evaluation & Optimization**: Validate the model using accuracy metrics like precision, recall, and F1-score, then fine-tune hyperparameters.