

# AI-Driven Predictive Analytics for Grocery Retail: A Chatbot-Based Approach

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**Abstract:** *With advent of Artificial Intelligence there is significant change observed in retail. There is special need for small grocery stores to adapt this technology for inventory management and demand forecasting to gain profitability. This paper presents development of an AI powered chatbot which will aid the owners with insights related to predictive analytics, demand forecasting, inventory management, sales optimization and much more aspects. Utilizing an AI API, the chatbot can answer to various queries related to restocking of products, demand forecasts, impact of discount and holiday on sales, etc. The infrastructure of technology comprises of Flask API for backend, whereas web technologies like HTML, CSS, JavaScript are used for frontend. Also Chart.js is used for data visualization. The chatbot analyses historical sales data and runs various machine learning models and gives actionable insights that helps to optimize inventory levels, reduce wastage and maximize profits. The chat history feature allows users to access past conversations and insights. This paper details the implementation, outcome, performance metrics and limitations of the proposed system while highlighting the importance of data driven decision making in grocery retail sector*

**Keywords:** AI Chatbot, Predictive Analytics, Grocery Retail, Sales Forecasting, and Machine Learning, Natural Language Processing.

