HACKTOBERFEST

Retail – AI Use Case Problem Statements

1. Real-Time Demand Forecasting & Inventory Optimization

Problem:

Retailers continue to struggle with stock-outs, over-stocking, slow response to demand shifts, and legacy rule-based forecasting. Trend reports highlight that data-quality, AI forecasting and supply-chain agility are top priorities for 2025.

Retailers face frequent mismatches between supply and demand due to manual or simplistic forecasting, leading to lost sales, markdowns, excess inventory and waste.

Challenge:

Build an AI-driven demand forecast and inventory optimization engine that:

- Uses POS, channel signals, seasonality and external factors (e.g., events, weather, promotions)
- Predicts item-level demand per channel/store/location
- Triggers intelligent replenishment recommendations and markdown/sell-through suggestions

Trend Link: [AI in retail forecasting, "Retail 4.0" operations, modern commerce platforms](#)

2. Hyper-Personalised Customer Engagement & Offer Delivery

Problem:

Consumers now expect personalised, context-aware shopping experiences across channels; generic offers or one-size promotions don't cut through. Retail research emphasises the move to scale AI-driven personalisation rather than pilot-only.

Many retailers rely on broad-brush segmentation and static rules for offers and recommendations, resulting in low engagement, weak loyalty and conversion gaps.

Challenge:

Design an AI-powered engagement platform that:

- Builds dynamic user profiles across channels (web, mobile, in-store)
- Delivers real-time personalised offers, content and product suggestions based on behaviour, context and channel
- Measures lift and adapts continuously

3. Seamless Omnichannel Commerce & Unified Customer Journey

Problem:

Despite many investments, channel silos persist (online vs in-store), leading to fractured customer experiences, returns issues, inadequate inventory visibility and channel conflicts. Industry sources emphasise unified commerce and modern architecture as key.

Retailers struggle to offer truly unified shopping—customers experience inconsistent inventory, price/promotions, purchase-&-pickup flows, returns across channels.

Challenge:

Build a unified commerce platform component that:

- Harmonises product/catalogue/inventory/promotions across channels
- Enables seamless flows (e.g., buy online pick up in store, mobile discovery in store)
- Uses AI to manage exceptions, optimise channel assignments and anticipate friction points

4. Smart Store Operations & Frontline AI Assistant

Problem:

Physical-retail stores face staff shortages, operational inefficiencies (stock gaps, shelf availability, task prioritisation), and legacy store-systems. Reports note in-store operations as an untapped area for AI impact.

Store operations remain reactive: staff receive tasks via traditional methods, shelf/gap issues identified too late, and store performance is hard to monitor in real-time.

Challenge:

Create an AI assistant for store operations that:

- Monitors store data (footfall, shelf sensors, inventory, staff task logs)
- Prioritises tasks (restock, merchandising, staffing) in real-time
- Provides frontline staff with a mobile/voice interface to act and track key store KPIs

5. Dynamic Pricing & Promotion Engine

Problem:

In a highly competitive and margin-squeezed environment, static pricing or manual promotions are insufficient. AI-driven pricing is increasingly referenced in major trend reports.

Retailers often update pricing and promotions based on calendar/events or rules; they lack dynamic capability to respond to demand shifts, competitor pricing, inventory levels, or customer segments in real-time.

Challenge:

Develop an AI engine that:

- Monitors factors like demand, inventory, competitor pricing, customer segment behaviour
- Recommends or implements dynamic price/promotions in real-time
- Simulates potential margin/volume impact and helps decide trade-offs

Trend Link: AI in price optimisation, commercial optimisation in retail

6. Sustainability-Driven Supply Chain & Waste Reduction

Problem:

Sustainability has moved from "nice to have" to strategic imperative. Retailers are under pressure to reduce waste, optimise packaging/logistics and use AI to achieve ESG goals. Trend research emphasises this.

Retail operations produce high levels of waste (unsold inventory, inefficient logistics, excess packaging), have limited visibility into sustainability metrics and struggle to optimise operations for both cost and carbon.

Challenge:

Build an AI solution that:

- Analyses supply-chain, inventory, returns, packaging and logistics data
- Identifies waste hotspots and recommends optimised routing, packaging or inventory strategies
- Tracks sustainability KPIs (e.g., carbon footprint, waste reduction) and aligns operations with them

Trend Link: AI for sustainability, circular retail models, data-driven operations