CREDENCYS
Data Management Company

Modern Data Platform for Real-Time Retail:

How Lakehouse Solves Data Challenges

Introduction

The retail industry is undergoing a massive transformation. With customer expectations rising and competition intensifying, data has become the most critical asset for retailers aiming to thrive in a digital-first world.

Today's consumers expect **personalized, consistent, and real-time experiences** across every touchpoint—online, in-store, and via mobile. Retailers, in turn, must make faster, smarter decisions across the value chain—from supply chain optimization to product recommendations to customer engagement.

But here's the challenge: most retailers are still operating with outdated data infrastructure that simply can't keep up.

Key Industry Insights:

- **73% of shoppers** expect brands to understand their unique needs and expectations (Salesforce).
- **83% of customers** say convenience is more important to them now than five years ago (PwC).
- **70% of retail companies** say they're investing in real-time analytics, yet only a fraction are executing at scale (McKinsey).
- **Legacy systems** remain the #1 barrier to digital transformation in retail, according to Forrester.

To meet today's demands, retailers need to move beyond siloed data systems and adopt a **modern data platform** that can power real-time operations, AI, and analytics at scale.

Common Challenges in Real-Time Retail Data Architecture

Retailers are rapidly modernizing—from automating distribution centers to enhancing customer engagement systems—to meet the growing demands of today's omnichannel shoppers. With warehouse automation expected to reach $41B, and delivery speed now a key driver of customer loyalty, brands are investing heavily in digital transformation.

Yet, despite these advancements, **many remain constrained by legacy data architectures** that can't support the speed and scale required for real-time decision-making.

Ingesting Data in Real Time
Retailers generate massive volumes of data from POS, clickstreams, mobile apps, inventory, and logistics systems. However, most still rely on **batch-based legacy warehouses,** which delay insights. Attempting more frequent ingestion often spikes costs, forcing many to settle for **nightly data updates,** delaying critical decisions.

Fine-Grained Analysis at Scale
Running accurate forecasts or price models by store and SKU can boost precision by 10% or more—but doing so requires **millions of calculations within tight windows.** Legacy systems can't scale for this, so retailers often compromise on either speed or accuracy.

Enabling Real-Time Decisions on the Front Line
Retailers need to empower thousands of employees with live insights. Yet, **most rely on daily or weekly reporting,** leaving frontline teams to make judgment calls without up-to-date data.

Personalizing the Omnichannel Experience
Retailers collect vast customer data but struggle to activate it at scale.
Off-the-shelf tools can't handle high-volume, high-velocity personalization, resulting in generic experiences that fail to engage.

The Lakehouse for Retail

The **Databricks Lakehouse for Retail** solves the core data challenges retailers face today—unlocking real-time insights, unifying all data types, and enabling predictive analytics at scale. Built on an open and fully managed platform, it combines the **flexibility of data lakes** with the **performance of data warehouses,** all while reducing cost and complexity.

Here's what makes it ideal for modern retail:

Real-Time Data for Real-Time Retail
The Lakehouse supports **streaming ingestion** from clickstreams, mobile apps, IoT sensors, POS, and e-commerce platforms. With Delta Lake, it delivers **record-setting performance with ACID transactions,** making real-time insights reliable and scalable.

All Data, One Platform
From structured POS data to images and videos, retailers collect a wide range of data types. The Lakehouse lets you **analyze all of it in a single platform,** helping uncover richer insights into customer behavior, inventory, and operations—**without driving up costs.**

Built-In Governance and Security
Enterprise-grade features like schema **enforcement, time travel, and data lineage** ensure data integrity, privacy, and compliance—without sacrificing speed or flexibility.

Predictive Analytics at Scale
Use cases like demand forecasting, inventory optimization, and personalized offers require massive scale and speed.
The Lakehouse supports **millions of predictions in tight windows,** enabling retailers to make **fast, accurate decisions** across supply chain and customer engagement.

Accelerate Value with Credencys and Databricks
With **Credencys and Databricks,** you can start fast—prioritizing the use case with the most business impact. This flexible approach helps you scale quickly and unlock value across multiple retail functions.

High-Impact Use Cases for Retailers Using the Lakehouse

Use Case: Real-Time Supply Chain Data

Challenge: Supply chain disruptions, volatile demand, and delays in insights.
Solution with Lakehouse:

Integrate real-time IoT sensor, logistics, and supplier data	Predict delivery delays using ML models	Optimize logistics and reduce overstock/out-of-stock scenarios

Use Case: Inventory Allocation

Challenge: Inaccurate inventory distribution across channels and locations.
Solution with Lakehouse:

Analyze sales patterns and local demand	Use ML models to forecast product demand at store-level	Allocate stock dynamically to maximize sell-through

Use Case: Point of Sale and Clickstream

Challenge: Lack of insight into cross-channel customer behavior.
Solution with Lakehouse:

Combine POS and web/mobile clickstream data	Identify buying patterns, channel preference, and abandoned carts	Deliver personalized marketing and retargeting in real-time

Use Case: On-Shelf Availability

Challenge: Manual checks and delays in detecting out-of-stock items.
Solution with Lakehouse:

Ingest planogram, IoT shelf sensor, and POS data in real time	Trigger alerts for restocking	Reduce lost sales and improve customer experience

Use Case: Recommendation Engines

Challenge: Irrelevant or generic product suggestions.
Solution with Lakehouse:

Build ML-based collaborative filtering and content-based models	Train models using unified customer and product data	Deliver real-time recommendations online and in-store

Use Case: Perpetual Inventory

Challenge: Inventory snapshots are outdated and inaccurate.
Solution with Lakehouse:

Enable near real-time inventory views with streaming data	Incorporate returns, orders, receipts, and damages continuously	Improve planning and reduce shrinkage

Use Case: Automated Replenishments

Challenge: Manual and reactive replenishment processes.
Solution with Lakehouse:

Forecast product sell-through and lead times with ML	Automate replenishment orders based on demand triggers	Reduce stockouts and carrying costs

Use Case: Propensity-to-Buy

Challenge: Limited insight into customer purchase intent.
Solution with Lakehouse:

Analyze browsing, transaction, demographic, and campaign data	Predict likelihood of purchase by segment or individual	Prioritize high-value leads and optimize marketing spend

Use Case: Next Best Action

Challenge: One-size-fits-all marketing and promotions.
Solution with Lakehouse:

Build a unified customer profile (CDP-style) on the Lakehouse	Apply ML to determine optimal timing, channel, and offer	Increase conversions through intelligent personalization

High-Impact Use Cases for Retailers Using the Lakehouse

Retail is no longer about reacting to yesterday's trends—it's about predicting and shaping tomorrow's outcomes in real time. From optimizing supply chains and streamlining inventory to delivering hyper-personalized customer experiences, the **Databricks Lakehouse for Retail** empowers organizations to make data-driven decisions at scale and speed.

As demonstrated in the use cases, the Lakehouse offers a unified platform to:

- Break down data silos and enable real-time analytics
- Leverage all data types—from POS and clickstream to video and IoT
- Run high-performance predictive models at enterprise scale
- Drive measurable outcomes across operations, marketing, and customer engagement

The retailers who win in this new era will be those who can **activate their data quickly, intelligently, and cost-effectively.**

Ready to Unlock the Full Value of Your Retail Data?

Partner with **Credencys and Databricks** to build your modern data foundation.

- Start with the use case that matters most
- Accelerate implementation with expert guidance
- Scale effortlessly as your business grows

Let's turn your data into real-time retail advantage.

Contact Us to Get Started