ionidea AI
ENGAGE EXCELLENCE

Case Study | HYPERMARKETS & FMCG

Inventory Optimization with Big Data for a Major FMCG

Problem

Inefficient inventory management caused stockouts, excess inventory, and impacted profitability.

Limited visibility into real-time demand patterns and forecasting led to suboptimal inventory decisions.

Solution

Implemented a data-driven inventory management system powered by big data analytics and machine learning:

- **Data Warehouse:** Centralized repository integrating data from POS systems, supply chain data, and other relevant sources.
- **Big Data Analytics:** Tools and infrastructure for handling large, diverse datasets in real time.
- **Demand Forecasting:** Machine learning models trained to accurately predict demand at the individual product (SKU) level.
- **Inventory Optimization:** Software integrated with real-time data and forecasts for automated decision-making.

Results

- Significantly reduced stockouts, preventing lost sales and improving customer satisfaction.
- Optimized inventory levels, reducing overhead costs associated with excess inventory.
- Enhanced supply chain efficiency and overall profitability due to data-driven insights.

Technology Stack

- **Data Warehouse:** Scalable solution (SQL or NoSQL database depending on volume and structure).
- **Big Data Analytics:** Platforms like Hadoop, Spark, etc.
- **Demand Forecasting:** Machine learning libraries (e.g., scikit-learn, TensorFlow) and time-series analysis tools.
- **Inventory Management Software:** Core inventory system with integration capabilities.

Software Development

- **Data Pipelines:** Building robust pipelines for continuous data flow from diverse sources.
- **Predictive Modeling:** Developing and refining machine learning models for accurate demand forecasting.
- **Visualizations and Alerts:** Intuitive dashboards for tracking key inventory metrics with proactive alerts.

Before Metrics

Stockout rate: 5%

Inventory carrying costs: $10 million annually.

After Metrics

Stockout rate: 2%

Inventory carrying costs: Reduced by 15%