Reimagining Retail & CPG Value Chain with an Agent Operating Model

A platform-agnostic, scalable AI Agent solution that unifies enterprise business and operations — orchestrating cross-domain insights, planning, and execution through a composable framework to drive profitable growth.

From boardrooms to the C-suite, retail and CPG Leaders across B2C and B2B businesses continue to pursue revenue growth, profitability, and market share with relentless determination. Yet achieving these ambitions amid shrinking customer demand, eroding loyalty, geopolitical volatility, and rising costs now requires unprecedented speed and agility. Over the years, the retail and CPG value chain has undergone tremendous transformation to keep pace with shifting business models, operational complexity, and waves of technological innovation. Omnichannel once redefined the industry by converging value chains and sales channels, creating seamless experiences across digital and physical touchpoints. Today, AI Agents are driving the next leap, converging decisions with execution to deliver autonomous, real-time, and context-aware actions across supply chain, merchandizing, commerce, and customer engagement.

> If omni-channel gave customers choice, AI Agents are giving enterprises intelligence, speed, and scale—the new currency of growth.

AI agents in Action: Tackling core business challenges with impact

Before we understand the challenges and capabilities required for AI-driven solutions, let's first look at how retail and CPG operating models are being disrupted. Business planning cycles, an exercise that happened annually or quarterly is being reduced to weekly or daily horizons. Why? Demand volatility has intensified across categories. A brand like Nike, for example, constantly adjusts assortments and allocations in response to micro-trends, while Walmart leverages near real-time demand sensing to optimize replenishment. At the same time, the explosion of diverse data modalities from transactions and loyalty programs to clickstream, IoT sensors, and social signals creates both an opportunity and a challenge. Most businesses are still struggling to synthesize this data fast enough to enable predictive, dynamic, and agile decision-making. Equally disruptive is the customer experience and ecosystem transformation. Customer journeys are hyper-personal. Take Sephora for example. The retailer tailors product recommendations and promotions to its consumers. PepsiCo uses micro-segmentation to cater to regional taste preferences. While this is happening, entire product, channel, and partnership ecosystems are multiplying, blurring the lines between competition and collaboration. Amazon, Instacart, and CPG brands are at once partners, competitors, and distributors. This interconnected, fast-moving environment demands continuous adaptation, making AI Agents central to driving operational intelligence, speed, and scale across retail and CPG enterprises.

Shrinking Horizons

- Business planning cycles are collapsing from annual or quarterly to intra-day, daily, weekly, monthly

- Decisions are becoming continuous and real-time.

Exploding Data Modalities

- Data sources are growing in variety and velocity: transactions, sensors, social, and IoT.

- The challenge is not collecting data but synthesizing it into actionable intelligence.

Hyper-personal Journeys

- Customer journeys are no longer linear but micro, contextual, and unique.

- Every interaction is tailored, personal, and moment-driven.

Expanding Ecosystems

- Products, channels, and partnerships are multiplying.

- Competition and collaboration now coexist across vast, interconnected networks.

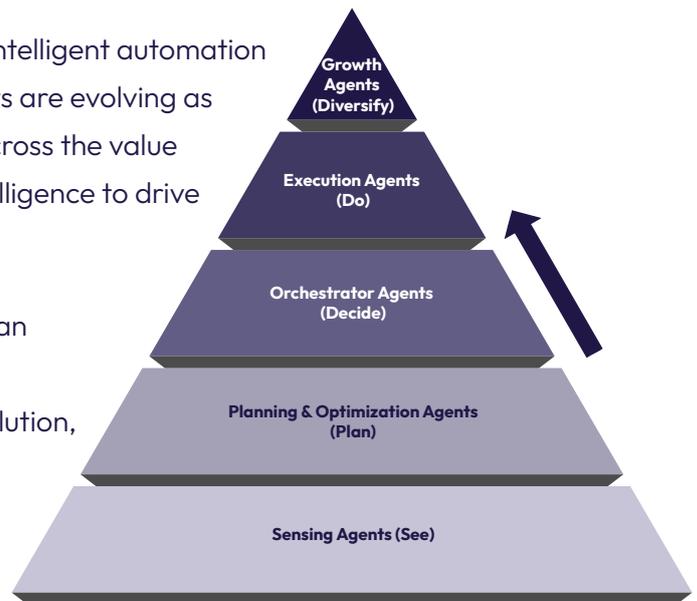# How AI agents can create the biggest impact: 5D business imperatives

As retail and CPG enterprises navigate shrinking horizons, exploding data, hyper-personalized journeys, and expanding ecosystems, five critical challenges emerge, which we collectively refer to as the 5D Imperatives. These are the areas where AI agents can unlock intelligence, speed, and scale to redefine growth and resilience.

I. **Demand volatility – dynamic demand sensing and forecasting:** Customer demand is no longer predictable. It fluctuates daily in response to promotions, social media buzz, weather conditions, and competitor actions. Retailers like Target and H&M are experimenting with AI-driven micro-forecasting to recalibrate their assortments in real-time. At the same time, CPG majors like Coca-Cola utilize dynamic models to adjust production in response to regional consumption trends. AI Agents can continuously monitor signals and replan demand at the SKU, store, or even basket level.

II. **Decision making – converged and connected decisions:** Traditional siloed decision-making, merchandizing on one side and supply chain on the other, fails in a hyper-connected world. Walmart integrates merchandizing, pricing, and replenishment into a single intelligence layer, while Unilever is piloting AI-enabled cross-functional scenario planning. AI agents can orchestrate decisions across commerce, marketing, supply, and operations, ensuring every move is aligned and optimized.

III. **Deconflicting goals – balancing growth, margin, and cost:** Profitability, cost efficiency, margin protection, and top-line growth are crucial factors for businesses to consider. Best Buy for example, must offset margin pressure using aggressive promotions. Nestle must weigh the benefits of a 'premium' tag against being an affordable brand in different markets. AI agents can simulate such trade-offs in real time and reconcile conflicts ahead of time to maximize business outcomes.

IV. **Delivery at scale – hyper personalization:** Execution at scale is no longer about mass campaigns; it's about delivering micro-level precision at massive scale. Amazon personalizes product recommendations for millions of shoppers in real time, while PepsiCo tests hyper-local assortments by neighborhood. AI Agents can execute atomic-level personalization across offers, pricing, fulfillment, and service—something humans and static systems can't scale.

V. **Diversify growth – unlocking new growth pathways:** Growth now comes from beyond core categories like private labels, retail media, new partnerships, and data monetization. Kroger's retail media network is now a billion-dollar business, while AB InBev experiments with direct-to-consumer platforms. AI Agents can proactively identify white spaces, model partnership potential, and accelerate growth diversification strategies.

AI agent building blocks for Retail CPG

In the new era of Retail and CPG, decision velocity and intelligent automation are emerging as the next competitive frontiers. AI Agents are evolving as digital co-pilots in that sense, reason, decide, and act across the value chain — augmenting human judgment with machine intelligence to drive faster, smarter, and more adaptive operations.

These agents are built on modular building blocks that can be assembled, composed, and orchestrated to deliver enterprise-wide outcomes. To bring structure to this evolution, we define five foundational AI Agent Archetypes, each mapped to one of the 5D Business Imperatives — See, Plan, Decide, Do, and Diversify.

Growth Agents (Diversify)

Execution Agents (Do)

Orchestrator Agents (Decide)

Planning & Optimization Agents (Plan)

Sensing Agents (See)

Together, these archetypes create an intelligent operating fabric that connects insight to execution, enabling enterprises to evolve toward autonomous, continuously learning retail and CPG ecosystems.

Proactive demand sensing agents (Archetype 1 – 'See')

Purpose: Anticipate demand shifts before they hit

Capabilities:

- Ingest POS, ERP, OMS, loyalty, competitor, social, weather, and macro signals
- Detect micro-trends and demand shocks in real time
- Generate early alerts for supply chain and commercial teams
- Example: A heatwave forecast where the agent predicts a beverage surge and alerts assortment planning, triggering replenishment.

Dynamic calibration agents (Archetype 2 – 'Plan')

Purpose: Continuously recalibrate plans and trade-offs

Capabilities:

- Optimize category, assortment, pricing, and promotions dynamically
- Auto-prioritize trending SKUs for enrichment and setup
- Reallocate inventory based on capacity, cost, and margin constraints to optimize efficiency
- Example: A competitor drops its price. The agent recalibrates the promotion plan and shifts stock to protect the margin.

Orchestrator agents (Archetype 3 – 'Decide and De-conflict')

Purpose: Align competing goals and optimize the cross-value chain

Capabilities:

- Balance service levels, margin, cost, and sustainability
- Synchronize merchandising, supply chain, and marketing
- Run trade-off simulations for enterprise-wide optimization
- Example: A promo-driven demand surge prompts the agent to reallocate SKUs across channels to balance logistics capacity and profitability.

Execution agents (Archetype 4 – 'Do')

Purpose: Automate workflows and execute them on a scale

Capabilities:

- Orchestrate order fulfillment, labor allocation, routing, and last-mile delivery
- Auto-adjust promos or allocations if stock risks are detected
- Personalize experiences and scale execution across channels
- Example: If a truck delay is detected, the agent reroutes stock, reschedules delivery slots, and updates promotions instantly.

Growth agents (Archetype 5 – 'Diversify')

Purpose: Unlock new growth and revenue streams

Capabilities:

- Launch and optimize retail media networks
- Build private labels and expand to marketplaces or D2C
- Automate ecosystem partnerships & monetization models
- Example: If there's a surge in plant-based demand, the agent proposes a private-label launch and recommends co-branding partnerships.

AI Agent Solution Framework for Retail and CPG Businesses - Powered by the ADAM Platform

ADAM is a first-of-its-kind Agentic Data and Application Management Platform powered by a network of intelligent, self-governing AI agents that automate the entire data lifecycle — from engineering and governance to analytics and operations — while extending through industry-specific frameworks to accelerate vertical AI solutions.

The AI Agent Solution Framework structures and operationalizes five core AI business agents across key domain processes connected through a unified architecture built on five foundational building blocks. Together, these agents form a cross-value chain AI operating system for retail and CPG, orchestrating demand, supply, operations, and growth in real-time.

Cross-value chain and domain orchestration and execution with growth potential	AI-powered Retail and Consumer Intelligence and Insights	Retail AI Agent Builder Framework Solution
	• Category manager copilot for revenue growth acceleration • Data monetization for supplier or vendor performance and optimization • New business development copilot for expanding markets, business models, and offerings	• Agents use case library • Low or no-code agent workflow/autonomous agent builder • Business configuration management (business objectives/KPI, domain objects, hierarchy/taxonomy, rules) • Multi-agent orchestration • Agent reference architecture • Agent monitoring and governance

Dynamic pre-planning and recalibration (model development, training, deployment)	Pre-built AI Models, Orchestration, and Simulators
	Powered by industry use cases, aligned AI/ML/LLM model design and build Demand forecast, category, assortment, product, price, promotion, inventory Order fulfilment, warehouse/DC, transportation and logistics

AI-native data transformation led by business semantic layer	**AI-ready Feature Engineering** A dynamic feature store that converts business signals into high-quality, explainable features, enabling faster, scalable, and more accurate AI models.
	Domain Canonical Data Schema and Ontology Graph A semantic business layer (knowledge graph) that maps and harmonizes business objectives, aligned to the client's industry and domain context.
Multi-modal, real-time sensing	**Unified Retail Data Fabric and Ingestion** A modular AI-ready foundation to unify, contextualize, and activate retail and CPG data across platforms, systems, and agents.

Unified retail data fabric and integration

What it is:

A modular, AI-ready foundation that unifies data from POS, e-commerce, loyalty, ERP, SCM, vendor portals, IoT sensors, and external feeds (social, weather, macroeconomics). It contextualizes and activates data for use across all agents.

How it enables agents:

- Proactive demand sensing agents fuse transactional sales with social signals (e.g., TikTok trends driving sudden demand for a beauty SKU).
- Dynamic calibration agents recalibrate pricing and promotions by blending competitive intelligence with inventory and demand forecasts.
- Execution agents integrate real-time logistics and labor data for agile fulfillment decisions.

An example:

- Walmart utilizes unified demand, supply, and external event data to anticipate a surge in water and battery demand driven by hurricanes.
- Nestle integrates consumers, distributors, and supply data across geographies to ensure product availability and freshness.

Unified ontology model (knowledge graph)

What it is:

A semantic business layer that harmonizes business objects (SKU, category, store, customer, promotion, order, shipment), creating a common language across merchandising, supply chain, and customer engagement systems.

How it enables agents:

- Orchestrator agents evaluate trade-offs (e.g., margin vs. sustainability) by linking the product, supplier, transportation, and carbon footprint.
- Dynamic calibration agents adjust assortments and promos based on ontology-driven insights like product affinities and substitution patterns.
- Growth agents identify adjacency opportunities (e.g., customers buying plant-based snacks may be candidates for eco-friendly beverages).

An example:

- Unilever uses ontology-driven products and consumer taxonomies to harmonize data across 190 countries, enabling consistent assortment and promotion strategies.
- Target leverages knowledge graphs to power personalization by connecting SKUs to customer lifestyle segments.

Pre-built domain solution accelerators and plan simulators

What it is:

AI/ML/LLM-powered accelerators that cover core retail and CPG domains: demand forecasting, assortment optimization, price or promo planning, inventory allocation, order fulfillment, warehousing, and logistics. Includes simulators to test scenarios.

How it enables agents:

- Proactive demand sensing agents use ML accelerators for short-term demand shifts, LLMs for narrative explanations (e.g., understand why a promotion underperformed).
- Dynamic calibration agents simulate promo impact, optimize allocation by store cluster, recalibrate weekly plans.
- Orchestrator agents run trade-off simulations (e.g., reduce delivery windows vs. increase labor availability).

An example:

- Best Buy runs 'what-if' promo simulators to optimize margins during back-to-school season.
- PepsiCo uses AI demand forecasting accelerators to reallocate stock across channels during significant sporting events.

AI-powered retail and consumer intelligence and insights

What it is:

Advanced analytics and copilots to empower human decision-makers, monetize data, and uncover new growth vectors.

How it enables agents:

- Proactive demand sensing agents provide merchandizers with copilots to understand early category shifts (e.g., surge in zero-sugar beverages).
- Dynamic calibration agents use pricing copilots to recommend real-time adjustments by channel.
- Growth Agents identify and prioritize new market entries (e.g., marketplace expansion, D2C, retail media).

- Kroger monetizes consumer intelligence through retail media, enabling CPG partners to optimize their targeting.
- Procter & Gamble uses data-driven copilots to evaluate new product opportunities in emerging markets.

Retail agent AI builder framework solution

What it is:

A low/no-code environment to design, deploy, and orchestrate AI agents. Includes a library of agent use cases, workflow builders, multi-agent orchestration, reference architectures, and governance mechanisms.

How it enables agents:

- Execution agents automate workflows for order routing, delivery slotting, and warehouse picking.
- Growth agents launch new agents rapidly (e.g., retail media optimization agent, private label assortment agent).
- Orchestrator agents govern agent decisions with human-in-loop approvals for critical trade-offs.

An example:

- Carrefour leverages orchestration frameworks to balance supplier negotiations, promotions, and inventory in near real-time.
- Coca-Cola develops AI copilots for marketing and pricing using low-code agent builders.

AI Agent Use Case framework to accelerate agentic adoption and value realization

Demand volatility, siloed decisions, conflicting objectives, execution bottlenecks, and the need for new growth models are challenges that traditional systems can't keep pace with. Leaders require a unified, agent-driven operating model that integrates insights, planning, and execution across the entire value chain.

To deliver cross-value chain orchestration with measurable business outcomes, we consolidate the five business agents into three core operating categories under our framework: Insights, Strategy and Planning and Intelligent Real-time Execution. Applied consistently across merchandising, supply chain, marketing, commerce, and loyalty, this model helps CXOs and operational leaders to:
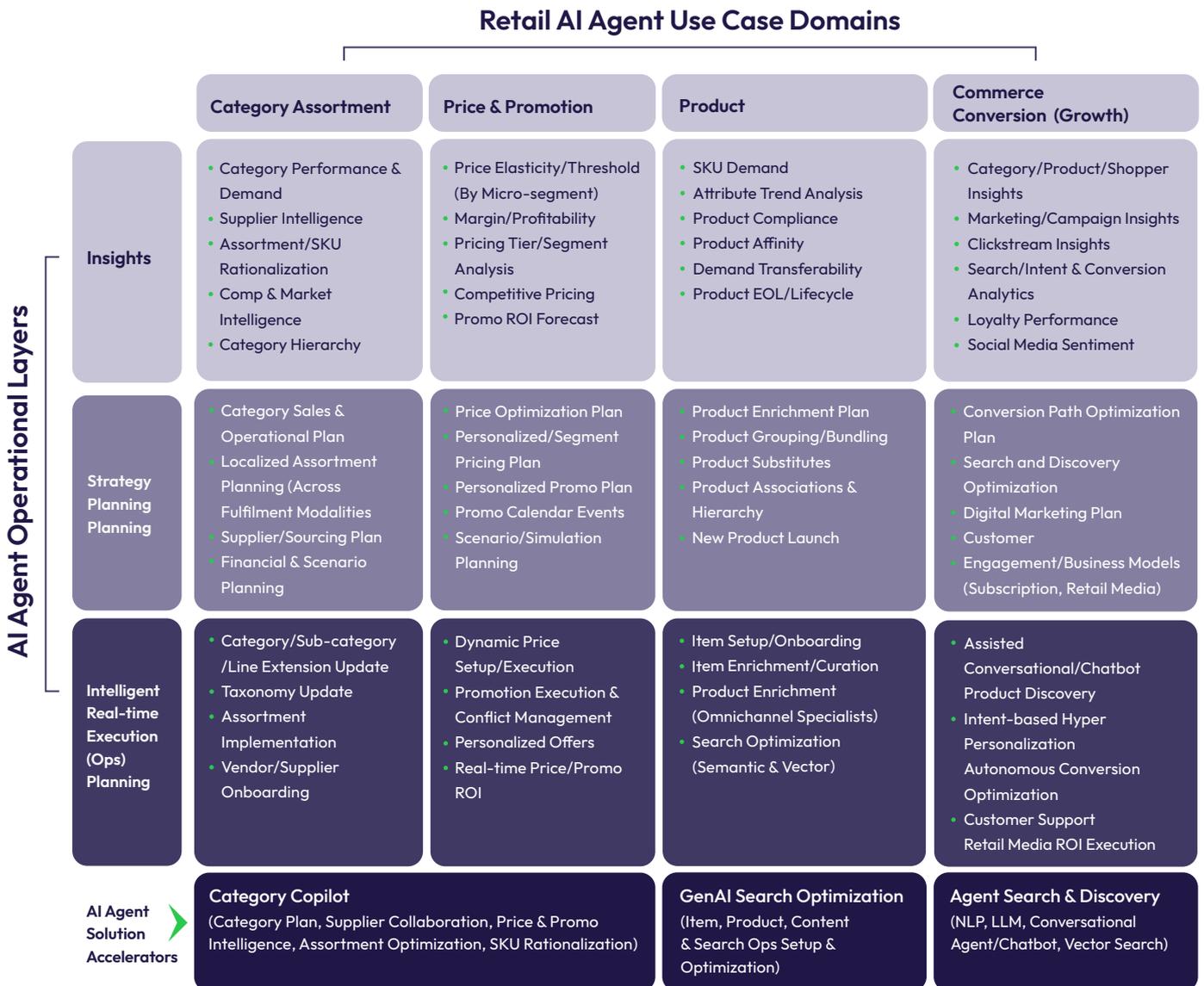
- Align cross-functional teams around a single integrated architecture.
- Transform fragmented signals into actionable insights for more innovative, faster planning.
- Recalibrate dynamically to balance cost, margin, growth, and customer needs.
- Execute intelligently at scale across partners, channels, and customers.
- Unlock new growth models from private labels to retail media and D2C.

The agent operating model

- Insights agents: Sense and interpret multi-variate demand and trend signals (POS, supply, weather, social) and translate them into real-time intelligence for downstream planning.

- Strategy and planning agents: Continuously build and recalibrate operational plans using dynamic calibration, digital twins, and cross-domain orchestration, aligning merchandizing, supply chain, and commercial functions.

- Execution agents: Translate plans into personalized, automated, and optimized execution at scale from fulfillment and logistics to workforce and customer interactions.

- Growth agents (embedded across all layers): Continuously unlock new revenue streams and business models (e.g., private-label meals or retail media) by embedding growth into insights, planning, and execution.

AI Agent Solution Framework
Retail and CPG for Insights-led Strategy Planning & Intelligent Real-time Execution

Retail AI Agent Use Case Domains

AI Agent Operational Layers		Category Assortment	Price & Promotion	Product	Commerce Conversion (Growth)
	Insights	• Category Performance & Demand • Supplier Intelligence • Assortment/SKU Rationalization • Comp & Market Intelligence • Category Hierarchy	• Price Elasticity/Threshold (By Micro-segment) • Margin/Profitability • Pricing Tier/Segment Analysis • Competitive Pricing • Promo ROI Forecast	• SKU Demand • Attribute Trend Analysis • Product Compliance • Product Affinity • Demand Transferability • Product EOL/Lifecycle	• Category/Product/Shopper Insights • Marketing/Campaign Insights • Clickstream Insights • Search/Intent & Conversion Analytics • Loyalty Performance • Social Media Sentiment
	Strategy Planning Planning	• Category Sales & Operational Plan • Localized Assortment Planning (Across Fulfilment Modalities • Supplier/Sourcing Plan • Financial & Scenario Planning	• Price Optimization Plan • Personalized/Segment Pricing Plan • Personalized Promo Plan • Promo Calendar Events • Scenario/Simulation Planning	• Product Enrichment Plan • Product Grouping/Bundling • Product Substitutes • Product Associations & Hierarchy • New Product Launch	• Conversion Path Optimization Plan • Search and Discovery Optimization • Digital Marketing Plan • Customer Engagement/Business Models (Subscription, Retail Media)
	Intelligent Real-time Execution (Ops) Planning	• Category/Sub-category /Line Extension Update • Taxonomy Update • Assortment Implementation • Vendor/Supplier Onboarding	• Dynamic Price Setup/Execution • Promotion Execution & Conflict Management • Personalized Offers • Real-time Price/Promo ROI	• Item Setup/Onboarding • Item Enrichment/Curation • Product Enrichment (Omnichannel Specialists) • Search Optimization (Semantic & Vector)	• Assisted Conversational/Chatbot Product Discovery • Intent-based Hyper Personalization Autonomous Conversion Optimization • Customer Support Retail Media ROI Execution
AI Agent Solution Accelerators ❯		**Category Copilot** (Category Plan, Supplier Collaboration, Price & Promo Intelligence, Assortment Optimization, SKU Rationalization)		**GenAI Search Optimization** (Item, Product, Content & Search Ops Setup & Optimization)	**Agent Search & Discovery** (NLP, LLM, Conversational Agent/Chatbot, Vector Search)

Retail AI Agent Use Case Domains

AI Agent Operational Layers	Inventory Allocation & Replenishment	Cost to Serve	Loyalty & Retention
Insights	• Dynamic Demand Signals • Assortment Plan • Inventory Visibility & Health • Supply Constraints • Cost to Serve Insights • Promo Event Insights • Lost Sales Prediction • Stores/DC Performance	• Customer Fulfilment & Delivery • Options Omnichannel Order & Sales, Basket • Analysis • Inventory SLAs, Health • Shipping & Carrier Costs DC, Store Fulfilment Cost, Delivery • Route Signals (Weather, Delays)	• Category/Product/Shopper • Insights • Marketing/Campaign Insights • Clickstream Insights • Search Conversion Analytics Loyalty, Membership & • Reward Redemption Churn Prediction
Strategy Planning Planning	• Cost & Margin Plan (Based on CTS, Inventory Holding Cost, Margin) • Inventory Allocation or Distribution Plan (Safety Stock) • Dynamic Inventory Reorder & Replenishment Plan • Dynamic Stock Transfer Plan	• Network & Node Design • Optimal Fulfilment Plan (Node, Path) • Optimized Labor Allocation (Picking, Staging) • Last-mile Delivery Plan (Consolidation, Route) • Returns & Reverse Logistics Plan	• Customer Churn & Retention Risk Scoring & Micro-segmentation • Cross-functional Retention Plan (Merch, CX, Marketing • Retention KPI Plan & Budget
Intelligent Real-time Execution (Ops) Planning	• Order Orchestration • Shipment Scheduling • Dynamic Routing & Carrier Optimization • Reallocation/Inter-node Transfers • Auto-replenishment • Inventory Monitoring & Exception Handling	• Dynamic Inventory Sync-up • Order Orchestration (Distributed, Split) • Last-mile Delivery • In-store Picking (Labor) • Returns, Refunds, Exchanges • Customer Support (Order Discrepancy Handling)	• Personalized Campaign & Loyalty Reward • Programs • Personalized Offers & Content • Retention Measurement & ROI
AI Agent Solution Accelerators ❯	**Connected Demand Intelligence Engine** (Integrated demand forecasting and inventory optimization)	**Cost to Serve Framework** (Optimized Order Orchestration, Fulfilment & Logistic Costs)	**Loyalty Model** (Churn, Retention, Personalized Loyalty, and Conversion Rate Optimization)

Domains brought together in a single framework

The AI Agent Use case Framework map seamlessly to critical retail and CPG domains, such as:

• Category and assortment from supplier intelligence to localized assortment planning and execution.

• Price and promotion from elasticity insights to personalized, real-time promotions.

• Product Management from trend and compliance insights to omnichannel item setup and enrichment.

• Commerce conversion from clickstream and loyalty insights to hyper-personalized engagement.

• Inventory and replenishment from demand signals to dynamic reallocation, routing, and exception handling.

• Cost to serve from omnichannel fulfillment cost insights to optimized last-mile execution.

• Loyalty and retention from churn prediction to personalized rewards and retention campaigns.

Why it matters for CXOs and leaders

The AI Agent Operating Model — a solution and use case framework — serves as a playbook for orchestrating AI agents.

- See the big picture while drilling into domain-specific opportunities.
- Unify cross-value chain ownership across merchandizing, supply chain, marketing, and commerce.
- Accelerate transformation by adopting a ready-made, extensible agent framework instead of piecemeal tools.

Powered by the ADAM platform, it transforms fragmented enterprise solutions into a cohesive Agentic OS for Retail and CPG. One that's purpose-built to deliver intelligence, speed, and scale across the 5D business imperatives.

About Brillio

Brillio is a digital technology services company that drives AI-first engineering and design-led experiences for global enterprises. Born digital in 2014, its consulting-led services span Customer Experience, Data & AI, Product Engineering, and Digital Infrastructure. With an industry-leading NPS of 71, Brillio accelerates time to market through its proprietary BrillioOne.ai platform, powered by AI-ready talent with deep domain expertise.
Brillio is the official Digital Transformation Partner and the official Data and AI Services Provider of Atlassian Williams Racing. Brillio partners with leading technology providers including Microsoft, AWS, Google Cloud, Salesforce, Adobe, Databricks, and Snowflake and operates with 6,000+ "Brillians" across 15 global delivery centers. Consistently recognized as a Great Place to Work since 2021, Brillio blends innovation, talent, and purpose to deliver measurable outcomes for clients and fulfilling careers for employees.

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