



Transforming specialty retail with AI



Google Cloud

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Executive summary

The \$15T global retail industry has been rocked with significant waves over the past decade, but the most recent disruption and global health crisis, COVID-19, has caused the biggest shock of all. Within several months, the global pandemic not only amplified differences between retail leaders and laggards, but seriously condensed the timeline available to play 'catch up' in digital transformation and e-commerce.

As the longer-term impacts of COVID-19 reshape the retail landscape, hundreds of operational decisions will need to be made even more rapidly across the value chain, and retailers will have to take advantage of new tools and business models to become ever more efficient and less exposed to future shock. In other words, the next 'normal' in retail will undoubtedly be digital, and it will increasingly be shaped by adoption of the best tools for such complex decisions: artificial intelligence and machine learning technologies (AI/ML).

Over the last decade, we've witnessed AI/ML grow dramatically, with its potential for wider commercial use made possible by falling sensor costs, increasing data management capabilities, and exponential strides in computing power. Retailers who choose to leverage AI/ML to solve critical business problems sooner rather than later will reap the benefits, as investments in AI yield more value as they mature.

At Google Cloud, we recently commissioned a survey of 100 global retail executives to better understand which AI/ML applications across the retail value chain drive the highest value and excitement in retail, and what retailers need to keep in mind when going after these opportunities. We took a look at two specific sectors—Food, Drug, and Mass merchants (FDM) and Specialty retailers. The researchers assessed value at stake based on the anticipated impact of using AI/ML approaches for the use cases vs traditional approaches used to optimize and applied that value to the relevant line items in the P&L.

Our research¹ identified the top AI/ML use cases² for investment by specialty retailers. Together, these application areas have the potential to drive between ~\$230-515B in value. In an industry where profit margins are often in the single digits, AI is poised to unlock significant value. In fact, ten use cases by our estimation make up just over 80% of the value at stake (~\$190-425B) and fall primarily within three parts of the value chain: merchandising and assortment, product lifecycle management, and logistics and fulfillment.

To take advantage of this value potential, retailers must act decisively: they need to earn the support of the C-suite and ensure their leadership truly champions adoption of AI; they should establish cross-functional working teams and well-defined KPIs for use cases; and they must nurture technical capabilities and a data-driven culture. This chain of actions, when taken together, can enable ~45% of the value capture we project, and could drive up to double the operating cash flow of a typical specialty retail business if fully implemented by 2023.³

The accelerated adoption of AI/ML will have wide-ranging effects. For retailers who move fast, the outcome will be more resilience in operation despite the uncertainties in the world - and the opportunity to focus on serving their consumers in the emerging new 'normal' environment. For those with the vision and the capacity to shape their futures, there are real opportunities today to position their business for innovation and success, and we at Google, with our suite of AI/ML technologies and cloud platform capabilities, can help retailers get there.

1. Google commissioned online survey across North America, Asia Pacific, Europe, Middle East, Africa and Latin America of 98 retail executives from July 3-July 17, 2020 with a direct or indirect involvement in AI/ML implementation on the business or technical side within a company of at least \$300 million in annual revenue. The data is not weighted, and therefore only representative of the individuals surveyed.
2. Top AI/ML use cases were identified based on the survey as well as expert interviews inside and outside Google. The researchers sized the relevant retail sectors from industry reports and revenue projections (adjusted appropriately for the impact of COVID-19) and assessed value at stake based on the impact of AI/ML based use cases vs traditional approaches on line items in that P&L. Value was tempered down to take into account market dynamics, including competition, and the impact of other use cases on the same P&L line items.
3. Notes from the AI Frontier: [Modeling the Impact of AI on the World Economy](#), McKinsey & Company, September 2018

Why are we focused on AI/ML in retail?

Artificial intelligence and machine learning (AI/ML) present us with novel and efficient ways to solve challenging and persistent problems, particularly when it comes to predictions. Retail, due to its fast moving, trend powered, and fluid nature coupled to an extended logistics chain, relies heavily on making smart predictions. As improvements in AI/ML over the last several years have proliferated, not only in performance advances but deployability, there are exciting openings for experimentation in many domains of the retail value chain.

Taking a step back, artificial intelligence is the theory and development of systems that are able to perform human-like tasks such as visual perception, speech recognition, and decision-making. Machine learning is an effective way of building AI systems that automatically find useful patterns in data that can vary greatly: voice, video, images, text, sensor outputs, etc. The resulting predictions can be small (“What is the product in front of this checkout camera?”), larger (“How many team members should I have in the distribution center Thursday morning?”), or more complex and forward-looking (“How many of this dress should I have in Store X in October next next?”). In each case, AI/ML can yield more accurate answers and those answers will improve over time. Greater amounts of data and “training” of a system’s logic, yields progressively detailed and effective predictions, thus making investments in AI yield more value as they mature—rather than deteriorating as seen with many depreciable capital investments.

Returning to retail, there’s an exciting range of opportunities across functions and roles, since retailers are regularly making predictions in hopes of serving customers in better, more sustainable, and profitable ways. Falling sensor costs, growing data management capabilities, increasing computing power, are all making AI/ML predictions better, faster, and cheaper—leading towards an anticipated rise in its use across all customer interactions and business processes within the retail sector.⁴

Google is at the forefront of technology changes, constantly pushing the frontier of possibilities in applying AI/ML, and has the ability to help enable our retail customers across the world to solve their hardest problems and capture their most compelling opportunities in new ways.



4. [Prediction Machines: The Simple Economics of Artificial Intelligence](#), Ajay Agarwal, Joshua Gans, Avi Goldfarb, (2018)



Chapter 1

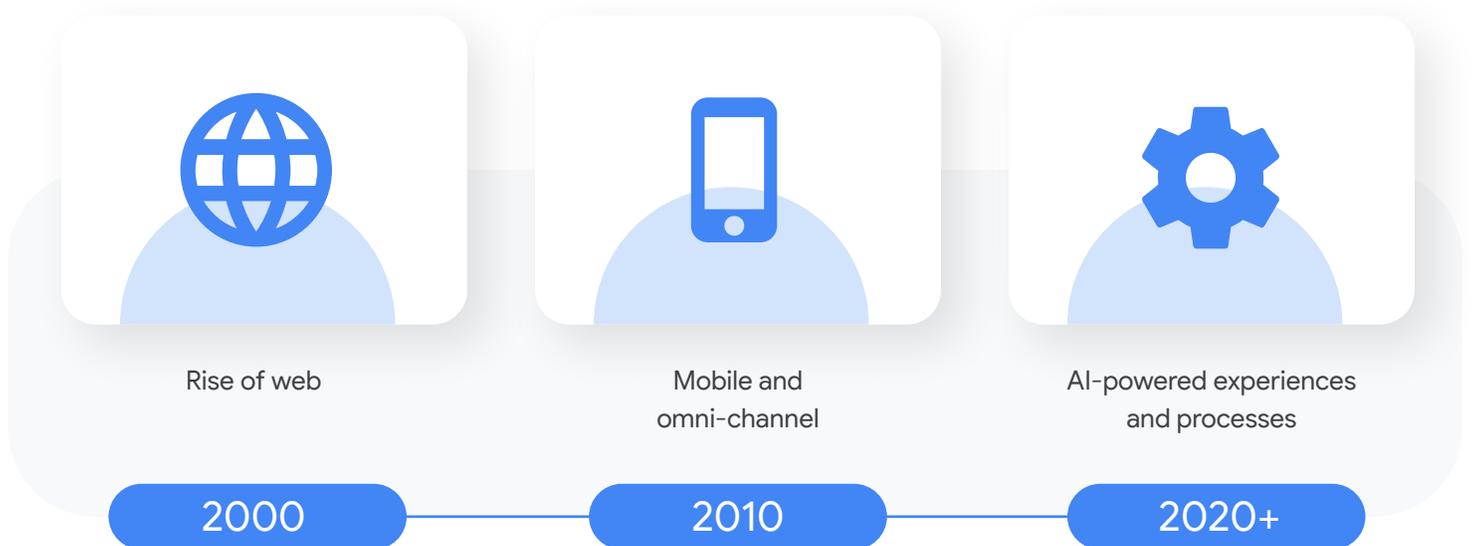
The state of retail

Waves of change in retail

While retail is a diverse and fluid sector, over the past decade the world has experienced significant waves of change: the rise of web commerce, the shift to mobile, the disruption of categories by digital natives. All of these changes have meant that shaping strategy and action plans based on technology has shifted from the sole role of CIOs and CTOs to the entire leadership team.

Presently, both the world and the retail sector are coping with an even newer wave of change and disruption sparked by the COVID-19 pandemic—which is first and foremost a global health crisis and a massive economic disruption affecting the lives of all people around the world. The sheer scale of the retail sector means that changes can unexpectedly

compound and create large and even permanent swings in previously stable parts of the industry (e.g. seasonality of sales), accelerate some already fast-moving changes (e.g. omni-channel commerce), and create changes that will ultimately result in the next 'normal' of retail.



Thus far, shifts in consumer behavior have impacted many parts of retail, as have public health orders limiting physical presence and economic activity. These changes have spurred swings in demand in many categories. At the peak of the pandemic, revenue dropped dramatically in many specialty categories, hitting formats such as department stores especially hard. Consumers switched to digital even for categories like apparel where they have traditionally shopped in-store with searches for “fashion online shopping” growing globally by over 600%⁵ YoY. However, as consumer behavior, business practices, and government regulations stabilize and reset, demand is expected to as well, though segments of the specialty retail sector may require more time to rebound.



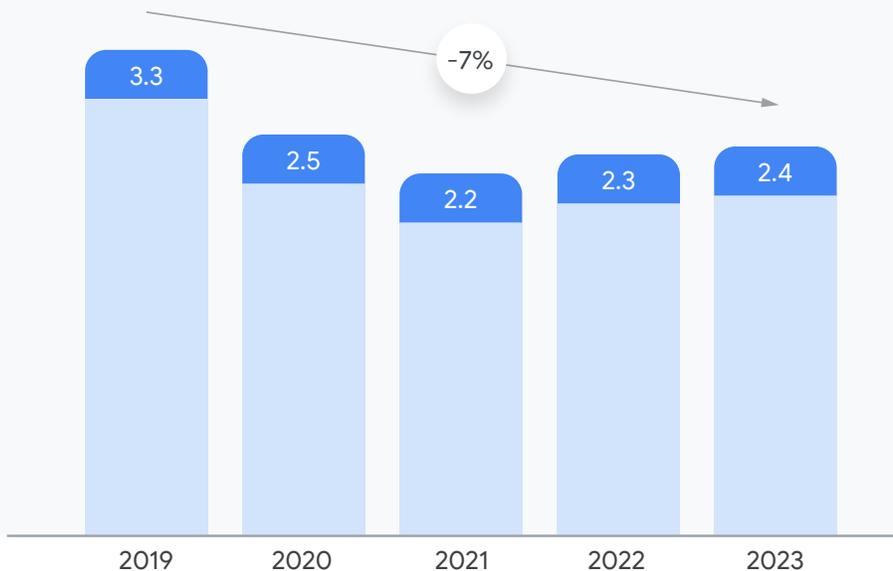
Searches for
“fashion online
shopping” have
grown globally
by **over 600%**
YoY

Source: Google Data, Global English, Mar 25, 2020 - May 23, 2020 vs Mar 25, 2019 - May 23, 2019

5. Google Data, Global English, Mar 25, 2020 - May 23, 2020 vs Mar 25, 2019 - May 23, 2019

It is also important to note just how large a segment of the retail sector specialty is. In 2019, the global retail market was ~\$15T in revenue, with the specialty market making up ~20% (~\$3.3T) of that total. Any forecast while in the midst of an evolving crisis is risky, but given the demand losses driven by COVID-19, industry analysts are projecting the sector to shrink by slightly more than 20% by 2023 to about \$2.4T with some growth returning at an aggregate level in late 2021 even though not sufficient to make up for this year's expected decline.⁶

Global Speciality revenues (\$T)



Source: Euromonitor/"The next normal in retail: Charting a path forward," McKinsey & Company, July 17, 2020

This acceleration of change will continue to have wide-ranging effects. More resilient operating models and leadership teams will not just survive, but thrive in this new environment. Others will be at risk, and some—especially those in a more fragile state entering the crisis—may not be able to sustain their businesses. For those with the vision and the capacity to shape their futures, there are real opportunities to position themselves through innovation for success. Google, with its AI/ML technologies and cloud infrastructure and solutions capabilities, is equipped to provide the platforms these businesses need for such innovation.

6. Source: Euromonitor/"The next normal in retail: Charting a path forward," McKinsey & Company, July 17, 2020

Shifting consumer behavior and impact on retail

Between 2019 and mid-2020, specialty retail sales dropped by about 25% globally, as discretionary spending cuts by consumers hit the sector. And while the loss in sales may be temporary, changes in consumer behavior are expected to become more embedded and alter the way people buy apparel, footwear, beauty products, jewelry, accessories, and other specialty goods.



200%

Searches for "clothes shopping apps" have grown globally by over 200% YoY⁷

Shift to e-commerce

The inability to visit stores given global lockdowns drove online consumption overall. Where one in four U.S. consumers shopped for apparel online prior to the pandemic, two in five now expect to continue to make apparel purchases online into the future. Searches for "clothes shopping apps" have grown globally by over 200% YoY.⁷ Similar trends are projected to shift e-commerce penetration by 10-30%, growing total online revenue from ~20% today to ~24% in the next year and a half, with the anticipation that it will reach to ~30% by 2023. Given the diversity of specialty categories, e-commerce penetration varies dramatically though it is rising everywhere.

The 'next' normal will drive a new reality for specialty retailers, particularly as they fight to maintain margins. From a cost perspective, they will need to aggressively renegotiate rents, reduce supply chain and input costs by optimizing sourcing, manufacturing, and quality, and reset labor forces, store fleets, and formats—with more agility than is typically possible today.⁸ From a revenue perspective, retailers need to invest deeply in maintaining loyal customer relationships. They will need to bolster their omni-channel experience; they will develop personalized product and promotional recommendations; and they will have to invest in the customer service experience, with a special focus on returns experience, given the shift to online. Through all of this, they will need to create new, dynamic demand models that can utilize multiple market signals to predict volume and mix amidst disruption of historic patterns. Better demand prediction can also help lead to optimized inventory and fewer or more effectively targeted markdowns, further supporting the bottom line.

7. Google Data, Global English, Jun 3, 2020 - Aug 1, 2020 vs Jun 3, 2019 - Aug 1, 2019
8. [The next normal in retail: Charting a path forward](#), McKinsey & Company, July 17, 2020

Digital transformation and the power of AI/ML

COVID-19 has not only amplified differences between retail leaders and laggards, but seriously condensed the timeline available to play ‘catch up’ in digital transformation and e-commerce. The result has been a digital divide across retailers, partitioning them into likely to thrive, simply survive, or struggle. So far implementation of AI/ML use cases has been key to success. Retailers who invested in cloud capabilities even one year ago have benefited.

But the story of AI/ML implementation is not straightforward since retailers often decommission a project before they can reap the expected value. (See ‘Barriers to value’ on [page 49](#)).

As the longer term impact of COVID-19 reshapes the retail landscape, business models will need to be adapted to become more efficient and less exposed to shock. In other words, the recovery will be digital. As such, across the value chain, hundreds of operational decisions will need to be

made more rapidly and AI cloud and data applications will have a disproportionate impact, because many of the needed tasks are hard for humans to do repetitively or at speed. Utilization will continue to separate those that thrive from those that struggle. The ability to leverage AI/ML will drive success, as companies that use AI/ML can drive 2x more data-driven decisions, 5x faster decision making, and 3x faster execution⁹.



9. [Machine Learning: The New Proving Ground for Competitive Advantage](#) by MIT in partnership with Google Cloud

By 2030, companies that fully absorb AI could double their cash flow.¹⁰ The next 'normal' in retail will undoubtedly be digital, and it will distinctly be marked by the adoption of AI/ML.

The following chapters explore AI/ML in a practical way, reviewing the highest impact use cases for specialty retailers across the value chain, as well as the barriers to implementation and how to ensure success.



10. Notes from the AI frontier: [Modeling the impact of AI on the world economy](#), McKinsey & Company, September 2018



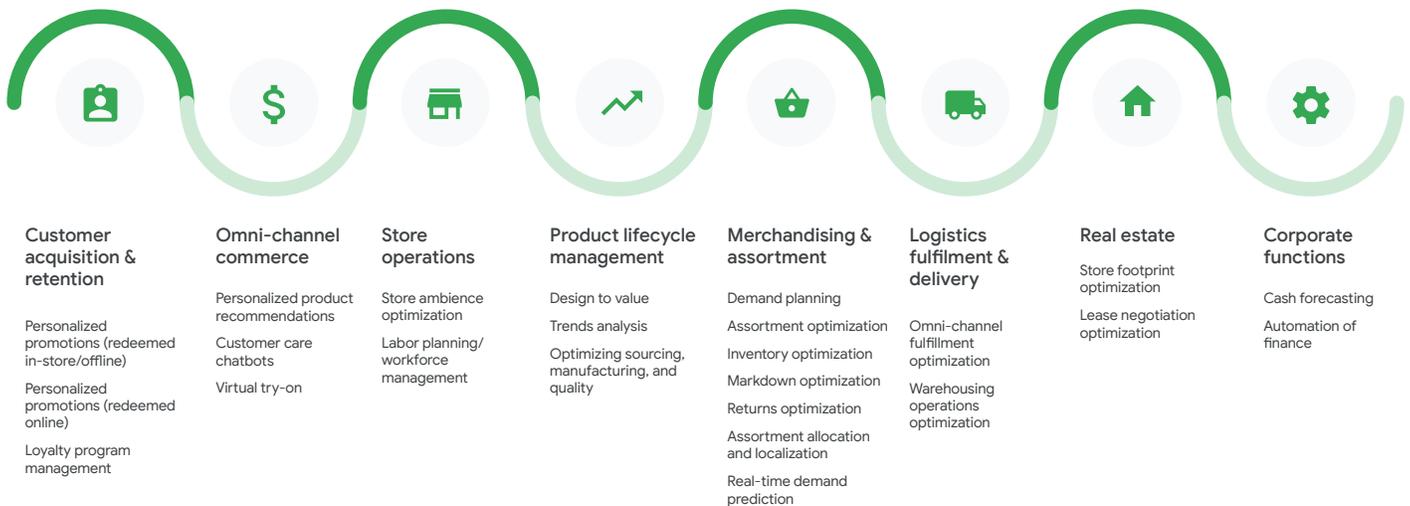
Chapter 2

The value of AI/ML

Overview of value chain and use cases

The retail value chain consists of eight parts, and ranges from ‘top-of-funnel’ activities like customer acquisition and retention, to ‘back office’ activities like real estate and corporate functions. Across these eight value chain domains, we have identified 75 use cases where AI/ML can help retailers unlock value by solving old problems in new ways (in much the same way self-checkout increased staff efficiency and customer experience) and new problems (like compliance to health standards).

Example AI/ML use cases across the retail value chain¹¹



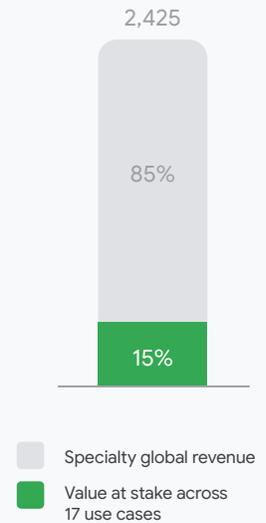
11. Use cases are not listed in any particular order and are representative of a list of 75 use cases.

High-value use cases

Across this portfolio of use cases, 10 of them make up just over 80% of the value at stake (~\$190B-425B). These 10 primarily fall within three parts of the value chain: merchandising and assortment, product lifecycle management, and logistics and fulfillment.

And while these areas of the value chain are the key drivers of potential over the next two years, other pockets of value may also emerge as important contributors. These include domains such as customer acquisition and retention, corporate functions and real estate, where AI/ML opportunities can also have impact. Today, more than 30% of specialty retailers are testing at least one high-value use case with proof-of-concept implementations, but full implementation across these high-value use cases varies widely and with many opportunities to explore new approaches to persistent challenges like setting target inventory levels, dynamic markdown management, assortment planning, and store location optimization.

Value at stake relative to specialty global revenues
\$B, 2023F



Value at stake

Across a wide range of specialty retailers, we observed a subset of the 75 use cases that stand out based on value potential, implementation difficulty and cost, and retailers' excitement to implement them. This subset of 17 use cases—identified through a survey of global retail executives in operational, commercial and technical roles, and via interviews of experts—could be a large value driver for the global specialty retail industry, with material impact on operating income. To arrive at the value at stake, the researchers sized the relevant retail segments from industry reports and revenue projections (adjusted appropriately for the impact of COVID-19) and assessed value at stake based on the anticipated impact of using AI/ML approaches for the use cases vs traditional approaches to optimize and applied that value to the relevant line items in that P&L. Value was tempered down to take into account market dynamics, including competition, and the impact of other use cases on the same P&L line items. Together, these use cases have the potential to drive between ~\$230-515B in value by 2023. In an industry where profit margins are in the single digits, AI can significantly unlock value.

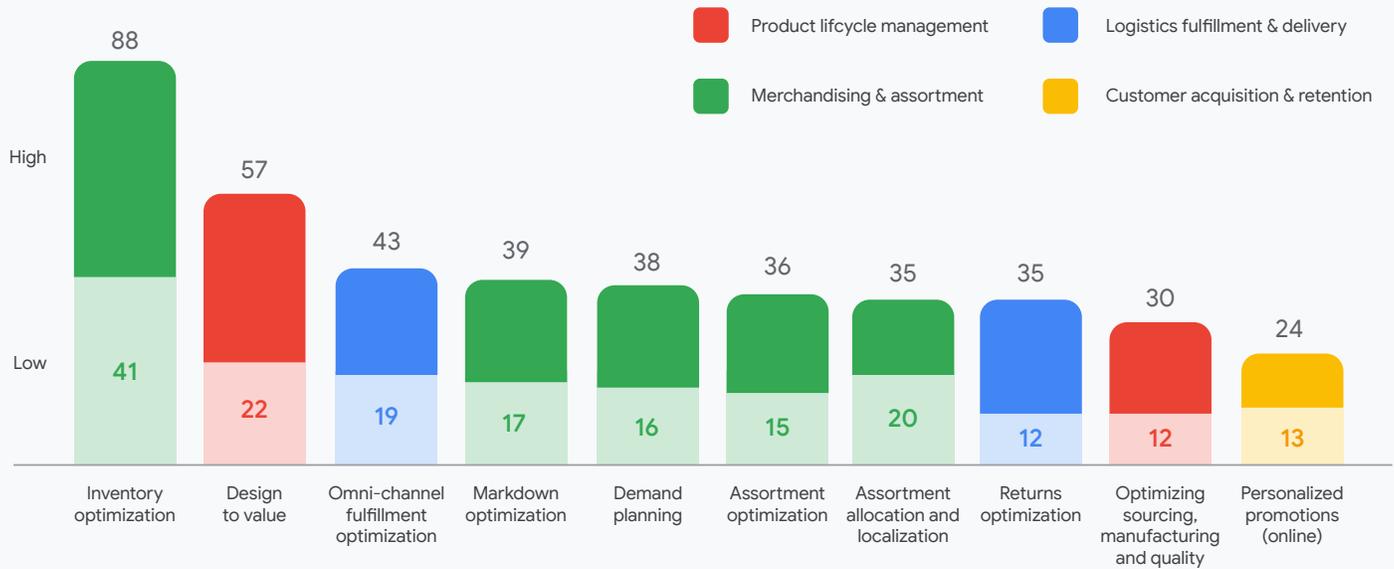


\$230B-515B

In value at stake through
AI/ML in retail

Top 10 use cases by value

\$B, 2023F



10 use cases make up over 80% of the value at stake

Use cases within merchandising and assortment make up 5 out of the top 10 use cases by value. Retailers can gain productivity and directly impact the bottom line through improvements in demand planning and by optimizing assortment, inventory, and markdowns. By utilizing the rich data set that retailers can obtain from their day-to-day operations, these use cases can drive up to ~45% of the value at stake in specialty.



5 of the top 10

use cases by value are in merchandising and assortment



Implementation across retailers, today and in the future

When we look across the different types of specialty stores, we see a similar appetite for AI/ML implementation. Over 60% of retailers we surveyed have more than 20 AI/ML use cases in pilot. On average, retailers are testing out 24 use cases at a time, while fully implementing an average of 11.

Who is motivating these use cases? In over 70% of the cases, business units initiated a use case for implementation, with 75% coming from commercial teams and the remainder being motivated by operational teams. Interestingly, technical teams initiated fewer than 30% of the use cases retailers have in pilot or full implementation, despite the heads of technology (such as the CTO and CIO) acting as key sponsors for AI/ML capability building and as key decision makers for the technology that would support the selected use cases.

However, when we take a broader look at the portfolio of use cases that specialty retailers have implemented today—whether inspired by the business or sparked by technology teams—over 60% of the use cases are not in our high-value group. While there are other considerations to leveraging AI/ML within retail applications (for more on the topic, see ‘How retailers are achieving impact’ on [page 45](#)), there is a clear opportunity for specialty retailers to optimize their portfolios to drive greater bottom line impact.

In the near future (6-24 months), retailers intend to prioritize top-of-funnel opportunities: loyalty program management, personalized product recommendations, and online personalized promotions to drive growth. 30-40% of specialty retailers are experimenting with these three use cases today. They continue to show high intent to fully implement in the future, with 55-70% of retailers declaring these use cases as high priority for implementation within the next 6-24 months.

Let’s take a closer look at each of the 17 high potential use cases across the value chain in more detail, up next.



75%
of use cases are
motivated by
business teams



60%
of use cases being
implemented today
are not in the high
value “top 10”

High-value use cases for specialty retailers

Use case profiles

For each of the high priority use cases identified in the research we have built a simple profile in the form shown in the example on the right side of this page.

See below for definitions of the dimensions in each profile.



Value at stake

The value potential created by the AI/ML use case across the global specialty industry based on operating profit impact on the P&L of a typical retailer in this market if full potential is captured by 2023.

Stars indicate use cases that drive top line growth while gears indicate those that create significant value from productivity.

Note: some use cases earn both badges.



Full implementation effort required

Assesses effort required across data, technology, talent, investment and other organizational requirements (such as change management, business process updates, or cultural aspects) to realize use case.



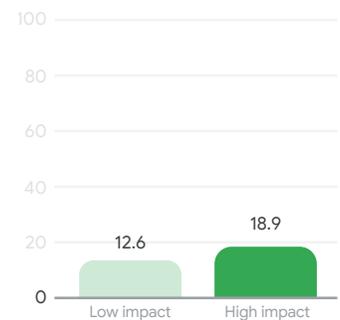
Momentum

The desirability of the use case based on retailers' excitement today and for the next 6-24¹² months; ranges from 0-10.

Value at stake

\$B, 2023F

★ Top-line growth



Full implementation effort required



Adoption momentum



12. Calculated based on reported full implementation of use case today and high priority intention to implement in future (6-24 months).

Customer acquisition & retention

Personalized promotions redeemed online

Online personalized promotions are designed to provide individual customers with the relevant offers to help drive conversion and sales (including cross-sales and up-sales).

Digital economics, as well as AI/ML models, have taken this use case a step further by enabling the deployment of even more effective personalization tactics such as individualized electronic product coupons.

Such solutions rely on pooling a range of customer data including past purchases and relevant online behavior in ways compliant with user policies and preferences. AI models enhance the accuracy of pattern finding and pattern-driven offer triggers enabling more relevant offers to be delivered at just the right time. They also allow for accurate matching of personalized offers to consumers needs increasing the likelihood consumers take action.

Typical implementation requires a cross-functional marketing and analytics team as small as 5 to 10 members and is reported to have one of the shortest times to value. More than 60% of specialty retailers we surveyed have realized the full expected value in fewer than 6 months.

While many are moving forward quickly, one of the key enablers is data access, with over 15% of specialty respondents citing the lack of necessary data as a major obstacle to realizing full AI/ML value.





Case study

Enhancing customer experiences with data science, machine learning and a focus on engagement

Every day, Zulily launches thousands of new products—more than 1.5 times the volume big-box stores typically stock in their warehouses. To connect customers with products for themselves, their families and their homes in a way that is engaging and personalized, Zulily runs thousands of processes every day on Google Cloud Platform to capture data and dynamically measure and report business performance and trending customer behavior throughout the day, funneling information to both marketers and merchants to serve millions of customers. Zulily also uses the data to enable more personalized and seamless customer experiences. For example, if a customer is watching an item but has not yet purchased it, Zulily sends “community signals” to

indicate the remaining inventory and customer interest in that item, helping the customer decide if and when to purchase. Zulily can also notify customers of abandoned shopping carts and explain that if they don’t check out within a certain amount of time, those items may no longer be available, as products are typically offered for only a limited time. Finally, Zulily can also push targeted offers and campaigns to those customers, enticing them to come back and complete the purchase. Zulily’s merchants have real-time visibility into sales performance for the products they’re responsible for, enabling them to quickly add inventory for trending items and increase overall sales of both beloved household brands and up-and-coming boutique brands.

Zulily



With Google Cloud Platform, Zulily is able to operationalize our live customer data in conjunction with our big data at rest and apply machine learning to drive personalized and contextual experiences. The capabilities provided by the platform also inform the business processes that allow our team to efficiently plan and fulfill our customers’ orders—even with 9,000 new products offered every day and millions of customers engaging with our online store. By empowering our teams to innovate, Google Cloud plays an important role in our ability to deliver significant lift in our key business performance and efficiency metrics.”

Dr. Olly Downs, VP of Martech, Data and Machine Learning

Customer acquisition & retention

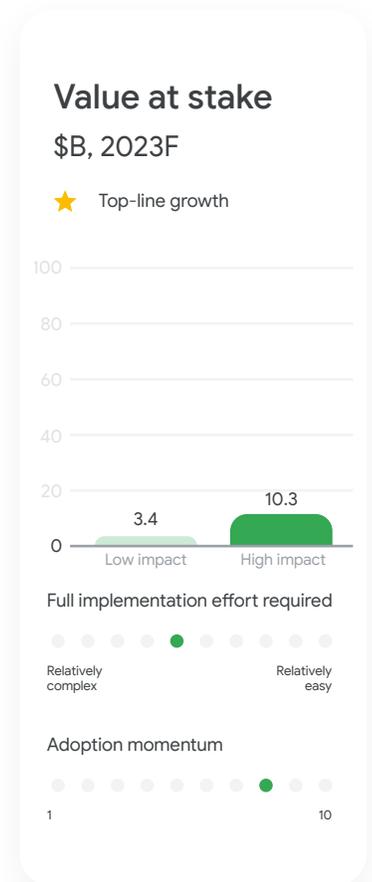
Personalized promotions (redeemed offline/in-store)

In-store or offline personalized promotions help provide individual customers with the most relevant offers in a specific time and place within or around a physical store.

Such promotions are traditionally more difficult to implement than their online counterparts given the challenge of collecting and integrating and consumers' "behavior stream" in-store relative to analyzing their click-stream online. A sales team at headquarters cannot pull up numbers on how many shoppers actually tried on a given sweater last month, though they can check how often it was clicked on or put on a wish list online. Getting offline promo targeting right also requires more change to execute—with changes needed in-store to train employees on how to handle offers at the POS and education of consumers themselves.

More than 50% of specialty retailers noted they expect training and change management requirements to be high to fully apply this promotion model in their daily operations. A learning program about AI for employees could become a nearly essential enabler during roll out and implementation of such systems. For these reasons, implementation effort remains relatively high.

Given the challenges in measuring contributions to incremental sales, as well as the change in business processes and checkout systems (which often require updating) for implementation, offline promotions are more difficult to execute relative to their online counterparts. Despite this, most specialty retailers are able to fully realize impact in less than 12 months. Across the global specialty market, this value can reach up to ~\$10B, and over 50% of retailers we surveyed are piloting solutions today as they seek to capture that prize.



Customer acquisition & retention

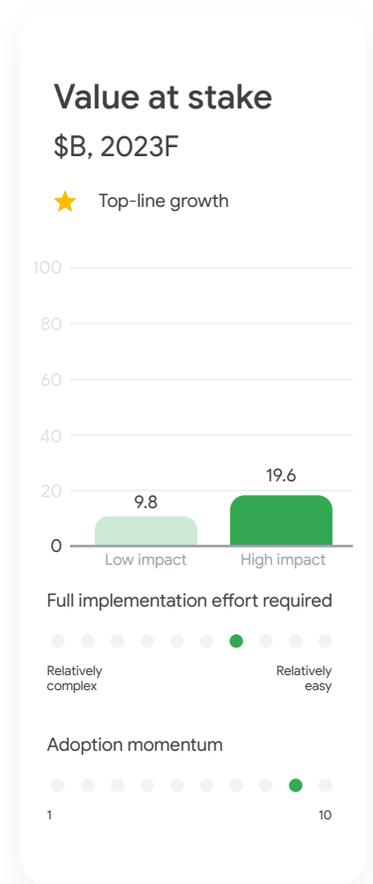
Loyalty program management¹³

Loyalty program management utilizes AI/ML to identify and capitalize on the factors that drive recurring engagement with a brand to increase customer lifetime value.

By using information about customer preferences and needs (e.g. channel of engagement, types of communication) and matching other information about audience targeting, AI/ML technology opens the door to targeted loyalty program management systems. Today, more than 36% of retailers are experimenting with AI-powered loyalty programs and over 34% intend to implement them within the next 6-24 months.

To capture the potential in next generation loyalty program management and to best cater to customers' needs, retailers need many kinds of data, e.g. transaction data, 'look-alike' data, CRM data, channel preferences, and other consumer profile information making this dependent on bringing a wide range of input streams into a retailer's data platform.

To take action based on a better view on loyalty and customer value, downstream processes need to change. For example, employees may need to be trained to input and use data from the CRM system. Revamping the data and analytics underneath an existing loyalty program typically also requires some redesign of the loyalty application architecture, but the payoff for that effort can come quickly—and continues over the lifetime of loyal customers. Thus, we are seeing growing adoption momentum in the market.



13. Includes smart CRM and customer lifetime value modelling based on AI/ML

Omni-channel commerce

Personalized product recommendations

AI/ML can improve customer omni-channel experiences by providing individualized product suggestions and other communications (e.g. online and in-store messaging)—not only to a given customer but also to specific moments in her shopping journey.

Highly relevant recommendations can be powerful drivers of basket expansion and increased order value—and can also lead to an enhanced customer experience as well. Shopper loyalty increases when trust grows that recommendations reflect personal taste and enable discovery of new products.

Aggregating the data needed to enhance accuracy and the pipelines needed to bring both on and offline data together is an important step in fueling models for predicting intent of purchase. Capturing value through recommendations requires only a small team and relatively little change management, but some business process changes will still be required to deliver the full potential over time. Overall time to value can be fast—and ~30% of specialty retailers realize the full expected value in roughly 3-6 months—leading to a strong adoption momentum.





Case study

Hanes Australasia: Improves product recommendations and revenue with Recommendations AI

Home to some of Australia's best-known apparel and lifestyle brands—including Bonds, Bras N Things, and Sheridan—Melbourne-headquartered Hanes Australasia sells its products through its network of approximately 550 stores, its 14 websites, and its extensive wholesale network.

With its Google Cloud data architecture helping power Hanes Australasia into a leading position as an ecommerce retailer in Australia and beyond, the business started exploring how it could use machine learning to offer even more compelling, personalized customer experiences. In particular, it wanted to move away from a manual, labor-intensive way of recommending products to visitors to its websites. Recommendations AI provided an easy entry point into machine learning for a business that was still exploring the potential of the technology. The business initially integrated Recommendations AI into pages for 10,000+ products for its popular Bonds, Bras & Things, and Sheridan brands, and was impressed. Based on its initial experience, Hanes Australasia plans to extend Recommendations AI to additional sites within its portfolio and to personalize the marketing emails it sends to customers.

Hanes



When we A/B tested the recommendations from Recommendations AI against our previous manual system, we identified a double-digit uplift in revenue per session.”

Peter Luu, Online Analytics Manager, Hanes Australasia

Source: [Google Cloud](#)



Case study

True Fit partners with Google Cloud to enhance the shopping experience and evolve the fashion retail market

True Fit, the data-driven personalization platform for footwear and apparel has partnered with Google Cloud to help retailers access the Fashion Genome™, the largest connected data set in the fashion industry, in order to personalize their customers' experience. Retailers can use the Fashion Genome™ to offer style, fit, and size recommendations at every phase of the customer journey plus gain valuable insights into shopper behaviors and product performance.

Together, True Fit and Google Cloud bring retailers beyond the "hype cycle" of artificial intelligence and machine learning, and generate repeatable value straight to retailers' P&L. Retailers that use True Fit's platform on Google Cloud's infrastructure benefit from incremental revenue lift and increased customer lifetime value and loyalty. With True Fit on Google Cloud, the improved processing power, speed, and reliability results in faster machine learning for improved shopper experiences, relevance, and insights.

True Fit



We believe in a diverse retail future that closely connects retailers to their consumers. We're thrilled to partner Google Cloud not only for performance, speed, and reliability, but also because our two companies have shared values for providing retailers white glove service, as well as shared vision and incentives to help create a thriving, competitive, and connected retail ecosystem that inspires consumers"

Romney Evans, True Fit's Co-founder and Chief Product and Marketing Officer

Source: [True Fit](#)

Omni-channel commerce

Customer care chatbots¹⁴

As perhaps the most well-known use of AI for everyday consumers, AI/ML has enabled retailers to implement advanced chatbots for personalized assistance, product recommendations, and customer service queries (e.g. first level support, FAQs). The goal is to increase customer satisfaction and operational efficiency, while simultaneously reducing handling costs.

This takes advantage of the rapid improvements in natural language understanding and generation—both speech and text—that AI models have enabled. Google is a leader in application of these technologies across our business and brings them to our retail customers as well.

Chatbots start with pre-trained models but that training needs to be enhanced with further training for responses on category and context specific topics for each retailer. Deployment requires data such as anonymized call center records and customer service conversational histories, which feed NLP (natural language processing) models. Customer workflows are also necessary inputs for designing an automated customer care experience. Thus, while 77% of chatbot applications are driven by business teams, cross-functional collaboration between business, operations and tech colleagues is a key driver of success.

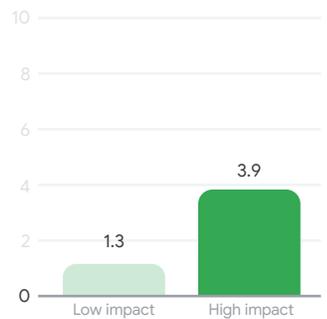
Time to impact can be short. Shifting customer care towards an automated, tech-based solution with a consistent customer experience (especially for first level support queries), can take as little as 3-6 months with a team of 5-10 members. The longer-term benefit of implementing such a solution comes as the AI/ML system continues to learn from agents on how to solve the toughest problems. This can enable enhanced service availability and quality at lower cost. Today, 40% of retailers have not implemented a chatbot solution, but almost half are expecting to do in the next 2 years.

Value at stake

\$B, 2023F

★ Top-line growth

Scale adjusted to \$0-10B for better visibility



Full implementation effort required



Adoption momentum



¹⁴. Includes customer care automation / call routing

Vestiaire Collective

Case study

Connecting multilingual users through instant translation

By providing authentication services to help ensure its customers can be confident in the quality of the pre-owned luxury items they are buying, online marketplace Vestiaire Collective has grown to become one of the world's foremost luxury marketplaces. Founded in Paris in 2009 and boasting more than five million community members, with logistics centers in New York, Hong Kong, and France, the website enables fashion enthusiasts to buy or sell rare designer items of clothing and accessories. Vestiaire Collective looked for a way to translate the 3,000 to 4,000 product descriptions uploaded every day into English automatically. It also wanted to reduce its costs while maintaining the quality of its service. To do that, it implemented Cloud Translation API on Google Cloud Platform to automatically translate product descriptions from six languages into English. Thanks to Cloud Translation API, users' product descriptions are now translated in near real time.

Vestiaire Collective



We are saving 82% on translation compared to our previous service provider. We want to invest those resources elsewhere, on improving our cloud infrastructure and exploring new tools that we can use.”

Patrick Hermann, CTO, Vestiaire Collective

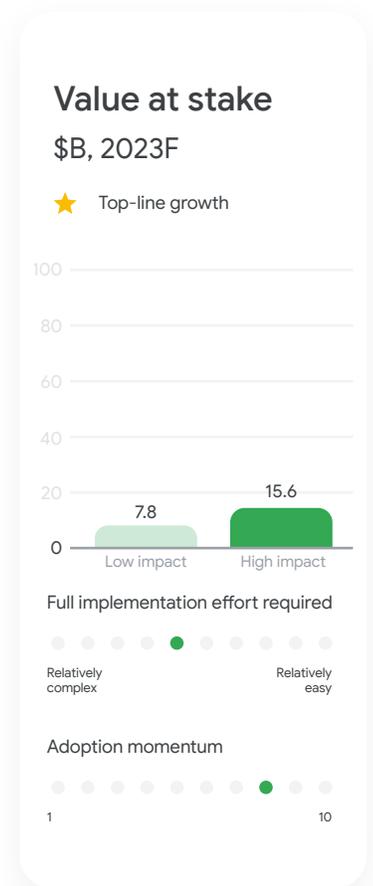
Store operations

Labor planning/workforce management

With AI/ML, staff allocation can be automated based on workers' available shift times, recent customer behavior, shopper flow and crowding analytics, and other factors and signals which offer the potential to increase efficiency of store operations and enhance the customer experience.

Such a system requires data on employee productivity and patterns of labor requirements for scheduling optimization, even in the face of unforeseen events and adjustments. Data feeds from existing systems for labor management and traffic can help, but accuracy is enhanced by more real-time, granular shopper patterns that can be gleaned from analysis of anonymous people flow data.

This kind of solution does demand focused change management with front-line managers and store teams. Full value capture requires changing existing business processes based on the recommendations from AI/ML labor planning tools. While relatively few specialty retailers have implemented such tools fully today, 40% of retailers cited labor planning / workforce management as a high priority for the next 6-24 months, as they work to get the right people in the right stores at the right times while managing through the economic uncertainty and assuring employee health and safety.



Product lifecycle management

Design to value

AI/ML-enabled design-to-value (DTV) processes rely on techniques like sentiment analysis, trend modeling, and social media listening to predict which products are likely to succeed.

They also can help quickly assess material design choices and associated costs and thus contribute to early modeling of the full economics of a new product launch. This helps ensure the correct brand and private label products are produced in the most efficient ways, with the least amount of waste for a given customer base.

Perhaps the biggest challenge to this approach is collecting sufficient catalogues of images, text, reviews, sentiment analysis, and transaction/sales data to help inform the AI/ML analysis. Additionally, significant work, data collection and model training are also required to develop R&D and supply chain models for all-in assessment of new product launches as well as for cost reductions to existing SKUs.

With nearly 70% of specialty retailers citing the need to train a moderate number of employees for DTV, plus additional investments in change management, and supply chain and R&D process updates, DTV becomes one of the more complex use cases to fully implement. As such, fewer than 10% of retailers have fully deployed AI in this domain today, despite the potential lift in sales and top-line impact. We expect momentum to build, however, as more players recognize the potential for impact.



Product lifecycle management

Optimizing sourcing, manufacturing, and quality

Sourcing, manufacturing, and quality controlling are critical processes for almost every specialty retailer. While such workflows are well-understood in the traditional world of brands and specialty retailers who are often orchestrating long global supply chains, in the age of AI/ML, there is a growing opportunity to optimize them for speed, cost, and quality based on historical data and advanced analytics models.

To implement this use case, specialty retailers need to collect efficiency data such as real-time supply chain availability and time to deliver, historical quality of each supplier, as well as apply AI/ML algorithms to build and rebuild optimal plans as conditions and constraints shift. Besides the ever-present dependency on internal data, this use case demands collaboration with suppliers to enable rapid data flows up and down the supply chain—a requirement that cloud data platforms are uniquely adapted to enable.

This also requires close collaboration between merchants, operations and tech teams. Retailers report that a cross functional project team of 11-30 members is the typical scale necessary for the implementation. Leading change in the supplier ecosystem will be critical for unlocking value.

While only a few players have started implementing this use case today, it has high potential to reduce production costs and accelerate time to market in the near future and specialty retailers report they expect adoption pace to grow.



Merchandising & assortment

Assortment optimization

Assortment optimization leverages AI/ML to enhance product selection based on data (e.g. customer reactions to products on shelves, customer ‘walk’ rates, space sensitivity, duplication) to maximize potential revenue, yet the technology can be leveraged both online and offline.

Assortment optimization requires an established base of data on both customer behavior (e.g. shopping, macro search trends, geographic location) and retailer information (e.g. historical sales, category assortment and performance, and marketing data), and as such, requires advanced analytics to balance the breadth, depth, and variety of SKUs optimally.

There is still a mindset component that leaders need to overcome for full value capture—namely the shift toward data-driven assortment optimization where merchants adjust based on recommended mix instead of fully merchant-driven choices. Workflows and roles of people within the process will also shift creating a need for thoughtful integration of analytics, training, and process design to capture the potential value.

Once the changes are rolled out, more than 35% of specialty retailers are able to capture the expected value in less than 12 months, suggesting this can deliver a strong early ROI which will grow over time with more and better data and integration of new signals for trends. Adoption momentum is therefore quite strong.



Merchandising & assortment

Demand planning

Demand planning employs AI/ML to better understand and predict customer demands of retailers in order to best optimize supply. Because demand planning impacts so many parts of a retailer's P&L (e.g. revenue, cost of goods sold, inventory holding costs, spoilage and markdowns), it is a critical use case for specialty retailers and can deliver impressive level of impact.

Retailer data (e.g. sales history, category data, and marketing data), data on consumer behavior (e.g. shopping, search trends, geographic location), and public information data (e.g. seasonal events, weather) all need to be analyzed together for effective implementation. Given the wide range of information that needs to be combined, platforms and "data pipelines" to organize and manage those resources are key enablers of the AI solution set.

Nearly 35% of specialty retailers have already implemented AI-driven demand planning solutions in some way and 50% have started proof of concept implementation. Yet some still require changes in corporate culture to reach full adoption, specifically a shift of mindset from human-based merchandising to data-based merchandising. This approach has its own associated change management hurdles, as stakeholders may also need to be introduced to new systems to properly allocate inventory.



Merchandising & assortment

Inventory optimization¹⁵

Getting the right inventory in the right place in the face of fast-changing demand is one of the most critical challenges in retail.

Almost all retailers use models of some kind to help them set stock levels. However, AI-powered inventory optimization is able to increase accuracy and granularity of SKU and store-level stock planning; results which enable companies to minimize lost sales, inventory waste and shrink, and therefore increase profitability and working capital efficiency.

As with many AI/ML techniques mentioned, a wealth of data is required, including product SKUs, (near-) real-time demand, expiration dates, and (near-) real-time inventory. Collaboration with vendors and logistics partners to enable supply chain visibility of inbound orders and to adapt to any supply disruptions is key. Faster data paths enabled by cloud-based event stream processing can enable better visibility from store to Distribution Center to in-transit stock. Cloud data platforms can bring together these fast-moving streams to allow machine learning algorithms to set and reset stocks and replenishment triggers more dynamically than ever. These platforms and third-party tools can enable even small cross-functional teams to deliver significant improvements vs. older modeling approaches and more importantly drive faster more accurate actions.

Specialty retailers are acting quickly. Nearly 50% of those surveyed have implemented some solution, and adoption is expected to grow substantially over the next 2 years. Because inventory optimization improves both top-line and productivity drivers of financial performance, it creates a disproportionate impact: roughly \$80B+ at stake across the world, making it the most valuable use case for specialty retailers.



¹⁵ Includes advanced replenishment



Case study

Driving higher profits with machine learning

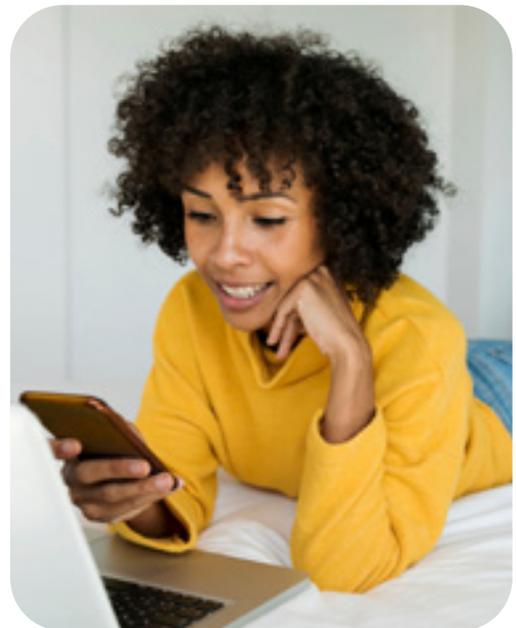
California Design, an online fashion bedding brand, depended upon a myriad of systems to track its complex forecasting and reordering processes. Team members typically planned inventory manually using desktop spreadsheet software, which could lead to excess inventory. Accurately forecasting demand and supply was essential to the company's financial success—but it was also a challenge. With guidance from Google partner Pluto7, California Design Den began migrating its database to Google Cloud Platform. Using Google BigQuery, Google Compute Engine, Google Cloud SQL, and Google Cloud Storage, and experimenting with Google Cloud Vision and Google Cloud AutoML, the company is reducing inventory carryovers by more than 50%, improving the accuracy of demand planning quarter over quarter, and gaining granular insights into how individual SKUs are performing.

California Design Den



We would need an army of data scientists to make faster decisions on pricing and inventory levels. With Google Cloud Platform machine learning and artificial intelligence, we don't need that. We can make much faster pricing decisions to optimize profitability and move inventory.”

Deepak Mehrotra, Co-founder and Chief Adventurer, California Design Den



Source: [Google Cloud](#)

Merchandising & assortment

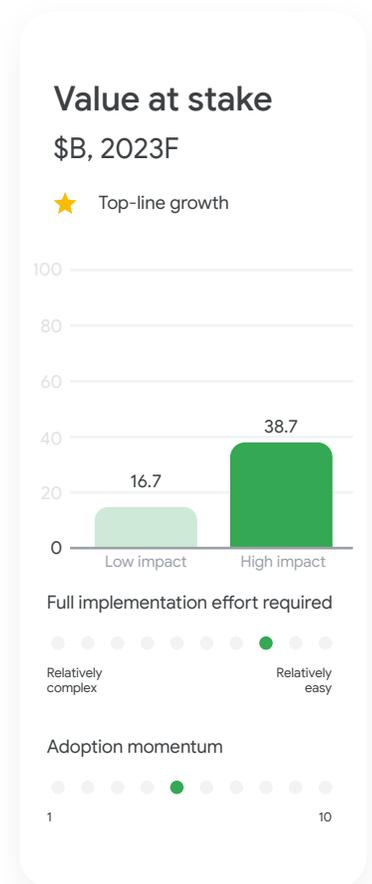
Markdown optimization

AI/ML technology has the ability to assist retailers to determine how to best adjust markdowns based on a host of interacting factors, such as inventory mix, product shelf-life, stock levels, current pricing, lifecycle and local seasonality trends, and financial needs.

Such optimizations can be applied at the regional or store level to improve the performance of each and achieve incremental gain based on specific fluctuations that are otherwise difficult for humans to fully take into account.

Markdown optimization using AI/ML capabilities relies on pricing data, such as external pricing intelligence and store-by-store prices, transaction data by location, and macro trend analyses. Since 33% of markdown optimization use cases are initiated and motivated by the pricing team within a retailer, increasing technical capabilities through hiring data scientists and ML specialties is the top driver for successful implementation and impact realization.

From a change management perspective, stakeholders from multiple teams need to be introduced to the new markdown systems to accurately re-price merchandise. However, the training effort is low and team size to execute is small—with 67% of specialty retailers reporting need for a cross-functional team of 5 to 10 members. Once the implementation is completed, 33% of specialty retailers surveyed have been able to realize the full expected value in fewer than 3 months making this the leader in time to impact.



Merchandising & assortment

Returns optimization

AI/ML can optimize returns processes based on the original sale value of the item, the demand for it, the time spent processing a return, the resale and demand potential of the item at different prices, and the overall margins given the returns channel used (e.g. return to DC, BORIS¹⁶).

Returns optimization would help determine the best disposition of the item to maximize available margin given the item's state, location, what is needed to make it saleable, and trends in its category, style, size etc. Since many factors—some conflicting with each other—can contribute to this recommended disposition plan AI can help to come up with a better plan than a person making this choice without the relevant context. The result is preserving potentially lost margin and improving overall economics.

Because returns management is a complex business process and sometimes lacks a clear business owner in a retailer's executive team, relatively few specialty retailers have implemented this use case today. However, use is expected to grow within the next 2 years, with 17% of retailers expecting to implement an AI-powered solution for these challenges.

Business process change needs and training are significant, since it affects both store and DC front line workers, as well as HQ operations and merchandising teams. However, given the opportunity for improvement, specialty retailers who have implemented report realizing expected value in 7-12 months.



16. Buy Online Return In Store

Merchandising & assortment

Assortment allocation and localization

Getting the right product into the right stores and adapting that store set to local tastes and style trends is an important way for specialty retailers to compete with the variety offered by large online marketplaces.

Assortment allocation and localization provides specialty retailers the capability to curate custom assortments based on each store's local historical sales, characteristics, and customer demographics. Similar to assortment optimization, assortment allocation and localization also requires a range of both historical and up-to-the-minute data—category and product trends, granular sales data, and other indicators of demand, coupled with local context and patterns (social, mobile, search trends, etc.).

As of 2020, only 20% of specialty retailers have implemented this type of use case, while more than 40% have in comparison started a proof-of-concept. Looking ahead, more than 50% indicated high intent to implement within the next 6-24 months. Thus we expect to see building momentum for adoption.



Merchandising & assortment

Real-time demand prediction

Sales in the retail sector are highly affected by both shopping demand and supply chain capability. Specialty retailers increasingly hope to deploy adaptive strategies to respond to fluid changes in demand or supply in an ever more timely manner. Real-time demand prediction provides such retailers a new way to get out ahead of such fluctuations and predict hyper-regional trends using a continuous flow of current data.

Similar to demand planning, transaction data by location, and macro trend analysis are key inputs for this use case. This data has to be real-time in order for the AI/ML models to provide sufficiently rapid recommendations for retailers to adequately adjust their resources as they work to optimize sales. As with many AI/ML techniques, a top enabler is access to rich, granular, and timely datasets.

In 2020, while only a few retailers have reached full implementation, real-time demand prediction is expected to become increasingly popular, with around 50% of specialty retailers having started the proof-of-concept trials. Another 40% said this use case is in very high priority for implementation in the next 2 years.



Logistics fulfillment & delivery

Omni-channel fulfillment optimization

Omni-channel retailing has required retailers to offer a fully-integrated shopping experience, uniting brick-and-mortar to mobile commerce and everything in between. The corresponding increase in consumer touch-points also provides opportunities for AI/ML to enable retailers to optimize multiple aspects of logistics. At its heart it requires retailers to communicate, with accuracy, what time a customer can expect an order to make their experience seamless, while driving the highest margin for the retailers.

Omni-channel fulfillment optimization demands a high accuracy level for inventory data across all channels, as well as integration of systems for consistently real-time views of inventory across the store / distribution center network.

Cloud data platforms bring new capabilities to aggregate this fast-moving data and AI algorithms offer enhanced capabilities to act on it quickly. Targeting KPIs for customer service, margin, and stock levels and optimizing across them simultaneously is only made possible on data in this volume and velocity by cloud-based AI.

Today, while only about 15% of retailers have fully implemented omni-channel fulfillment solutions, more than 30% of them are experimenting with them. Specialty players project moderate training and change management requirements—leading to a reported time to achieve full value of 7-12 months post-implementation.

With impact potential being high and growing as shopping behaviors continue to shift, we found the opportunity to unlock as much as \$42B in projected value annually by 2023.



Real estate

Store footprint optimization

Store footprint optimization employs AI/ML technology to analyze the best quantity, size, and layout of stores based on analysis of consumer behavior and shifting shopping patterns. As part of responding to the COVID-19 pandemic and the resulting consumer behavior changes, an increasing number of specialty retailers are likely to start strategically rethinking the relevant store footprint for their customers. To do this they are seeking to balance customer access and convenience with real estate costs, as the economics of both shift in an omni-channel world.

To reassess their real estate for optimum foot traffic and sales, retailers need to collect store-by-store, time-tagged shopper traffic and conversion data, as well as sales and leasing information from all their locations.

Store footprint optimization necessitates relatively limited change in business processes. However, the training effort should not be ignored as 80% of specialty retailers report needing to train a moderate number of employees to act on recommendations from these kinds of AI/ML models. After the implementation is completed, 80% of specialty retailers say they realize the full expected impact within 7-12 months—so long as well-defined KPIs are used to track value.





Chapter 3

Accelerating delivery of AI/ML

Achieved impact

Across implementation and proof of concept, specialty retailers of different types and sizes can achieve exciting impact with AI/ML, and often at greater levels than expected. In fact, research shows that in 8 out of 10 cases, specialty retailers generated as much or more value than anticipated from their portfolio of AI/ML use cases including early proof-of-concept efforts. 30% saw as much as 25-50% more impact than expected, and fewer than 20% realized less impact than anticipated across their portfolios of use cases.



8 out of 10

Specialty retailers realized expected value, or 25-50% more than expected value, from the AI/ML use cases they implemented

CEOs, CTOs, CIOs, and Chief Marketing Officers (CMO) overwhelmingly sponsor and support the implementation of most use cases across the specialty value chain, co-sponsoring efforts in almost 50% of the occasions. Implementation is vital though and it is the technical teams who critically choose the technology provider. This fact might indicate a movement of AI/ML into the “mainstream” of enterprise technology in retail.

While implementation of these technologies often requires significant change management and user education, as specialty retailers need to retrain a moderate number of end users in 90% of use cases, ultimately value realization can be quick. In general, 80% of AI/ML use cases in the specialty retail sector realize expected value in less than 12 months with one of four being able to deliver anticipated impact in fewer than 3 months.



80%
use cases realized
value in fewer than
12 months



70%
use cases are
motivated by
business teams



CEO, CTO, CIO & CMO are key sponsors.

CTO/CIO is key decision maker of technology
and cloud provider to use

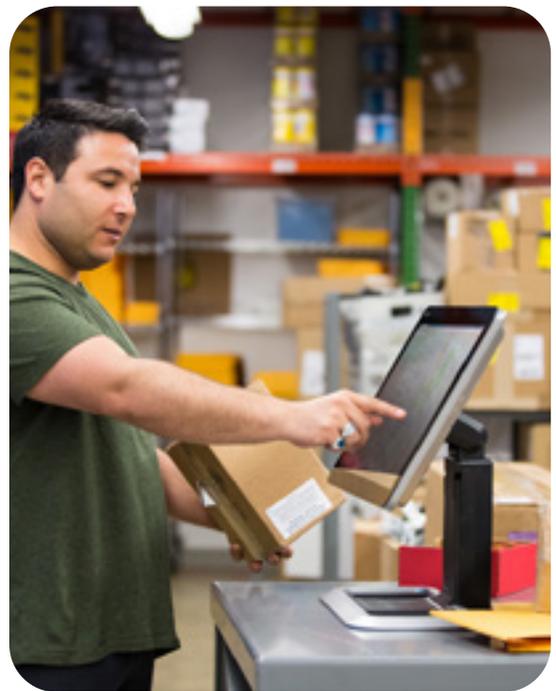
Enablers of value

What makes a retailer more likely to succeed in capturing value from AI/ML? Based on our research, there are 5 key factors that retailers have identified as the top enablers for success. Together, these factors lead to ~60% of the value capture.

Top 5

Enablers of value for specialty retailers

- C-suite championing and understanding of the value of AI
- Data is available
- Organization understanding of the changes needed to take advantage of AI
- Well-defined KPIs for use cases
- Cross-functional teams working together





C-suite championing and understanding of the value of AI

Thus far it seems implementation success requires C-suite attention to not only provide sufficient support and motivation, but also to help disseminate a firm understanding of both the short-term and long-term value of these efforts. As in most situations, leadership is vital in coordinating the troops to believe in the goal they are marching towards.



Data availability

AI/ML hinges on large quantities of data. This is no surprise based on how the technology functions. But data needs to be prepared - mapped, cleansed and combined from multiple sources to be usable. The specific nature of those data sets is just as important. Within the specialty retail sector availability of information caches on customer transactions, location, and images, providing the key fundamentals for building these cutting-edge applications (see 'AI/ML myths debunked' on [page 51](#)).



Cross-functional teams working together

Collaboration across business, operations, tech, R&D, and other teams is critical for specialty retailers, given the deployment of more complex AI/ML applications are likely to touch multiple parts of the organization. Nuanced and interwoven systems require analogous fixes and in specialty this is especially true as we see such implementation most often requires multiple cohesive and integrated efforts.



Well-defined KPIs for use cases

KPIs help retailers maintain a North Star for the success of their use case portfolios. Guided by clearly defined measurements for each use case, retailers can maintain a careful watch on progress and more easily and actively evaluate the impact of their AI/ML applications as it navigates critical decisions. Well-defined KPIs for each use case is the top enabler for use cases like omni-channel fulfillment optimization (see 'Omni-channel fulfillment optimization' on [page 42](#)), and store footprint optimization (see 'Store footprint optimization' on [page 43](#)).



Organization understanding of the changes needed to take advantage of AI

Most organizations adopt rules-based analytics first because rules are more straightforward to understand and implement, and it is how we ourselves often see and navigate the world. However, human bias is difficult to avoid and when organizations grow, hard and fast rules become less valuable as more and more "edge cases" arise. Therefore, before organizations undertake the shift in their processes and mindsets, it is important for them to understand that the changes and paths AI/ML offers may not always on the surface seem logical, and to therefore calibrate their expectations to test, verify, and ultimately trust results.

Barriers to value

What makes a retailer less likely to succeed in capturing value from the portfolio of use cases? Based on our research, there are 5 key barriers that retailers, who have captured less than the expected value from the implementation of AI/ML use cases, have identified as drivers for potential failure. Collectively, these barriers are cited ~60% of the time when retailers we surveyed looked back at initiatives that failed to deliver the full potential they targeted.

Barriers in the future

When asked about the use cases they intended to implement in the near future (6-24 months) specialty retailers identified 5 barriers they believed would continue to block or begin to block the realization of value. Together, these made up ~50% of the blockers to value. 'To be fore-warned is to be fore-armed' and so many businesses should be prepared to contend with similar roadblocks.

Top 5

Barriers to value for specialty retailers

- Lack of organizational/business unit commitment to analytics strategy
- Data limitations
- Lack of understanding of the changes needed to take advantage of AI
- Lack of well-defined KPI to track value
- Organizational politics

Top 5

Anticipated barriers to value for specialty retailers

- Technical talent limitations
- Financial constraints
- Strategy changes
- Cultural and mindset challenges
- Data limitation



Chapter 4

AI/ML myths and how Google Cloud can help

AI/ML myths debunked

AI/ML is a complicated and sophisticated set of tools, but there are certain perceptions about it that we want to debunk.



Myth #1 Data needs to be perfect

No! There is neither perfect data nor perfect models. While most data needs to be cleaned, annotated, aggregated and grouped to feed AI/ML models, the data does not need to be perfect as long as it carries the key signals and factors that can indicate further insights and action items. Data pipelines and data quality tools need to be configured to enhance quality and remove bias, but also to be robust against some noise in the data or disruptions in gathering. Even if a business did invest in “perfect” data at a point in time, without being continuously collected and updated, even “perfect” data loses power and value. However, it’s important to note that while data does not need to be “perfect,” ML models should be trained on data that is similar to that which will be used in production. This requires upfront effort, usually in the form of data gathering, normalization, cleansing, and processing, so it’s important not to get discouraged at the process, as this will lead to better quality outputs for the AI models overall.



Myth #2 AI/ML models only work with transactional data

No, again! Machine learning is an effective way of building AI systems that automatically find useful patterns in data that can vary greatly. Beyond traditional transactional data, there are video, voice, text, images, sensor outputs, and other data that can be consumed and employed by models to build predictions. In fact, machine learning provides unique capabilities when applied to these varied data sources and unique “multimodal” approaches to combining signals from diverse types of data. Thus an effective AI strategy should assure a wider range of digital information—with appropriate privacy and security controls applied—are used to extract valuable insights and to drive actions that enhance customer experiences and business processes.



Myth #3 Data cannot be missing

AI/ML models actually do not need a complete set of data to be able to ‘learn’ and provide predictions. One of the key benefits of AI is that it can work better on “sparse” data sets (i.e. those with missing or not fully populated values) than other analytics approaches. This enables models to be more robust against the “real world” disruptions in data flows and to deliver predictions that are valuable early on, as well as even better as data volume and quality improve. This makes investments in AI/ML based-systems less “fragile” than other kinds of enterprise IT systems. For example, [AutoML Tables](#) is a Google solution that can handle data as its found in the wild. AutoML Tables automates feature engineering on a wide range of tabular data primitives (such as numbers, classes, strings, timestamps, and lists) and also helps you detect and take care of missing values, outliers, and other common data issues.



Myth #4 Data can only tell us about the past

One of the key benefits of AI is that it can help move retailers from using their data in a “rear view mirror” capacity (e.g. a historical understanding of their performance) toward using data as the “headlights” of a fast moving enterprise navigating uncertain terrain (e.g. a view on demand and sales in 12 months). AI’s power comes in handling data exceptions well enough to enable retailers to identify when the business is starting to falter, and to continually update forecasts based on new data that is coming in. These ‘predictions’ and constant learning are what make AI/ML applications so compelling.



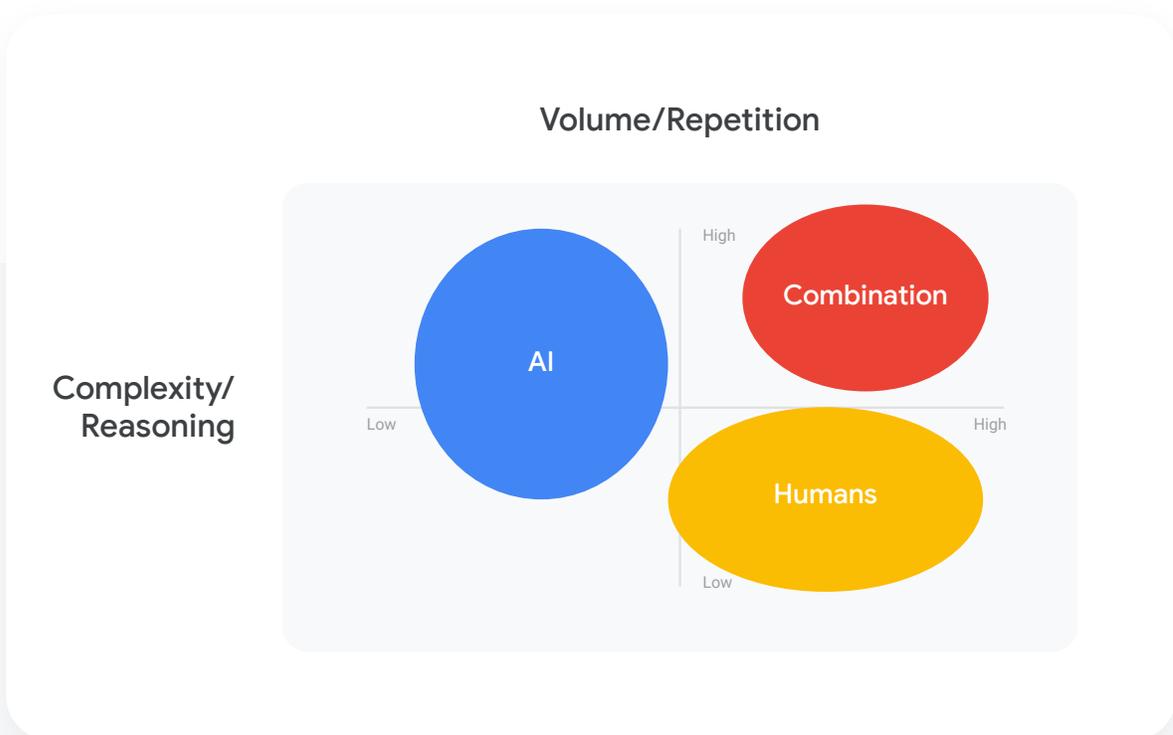
Myth #5 AI startup costs are high

No! It’s more affordable than you think. Nowadays, with the cloud and AI infrastructure providers such as Google, retailers only need to focus on their core business logic and the best use cases of AI technology. Additionally, you can tackle projects incrementally. Therefore, the costs of AI startup, such as keeping clean and organized data, have been decreasing and have become more controllable in recent years.



Myth #6 AI can only solve esoteric problems

Actually, AI/ML is very effective in solving seemingly simple problems. Within retail, hundreds of operational decisions will need to be made on a more rapid daily, weekly, and monthly basis. This is an area where AI cloud and data applications will have a disproportionate impact for retailers who deploy them, particularly because many of the needed tasks are hard for humans to do at repetitively or at speed, but relatively easy for AI to perform. Other examples areas where AI can help in a practical way is in helping users search better and find the products they need.



How Google Cloud can help

Specialty retailers around the world are boldly reshaping their strategies to delight increasingly digital consumers and to deliver even more compelling and personalized experiences.

Google Cloud can be your trusted technology partner, creatively leveraging all of our consumer innovation and broader offerings to help you deliver on new, unique journeys for your brand. Benefit from the same AI technology Google uses to build products and features, our commitment to [AI principles](#) and investments in [explainable AI](#) that help you better interpret predictions made by ML models. Our objective is to help make AI/ML accessible with products and solutions built for Retail and we approach this in three key ways to ensure we meet the needs of retailers across the AI/ML capability spectrum:



Pre-built solutions

We are bringing industry specific solutions to market across the retail value chain to solve for specific retail use cases. For instance, with [Recommendations AI](#) you can deliver highly personalized product recommendations at scale.



Building Blocks

Our [Cloud AI Building Blocks](#) enable your developers to easily infuse AI into your existing applications or build entirely new intelligent applications across a broad spectrum of use cases with or without prior ML expertise. There are two types of building blocks: AutoML for custom models and APIs for pre-trained models. You can use them individually or in combination depending on your use case.

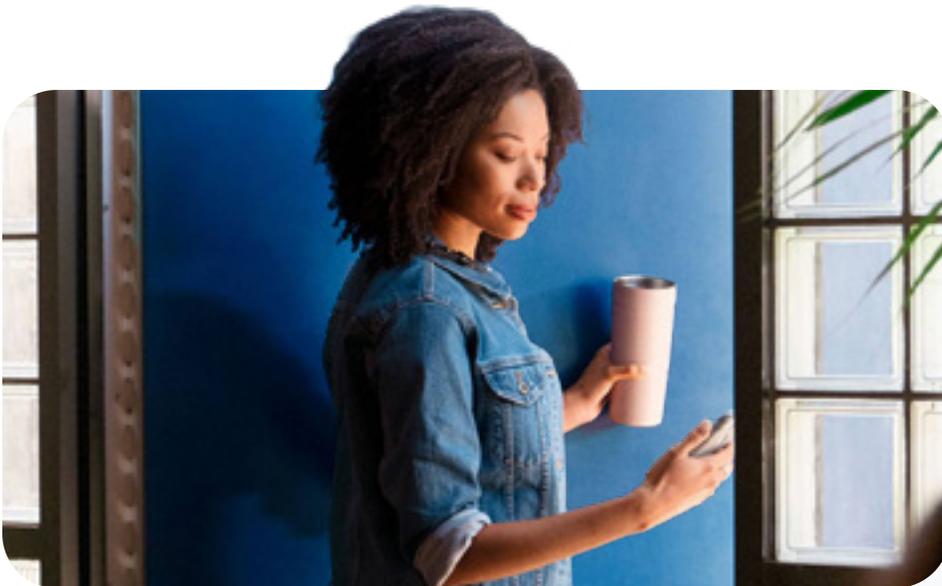


AI platform

And finally, if you have the data science and machine learning skillset and the desire, you can leverage our robust [AI platform](#) to build your own applications to meet the unique needs of your business.

We are also growing our ecosystem of partners who have deep expertise in enterprise retail and can help you get faster results with integrated or out of the box SaaS solutions.

Ultimately our goal is to help retailers capture digital and omnichannel growth and become customer centric and data driven, while driving operational excellence across the organization.



We hope you found the findings shared in this ebook useful. For a conversation on how we can support your unique needs as you work on a transformation agenda for your business, reach out to your Google Cloud account team or [contact us](#) online.