



AI-Driven Customer Retention and Sale Optimization in Retail E-Commerce

Overview

A leading retail e-commerce company was facing high customer churn and declining repeat purchases despite a growing product catalog. With thousands of SKUs and fragmented customer data across platforms (web, app, and CRM), the brand struggled to identify churn risks, personalize offers, and optimize its product recommendations. Manual campaign segmentation and static rule-based promotions were ineffective, leading to missed revenue opportunities and reduced customer lifetime value.

Business Challenges

The company struggled with:

High customer churn rates and declining repeat purchase frequency

Limited visibility into customer behavior and purchase intent

Inefficient manual segmentation and non-personalized campaigns

Underutilization of product catalog insights for cross-sell and up-sell opportunities

Fragmented data across web, app, and CRM platforms, making it difficult to build a unified customer profile

These challenges directly affected sales performance, marketing ROI, and customer lifetime value (CLV)

Objective

To leverage AI and data analytics for predicting customer churn, enhancing cross-sell and up-sell opportunities, and driving personalized engagement that improves customer retention and sales conversion rates.

Solution Approach



Customer 360° Modeling

Consolidated data from sales, purchase history, browsing behavior, and product catalog into a unified data for holistic customer profiling.



Churn Prediction Engine

Deployed a machine learning model to score customers based on churn probability using behavioral signals (recency, frequency, value, engagement patterns).



Personalized Product Recommendations

Implemented a recommendation system using collaborative and content-based filtering to suggest products aligned with customer preferences and purchase patterns.



Sales Campaign Optimization

Integrated predictive insights into CRM workflows, enabling marketing teams to run targeted retention and re-engagement campaigns.



Real-Time Insights Dashboard

Built an AI-powered analytics dashboard to monitor churn trends, campaign ROI, and product performance in real time.



Technology Stack



Data Layer

AWS S3 and Kafka for data ingestion and storage



AI/ML Frameworks

Python (Scikit-learn, TensorFlow, XGBoost) for churn prediction and recommendation models



Analytics & Visualization

Dashboards for campaign and sales insights



Integration

REST APIs for connecting AI outputs to e-commerce and CRM systems

Key Takeaway

25% reduction in customer churn within 3 months of deployment

18% increase in repeat purchase rate driven by personalized recommendations

15% lift in average order value through intelligent cross-sell suggestions

Automated segmentation reduced marketing campaign setup time by 40%

Enhanced decision-making with real-time visibility into churn risk and sales drivers



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