

Developing An AI-Driven Data Analytics Platform For A Global Retail Conglomerate

Customer

UAE's leading retail conglomerate

Country

UAE

Industry

Retail



ABOUT THE CLIENT



The client is a retail and distribution company with a strong operational network across the Middle East (MENA), Southeast Asia (SEA), and Hong Kong. The company delivers consumer goods across key sectors, including sports, food, healthcare, and everyday essentials. Operating in 12 countries with over 550 retail stores in 57 cities, its business model integrates both retail operations and distribution services across large physical stores, e-commerce platforms, and a sophisticated logistics backbone.

TECH STACK



BUSINESS SITUATION

As the client scaled its operations across multiple regions and verticals, it generated vast volumes of operational data daily spanning inventory, sales, customer behavior, and supply chain metrics. The complexity of managing this data from various sources became a major problem. Data was siloed across departments and brands, making it difficult to generate unified insights across regions and forecast consumer demand accurately.

And to stay ahead in the fast-moving retail landscape, they needed a technology partner who truly understood the complexities of multi-channel retail operations and could help them leverage real-time insights based on different business verticals.

The client envisioned an AI-powered data analytics platform that could unify their fragmented data streams, automate forecasting through custom machine learning models, and provide real-time, interactive dashboards for smarter decision-making.

KEY REQUIREMENTS

- 01
Centralized data infrastructure

Implement a centralized data infrastructure capable of unifying large volumes of structured and unstructured data from multiple regions and systems into a single, accessible platform.
- 02
Automated real-time data pipelines

Build automated real-time data pipelines capable of processing high-volume operational data daily, including inventory, sales, loyalty, footfall, and employee metrics.
- 03
Predictive analytics with machine learning

Develop machine learning models to enable predictive analytics for demand forecasting, operational optimization, and real-time diagnosis of irregular patterns or system anomalies.
- 04
Responsive KPI dashboards

Create responsive dashboards with dynamic KPI visualization, accessible across devices, tailored for various user roles.
- 05
Secure and scalable API integration

Integrate secure and scalable API framework to facilitate automated data exchange between legacy systems, cloud platforms, and third-party applications.
- 06
Data governance and compliance

Implement data governance protocols to ensure quality, security, and compliance across all regions and business units.

THE SOLUTION

Transforming fragmented data into unified retail intelligence

The project began with a detailed assessment of the client's current data architecture, which spanned multiple systems and regions. Unthinkable Solutions worked closely with their teams to map data sources, formats, and integration points across platforms like SAP, Dynamics 365, Retail NXT, Tyco, and SharePoint DMS. During the strategic planning phase, the team defined key KPIs across all business verticals and mapped user roles for different operational levels.

The backend infrastructure was designed to efficiently process massive data volumes from retail operations without affecting performance. Our developers used PySpark for distributed data processing which was able to handle their 300GB of daily data requirements. Raw data from various sources was systematically cleaned, structured into unified schemas, and processed in real-time.

Seamless System Integration With API Framework

Custom APIs were developed to enable seamless data flow between existing systems and the new analytics platform. This integration framework allows real-time inventory updates from SAP systems, automated daily sales reports from Dynamics 365, continuous tracking of customer loyalty behavior, and footfall analytics processed from the Tyco sensor network. The API architecture was designed for scalability and reliability, ensuring consistent data quality and minimal system downtime during integration processes.

Advanced Error Detection And Performance Monitoring

The platform incorporated comprehensive error tracking mechanisms to maintain data integrity and system reliability. Automated detection systems monitored data uploads, identified corrupted files or failed transfers, and generated real-time alerts for immediate resolution. Performance tracking is, further, embedded into the platform with real-time monitoring of data processing speeds, dashboard loading times, API response rates, and user activity. This enables continuous optimization and proactive system maintenance with little manual effort.

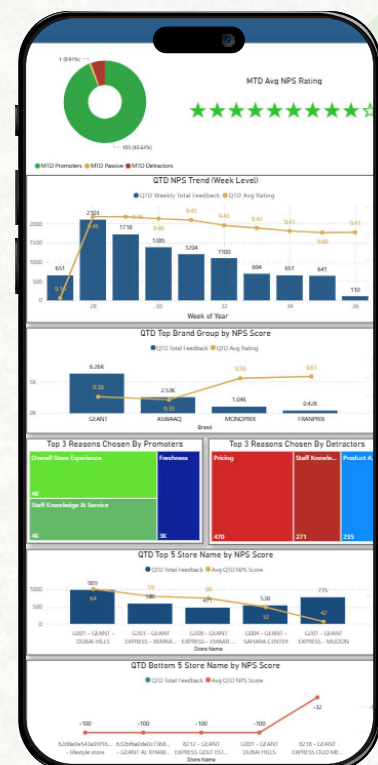
Some key enhancements behind platform's success were:

Centralized data lake implementation

Unthinkable tech experts selected a technology stack centered on Databricks on AWS, capable of supporting auto-scaling architecture and rapid deployment during peak data processing periods.

It helped in organizing all fragmented datasets into a unified, scalable platform. This helped in avoiding operational gaps and enabled comprehensive cross-functional visibility across their business verticals.

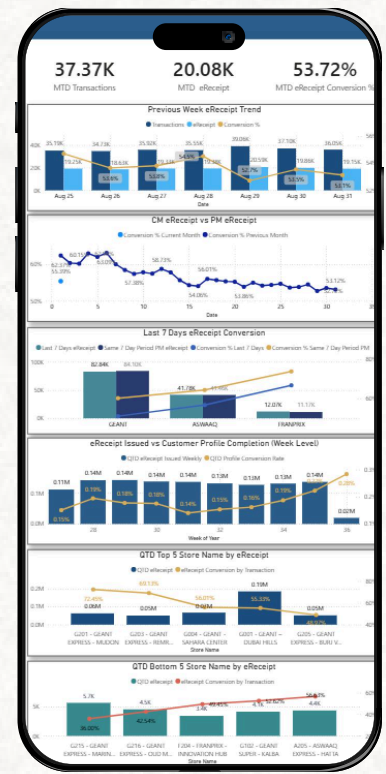
Further, our data experts incorporated advanced data governance frameworks ensuring data quality, security, and compliance across all regional operations while maintaining performance optimization for growing data volumes.



Real-time dashboard and visualization

Interactive dashboards were developed to provide comprehensive KPI data across desktop and mobile devices. The platform featured dynamic charts, multi-layered filtering options, and customizable views, enabling users to analyze data from multiple operational perspectives.

Some key dashboard features included tracking how fast inventory moved across regions, analyzing delivery by category and location, monitoring loyalty programs and customer behavior, measuring conversions, and reviewing gift card usage to improve promotions.

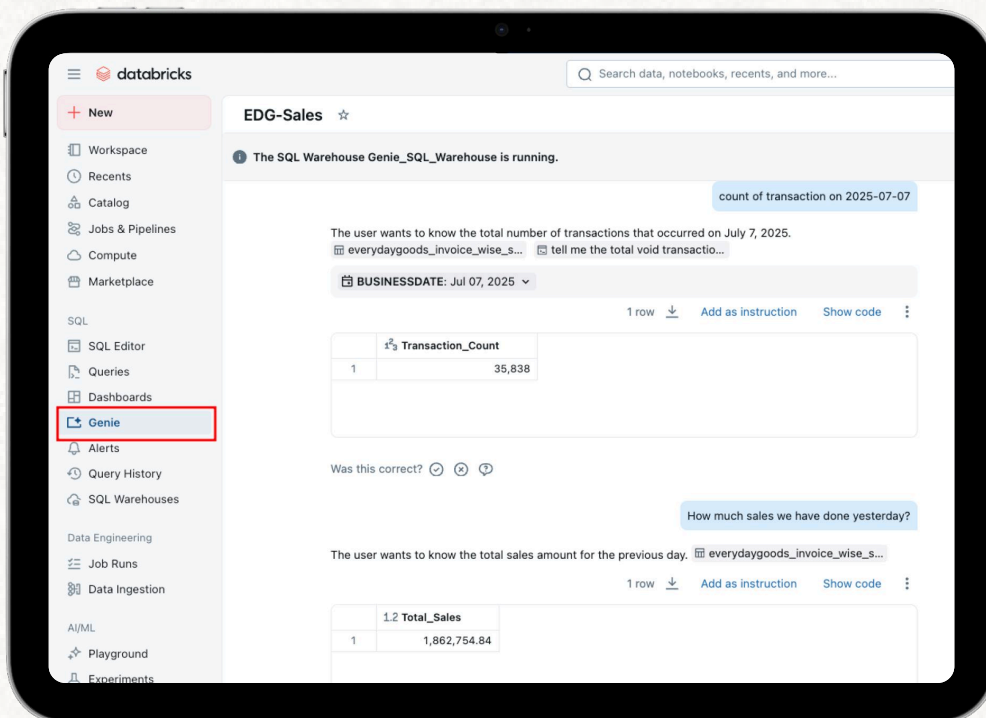


AI-powered forecasting enhanced by chatbot

AI-powered forecasting uses smart machine learning models to predict business needs and enhance decision-making. It integrates with Databricks Genie, a chatbot that allows retail teams to ask natural language questions about sales and inventory, instantly receiving accurate answers from Databricks SQL warehouses.

The AI system focused on factors like historical sales patterns, seasonal demand analysis, and regional demand variations. Additionally, it was also trained to identify errors and unusual patterns in sales performance, footfall metrics, and operational activities.

These models continuously learn from incoming data streams, improving accuracy and adapting to changing market conditions across diverse retail categories and geographic regions.



IMPACT

The unified dashboards spanning inventory, sales, customer insights, and operational metrics have enabled complete visibility into KPIs and behavioural trends across regions and business verticals.

The impact has been immediate and significant. The manual operational effort dropped by 52% while allowing in-house teams to respond faster and make smarter decisions. Additionally, AI-powered forecasting boosted inventory forecasting accuracy, helping reduce stock-outs and overstocking, further saving costs.

With a significant increase in data processing and visualization capability, the client now accesses real-time insights across its retail ecosystem, supporting faster response to market shifts. The scalable infrastructure has seamlessly managed growing data volumes, reinforcing their expansion strategy without compromising performance.

This strategic initiative not only delivered exceptional technical capabilities but also positioned them as a data-driven retail leader in the competitive MENA and Southeast Asian markets, enabling sustained growth and operational excellence.

KEY PERFORMANCE INDICATORS

52%

reduction in manual effort

65%

faster reporting

70%

increase in data processing capabilities

**HAVE A SOFTWARE
PRODUCT VISION IN MIND?**

Set up a personalized consultation with our technology expert

Let's Talk 



info@unthinkable.co



www.unthinkable.co