



The next-generation retail store

Accelerating the hybrid shopping journey with AI and cloud

Experts on this topic



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Key takeaways

Retailers are on an accelerated journey to transform their stores and deliver differentiated consumer experiences and interactions.

■ Next generation stores

In response to evolving consumer behavior and the continued relevance of stores,¹ many retailers are on an accelerated journey to digitally transform their physical locations.

■ Differentiated experiences

As they navigate their hybrid shopping experiences, consumers across all demographics want personalized, frictionless service via interactions with both human and digital associates.²

■ The “Golden Thread” of intelligent workflows

Instead of experimenting with specific point solutions, retailers must orchestrate these experiences through intelligent workflows that weave across an enterprise and its ecosystems.³

■ The Store Operating Platform

Retailers must build these capabilities on a Store Operating Platform that can scale across thousands of locations, implement enhanced security capabilities, and provide the flexibility to integrate point solutions and disparate data sources.

In the new normal, stores still matter

Over the past 2 years, we have all needed to adopt new hybrid approaches to working, parenting, socializing—and shopping. The emergence of “hybrid shopping,” which blends in-store digital and physical touchpoints, was born out of necessity but has become mainstream.⁴ In fact, hybrid shopping is the primary buying method for 27% of all consumers and 36% of Gen Zers. And critically, across all ages, nearly 3 in 4 (72%) of consumers overall depend on stores as part of their primary buying method.⁵

This creates both a challenge and an opportunity: how can retailers seamlessly weave together experiences that traverse online, in-store, mobile, and virtual channels within a single customer journey?

The Cognitive Store is a key aspect of this new landscape. Representing our vision for the store of the future, the Cognitive Store is an AI-driven digitally transformed physical location that delivers differentiated *personalized experiences* through interaction with *superpowered associates*, is orchestrated by *intelligent workflows* that are proactively supported by a *smart operations center*, and is powered by a *Store Operating Platform*.

The Cognitive Store is emerging as a target operating model that can enable retailers to thrive in a dynamic environment. This model embraces AI at its core to enable key capabilities across these 5 areas:

Personalized experiences

The Cognitive Store incorporates hyper-localized, hyper-personal insights from both digital and physical interactions—for example, knowing the context behind the customer’s visit and delivering Next Best Action recommendations in real time.

Superpowered associates

Equipped with AI assistants, store associates can facilitate meaningful contextual exchanges with consumers across virtually all touchpoints.

Intelligent workflows

The rapid evolution of shopping behavior is driving the need to proactively optimize in-store business processes such as buy online/fulfill in store, in-store purchase journeys, management of store-level inventory and on-shelf availability, and replenishment, shipment intake, and local deliveries.

Operations center

This serves as a hub that proactively monitors store operations and efficiently handles incidents, changes, and problems to facilitate fast resolution.

Store Operating Platform

This platform powers an open foundation that can scale across thousands of stores and promote enhanced security from enterprise through the edge. The platform’s resilience can help ensure continuous business operations, facilitate AI at the edge, and provide the flexibility for integrating point solutions and disparate data sources.

Why do we need Cognitive Stores?

Pre-COVID-19, IBV research revealed that 70% of consumers reported shopping in “micro moments.”

Retail stores continue to be an essential part of consumers’ lives. Throughout COVID-19 and into the post-pandemic landscape, stores have emerged even stronger. They remain the primary place where customers go to purchase what they need and want—and also to interact with each other, with knowledgeable store staff, and with the brands they love.

At the same time, stores are no longer the only option when it comes to shopping. Pre-COVID-19, IBV research revealed that 70% of consumers reported shopping in “micro moments”⁶—that is, while doing something else. And 35% said they shopped this way at least once a week.⁷ Customer shopping journeys have splintered across multiple digital, physical, mobile, and in-person touchpoints.

COVID-19 has accelerated this trend. Consumers now most commonly shop in 3 ways: in stores (65%), on a mobile app (50%), and via a website (42%). And they engage in extensive education before purchasing. 73% of consumers learn about products online via brand and retail websites, social channels, and marketplaces. 27% study ratings and reviews, and 19% learn about products through ads.

Physical stores may view these trends as a threat. But in truth, they’re an opportunity: virtually every touchpoint creates information that can be as valuable as sales. But to generate that value, information must be infused with intelligence. To meet the goal of AI-driven store transformation, retailers must focus on more than just traffic, conversion, and 4-wall profit. They have to aggregate, curate, analyze, and act on data gleaned from multiple internal and external sources, driving personalized experiences for both frictionless and high-touch service models, and lowering costs by optimizing workflows.

In the Cognitive Store, interactions have context derived from previous experiences. These exchanges set the stage for continued relationships.

Becoming a Cognitive Store demands forward-looking reinvention. It involves reconsidering everything from physical store design to re-platforming technology and operating infrastructures. It means using robust data to hyper-localize offers to individual consumers, moving from “one size fits all” to “one size fits one.” It means making the most of enhanced insights derived from data about neighborhoods, competition, weather, and activities—all of which can shape services, pricing and promotions, staffing, and more.

In effect, the Cognitive Store distills data from the macro to the micro, from broad-brush analytics to personalized data points. Sales associates have the opportunity to gain deep knowledge of their consumers, helping to create in-store visits that are both personalized and productive. Store managers—even those working for global companies—can “think local,” with the power to drive business across organizational channels in their trade area.

The Cognitive Store is the store of the future—and the time to get started is now.



Done, now, and next

How can you best
prepare for your
Cognitive Store of
tomorrow?

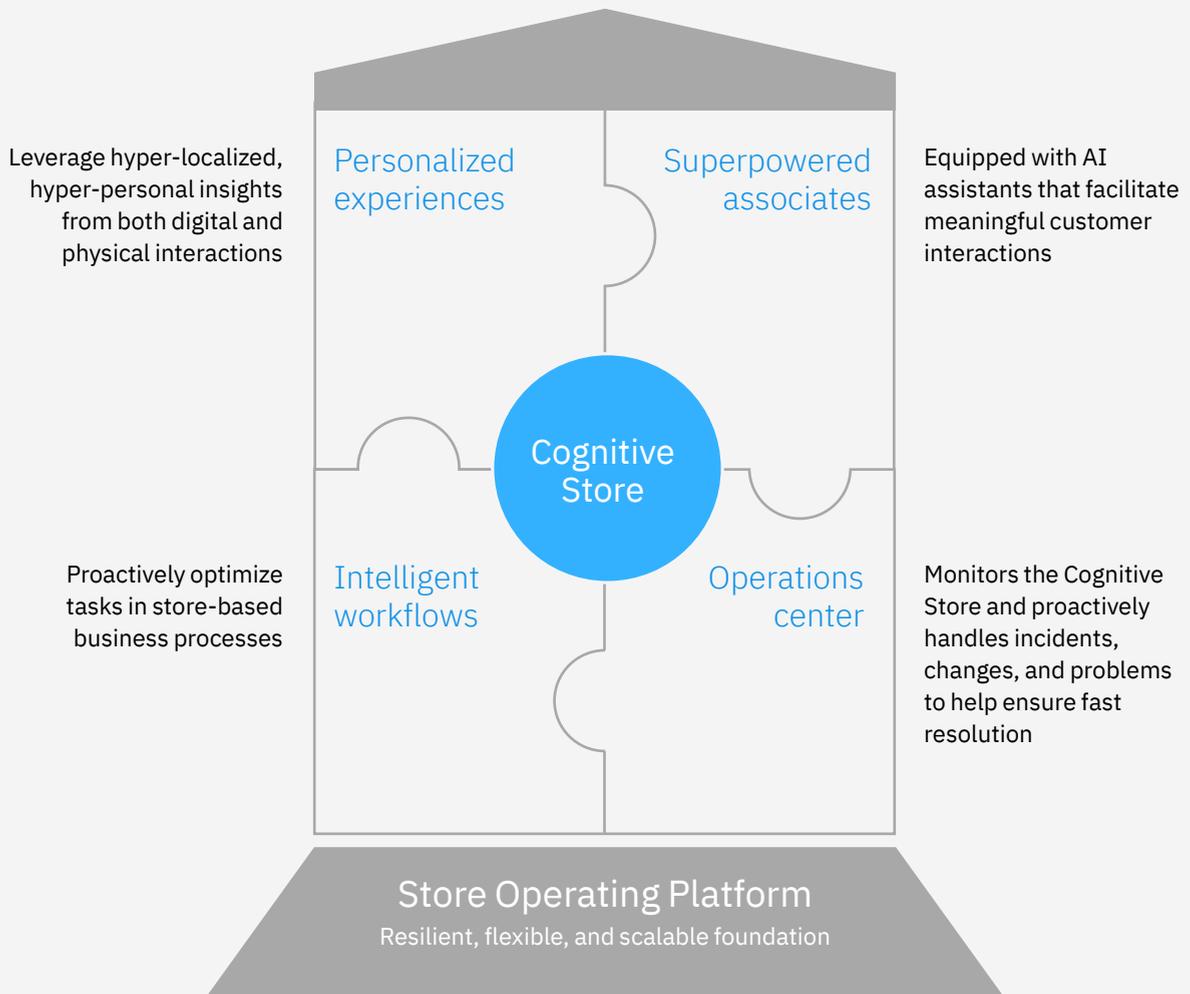
Many retailers have begun to address the necessity of the Cognitive Store, and some have made substantial progress. Still, many take a “micro” approach, using Cognitive Store technology for specific use cases, such as staging orders for curbside pickup or using automation and robotics for inventory counting. However, by not envisioning the Cognitive Store *holistically*, these retail organizations risk continued fragmentation of their business channels—and falling behind their more strategic competitors.⁸

We believe that the Cognitive Store transformation requires a more comprehensive approach that spans all 5 areas: personalized experiences, superpowered associates, intelligent workflows, a smart operations center, and a foundational Store Operating Platform (see Figure 1).

As with any transformational exercise, charting the course from the current to the desired state requires these questions to be answered: How do you get from here to there? What should already be in place? What needs urgent focus today? And how can you best prepare for your Cognitive Store of tomorrow?

FIGURE 1

The Cognitive Store



Source: IBM Institute for Business Value.

Done/now/next framework capabilities

Using the framework below, we have outlined some of the key capabilities retailers need to develop in each area:

Done

These benchmarks are yesterday's news. Leading retailers are well underway on these measures. If you're not there, you're behind.

Now

Strive for these milestones today to keep pace with your competition—they're engaging in active projects slated for completion in the near term.

Next

To superscale your Cognitive Store over the next 3 years and beyond, start planning today.

Personalized experiences

Done

Embrace *AI-enabled self-service models* to reduce costs and increase customer satisfaction

Now

Harmonize digital-physical experiences to align with new shopping patterns

Next

Curate and execute real-time personalized digital/hybrid experiences based on comprehensive internal, external, and customer insights from every channel

Increase agility by *shifting customer-facing applications to cloud*

Reinvent store operations and technology, *shifting from a product-centric to a customer-centric mindset*

Enable *contactless and/or passive commerce*, leveraging AI and IoT

Create *unified customer experiences* across physical and digital touchpoints

Personalize customer experiences based on store-focused (buy online-fulfill in store, in-store sales) *buying behaviors*

Increase store agility to be able to *adapt more quickly to changing local conditions (delivering assortments based on buying behaviors)*

Superpowered associates

Done

Enhance employee productivity and satisfaction by modernizing and mobile-enabling key tools

Now

Embrace *human-centered design* to help ensure enterprise experiences meet customer and associate needs

Next

Expand intelligent workflows to assign and distribute tasks between humans and machines based on real-time understanding of capacity and capabilities

Aggressively hire more *digitally savvy talent*

Use *intelligent agents* to enhance human cognitive and physical capabilities

Arm store associates with real-time digital capabilities to *sell and serve customers from anywhere*

Leverage new capabilities (such as AI, AR/VR, mobile) to *improve training for employees*

Incorporate health and wellness *insights to improve working conditions* (for store, warehouse, and data center employees)

Build predictive models to address skills and talent issues before they happen

Use *AI and automation* to support key hiring and development processes to support peak/holiday seasons

Leverage AI to identify new sources of talent, both internal and external

Extend the enterprise to *enable work performed by employees, partners, and gig workers*

Intelligent workflows

Done

Modernize allocation and replenishment using AI/ML to enable smaller pull-based product flows into stores

Build multi-modal distribution capabilities, leveraging all available forward-deployed inventory to address “last mile” challenges for store-focused fulfillment options

Adapt store fulfillment processes to align with customer buying behaviors.

Now

Build capabilities to assess demand patterns at local level and react to changes in near real-time

Extend capabilities by enabling inventory visibility in stores and across partner ecosystem

Optimize staff productivity for core store processes

Next

Create hyper-localized assortments and merchandising by region/neighborhood to optimize sell-through and store space

Scale and automate proactive stock replenishment, promotions and pricing, and optimize supply across ecosystem

Incorporate sustainability and social purpose into store-level workflows and metrics

Operations center

Done

Identify where store business processes introduce errors and require increased reconciliation

Analyze historical incident and problem data in operational store processes to determine patterns and explore remediation steps

Instrument store processes and associated applications for observability

Now

Scale store processes and procedures to help ensure operational resiliency

Define and validate specific remediation steps to address common incident and problem patterns

Streamline error-prone processes through automation and ChatOps

Next

Use insights, automation, and AI to automatically adjust running store and enterprise business processes

Apply AIOps across store-related business processes and applications to proactively handle issues and problems

Establish a Unified Control Plane for stores to manage operations measured by real-time, next generation digital store and business KPIs which correlate operational and financial performance

Store Operating Platform

Done

Integrate store systems with enterprise and cloud systems to enable data exchange and decision-making

Increase resiliency by orchestrating security across the entire store IT landscape including edge devices, systems, and applications

Establish an automated disaster recovery capability to allow store operations to continue in disconnected mode

Manage store IoT devices consistently to improve operations, security, and maintenance

Now

Create an experience orchestration layer to enable differentiated customer and associate experiences from multiple applications

Establish Site Reliability Engineering (SRE) to streamline store operations

Establish a software-defined (SD-WAN)⁹ based on 5G with policy-based automation supporting store operations

Seamlessly manage store applications, AI, data, and devices across hybrid cloud and edge

Next

Develop a store operating system that enables unified experiences, seamless data exchange, and real-time decision-making

Deploy automated runbooks to address common patterns for problems and incidents in store operations to support proactive management

Optimize traffic flow, performance, and quality at the edge to support real-time AI-driven insights across all store operations

Enable AI@edge with autonomous workload lifecycle management, built-in tamper-resistant security, and flexible deployments

A preview of the Cognitive Store journey

Here, we aggregate our successes with several major retail clients to create a composite portrait of the Cognitive Store.¹⁰

To illustrate the Cognitive Store evolution, let's use a near-universal retail experience: grocery shopping. Here, we aggregate the successes of several major retail clients. In combination, they create a composite portrait of the Cognitive Store.¹⁰

Let's get personal

A US-based food service supplier understood that shoppers are a vault of information. In effect, they hold the secrets to their own shopping satisfaction. Toward that end, this company captured and curated comprehensive internal, external, and customer data. Within the context of effective marketing and product selection, the company gained an understanding of in-store customer behaviors and decisions.

Building on this understanding, they created real-time personalized experiences—*using insights derived from shoppers themselves*—to simplify consumer decision-making and enhance their shopping experience.

Your new superhero: The store associate

To address the flood of customer calls during COVID-19, one North American grocery/pharmacy chain developed a COVID-19 virtual AI agent that handled 80% of customer calls regarding COVID-19 vaccines and appointments. This strategy reduced operational costs by 50% and call abandonment by 70%. Additionally, leveraging virtual agents freed up store associates to provide personalized interactions and help customers visiting the store.

From there, this organization accelerated to a fully realized cognitive call center and culminated with effective in-store task orchestration (for example, store associates supporting curbside pickup). It significantly improved customer experience by using intelligent agents to enable omnichannel shopping options (for example, buy online / curbside pickup), strengthening and expanding its loyalty program, and increasing responsiveness to customers at every touchpoint. The retailer accomplished this while driving significant (40%) operational cost savings.

The “golden thread”: Workflows that weave intelligence into store processes

In another scenario, a US-based food service retailer used AI-enabled cameras to monitor store inventory. The cameras worked in combination with IoT and machine learning (ML) technology to provide essential insights into store operations. This IOT/AI/ML trio specifically honed in on modernizing allocation and replenishment, enabling smaller pull-based product flows. The technology helped automate task management for associates, optimize shelf time, boost private-label sales, and automate replenishment and ordering to facilitate fresh inventory.

Preserving real food with artificial intelligence

With consumers increasingly focused on sustainability,¹¹ a global grocery chain is using an AI-enabled operations center to reduce food waste. The center uses insights, automation, and AI to drive smarter demand-driven food preparation and efficient tracking mechanisms that identify potential waste before it happens, adding new monetization opportunities—for example, sales to secondary markets. The grocer is also able to divert organic waste to digesters for energy generation and waste management cost reduction. In addition, the systems educate for alerts and visual cues that foods are expiring and should be rotated out, or perhaps donated.

The Cognitive Store starts here: The Store Operating Platform

All of these client examples operate on an open, resilient Store Operating Platform. One European grocer adopted this approach, along with DevSecOps,¹² to automate deployment and increase portability of applications. The platform has helped increase resiliency and moved the grocer toward end-to-end security across the entire IT landscape, both on premise and on the cloud. The platform improved reliability of the grocer’s critical infrastructure through automated disaster recovery.

Every scenario is different

But based on IBM client experience, we’ve found the following metrics can be achieved with the right expertise and infrastructure:

- Labor costs lowered by 50 to 100 basis points (0.5% to 1.0% of sales)
- Reduction of lost revenue due to stock shortages (estimated at 4-8%) by 1.0%
- Sales per employee increased (store net sales/# of store employees) by 0.5%.¹³

Perspective

The agile journey to Cognitive Store transformation

We're in the midst of an immense opportunity. Hybrid cloud, data, and AI are empowering us to transform the retail store model across multiple dimensions, including experience, operations, and business model. However, the path to get there involves time, resources, and expertise, as well as the capital constraints most retailers face when migrating to a new operating environment.

To help accelerate transformation to a Cognitive Store, we have developed a suite of integrated assets, technologies, and accelerators that enable key retail use cases associated with store operations, inventory management, and customer experience. These capabilities include data, AI, integration, and experience components that have been designed specifically for retail built on the IBM Retail Reference Architecture and are deployable on any environment. These capabilities are illustrated through key personas and processes delivered through the IBM Retail Orchestration Hub.¹⁴

These use cases are co-created with retailers through an agile development and open ecosystem approach that allows the Cognitive Store journey to rapidly move from pilot to scaled-out deployment. We use IBM Garage™ methodology and the Red Hat Open Innovation Labs to help expedite the realization of business outcomes in iterative, prioritized Minimum Viable Products (MVPs) and scale these rapidly to all stores.¹⁵

Getting there!

Done → now → next

Think in terms of iterative MVPs that use the power of AI-driven insights and a flexible hybrid cloud platform.

Pre-2020 will forever be known as the “before” times. But as they have through the COVID-19 era, consumers continue to shop. A recalibrated world presents a rare window for retailers to update their business. It’s an opportunity to exceed ever-higher customer expectations and differentiate themselves from their competition.

How to do this? Transform your stores to Cognitive Stores, now, before it’s a consumer mandate. Our position, in short, encompasses the areas that can grow your business: Deliver *personalized experiences* through interaction with *superpowered associates* orchestrated by *intelligent workflows* managed by an *operations center*, all powered by a *Store Operating Platform*.

Using the framework above, you can get started by thinking in terms of iterative MVPs in each of these areas—using the power of AI-driven insights and a flexible hybrid cloud platform.

Each retailer’s Cognitive Store evolution will be unique. But what’s shared across virtually all retailers is timing—and that time is now.

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