

# From Aisles to Insights: Solving Retail's Real-Time Data Dilemma



Margot Juros  
Research Director,  
Retail Technology Strategies, IDC

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# In This InfoBrief

Retailers are facing a complex array of pressures in today's environment and need to digitally transform. Access to real-time, AI-fueled data insights has become imperative for competitive success.



**Retailers leveraging data and AI successfully** are able to meet the fast-changing demands and expectations.



**Retailers have a gold mine of data to drive insights** but face steep challenges in leveraging it due to data silos, data visibility challenges, and inability to use data in real time.



**Retailers want to implement intelligent, data-driven insights but struggle** with where and how to get started and with roadblocks such as infrastructure challenges and a lack of the right talent/skills.



**Retailers can gain the benefits of AI with purpose-built, edge-driven AI retail solutions** without having to completely overhaul their infrastructure. Cost-effective, CPU-based AI solutions are good first steps on the road to becoming AI-fueled, data-driven retailers.

# Today's Retailers Face Multiple Competing Pressures

Retailers are caught in a perfect storm of new and rapidly evolving challenges, from heightened shopper expectations to volatile macroeconomic trends and growing external pressures.

### HEIGHTENED SHOPPER EXPECTATIONS/DIMINISHED LOYALTY

Shoppers have new expectations for seamless omnichannel retail and are willing to walk away from brands that don't provide features such as:

- ▶ Real-time item availability info
- ▶ Personalized promos and pricing
- ▶ Personalized service from store staff



**43%**

Will walk away from retailers lacking personalized promotions



**48%**

Will leave brands not delivering personalized/relevant communications

### INTENSIFYING EXTERNAL CHALLENGES

-  Growing cybersecurity risks and inability to prevent increasingly sophisticated attacks
-  Growing amounts of shrink, fraud, and theft but inadequate loss prevention solutions
-  An increasingly complex regulatory compliance environment and insufficient data tools and automation to handle it

### FAST-EVOLVING MACROECONOMIC TRENDS

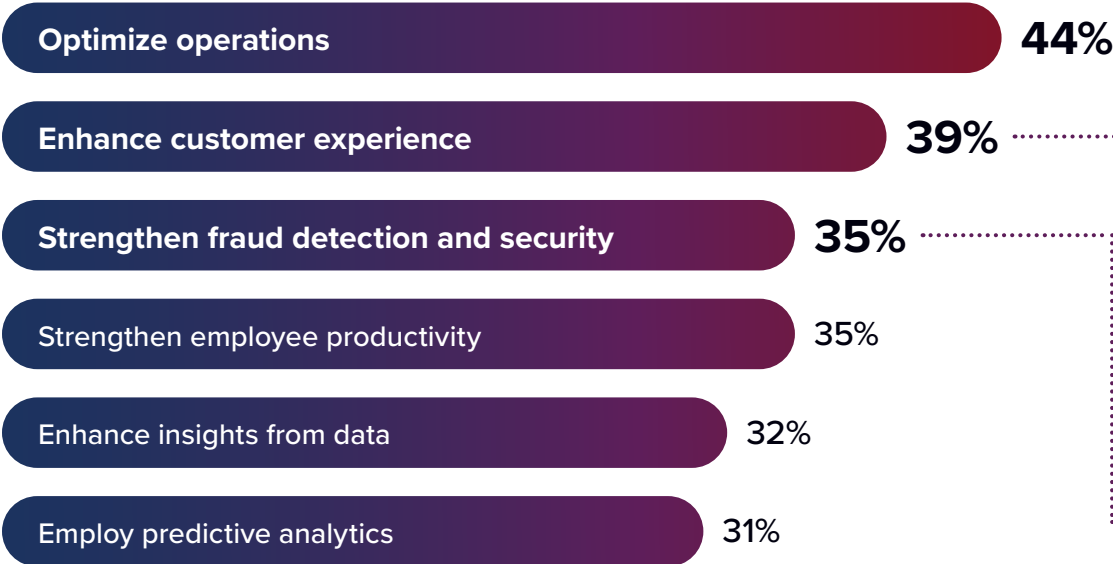
-  Slowing economic growth and uncertainty
-  Economic volatility/uncertainty/tariff wars
-  Labor shortages and IT skills shortages
-  Changing supply chain dynamics and forecast uncertainty

n = 1,265; Source: IDC's Global Consumer Sentiment Survey 2024. n = 980; Source: IDC's Syndicated Survey: Global Retail Survey 2024

# Fast-Changing Demands and Challenges Underline the Need for Intelligent, Data-Driven Retailing

Retailers need to become more agile to quickly and easily respond to new demands, and they have a critical need to use their own data in real time for insights to improve operations, customer experience, and cybersecurity/loss prevention.

### Top drivers of investments in AI everywhere/automation:



#### Optimize operations:

- ▶ Use AI-powered shelf monitoring and replenishment alerts.
- ▶ Improve traffic flow and product placement to increase sales.



#### Enhance customer experience:

- ▶ Create frictionless checkout.
- ▶ Create personalized offers and promotions.



#### Improve fraud detection and cybersecurity:

- ▶ Use AI analytics for improved theft and fraud monitoring and to develop proactive strategies to reduce shrink.
- ▶ Use predictive AI to proactively prevent cyberattacks before they happen.

n = 192; Source: IDC's *Industry Intelligence — Retail Survey 2025*, April 2025

# More Data-Creating Tech Means Spiraling Amounts of Valuable Retail Data, Yet Many Retailers Can't Leverage It

The growing use of data capture/creating tech, such as IoT, sensors, and video, means a gold mine of data to drive competitive success. Yet, retailers face challenges from data silos, lack of visibility, and real-time access to data.

- ▶ Massive amounts of data exist from digitally-enabled, connected products, assets, and people. According to IDC's 2024 datasphere research, **by 2030, companies will be managing an average of 90 exabytes of data per day.**
- ▶ **Retailers want to leverage data and apply real-time AI analytics** to create highly relevant customer insights, reduce operational inefficiencies, and innovate new business models and data monetization opportunities.



However, many retailers struggle to leverage their data due to data silos/a lack of visibility, poor data integration, and inability to use data in real time.

## RETAILERS' TOP INTERNAL BUSINESS CHALLENGES



Lack of data visibility



Poor data integration/  
synchronization



Lack of analytics/  
accessible data insights

n = 980; Source: IDC's *Syndicated Survey: Global Retail Survey 2024*

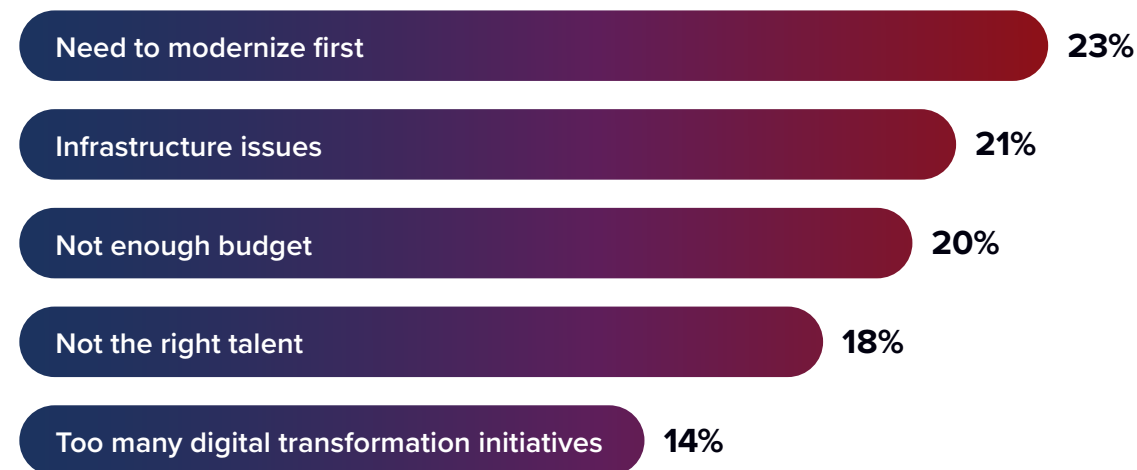
# Retailers Can Leverage AI-Powered Data Insights Without Completely Revamping Infrastructure Thanks to Edge-Driven AI Solutions

- ▶ **Modern, edge-native AI solutions tailored for retail** extend the benefits of real-time data processing and applied AI analytics.
- ▶ **However, retailers struggle with how to get started in the journey to AI-fueled, data-driven retail.** Deep concerns about modernization needs, the need to overhaul infrastructure, and the lack of the right talent hold retailers back from pivoting to AI more quickly.



Retailers do not need to completely overhaul to start gaining benefits from AI-driven applications. A good starting place to consider is a cost-effective, fit-for-purpose, CPU-based AI edge solution.

## What is the primary issue holding your organization back from pivoting to AI more quickly?



n = 95; Source: IDC's Syndicated Survey 2025: AI-Wave 1 Retail

# Quickly Gain Benefits and Improve Competitiveness by Deploying Edge-Based Cloud AI Solutions

There is a wide range of CPU-based AI edge solutions for retailers to consider that cover challenges in many different aspects of retail, including:



## CUSTOMER EXPERIENCE

- ▶ Drive customer loyalty with enhanced checkout experiences.
- ▶ Improve customer experience with wait time and occupancy monitoring.
- ▶ Use intelligent shelf monitoring to mitigate out of stocks for better customer satisfaction.
- ▶ Drive engagement with personalized promotions.



## LOSS PREVENTION/SAFETY

- ▶ Improve loss prevention efforts with applied AI to proactively recognize threats/fraud and optimize strategies.
- ▶ Reduce loss from theft with intelligent theft detection at store exits/checkout areas with real-time alerts.
- ▶ Use real-time spill detection for improved safety for shoppers and associates.



## INVENTORY AND LOGISTICS

- ▶ Implement intelligent stockout monitoring for better customer satisfaction and to maximize sales.
- ▶ Employ fraud detection and prevention with anomaly analytics.
- ▶ Use detection and real-time alerts to staff on food safety and waste issues, such as from frozen food that is melting or rotting produce.



# Quickly Gain Benefits and Improve Competitiveness by Deploying Edge-Native AI Solutions

Below is a selection of examples of benefits from CPU-based AI edge solutions.

	Use Cases	Solution	Benefits
<b>WaitTime</b> Camera-based intelligent crowd analytics	<ul style="list-style-type: none"> <li>▶ <b>Entry/exit analytics</b> for real-time tracking of shopper flow in/out of stores to optimize dynamic pricing, staffing, and promo timing</li> <li>▶ <b>Queue control and analytics</b> to determine missed revenue from long lines/waits and optimize staffing/alerting changes to minimize loss</li> </ul>	<ul style="list-style-type: none"> <li>▶ CPU-based edge and camera solution deployed on Lenovo-Intel technology</li> <li>▶ Leverages AI at the edge for fast, on-prem compute</li> </ul>	<ul style="list-style-type: none"> <li>▶ Identifies opportunities to improve ROI or <b>operational efficiencies</b> to reduce costs</li> <li>▶ <b>Improves customer experience</b> by minimizing wait times and optimizing staff during busier periods</li> </ul>
<b>Signatrix</b> Visual intelligence for retail	<ul style="list-style-type: none"> <li>▶ <b>Security/theft prevention</b> at store exits</li> <li>▶ <b>Shelf intelligence</b> to prevent out of stocks and gain intelligent insights into shelf sales</li> <li>▶ <b>POS theft detection/prevention</b>, such as detecting unpaid items left in cart</li> </ul>	<ul style="list-style-type: none"> <li>▶ CPU-based edge and camera solution; works with Lenovo in offering development and deploys on Lenovo edge</li> <li>▶ Offers GPU and CPU solutions but uses CPU where the cost–benefit ratio makes most sense to maximize cost effectiveness</li> </ul>	<ul style="list-style-type: none"> <li>▶ <b>Reduces loss</b> with real-time alerts to security/store staff to stop theft while it's happening</li> <li>▶ <b>Improves bottom line</b> using shelf insights to optimize product placement and reduce out of stocks</li> </ul>
<b>iOmniscient</b> Intuitive AI multi-sensory analytics (video, sound, and smell)	<ul style="list-style-type: none"> <li>▶ <b>Safety and security</b>, spill/slip detection in crowded environments</li> <li>▶ <b>Shrinkage</b> to detect theft and watch for known criminals (while protecting customer privacy)</li> <li>▶ <b>Drive-thru vehicle intelligence</b> to optimize customer experience and efficiency</li> </ul>	<ul style="list-style-type: none"> <li>▶ Integrated retail suite of 300+ applications available on Intel-based Lenovo edge and servers</li> <li>▶ Unique intuitive AI technology requiring no deep learning and no GPUs; solutions are built for purpose on CPU chips, which means lower costs and power usage than GPU-based solutions</li> </ul>	<ul style="list-style-type: none"> <li>▶ <b>Improves store safety for customers;</b> reduces fall-related claims</li> <li>▶ <b>Reduces shrinkage/theft</b></li> <li>▶ <b>Improves customer experience</b> through faster service</li> </ul>

# Essential Guidance

It is critical for retailers to embrace edge-driven AI solutions to gain the real-time, intelligent data insights they need to successfully compete in today's environment.



**Real-time AI solutions are critical** to solving today's key retail challenges and driving competitive success.



**Retailers need to consider modern, edge-native AI solutions** to extend the benefits of real-time data processing and applied AI analytics to their own rich data sets.



**Fit-for-purpose industry solutions** provide a cost-effective way to gain the benefits of AI as a great first step on the road to mature, intelligent, data-driven retailing or as an add-on to existing AI strategies.



# About the IDC Analyst

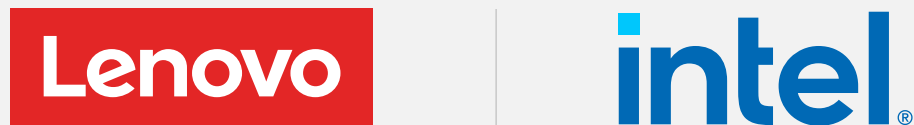
**Margot Juros**

Research Director,  
Retail Technology Strategies, IDC

Margot Juros is a research director for IDC Retail Insights and is responsible for the Retail Technology Strategies research program. Juros's core research focuses on best practices, trends, market conditions, business concerns, and vendor offerings to provide authoritative advice on investment, life-cycle management, and the use of technologies for modern IT infrastructure. Her research will cover key technologies in retail transformation, including IT modernization, cloud/edge/5G, security, payments, mobile platforms, and network management.

[More about Margot Juros](#)

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IDC Research, Inc.  
140 Kendrick Street, Building B, Needham, MA 02494, USA  
T +1 508 872 8200

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