

AI for Bharat Hackathon

Powered by **aws**



Team Name :Friday

Team Leader Name :Prashanth chowdary

Problem Statement :AI for Retail, Commerce & Market Intelligence

Brief about the Idea:

Retail businesses often struggle to understand customer demand, buying patterns, and sales trends due to large volumes of unstructured and historical data. Traditional methods fail to provide accurate insights in real time, leading to poor inventory planning, lost sales, and inefficient decision-making. This idea proposes an AI-powered retail intelligence system that analyzes past sales data, customer behavior, and market trends to predict product demand and generate actionable insights for retailers. By using machine learning models, the system helps businesses optimize inventory, reduce losses, and improve customer satisfaction through data-driven decisions. The solution demonstrates meaningful use of AI by learning patterns from data that cannot be effectively handled through rule-based logic, enabling smarter and scalable retail decision making.

Your solution should be able to explain the following:

How different is it from existing ideas?

Most existing retail tools provide static reports and historical dashboards that require manual interpretation. Our solution goes a step ahead by using AI-driven predictive intelligence, automatically identifying demand patterns, customer preferences, and sales trends. Instead of just showing what happened, it focuses on what is likely to happen next, making it proactive rather than reactive.

How will it solve the problem?

The system uses machine learning models trained on historical sales and customer data to:

- Predict future product demand

- Identify high- and low-performing products

- Support smarter inventory and pricing decisions

By automating data analysis and prediction, retailers can reduce stock shortages, avoid overstocking, and make faster, data-backed decisions without relying on guesswork.

USP of the proposed solution

- AI-powered demand prediction, not rule-based logic

- Easy-to-use insights for small and medium retailers

- Scalable and adaptable across different retail categories

List of features offered by the solution

AI-Based Demand Forecasting

Predicts future product demand using historical sales and customer data.

Sales Trend Analysis

Identifies seasonal patterns, peak sales periods, and declining products.

Customer Behavior Insights

Analyzes buying patterns to understand customer preferences and repeat purchases.

Inventory Optimization Suggestions

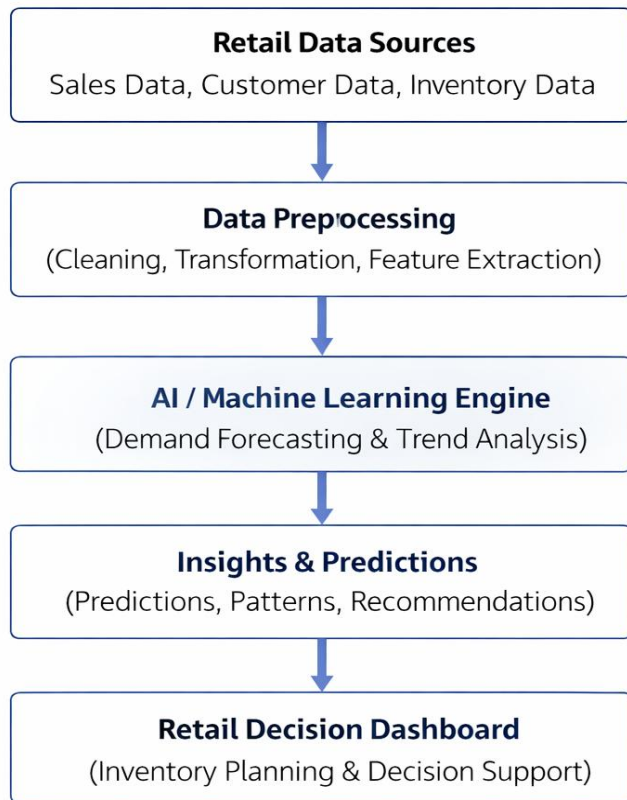
Recommends optimal stock levels to reduce overstocking and stock-outs.

Actionable Business Insights Dashboard

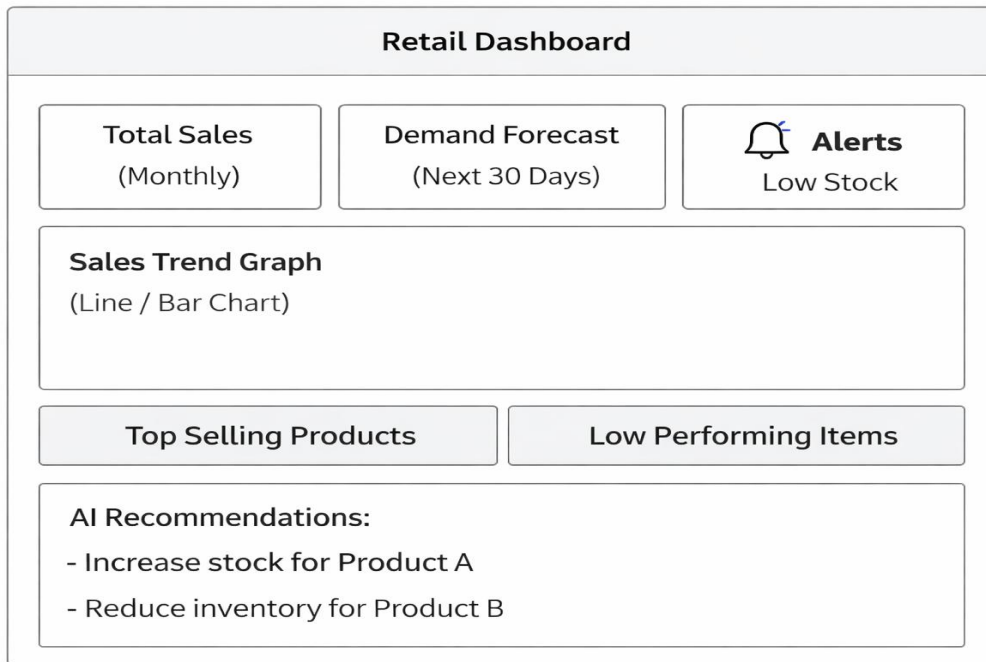
Displays AI-generated insights in a simple, visual, and easy-to-understand format.

Scalable Retail Intelligence System

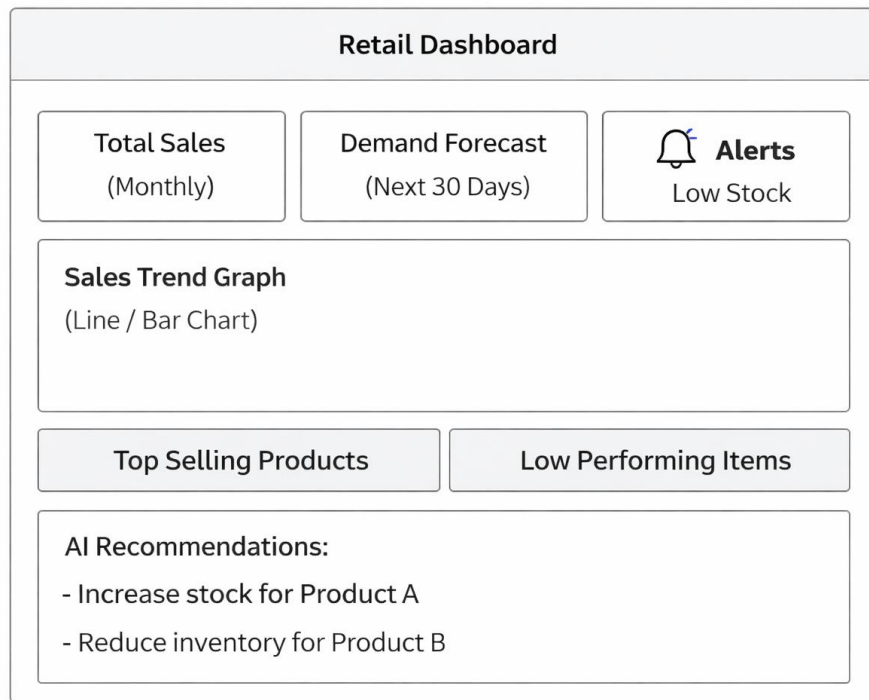
Can be adapted for small, medium, and large retail businesses across categories.



Wireframes/Mock diagrams of the proposed solution (optional)



Architecture diagram of the proposed solution:



Technologies to be used in the solution:

Programming Language:

Python – for data processing, model development, and backend logic

Machine Learning Libraries:

Scikit-learn – for demand forecasting and trend analysis

Pandas & NumPy – for data cleaning, transformation, and analysis

Data Visualization:

Matplotlib / Seaborn – for generating sales and trend visualizations

Frontend / Dashboard:

Streamlit – for building an interactive retail insights dashboard

Data Storage:

CSV / Relational Database (MySQL) – for storing sales, inventory, and customer data

Cloud Platform :

AWS – for scalable model deployment and data storage

AI-Assisted Development Tools:

ChatGPT / GitHub Copilot – for assisted development and code optimization

Add as per the requirements for the hackathon:

The solution demonstrates meaningful use of Artificial Intelligence, not rule-based logic. AI is used to analyze large retail datasets and predict demand trends, which cannot be efficiently achieved manually.

The proposed system focuses on clarity, usability, and real-world applicability for retailers. The solution follows a responsible AI approach, ensuring transparency and data-driven decision-making.

AI-assisted development tools were used to support idea formulation and implementation. The idea aligns with the AI for Bharat vision by supporting data-driven growth in the retail and commerce sector.

