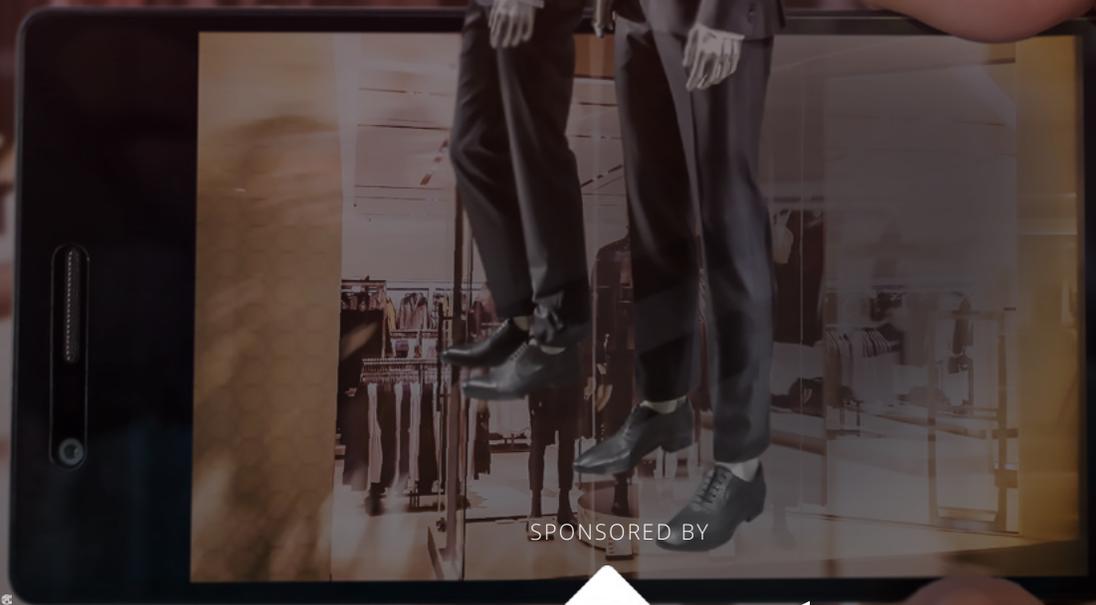


3 AI SUCCESS STORIES

Tips from
OVERSTOCK.COM,
FINISH LINE
AND H&M



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SPECIAL REPORT



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3 AI SUCCESS STORIES

An expanding group of retailers are implementing AI solutions to solve specific operational problems, from merchandising and marketing to promotions and pricing. AI's growth reflects this — the technology's market within retail is projected to reach [\\$27.2 billion by 2025](#).

Retailers are tapping AI to **drive sales and anticipate demand (50%); understand consumer behavior (46%);** and offer **highly accurate individualized promotions (46%),** according to a 2017 survey from Retail Week and Qubit.

This special report showcases how retailers from three different industry segments have implemented AI platforms across their enterprises. Highlights include:

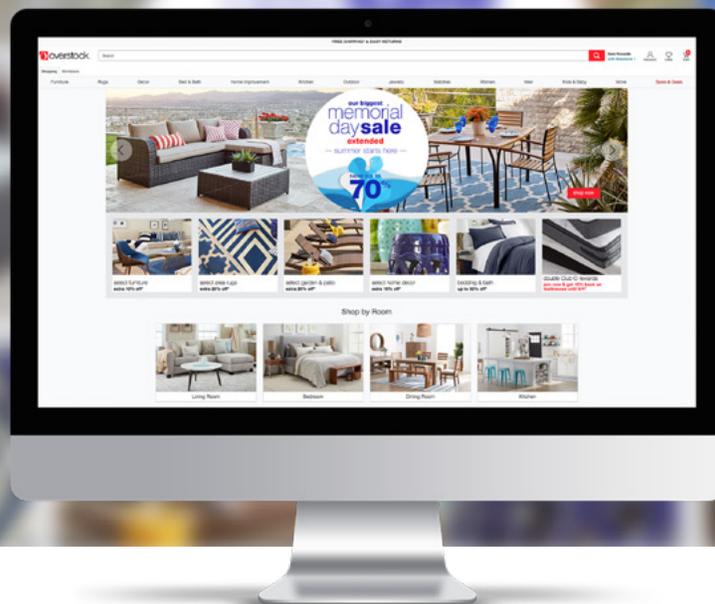
- How machine learning powers image recognition capabilities for **Overstock**, improving its online search feature and helping generate a **3% lift** in conversions;
- How **Finish Line** has gained greater insight into inventory management and supply chain efficiency by leveraging algorithms to cluster stores based on consumer actions; and
- Why **H&M** started working with 200 data scientists and engineers — both internal and external — to diversify products in individual stores.

The report also recommends three “buckets” of priorities for AI implementations that will help retail businesses speed business improvements.

The impact of AI is about speed and accuracy, according to Nariman Noursalehi, VP of Marketing and Customer Acquisition at Overstock.com: “I like to think of machine learning/AI as the right solution for when you want to do something that is possible to do on your own, but it would just take you a dozen analysts and a week to do,” Noursalehi noted during an AI panel at the [2018 Retail Innovation Conference](#). “But **when you need to make those decisions in a millisecond** you have to rely on a machine learning model.”

“When you need to make those decisions in a millisecond you have to rely on a machine learning model.”

NARIMAN NOURSALEHI,
OVERSTOCK.COM



RETAIL SUCCESS STORY #1: OVERSTOCK.COM BOLSTERS SITE SEARCH WITH IMAGE RECOGNITION

Overstock.com uses machine learning in three areas: merchandising, marketing and web site personalization. Because approximately **60%** of Overstock.com sales are initiated by a shopper entering a search term in the search bar, the retailer implemented machine learning into its web site sorting algorithm. Overstock.com first leveraged text-based machine learning to look at product data such as descriptions and attributes, but Noursalehi admitted there was still “a lot of bad data” that came from that method — so the company shifted its emphasis to image recognition.

“It’s easy to optimize a search that happens every day,” Noursalehi explained. “If someone searches the same term 10 times a day on our site, within a month we’ll have the data to know what product we should feature. We’ll have a click history.”

In contrast, “it’s those long tail searches where the image recognition becomes handy,” Noursalehi added. “Let’s say someone does a search for a ‘Scandinavian ottoman with brown leather.’ We have history on maybe a dozen searches of people who’ve done that, and from those dozen searches, they’ve clicked on three products on those searches. By knowing those images, we can identify another 50 products that look like the images that got clicked.”

With this change implemented, Overstock.com experienced a **3% lift in conversion** from shoppers who used the search bar on the site. Additionally, the retailer can now leverage image recognition to bolster the visibility of new products on the site.

“When you have a new product on our site, there’s not much of a click history,” Noursalehi said. “But the more weight we put on image recognition, the more it services new products that **are in the same style as things that are best sellers.**”

Adopting machine learning to use image recognition gave Overstock.com a 3% lift in conversion from shoppers who used the search bar on the site.

3

3 AI SUCCESS STORIES:
TIPS FROM OVERSTOCK.COM, FINISH LINE AND H&M

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RETAIL SUCCESS STORY #2: FINISH LINE OPTIMIZES STORE MERCHANDISING WITH PRESCRIPTIVE ANALYTICS

Retailers are discovering that they can leverage AI platforms to simplify their back-end operations, particularly improving inventory visibility at the store level. **Finish Line** sought to move beyond traditional reporting with machine learning and prescriptive analytics capabilities, so the retailer partnered with [Profitect](#) in early 2018 to more easily understand and act on supply chain data.

Brad Eckhart, Sr. VP of Planning and Allocation at Finish Line, was looking for exceptions — where a specific store stood out from the chain average in a particular product category. This information was vital for the retailer to understand how to improve assortment, but it was “virtually impossible” to compare this data using typical sorting features such as Excel pivot tables, said Eckhart.

With Profitect, Finish Line aimed to crunch massive amounts of supply chain data on a granular level, automatically identify store stock patterns and take suggested actions once the pattern was identified.

“The more granular you get with your data, the more accurate the models are going to be,” Eckhart said in an interview with *Retail TouchPoints*. “You start with the IT team, then you start with the data requests from Profitect. What it uncovered were some holes and gaps in our data that we don’t maintain at that level. They were asking us for by-store, by-SKU, by-day inventory on hand at the location level. We don’t store the data at that level, we only store SKU level on hand at the store level on a weekly basis. Our IT team provided this to the team at Profitect, who in turn stored it for us at a daily level, so we actually now have data availability that we didn’t have access to in the past.”

“The more granular you get with your data, the more accurate the [prescriptive] models are going to be.”

**BRAD ECKHART,
FINISH LINE**



With access to the daily inventory level, Finish Line now can leverage prescriptive analytics to **visualize and create a model around missed sales.**

“For instance, we can see that a fringe size of a sneaker that’s allocated to a store was received in the store and sold out in two days — and didn’t get replenished for a week,” Eckhart said. “When I say that we have visibility to that, we’re not even envisioning using the tool to say, ‘You ran out of size 6.5 in this store yesterday.’ It’s more about **aggregating this information** and learning that **overall we’re not buying our size curves correctly.** With that model, we could estimate what those missed sales were in the following seven days that the store was out of stock.”

Operating in more than 900 locations, including shops located in **Macy’s** stores, Finish Line executives believe the brand has a distinct advantage over **Amazon.** The prescriptive analytics platform can help the company cluster stores by demand and help it send products to every location within 24 hours.

“We feel we can better determine the assortment by location, so that we’re getting the product as close to the customer as possible,” Eckhart said. “Everybody clusters their stores in one way or another, but everybody tends to cluster stores with preconceived notions, by weather or region or urban vs. suburban. With AI, we can now cluster stores based on **customer actions and demand,** as opposed to just surmising how the stores are grouped.”

“With AI, we can now cluster stores based on customer actions and demand, as opposed to just surmising how the stores are grouped.”

**BRAD ECKHART,
FINISH LINE**

ASSORTMENT OPTIMIZATION POWERED BY AI / MACHINE LEARNING

We have come to a point where a nation's AI capabilities will determine its influence over the world, particularly in the work of retail. Retailers are beginning to realize the benefits of this cutting-edge technology and are adopting AI to empower their clients and make strides regarding visibility and profitability.

Dr. Marshall Fisher, Wharton Business School Professor, and Dr. Ananth Raman, a Harvard Business School Professor, realized the opportunities for retailers to differentiate by effective utilization of predictive analytics and machine learning, which resulted in the inception of 4R Systems. The company, whose name (4R) was inspired by the belief 'Right product at the right place and right time results in driving the right profit', caters to the demanding world of driving real results in the world of retail.

4R Systems incorporates machine learning and AI into each of their solutions, with the aim of improving the relationship between customer demand, product availability and logistical support, a common retail equation which demands equilibrium but is seldom optimized past the existing silos. 4R employs automated machine learning techniques to help arrive at accurate business predictions based on consumer buying patterns.

This approach is significantly more efficient as compared to the traditional, judgement-based approach.

4R Systems generates significant ROI for its clients by maximizing the financial returns on their inventory investment. The adoption of our solutions has increased the profits of our clients from 1% to an impressive 6%. This enhanced profit is many millions of dollars for a multi-billion dollar retailer.

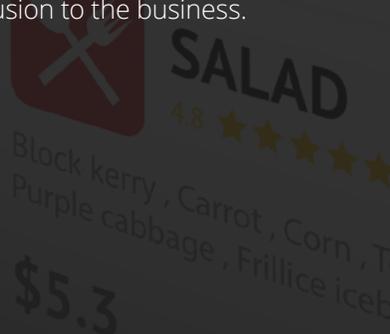
Consider the power of AI and the combination of machine learning to truly understand the consumer buying patterns and apply this to the assortment decision. There are many assortment solutions on the market today, but they focus on analysis at the product level. To truly understand the consumer drivers each product dimension needs to be understood in detail.

The 4R attribute-driven approach understands each of these dimensions and the correlations between product attributes and consumer buying habits by mining the underlying demand. This method not only achieves an optimal assortment based on the current product mix but also recommends new product opportunities based on the attribute dimensions and consumer marketplace demand. The 4R retail solution facilitates retailers to customize a solution that perfectly resonates with their customer buying patterns with minimal intrusion to the business.

Mark Garland is the Executive VP of Sales, Marketing and Solutions at 4R Systems, and brings more than 18 years of experience in the supply chain industry.



MARK GARLAND
4R SYSTEMS





RETAIL SUCCESS STORY #3: H&M JUMPS INTO THE AI FRAY WITH 200 DATA SCIENTISTS

Finish Line certainly isn't the only retailer to tailor its store assortments via AI. Global fast fashion brand **H&M** recently turned to the technology with hopes of reversing a 10-quarter same-store sales slump.

Specifically, H&M is using AI to analyze returns, loyalty card data, store receipts, blog posts and search results to discover what products it **should be selling in individual stores**. This represents a break from H&M's longstanding practice of stocking stores around the globe with similar merchandise. The fast fashion brand already cut the number of SKUs last year by **40%**, and has employed or worked with 200 data scientists and engineers to review store-level purchasing patterns.

The development of algorithmically powered operational systems, such as the integration of multiple data sets, is going to be a vital step for other retailers seeking to gain better insight into their data going forward, according to Bryan Gildenberg, Chief Knowledge Officer of Retail at Kantar Consulting.

"The ability to be able to build in external data that can help define what happened historically so that the machine can learn better" will be critical in AI implementations, said Gildenberg in an interview with *Retail TouchPoints*. "If a retailer is seeing weird volume spikes in its business month-over-month, is that due to something inherent to the business, or an external factor? Additionally, competitive activity will be a big topic — if retailer 'Y' becomes more competitive, does retailer 'X' suffer disproportionately? The ability to see exogenous factors to drive the business will be a big step that systems designers are making as AI develops," Gildenberg added.

"The ability to be able to build in external data that can help define what happened historically so that the machine can learn better will be critical in AI implementations."

**BRYAN GILDENBERG,
KANTAR CONSULTING**

AI FOR RETAIL IS MORE ACCESSIBLE THAN YOU THINK

It's not news that the state of retail is changing. The constraints inhibiting some retailers from keeping up with market disruptors like **Amazon** and **Walmart** are creating a tipping point in terms of leveraging AI to automate everything from inventory to promotional marketing. We hear a lot about AI, but it's not always clear what it can do for large enterprise retailers.

Taking into account all the moving pieces required to run an enterprise retail business, it's the most operationally heavy vertical in the world. The idea that generic AI can address all the challenges retailers are facing today is an outdated approach. When retail executives are looking for solutions, they don't set out looking to buy AI at the outset, they're looking to solve real, tangible and significant business problems like how to grow their loyalty base, reduce store level stock-outs and overstocks, increase revenue, improve promotions and reduce manual processes.

The fact is, they need more from an AI company than just deep learning, global infrastructure and top talent; they need a specific use case, a product, ROI, and most importantly, a fast timeline to implementation and value. Retailers operate day to day, week to week and month to month, with targets to hit at each interval. Solutions must have time to value that spans months not years.

Using AI and data science to automate business decisions in merchandising and marketing operations is the solution for retailers to remain competitive. This low-hanging fruit is only the entry-point for enterprise AI, with the potential to go much further.

Think about store experience — using security cameras to reduce loss prevention, determine how staffing levels impact sales and improve the smoothness of self-checkouts. Take it even further to actually understand what people want; what they want to buy, why they want to buy it and which channel they prefer to engage with. Retailers have integral data at the ready empowering them to cater to their customers in very specific ways. Enterprise AI can transform and optimize this data to enable retailers to tune into customers' needs and shopping habits, whether it's through promotional planning, loyalty management or product selection.

Using Rubikloud's enterprise AI solutions, a \$2 billion mass beauty retailer saw the below results:

- **40% increase in forecast accuracy** leading to up to \$12.5 million saved by holding less excess inventory in store;
- **31% reduction in stockouts** leading to up to \$7.5 million in sales; and
- **50% reduction in time spent** managing a promotion campaign process, saving up to 1,600 full-time employee days in a year.

Kerry Liu is the Co-Founder & CEO at Rubikloud, where he leads three important functions: people, sales, and technology disruption.



KERRY LIU
RUBIKLOUD

Investment in enterprise AI that is focused on a specific problem or use case will help retailers make better decisions that result in efficiencies, increased revenues, and better customer experiences and allow retailers to see time to value on their investment in a matter of weeks and months versus years.





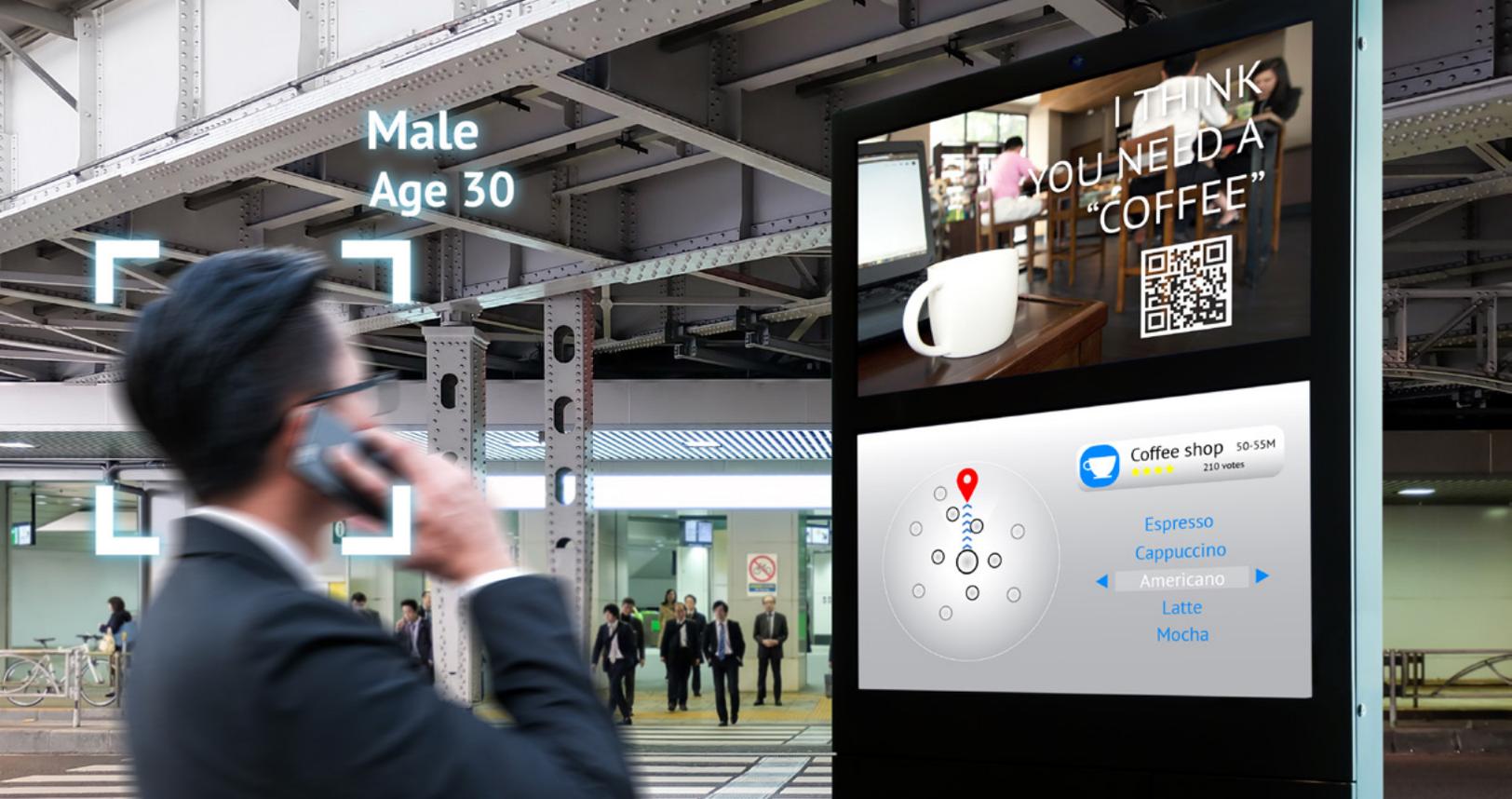
THREE PRIORITY 'BUCKETS' FOR RETAIL AI IMPLEMENTATIONS

Feasible AI implementations within retail should be classified into three “buckets,” according to Kerry Liu, CEO of [Rubikloud](#), an AI platform for promotional planning and loyalty-driven marketing:

- 1. Day-to-day operations**, including pricing, inventory, loyalty, merchandising, customer and store operations. This is the most impactful low-hanging fruit for any retailer.
- 2. In-store customer experiences.** “How do you use overhead cameras to look at loss prevention or staffing levels, and whether or not that’s affecting sales?” said Liu. “How do you use AI technologies to increase the smoothness of self-checkouts, or recognize the individual to improve payments?”
- 3. Meeting the demand for high-quality product assortments.** Retailers will need to determine via AI platforms whether it would be better to sell 18 different deodorants, or to limit their product selection by discovering the type of ingredients in the deodorants that customers demand the most. Retailers are still far away from implementing AI capabilities to meet this consumer demand consistently, according to Liu.

Retailers must examine their own in-store experiences and determine where AI can improve them.

KERRY LIU,
RUBIKLOUD



“The ability to understand the assortment of what products people want is currently something retailers aren’t doing, but something that’s being met in the market,” Liu noted. “That gap is being met by consumer goods companies and direct-to-consumer companies like **Native** or **Dollar Shave Club**, but they’re only scratching the absolute surface of market share. Retailers have a great opportunity here through their private label brands.”

Despite this great opportunity, the retailers that succeed with AI will likely be the ones that have already made advances in technology integration.

“It appears it’s not the easiest thing in the world to skip a generation with AI,” said Gildenberg of Kantar Consulting. “A retailer that was well behind on technology is going to find it difficult to implement a giant magical AI solution and somehow leapfrog the more technically sophisticated competitors. In order for a computer to learn, it needs something to learn from. If you don’t have good data and you don’t have reliable forecasting systems, you’re going to teach the computer something, but you’re going to teach it what you don’t know how to do.”

“A retailer that was well behind on technology is going to find it difficult to implement a giant magical AI solution and somehow leapfrog the more technically sophisticated competitors.”

BRYAN GILDENBERG,
KANTAR CONSULTING



AI ADOPTION TAKES QUICK TURN, AND MORE RETAILERS ARE SURE TO FOLLOW

Although retailers shouldn't necessarily run before they walk when it comes to deploying technology, AI and machine learning have moved from the realm of science fiction into retail fact at a fast pace. As many as [45% of retailers plan to use AI through either chatbots or digital assistants within three years](#), according to a survey from Boston Retail Partners (BRP).

With many retailers already using AI across the enterprise, merchants that are new to the technology can follow these success stories as inspiration to innovate or disrupt their own business. Retailers seeking to get the most out of AI on the front end can use machine learning to improve web site personalization, particularly within the search bar. At the same time, they also can get the most out of the back end to optimize merchandising across all stores. And beyond those day-to-day operations, there are now plenty of opportunities for retailers to bolster in-store experiences and determine optimal product assortments.

Up to 45% of retailers plan to use AI through chatbots or digital assistants by 2021.

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To Learn More...



4R Systems is a leading provider of advanced inventory and supply chain services, which help retailers gain significantly increased profits by optimizing their omnichannel inventory and related supply chain decisions. Founded by supply chain experts from The Wharton School and Harvard Business School, 4R provides capabilities that profit optimize the matching of supply and demand. From initial launch through replenishment to end-of-life for products—ranging from short-lived fashion items to long term staples—4R provides retailers with services that fit their business. Clients using 4R have seen increases in profitability of 1-2% of sales as a result of higher sales levels on lowered inventory.

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Rubikloud is the world's leading AI platform for retail. Our cloud-native platform and two flagship AI applications automate and improve mass promotional planning and loyalty driven marketing for our multi-billion dollar retailers. We target mission-critical business problems by analyzing large amounts of data from multiple legacy offline sources as well as new online systems. This empowers retailers to take tangible actions with powerful results.

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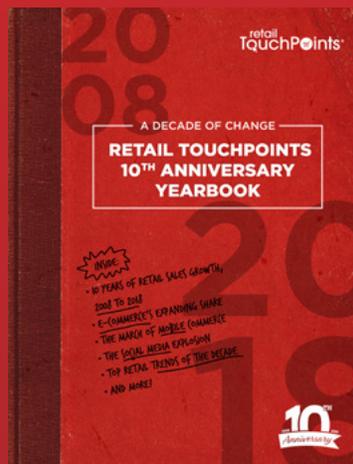
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ABOUT THE AUTHOR

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Glenn Taylor is a retail journalist covering all aspects of the industry with interests tilted toward AI-driven personalization, conversational commerce and financial/business related news.

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