



Artificial Intelligence In Retail: What Now?

Benchmark Report

Brian Kilcourse and Steve Rowen, Managing Partners

October 2022

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Executive Summary

Key Findings

Today, despite years of hype, confusion, and downright misinformation, practical concerns about AI/ML are very much on the minds of retailers. New sources of data are available to businesses from an increasingly digitized global marketplace, and the hope is that AI/ML technology can be used to turn those data into insights, and help retailers better understand the environments they operate in. As a result, we set out to study retailers' attitudes about these very real-world opportunities.

The following are some of the highlights of what they told us:

- **Nearly half** of our retail respondents chose the ability to identify trends that impact future objectives as their #1 use for business analytics, despite 12 different choices on offer. In an age of increased uncertainty, retailers can't rely on gut feel to know what to do next, and they want the smartest math possible (AI) to be able to help them react. Quite simply, they want (and need) better tools to navigate uncertainly than what they currently have.
- The best performers, (those whose sales are already outperforming the norm) are *FAR* more bullish on AI and ML tools. **71% of the best performers** say AI-enabled analytics will fundamentally change how they forecast their merchandise in the next three years (compared to only 44% of average and underperformers). This pattern extends to all kinds of decision-making processes, including supply chain planning and management (62% vs 48%) and store performance evaluation methods (56% vs. 40%).
- While retailers' number one external challenge continues to be rapid shifts in consumer demand (46% choose it as their top priority from a list of 9 options), the biggest opportunity they see for greater use of AI-enabled analytics turns inward: 44% say they can use these advanced algorithms to help them react better to supply chain interruptions. Quite simply, retailers fear consumers – and rightfully so. But they think their best chance of upping their game (again, correctly) is to improve their own ability to react to the unthinkable. At all costs, *they know they at least need to be able to provide the products they've promised that they can*. No doubt, the COVID-19 pandemic has shaken our industry up, and AI-enabled analytics may well be one of the biggest benefactors of that dramatic change.
- As it relates to specific technologies, our response pool tells us that investment is coming slowly: but it is, indeed, coming – particularly for the best performers. Retailers are not moving as quickly to leverage these new tools as consumers might wish, but slow-and-steady increases in both the value and use of such AI-enabled interfaces as executive dashboards, exception reports and visual data models has steadily improved since we last conducted this research during the height of the pandemic in 2020. It is the ability to layer intelligence onto the structured data they are collecting from their legacy operational systems that holds their interest most: both *right now*, and in the coming future.

Based on our data, we also offer several in-depth and pragmatic suggestions on how retailers should proceed. These recommendations can be found in the **Bootstrap Recommendations** portion of the report.

We certainly hope you enjoy it,

Brian Kilcourse and Steve Rowen

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Research Overview

Fast-Paced Adoption Of A Revolutionary Technology

Artificial Intelligence (AI) and Machine Learning (ML) technologies have been the subject of a lot of hype in the past several years. For some, AI/ML has the potential to trigger a dystopian future where automation does everything from completely replacing the human workforce, to chatbots instead of humans to answer our questions, all the way to Terminator-like "killer robots". It doesn't help that some of the most respected thinkers in the world such as theoretical physicist **Stephen Hawking** ("artificial intelligence could spell the end of the human race") and **Elon Musk** (who once referred to artificial intelligence as "summoning the demon"), have expressed grave concerns.

Meanwhile in the retail industry, *much* more practical concerns about AI/ML are on the minds of retailers. There is a veritable ocean of "external" data available to businesses from an increasingly "digitized" global marketplace, and the hope is that AI/ML technology can be used to turn those data into insights, and help retailers better understand the environments they operate in.

RSR noted in its [2020 benchmark on retailer attitudes about AI/ML](#) that retailers are trying to change their operational models to be able to respond very quickly to sudden changes in either supply or demand, and they are looking to AI/ML to help them to achieve that. What was new to this quest is the application of AI technology. But retailers also recognized that moving from a hyper-efficient (albeit not very flexible model) to a hyper-agile one is a huge change that affects employees and business processes, as well as the technologies that support them.

The purpose of this new benchmark study is to update our understanding of if and how retailers are focusing AI/ML to address challenges in the marketplace and seize on the opportunities that those challenges create.

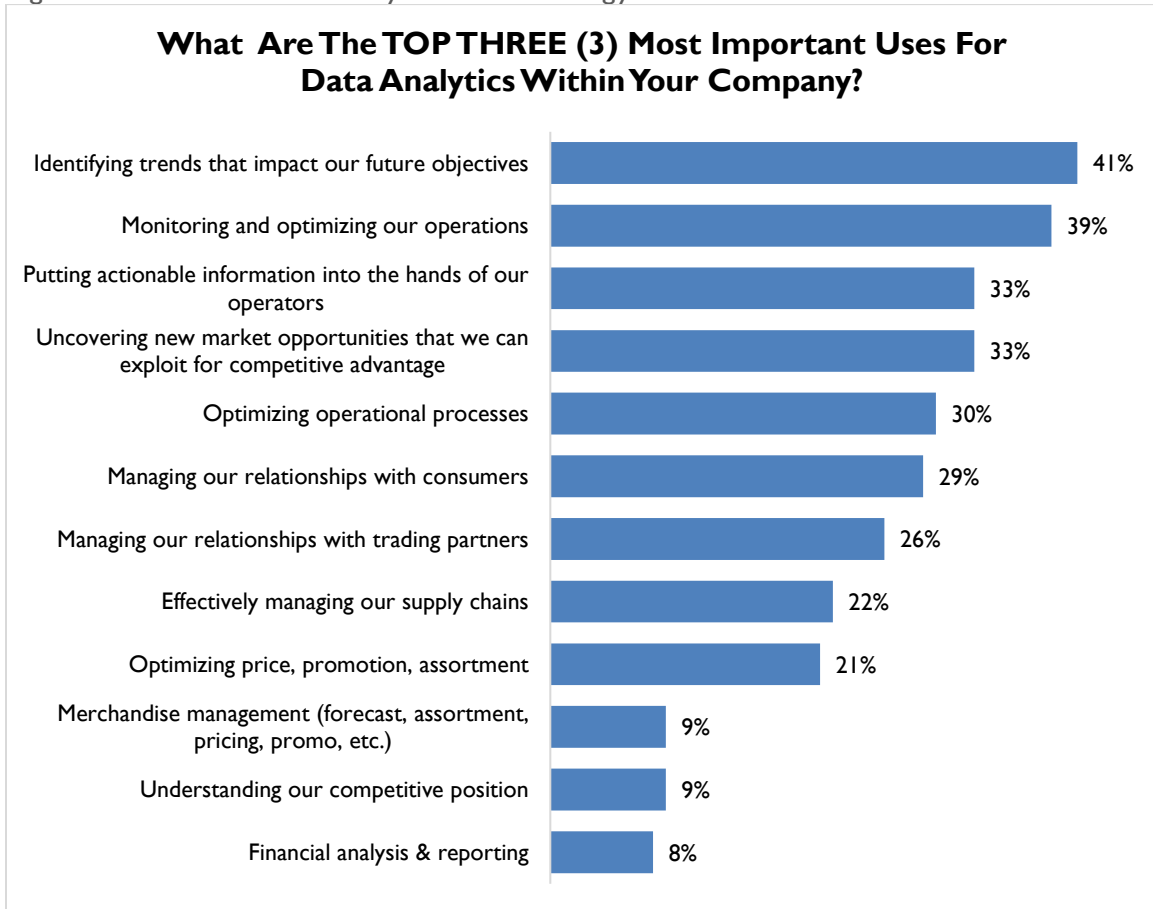
Flexibility As Strategy

Retail is a famously reactive business; when either supply or demand changes, retailers change in response. RSR's own BOOT™ research methodology reflects a 12-24 month horizon in recognition that retailers rarely look too far beyond the next year's plan. Retailers' planning cycles assume a *predictable* environment, and the strategic imperative is *operational efficiency*. But in recent years (and certainly since the Great Recession of 2008-12), the retail marketplace has been buffeted by a seemingly endless procession of mega-challenges: economic and political uncertainty, new and powerful competition, the rise of digitally empowered consumers, pandemics, and global climate change.

In short, the world in which retailers operate *isn't* predictable, it's increasingly *dynamic*. That in turn is causing businesses across industries to adopt *agility* as a strategic imperative, i.e., developing an intrinsic ability to respond very quickly to changes in the marketplace.

Retail is certainly not immune to this business trend. We can see this in the priority that retailers assign to data analytics (Figure1). Just as it was in 2020, retailers want to be able to identify trends that can affect their ability to meet future objectives.

Figure 1: Greater Flexibility Is The Strategy



Source: RSR Research, October 2022

As we'll see later in this report, retailers are anxious to use new data gathered from *outside* the theoretical four walls of their businesses to develop scenario models – with the expectation that they will be able to better position the business's processes and assets to respond much more quickly to changes in the marketplace that may occur. Greater flexibility is the *strategic* objective.

This is very different from the *tactical* objectives that retailers were focused on just ten years ago. RSR's 2012 study on the state of analytics in retail¹ revealed that the top opportunity for retailers at the time was to improve their ability to match demand with assortments, prices, and promotions. Retailers sought to use new customer sentiment data from the then-emerging digital selling channel as well as from the market-basket to optimize their merchandise plans.

But retailers haven't forgotten about operational efficiency as they seek greater agility— narrow profit margins never let retailers ignore the need to optimize internal processes. That is why the top-three uses for data include the ability to *optimize operations* and to *put actionable (i.e., real time) information into the hands of operators*.

¹ Retail Business Intelligence: A Work in Progress, RSR Benchmark Report, October 2012

Agility and *optimization* aren't mutually exclusive. In this study, we wanted to see how retailers view AI's ability to help them achieve both objectives.

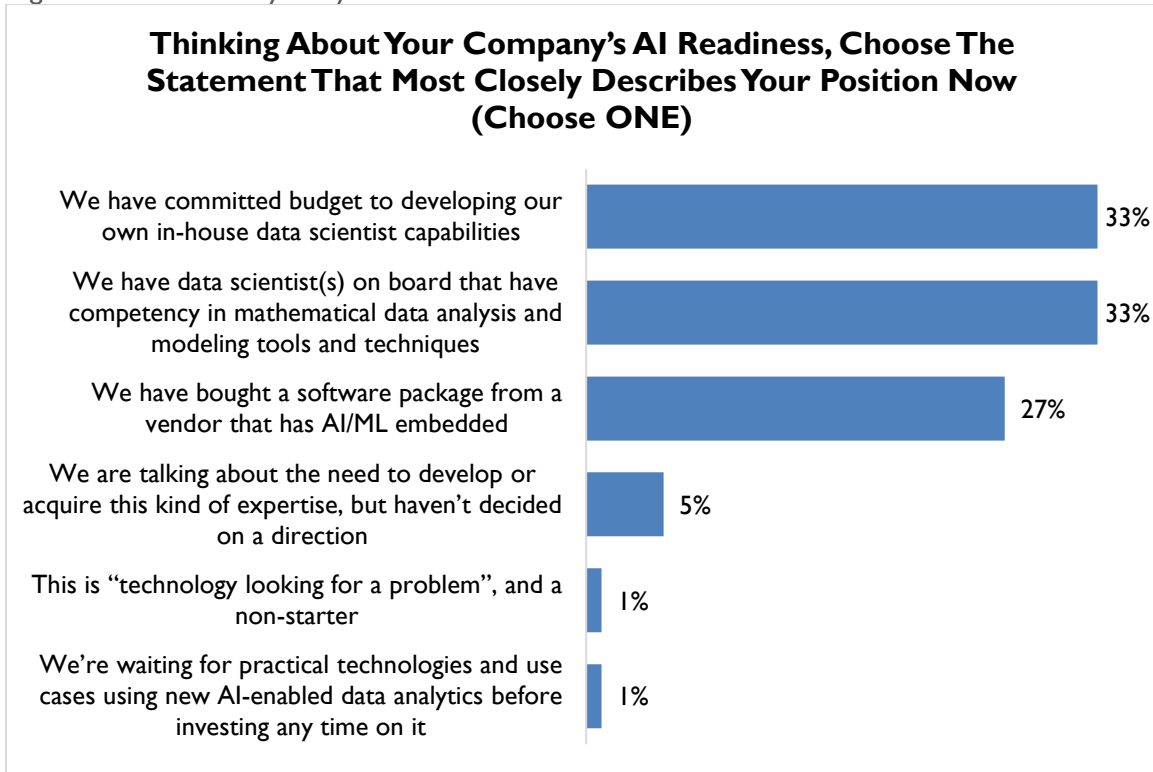
How AI Fits In

In RSR's 2020 study, we noted that over-performing retailers were far more bullish on AI-analytics to better manage products, the supply chain, and even to evaluate store performance. Based on our observations, we identified several to-dos for retailers:

- *Accept the “meta challenge” and use AI-infused analytics to help rapid responses and decision making;*
- *Use AI infused merchandise forecasts and plans to put the right product in the right place at the right time;*
- *Expand decision automation to be able to support greater localization of merchandise planning and execution;*
- *Use AI to glean insights from non-transactional data;*
- *Support Store Operations with AI;*
- *Don't abandon traditional analytics; AI is not a “silver bullet”.*

All of these recommendations are predicated on retailers having the ability to develop AI models (or “algorithms”) to make sense of all the new data available. We wanted to test that assumption, and so we asked retailers to self-assess their AI “readiness (Figure 2). While it's very clear that retailers don't believe that AI is “a solution looking for a problem”, there is no question that AI adoption is still in its early stages, at least as evidenced by how far companies are in developing the internal capabilities needed.

Figure 2: Still Early Days



Source: RSR Research, October 2022

Within these findings, there are some interesting insights. For example, over-performing "Retail Winners" (described below) are more likely to have data scientists on board (40% compared to 25% of all others). And curiously, far fewer **Fashion & Specialty** retailers than others have data scientists in-hand (only 6%), although far more of those retailers have committed budget to acquiring that talent (59%, compared to 33% overall). Clearly, they are late to the AI game.

It's also interesting to note that the self-assessment provided by our survey respondents is almost identical between line-of-business managers and IT'ers. The message is that business decision makers and technologists are in agreement about where their companies stand.

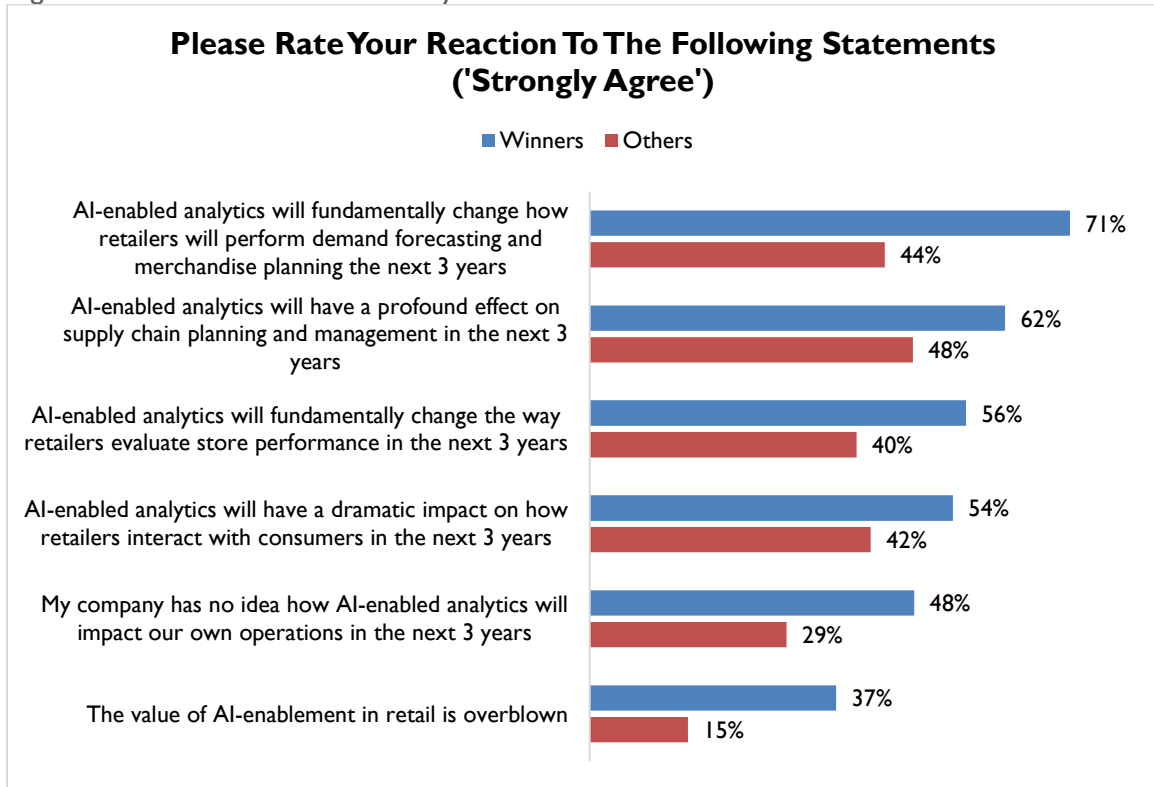
Retail Winners And Why They Win

Over the years, RSR has found significant differences between retailers who over-perform in year-over-year comparable sales and their competitors. These differences are highlighted in our benchmark reports; *consistent sales performance turns out to be an outcome of a differentiating set of thought processes, strategies and tactics*. While some might argue that comparable sales are a dated metric, it remains the best measure of retailer success.

RSR's definition of "Retail Winners" is straightforward. Assuming industry average comparable store/channel sales growth of **7 percent** in 2021, we define those with sales above this hurdle as "Winners," those at this sales growth rate as "average," and those below this sales growth rate as "laggards" or "also-rans."

Figure 3, below, gives us our first insight into the differences in thought processes and execution capabilities between Retail Winners and their peers.

Figure 3: Winners Are Clear-Eyed



Source: RSR Research, October 2022

While average and under-performers are hedging their bets about the potential impact of AI, Winners are both more bullish about the new technology's potential for impact on both demand forecasting and supply chain planning, and more transparent in their assessment that they don't really know the true extent of AI's impact to internal operations in the future.

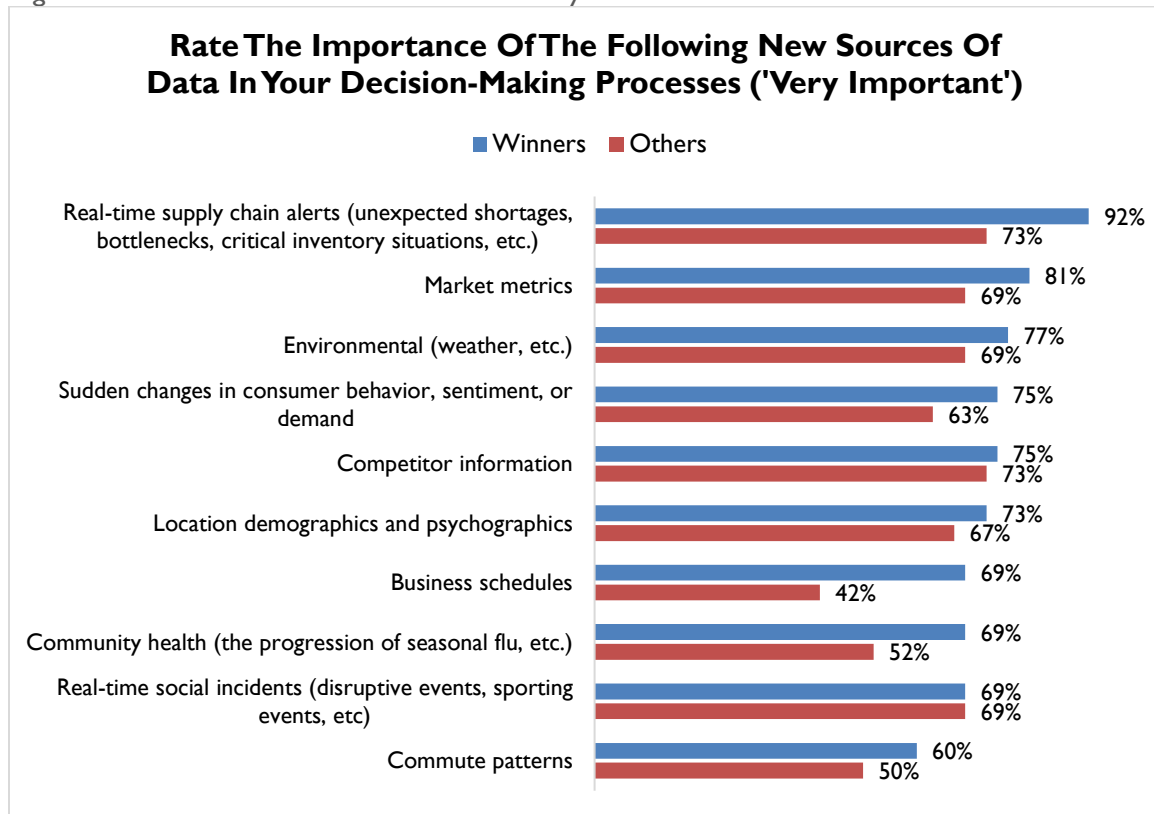
More Winners than non-winners are also willing to challenge some of the hype surrounding AI. That's encouraging; As Apple's Steve Jobs once said, "It's not the tools that you have faith in - tools are just tools. They work, or they don't work." After it is all said and done, AI alone won't make a business better – retailers can't wave it like a magic wand. People make businesses better. But Winners also know that AI is an important new tool that will help their businesses turn data into insights – and those insights *will* help to make the business better.

What New Data?

Figure 3 shows a majority of Winners see value in the power of AI-enabled analytics to help them improve demand forecasts and merchandise plans, and to improve supply chain planning and management. Those are clearly the top focuses even for non-winners. But most Winners also think that AI-enabled analytics will help them to get the best performance out of their stores and improve their interactions with customers.

That's all good news. The question is, what data will feed those AI-enabled analytics? Here's what retailers told us (Figure 4):

Figure 4: New Data To Feed New Analytics



Source: RSR Research, October 2022

Interestingly, retailers are more united in their assessment of the value of new data than they are in the role of AI to help them make sense of it all. As a reflection of the findings in Figure 3, supply chain alerts and sudden changes in key consumer data are ranked as “very important” by a large majority of retailers (and particularly by Retail Winners).

Some high priority data are what we would expect: *competitor information* and *location demographics/psychographics*, in conjunction with new data like *commute patterns* and *business schedules*, could help retailers plan store locations, localized fulfillment centers, and merchandise assortments and presentations.

Other data, such *environmental data*, *real time social incidents*, and *community health*, all point to retailers’ desire to be more proactive in how they respond to conditions that could impact their ability to execute day-to-day operations effectively.

Looking at these results by retail vertical, there are a few stand-out learnings. For example, FMCG (“fast moving consumer goods”) retailers see more value in *environmental* data than all other retailers (78% compared to 73% overall), while GM (“general merchandise”) retailers are far more concerned about *real time social incidents* than all other retailers (90% compared to 69% overall). These are reflective of the peculiarities of those particular verticals (for example, FMCG’s ability to bring fresh food to the sales floor is impacted by the weather).

But taken as a whole, retailers of all stripes want to use new data to gain new insights – they only seem to disagree on whether AI-enabled analytics is a prerequisite to being able to accomplish that.

In the following sections of this report, we will identify how retailers are addressing the business challenges and opportunities associated with AI-enablement. To a great extent, this is a Winners' story. But as we've already seen, it's still early days for AI-enablement, and non-winners have a chance to catch up. Throughout the report, we'll point out if and how they are trying to leapfrog their way into a better position.

Methodology

RSR uses its own model, called The BOOT Methodology® to analyze Retail Industry issues. We build this model with our survey instruments. See [Appendix A](#) for a full explanation.

In our surveys, we continue to find the kinds of differences in thought processes, actions, and decisions cited above. The BOOT helps us better understand the behavioral and technological differences that drive sustainable sales improvements and successful execution of brand vision.

Survey Respondent Characteristics

RSR conducted an online survey in August 2022 and received answers from 100 qualified retail respondents. Respondent demographics are as follows:

- **Products Driving The Majority Of Revenue:**

Fast Moving Consumer Goods (C-store, Food & Drug, Health Care Products)	45%
Apparel, Footwear, & Specialty	14%
Hard Goods (CE, Hard Goods, Home Décor, Improvement, Automotive)	18%
General Merchandise (Discount, Mass Merchant, Department Stores)	20%
Vertically Integrated Brand	3%

- **Retail Presence:**

USA	100%
Canada	43%
Latin America	22%
UK	21%
Europe	20%
Middle East & Africa	6%
Asia/Pacific	8%

- **Year-Over-Year Sales Growth Rates** (assume average growth of 7%):

Worse than average	11%
Average	37%
Better than average ("Retail Winners")	52%

- **Respondents Position Within The Organization**

C-level (e.g., CEO, CFO, COO, CIO)	46%
Vice President	17%
Director/Manager	35%
Staff and other	2%

- **Functional Area of Responsibility**

Executive Management	36%
Customer Experience/eCommerce Operations	5%
Finance, Legal & HR	8%
Information Technology	37%
Merchandising	3%
Marketing	4%
Store Operations	1%
Procurement, Supply Chain and Other	6%

Business Challenges

Challenges On Both Sides Of The Model

The retail operational model has three basic components: the consumer side, the supply side, and all the operational processes that bring those two sides together. We have already noted that Winners are bullish about the new technology’s potential for impact on both demand forecasting and supply chain planning. In the aggregate response, we see these concerns clearly reflected (Figure 5).

Figure 5: Sensing Demand / Managing Supply



Source: RSR Research, October 2022

But other concerns are also highlighted; competition, consumers, and (as is always the case) operational costs. These concerns come into sharper focus when we look at differences by performance.

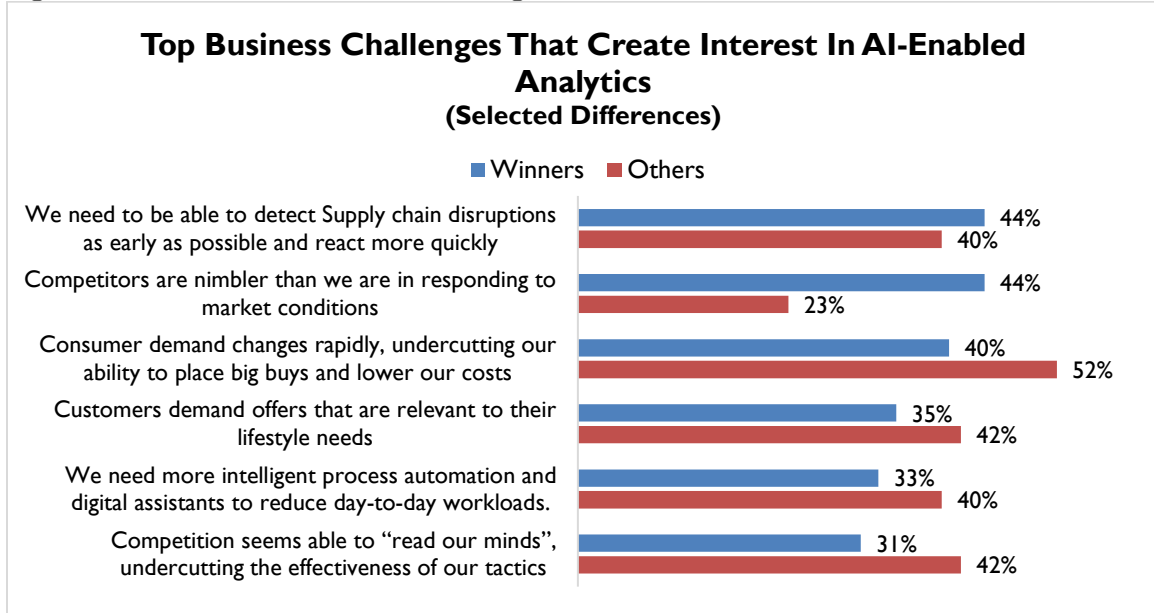
It’s hardly surprising the supply chain disruptions are top of mind for Retail Winners and non-winners alike (Figure 6). 2021-22 saw shocking interruptions in the flow of goods to retailers. As RSR noted in its 2021 benchmark study on the state of the retail supply chain:

“When it comes to greater visibility into the supply chain, especially “alerts for unexpected supply shortages” and “critical inventory situations anywhere in the supply chain”, over 60% of retailers believe those to be a problem. Finally, only 52% of our survey respondents are confident that they can “respond to disruptions... Taken as a whole, the overall picture

is that of an industry that has difficulty anticipating, seeing, or responding to disruptions in the supply chain whenever they occur.”²

Figure 6 shows that Winners and non-winners agree on one key point, that they need to be able to detect supply chain disruptions quickly enough to take corrective actions.

Figure 6: More Differences Than Agreement



Source: RSR Research, October 2022

From there, however, concerns quickly diverge. A majority of non-winners believe that sudden shifts in consumer demand are undercutting their ability to lower cost of goods through efficient buying practices. On the other hand, Winners worry that somehow “the competition” is nimbler than they are.

We’ve seen this before now. In RSR’s 2022 benchmark on the state of KPIs in retail³, we noted that 56% of Winners (compared to 33% of other retailers) identified that “*the competition is much more agile in responding to changes in supply and demand than we are*”. In that report, we noted that “*over-performers stay sharp by acting as if the competition is catching up.*”

The Kitchen Sink

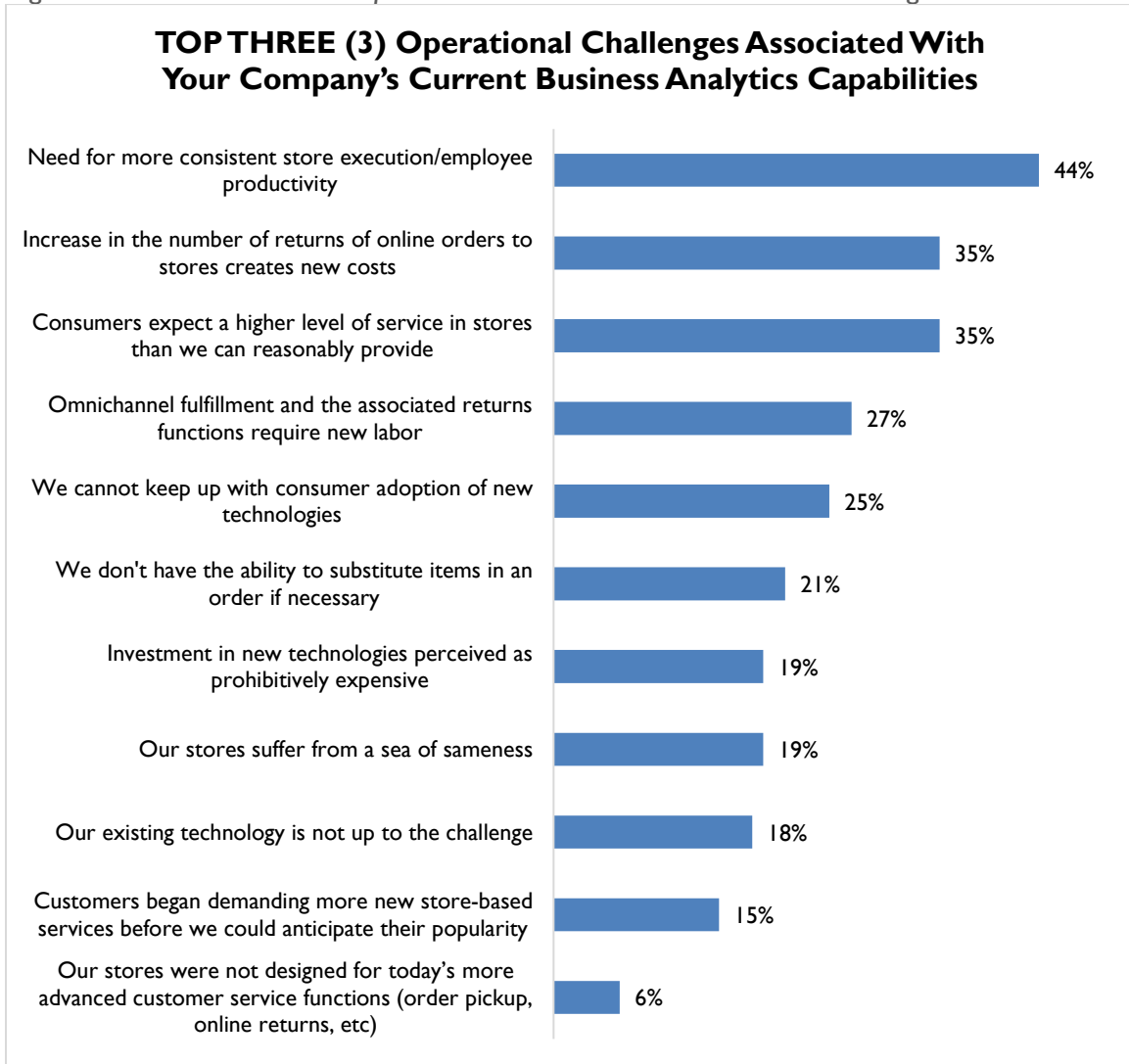
To better understand if and how next-generation analytics can help retailers optimize the internal processes that bring supply and demand together, we asked retailers to prioritize operational challenges that potentially could benefit from improved insights.

When it comes to store operations, what we got was a veritable “kitchen sink” full of operational issues, but three stand out: the need for *more consistent store-level execution*, the growing problem of *returns handling*, and customer demands for *more services that add new costs* (Figure 7).

² Retail Supply Chain: Navigating Through Rough Waters With Improved Agility, RSR Benchmark, December 2021

³ How Retailers Are Operationalizing Analytics With New KPIs, RSR Benchmark, June 2022

Figure 7: The Need To Improve Store-Level Execution With Insights



Source: RSR Research, October 2022

Let's address the potential role of insights derived from analytics for each of these challenges:

First, retailers are looking to improve store operations by informing operational processes with insights derived from real time analysis of business metrics. RSR's 2022 benchmark study on the state of KPIs in retail⁴ identified many of the insights derived from improved analytics that could help. They include *labor retention rates and utilization rates, sales per employee, inventory turns and out-of-stock measures, shrink and waste measurements, and customer order fulfillment measures.*

Secondly, as relates to in-store returns of online orders, RSR recently revealed in our annual report on the state of the stores⁵ that retailers see the ability to accept online order returns in the stores as an opportunity as much as a challenge, since it creates another chance to interact with

⁴ **How Retailers Are Operationalizing Analytics With New KPIs**, *ibid.*

⁵ **What Can Retailers Do In Stores That Amazon Still Can't?**, RSR Benchmark, August 2022

consumers in the store. Retailers understand the role of analytics in helping them to control this increasingly important activity.

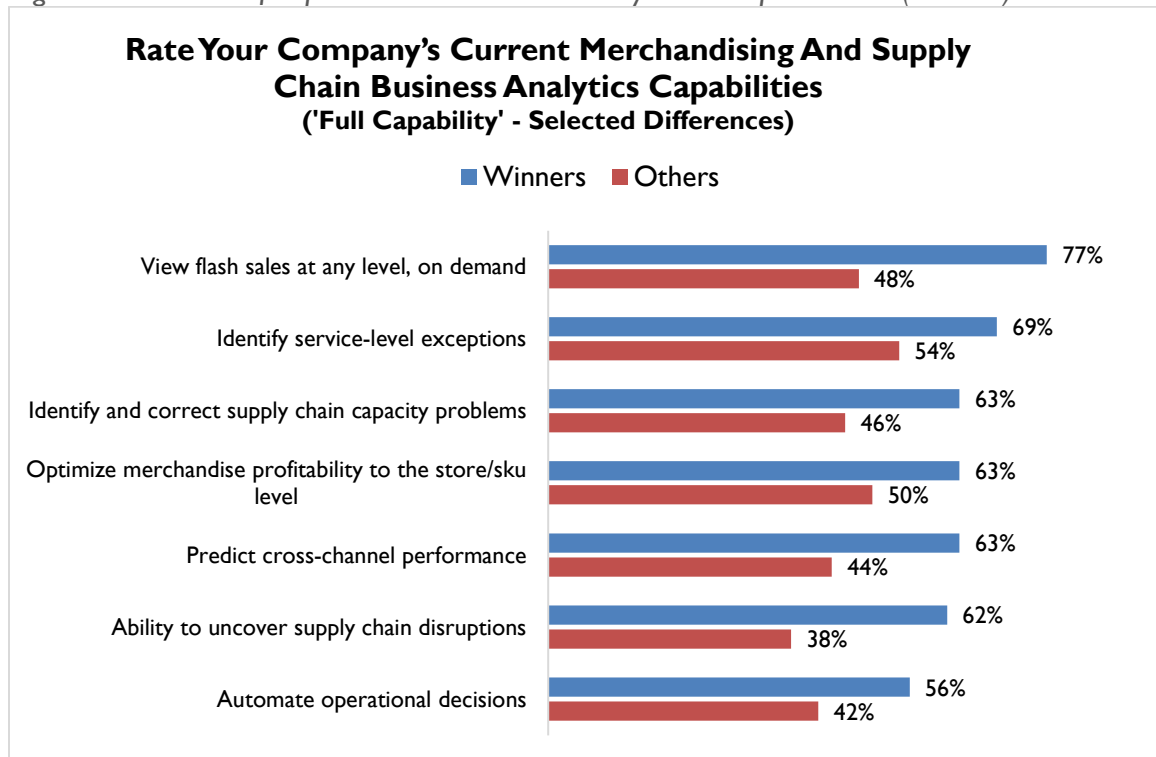
Finally, retailers recognize that in order to service customers in new ways, they need to “find the money” by optimizing and even automating some in-store decisions and processes. That requires operational analytics.

The State Of Current Merchandising And Marketing Analytics

Analytics has had an important role to play in bringing “science” to the art of retailing. Along with financial analysis, merchandising and marketing functions have been using data warehouses and related tools for over 30 years to understand product movement by location, time period, and by assortment categories. Vendor performance is score carded, and supply chain performance is measured. Promotional effectiveness is monitored, and customer interactions are tracked to improve loyalty. These capabilities are accomplished largely with traditional BI (“business intelligence”) tools that examine internal data from operational systems, and don’t require the new data identified earlier in Figure 4.

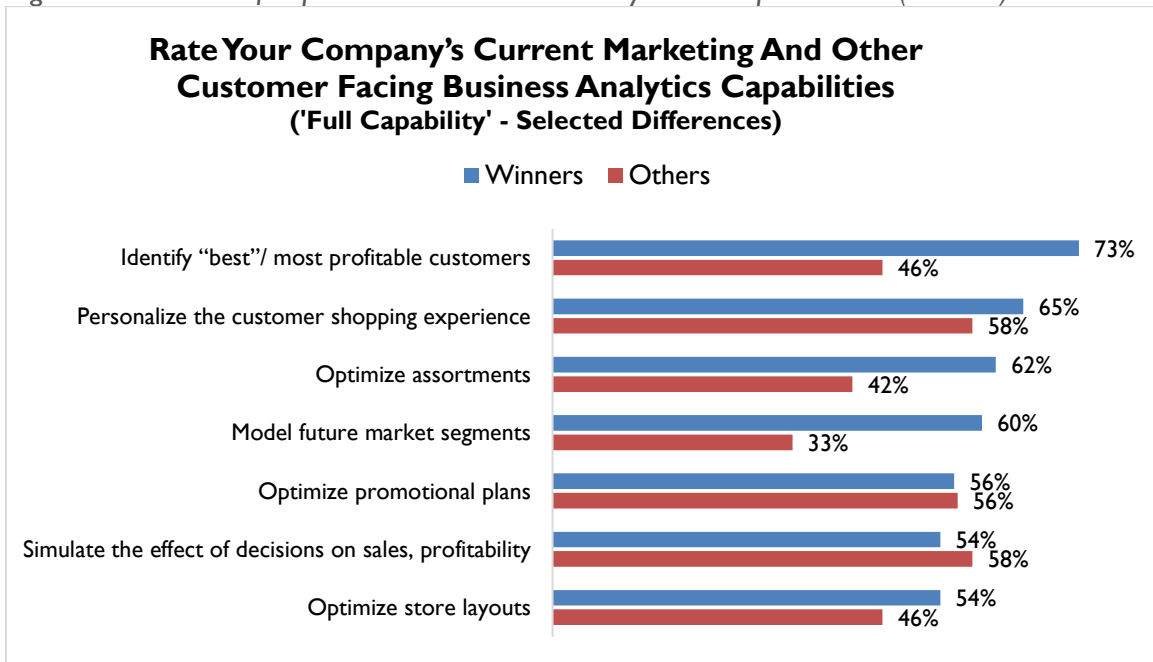
Figures 8 and 9 highlight retailers’ self-assessment of their *current* analytical capabilities as they relate the supply side and the customer side of the business. Two realizations jump out: first, Winners make better use of analytics, and secondly, even Winners are challenged to get more from those capabilities.

Figure 8: A Lot Of Upside For Current Analytical Capabilities (Part 1)



Source: RSR Research, October 2022

Figure 9: A Lot Of Upside For Current Analytical Capabilities (Part 2)



Source: RSR Research, October 2022

Under-utilization of current tools amounts to a true business challenge for retailers – even for Retail Winners. Adoption of AI to gain new insights from new data has great promise, but many companies aren't getting the full value of their current capabilities. RSR's already mentioned 2022 benchmark study on the state of KPIs in retail⁶ gave us some clues about why this is the situation. They include *siloed data*, *"dirty" or incomplete data*, and *"too many versions of the truth"*.

While we'll find out more about what stands in the way of AI adoption in the **Organizational Inhibitors** section of this report, there's a more practical to-do facing retailers right now, and that is to use the tools and data that are already available.

⁶ How Retailers Are Operationalizing Analytics With New KPIs, *ibid.*

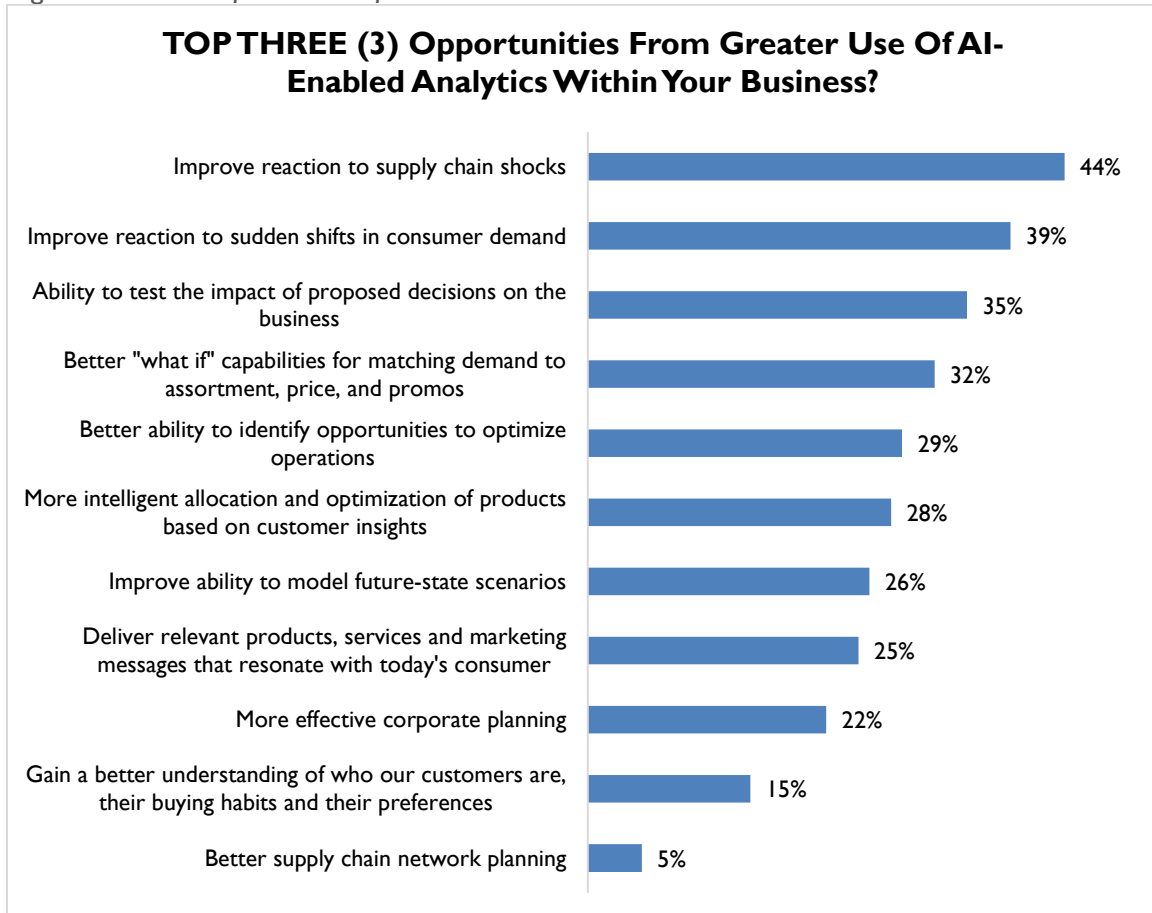
Opportunities

Top Of Mind

Retailers can be forgiven if their primary focus is the supply chain. Many are still hurting from the massive disruptions experienced in 2021. For example, retailers like Minneapolis-based **Target** attributed its weaker-than-expected first quarter results to “inventory impairments” and costs relating to supply chain disruptions. Very recently, **S&P Global Chief U.S. Economist Beth Ann Bovino** [commented](#) that “*It’s still a major problem... It’s one of the biggest factors that are causing this where we are today. We have seen some signs of softness, some signs of moderation — but nowhere near what we need to get to.*”

Earlier in this report, retailers told us that one of their top business challenges is the need to detect supply chain disruptions and react as quickly as possible (Figure 6). It follows then that the top opportunity they see is the other side of that challenge: *to improve reaction to supply chain shocks* (Figure 10).

Figure 10: A Reflection Of The Real World



Source: RSR Research, October 2022

Looking at the details of that finding, something interesting is revealed: while *improved reaction to supply chain shocks* is the top opportunity for both Retail Winners and all others, it is non-winners that put the most weight on it (50% compared to 38% of Winners). But that doesn't imply that

Winners don't see that as an opportunity. Rather, it's likely that most Winners are already pretty good at reacting to disruptions in the supply chain. Fully one-half of average and under-performers rate that to be a top opportunity- an indication that those retailers are not satisfied with their current capabilities.

There's a similar dynamic in the second top opportunity, to *improve reaction to sudden shifts in consumer demand*. In Figure 4, average and under-performers identified rapid changes in consumer demand as their top business challenge. In the responses to the question in Figure 10, 44% of non-winners view *improved reaction to sudden shifts in consumer demand* as a top opportunity, compared to only 35% of Winners. Although that's a narrower gap than the opportunity for *improved reaction to supply chain shocks*, it still points out that more Winners are confident that they can respond appropriately.

How To Improve Supply Chain Management?

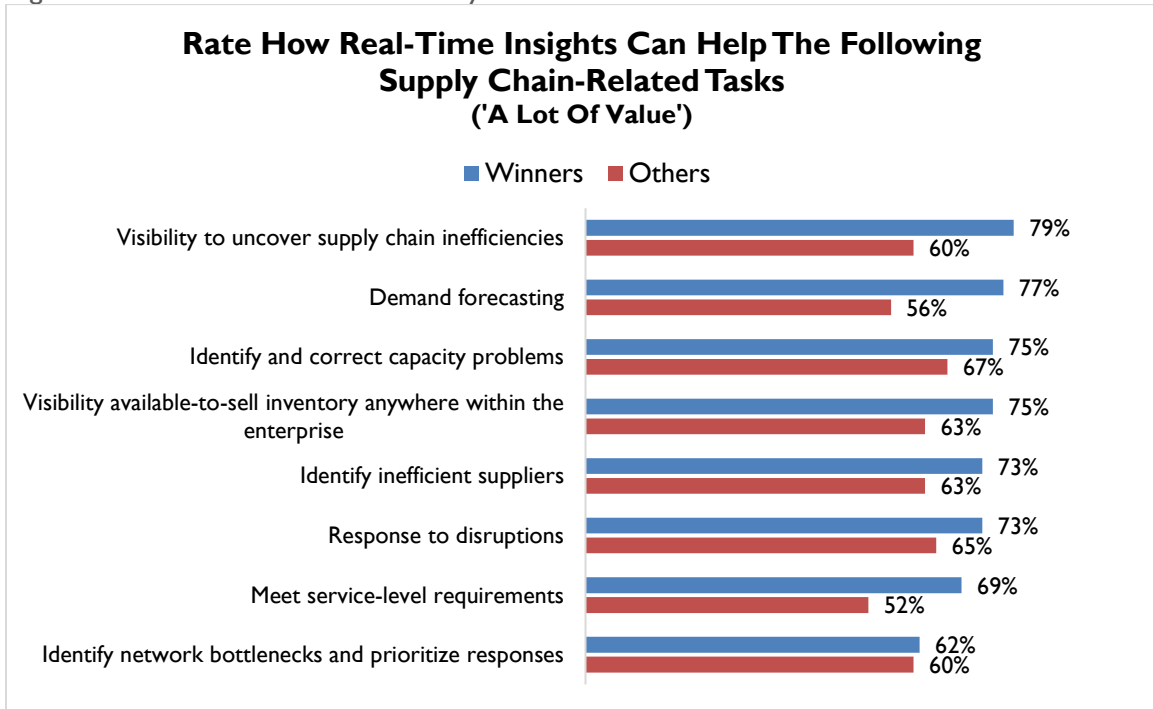
In RSR's 2022 benchmark on the state of IoT ("Internet-of-Things") in retail⁷, respondents identified the Supply Chain as the top opportunity for impact from deploying IoT. IoT and AI are closely related in that they work together to deliver real time process insights to decision makers. In the IoT report, we noted that:

IoT creates a lot of non-transactional data ... new data tools, particularly artificial intelligence (AI) and machine learning (ML), make it possible for retailers to observe and measure the effect of their efforts in real time and to alert operators when exceptions occur.

In this study, retailers identify several capabilities that are aided by real time insights (Figure 11).

⁷ A Deep Dive Into Retailers' Views About RFID And The Internet Of Things. RSR Benchmark, March 2022

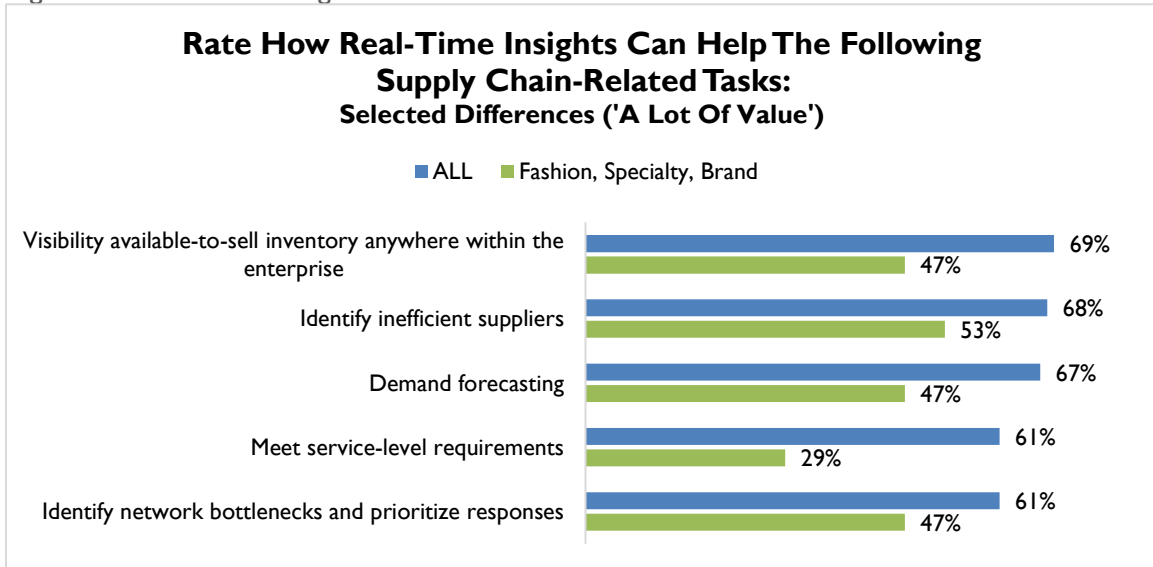
Figure 11: It's All About Visibility



Source: RSR Research, October 2022

A majority of respondents rated each of the opportunities we presented as “high value” (with Winners leading the way). But when we looked at responses by retail vertical, far fewer **Fashion & Specialty** retailers assign a high value to some of these supply chain-related insights (Figure 12).

Figure 12: Fashion Lags



Source: RSR Research, October 2022

Earlier in this report, we noted that Fashion & Specialty retailers lag behind the other retailers in bring data scientists in-house to develop AI capabilities. At least as it relates to supply chain management, fewer of these retailers see a lot of value to real-time insights. These findings are

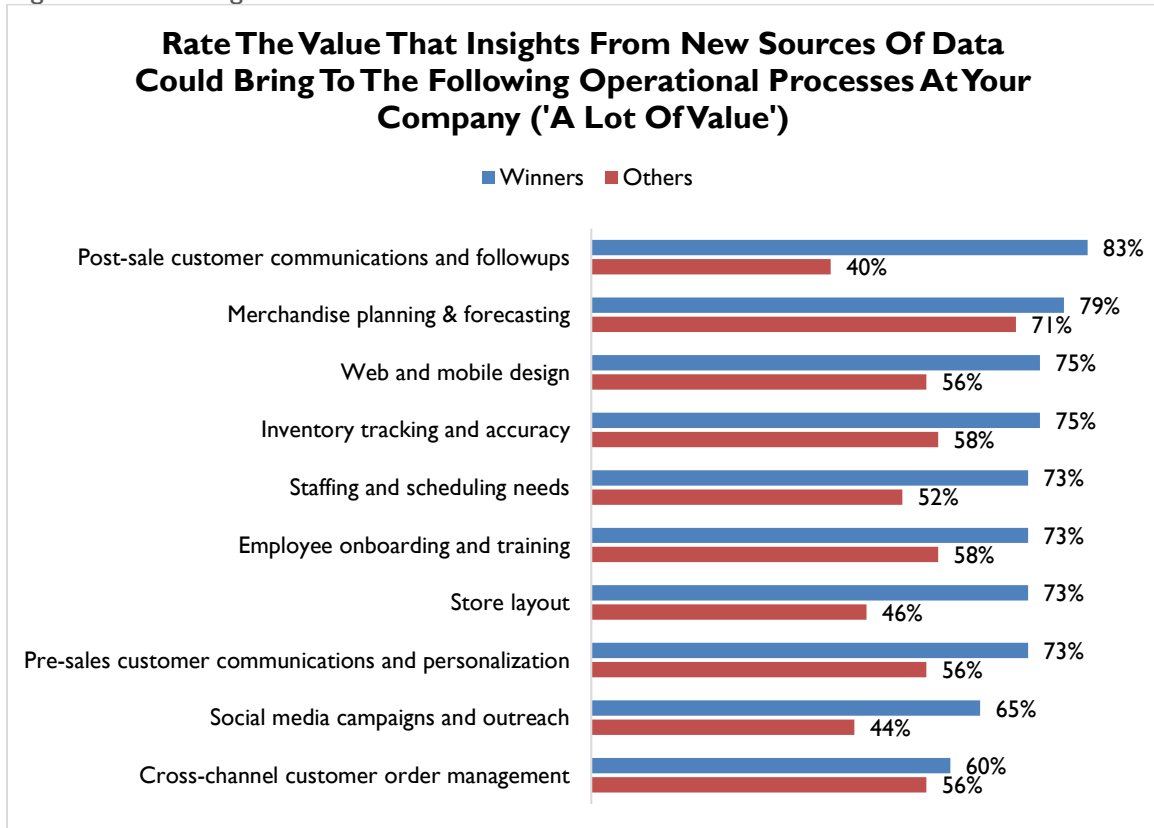
related, and probably are indicative of the long supply chains associated with niche and design-to-sell private label product assortments.

What About The Consumer Side Of The Business?

This report makes the connections between new data, AI-enabled analytics, and real time insights. These technologies are all supportive of a *digital transformation* strategy. Realtime visibility is a key objective of any digital transformation strategy; any physical “thing” that has a digital equivalent can be observed in real time to determine its status and analyzed.

While the supply chain is a primary focus for many retailers’ digital transformation agendas, there are many opportunities on the consumer (selling) side of the business as well. We asked retailers to rate the value of real time insights for operational processes on the consumer side of the business, and just as on the supply chain side, we found that Winners are leading the way (Figure 13).

Figure 13: Going Real-time



Source: RSR Research, October 2022

There are some interesting differences by retail vertical. While retailers generally agree that real time insights will be an aid to *merchandise planning & forecasting*, and *cross-channel order management*. In the case of merchandise planning & forecasting, only FMCG retailers (grocery, drug, convenience) assign a lower value than the overall group, and more General Merchants assign 'high value':

“A Lot Of Value”	FMCG	GM	Fashion, Specialty, Brand	Hardgoods
Merchandise planning & forecasting	60%	90%	82%	89%

In the case of customer order management, General Merchants and Hardgoods retailers express the greatest interest while fewer FMCG and Fashion & Specialty retailers assign ‘a lot of value’:

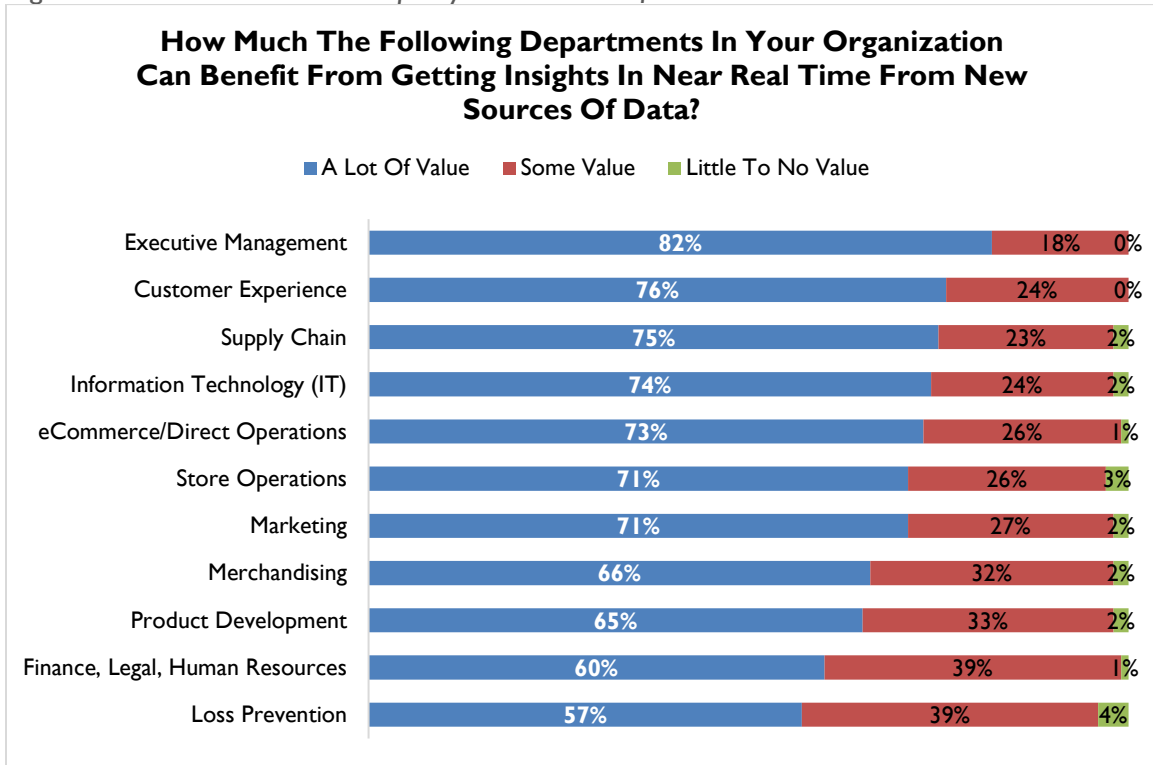
“A Lot Of Value”	FMCG	GM	Fashion, Specialty, Brand	Hardgoods
Cross-channel customer order management	51%	65%	47%	78%

But beyond these exceptions, more Retail Winners assign a ‘high value’ to real time insights for *all* the customer facing capabilities we asked about. Clearly, real time insights constitute a winning behavior – something that all retailers should aspire to.

Who Benefits? Everybody!

Finally, we asked retailers to tell us which corporate functions would benefit from real time insights. The answer? All of them (Figure 14).

Figure 14: The Whole Company Could Benefit



Source: RSR Research, October 2022

Surprisingly, there was general agreement both by performance groups and by retail vertical. Beyond any of the detailed responses, this speaks to retailers' perception that they need to constantly monitor their operations in the face of a fast paced and ever-changing environment.

In RSR's 2022 benchmark on KPIs⁸, we noted that *"There is strong agreement that management is 'constantly looking for new ways to measure performance' and that 'the executive team needs performance reports that are 'short and sweet'".* AI-empowered analytics are seen as a way to get those new measures.

In the next section of this report, we'll identify what stands in the way of retailers' ability to address challenges and seize opportunities.

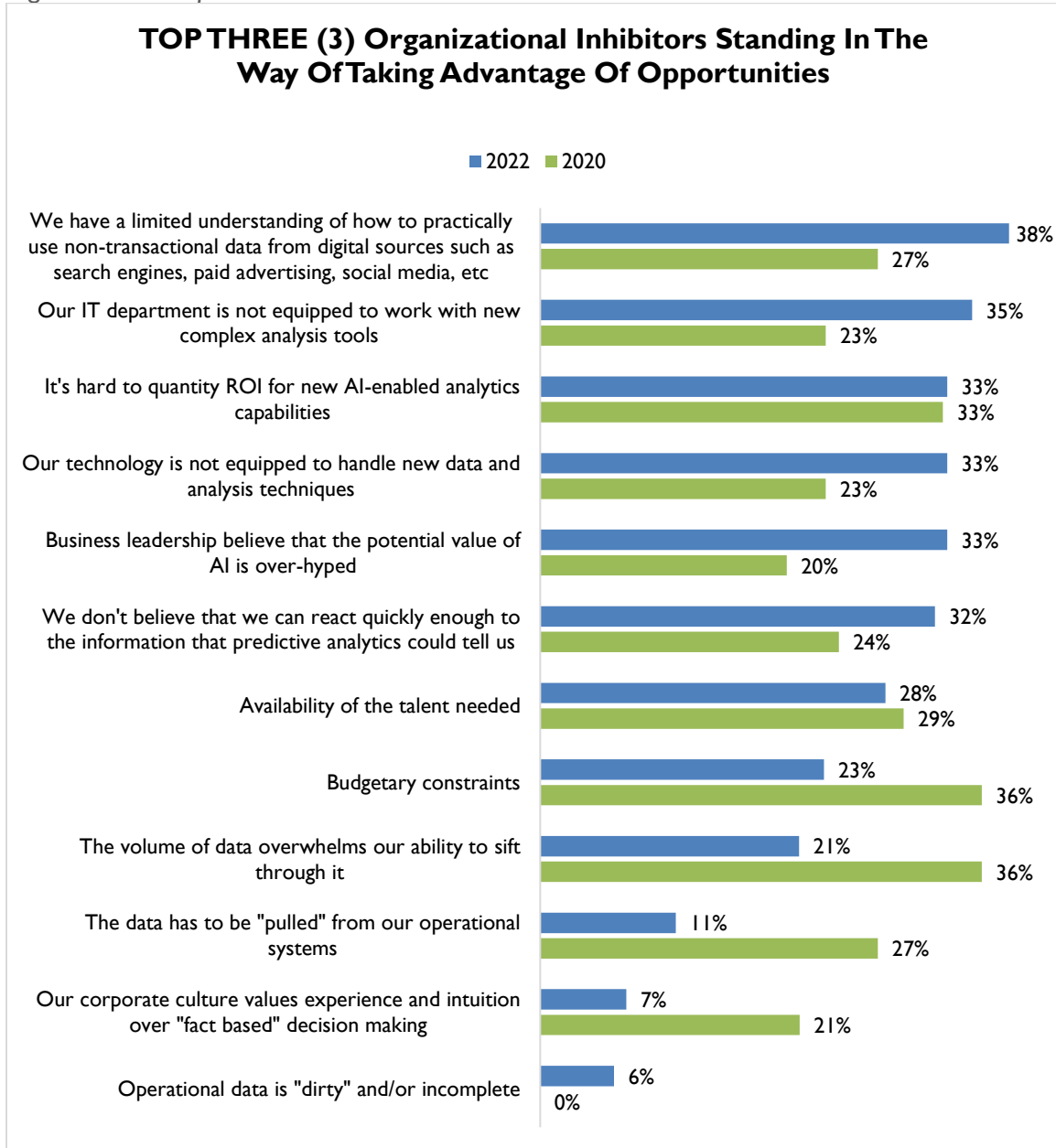
⁸ How Retailers Are Operationalizing Analytics With New KPIs, *ibid.*

Organizational Inhibitors

The Plot Thickens

When we compare what stands in the way of addressing the opportunities that come from greater use of AI-enabled analytics in comparison to the last time we conducted this research, the answer is simple: as retailers have learned more about AI, they have developed a more sober assessment of what stands in the way of adoption (Figure 15).

Figure 15: Help Wanted



Source: RSR Research, October 2022

Retailers don't have a whole new host of internal roadblocks to overcome - quite the contrary. Their problems have simply heightened. Their number one challenge is still that they need help understanding how they can use all of the new data they are collecting, specifically the non-transactional data that is "new" to them.

For example, what are retailers to do with a sentiment expressed on Facebook? Determining context, alone, is still remarkably challenging – even Facebook's own hyper-advanced AI tools still can't even get that part accurate. And the idea of making intelligent decisions based on the troves of data streaming in from search engines can be overwhelming. Retailers know they need help, more than they even did a few years ago.

While it's encouraging to see fewer retailers report budgetary constraints, that can only be expected; the last time we conducted this research in 2020, AI enablement was still a new topic for many retailers. As a result, the fact that so few retailers had earmarked budget for AI technologies in the summer of 2020 was hardly surprising.

Pictures Bring Stories To Life

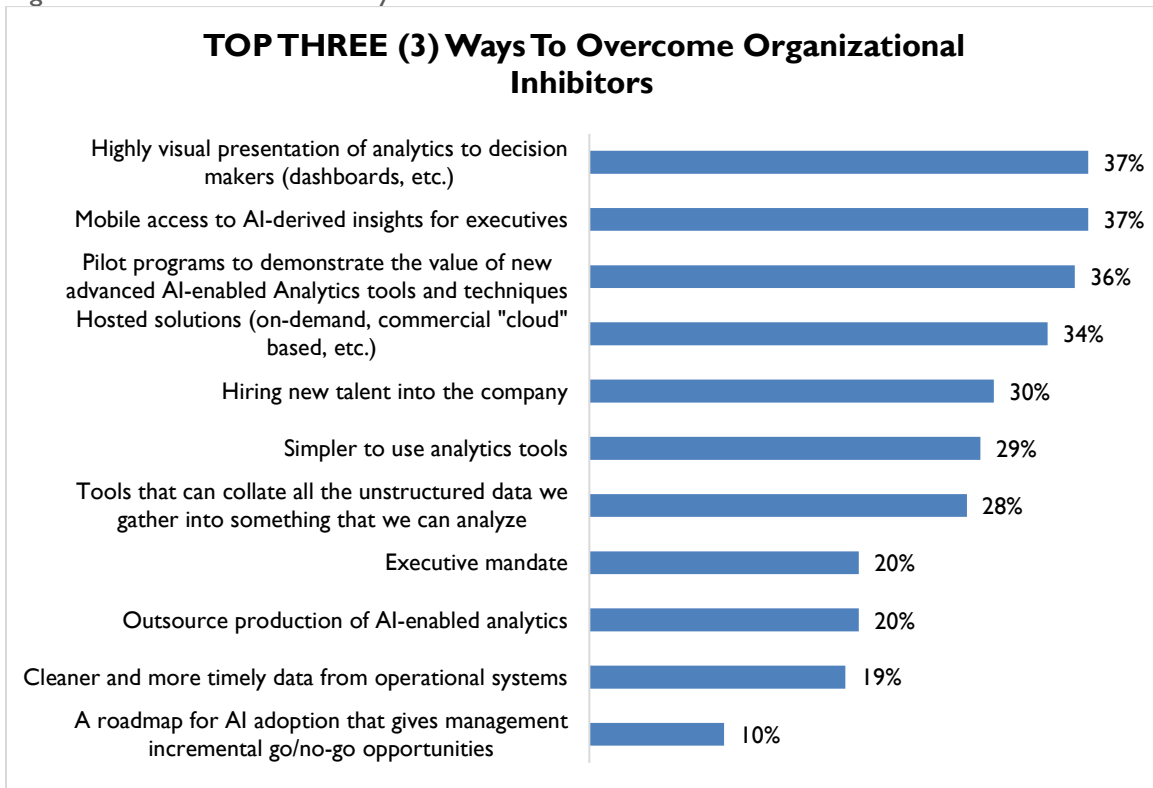
As mentioned in the Business Challenges section of this report, RSR recently concluded its first ever study on next- generation key performance indicators, *How Retailers Are Operationalizing Analytics With New KPIs*⁹. One of the main takeaways from that report was retailers' opinion that if new analytics are to mean anything, they need to be visually interesting: particularly to executives. From that report:

Our retail respondents are clear: in order for the impact new KPIs enable to reach maximum effectiveness, they must be presented in a manner that works best for key decision makers. Clean and simple layouts are paramount. Line of business executives are often-times quick to dismiss overly technical data presentations (regardless of how impressive they are or how much work went into them), and therefore dashboards that make huge swaths of complicated data inherently actionable hold the most favor.

Today, in Figure 16, below, retailers echo this sentiment. When it comes to AI, highly visual presentations for decision makers are the best way to get past the vast array of hurdles they have defined.

⁹ **How Retailers Are Operationalizing Analytics With New KPIs**, *ibid.*

Figure 16: A Picture's Only Worth A Thousand Words When It's Mobile



Source: RSR Research, October 2022

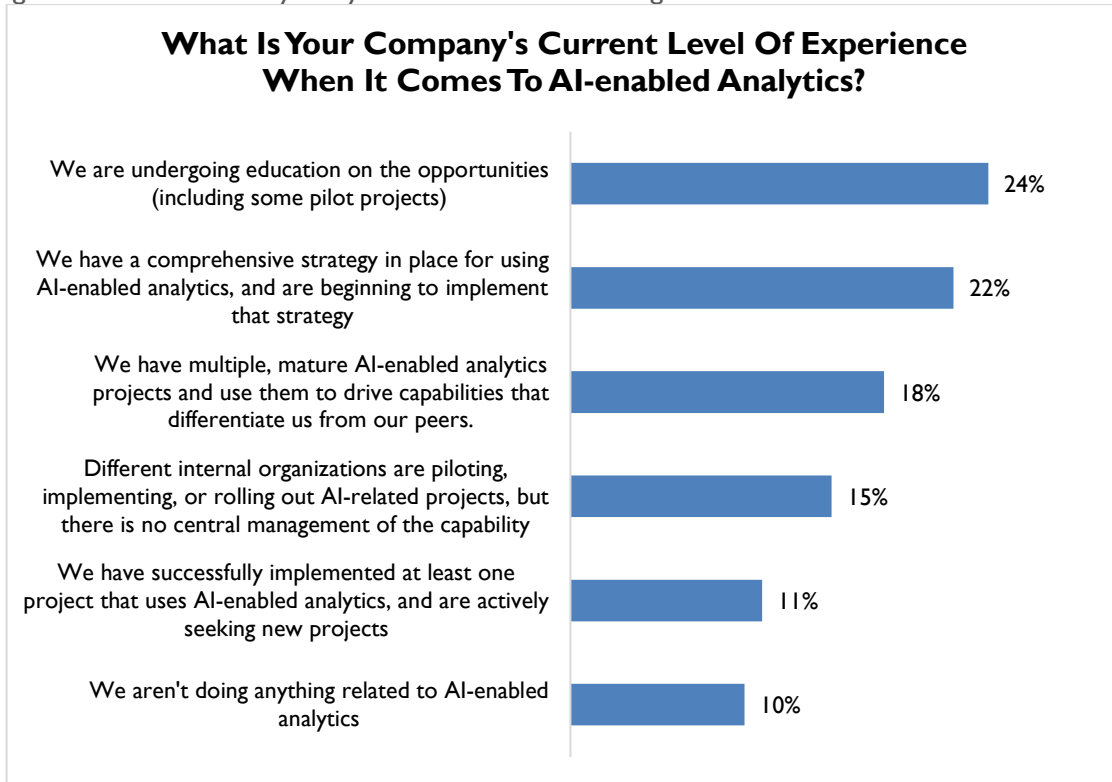
It is surprising to find was that providing decision makers with mobile access to those compelling visuals was *equally important* as the graphics, themselves. But our respondents are clear: big decisions are being made by executives at any time of day. If the benefits of AI are to be leveraged, they not only need to make the results of complex analytics easy to consume, but they also need to be available via a mobile device anytime and anywhere there's Wi-Fi or cellular connection.

This is a big deal.

Most Retailers Still In 'Education' Mode

When asked to choose the most pertinent statement to describe their efforts to date, retailers indicate that it is still early days for AI adoption: more reporting being in the "educational" phase than any of the other options we offered (Figure 17).

Figure 17: Still ‘Early Days’: But For How Long?



Source: RSR Research, October 2022

Once more, good news comes in small doses. While most retailers have at least one AI project in pilot, we had expected to see more further along the maturity curve. In all likelihood, retailers have far better ideas of ways AI could help than their investments to date would suggest. In fact, they've been telling us that very thing since our earliest forays into AI inquiry back in 2017. When it comes to advanced use cases? Of course, they could use more education from the industry about the possibilities. But as we are about to see in the Technology Enablers section of this report, the jury has long been out on some very real, very *right-now* functions that benefit from the analysis and intelligence that AI solutions bring to the table.

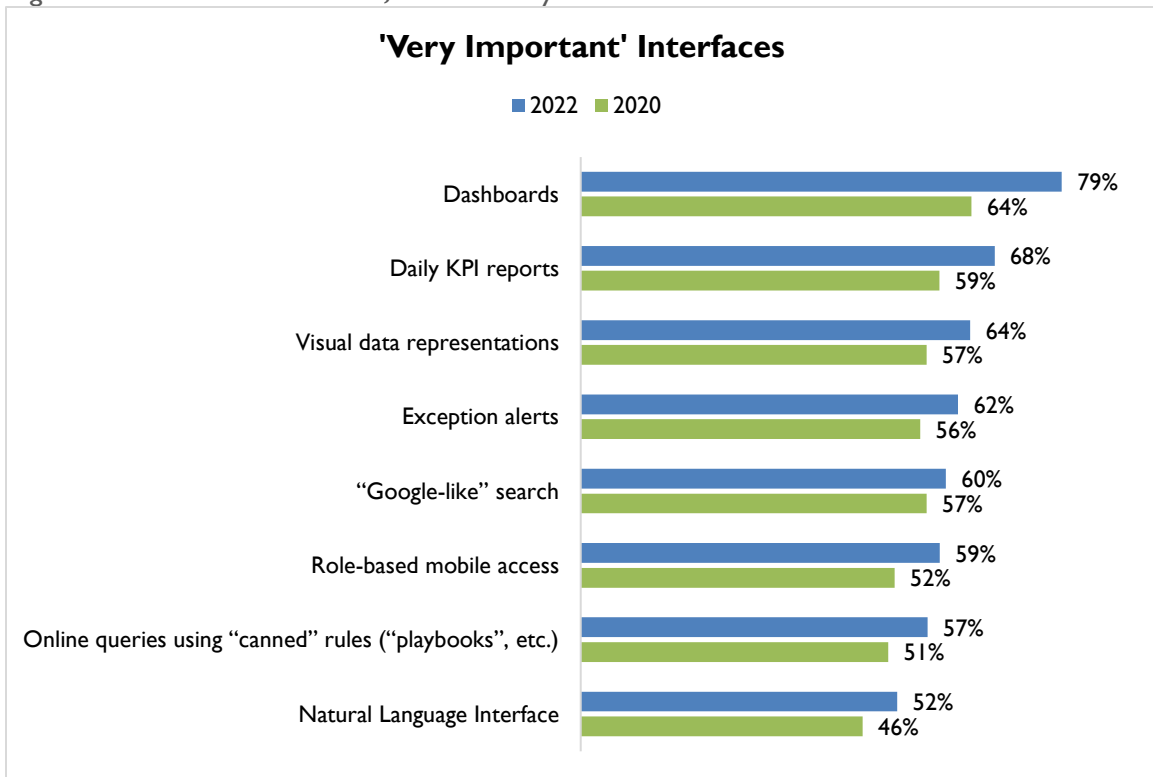
Perhaps the brightest spot in Figure 17, however, it is that very few retailers (only 10%) are currently doing “nothing” with AI-enabled analytics. That means it is time to find out exactly they *are* doing with these next gen technologies.

Technology Enablers

Time In A Bottle

As we've just seen in the previous section, retailers say the way to get past corporate aversion to new, AI-enabled analytics and tools is to provide executives with visually compelling dashboards. It only makes sense, then, that their importance is growing with the passing of time (Figure 18).

Figure 18: As Time Passes, Need Only Escalates

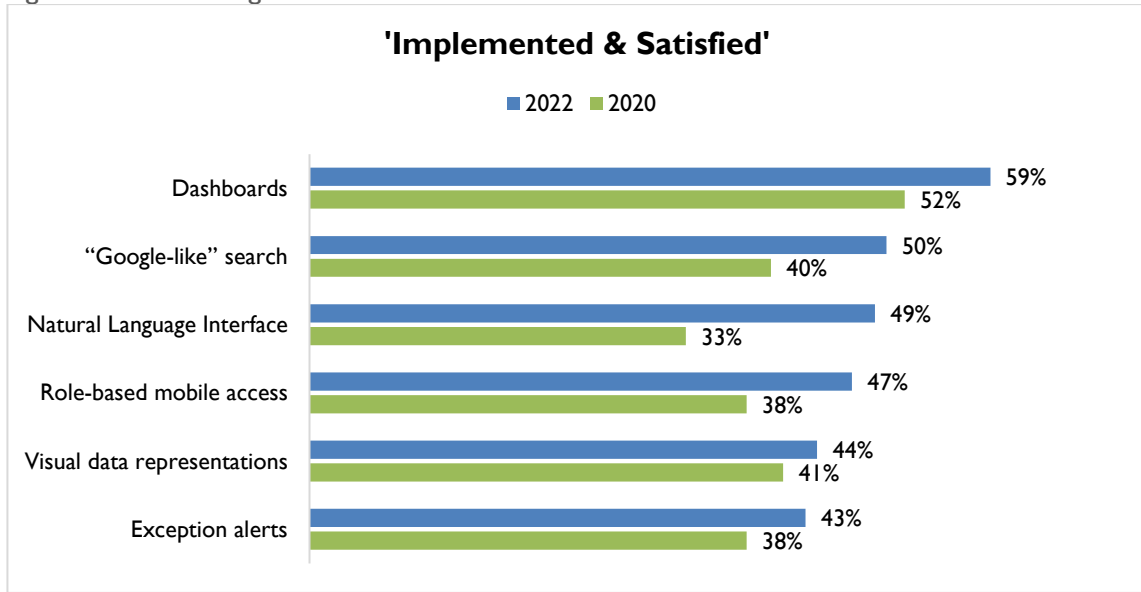


Source: RSR Research, October 2022

Far and away, dashboards top the list of what's not only important right now, but what will be important in the future. Nearly 8 out of every 10 retailers define these tools as important to their strategy going forward.

But the critical role new tools will play is not limited to dashboards that make complex analytics less daunting. Exception alerts, newly redesigned KPIs, the ability to search as simply as one can in a web browser: all of these interfaces have grown in importance in the past 2 years. What's just important as their perceived value, however, is their growing use over that same amount of time (Figure 19).

Figure 19: Getting It Done

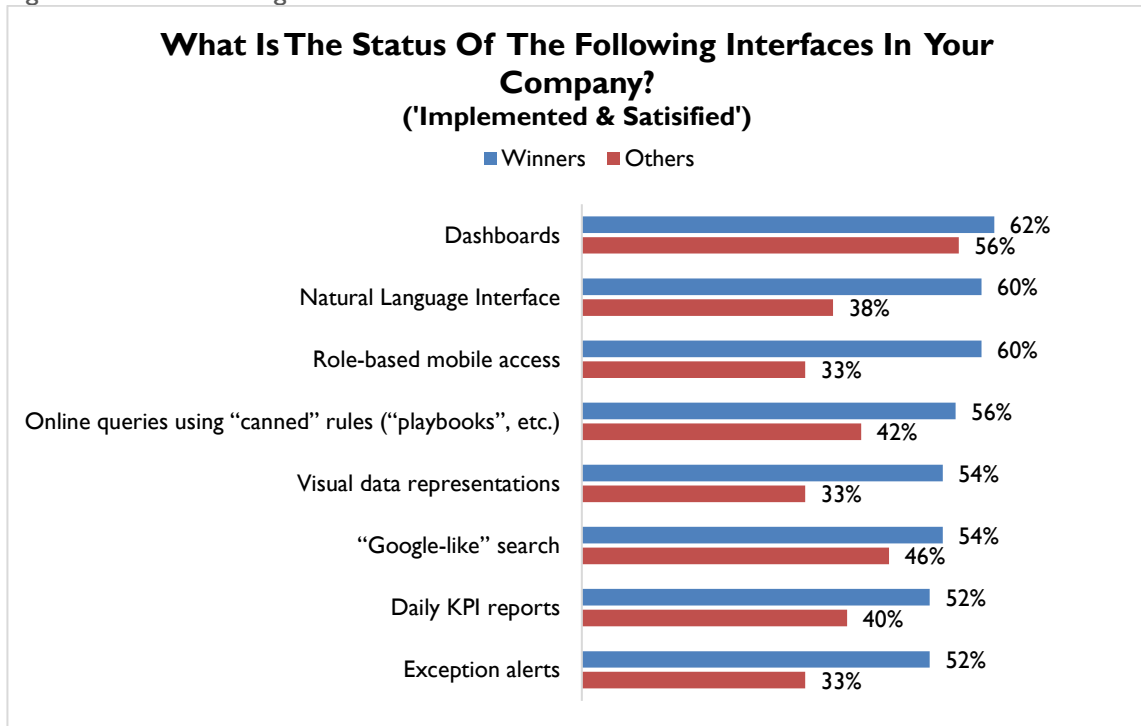


Source: RSR Research, October 2022

In just the past 24 months, the entire industry has elevated its use of these tools. Better still, they are happy with their investments, to date. Who, then is driving such positive trends?

As we can see in Figure 20, the answer is Retail Winners.

Figure 20: Grabbing The Low Fruit First



Source: RSR Research, October 2022

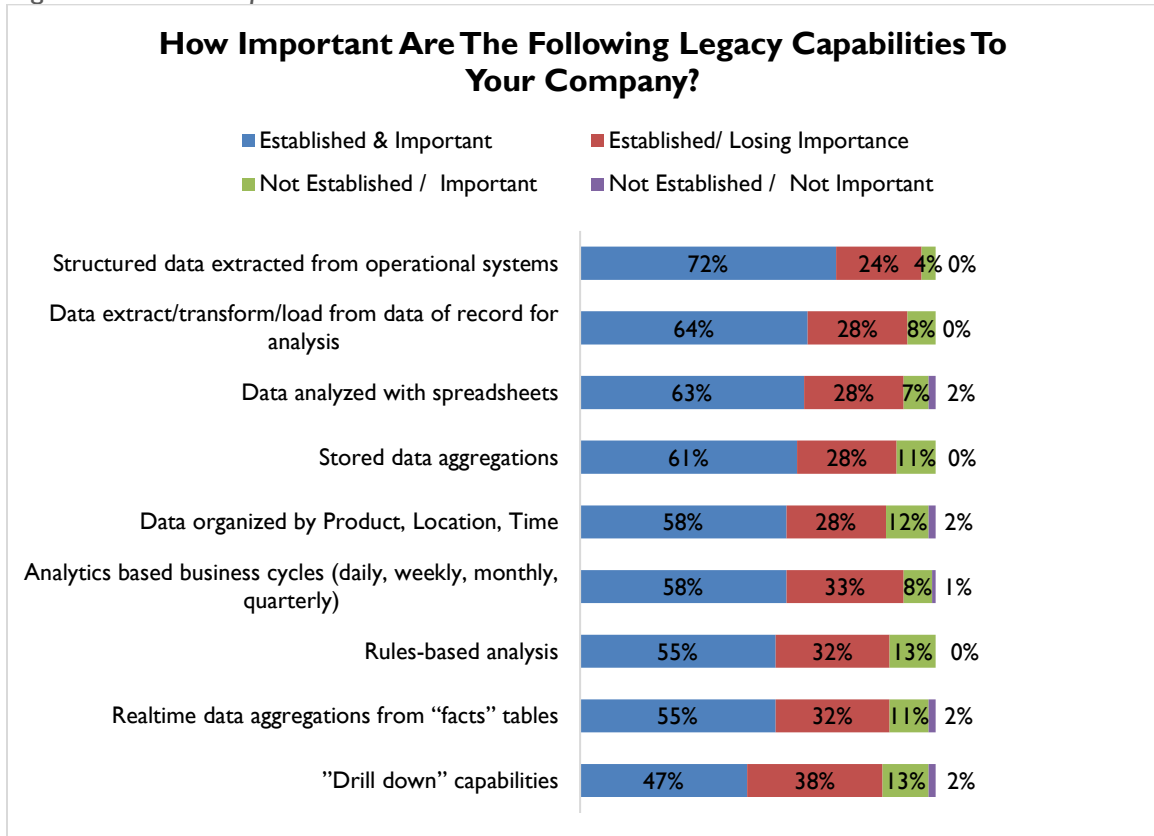
Retail Winners didn't become winners by accident. While much of the industry talks about the future value that artificial intelligence will bring to commerce, they have been harder at work incorporating the tools they know will make the most sense first. To wit: more than half of Retail Winners have not only brought on every interface that we put forth as an option, but they are already happy with each of those solutions. That's a big deal.

From the ability to engage via spoken word (natural language interfaces) to knowing when things aren't going quite to plan (exception alerts) - and everything in between - Winners are seeing benefits from the investments they've made so far. While some of these certainly classify as "low hanging fruit", they are wins, nonetheless.

Making Legacy Tech Smarter

When our line of inquiry changes to the legacy capabilities that retailers have in house, we find a significant opportunity for retailers to up their games (Figure 21).

Figure 21: The Aperture Widens



Source: RSR Research, October 2022

Nearly 3 out of 4 retail respondents cite structured data extracted from their operational systems as the capability they still rely on most. On its own, the ability to make this data more actionable is a clear opportunity for AI. Delivering new insights from structured data is *exactly* what will enable retailers to stay competitive in a world increasingly dominated by Amazon.com, by enabling smarter order orchestration, enhanced understanding of customer patterns and behaviors, even the ability to understand and manage product returns.

But as it stands, Figure 21 reminds us that much of this analysis happens using legacy capabilities.

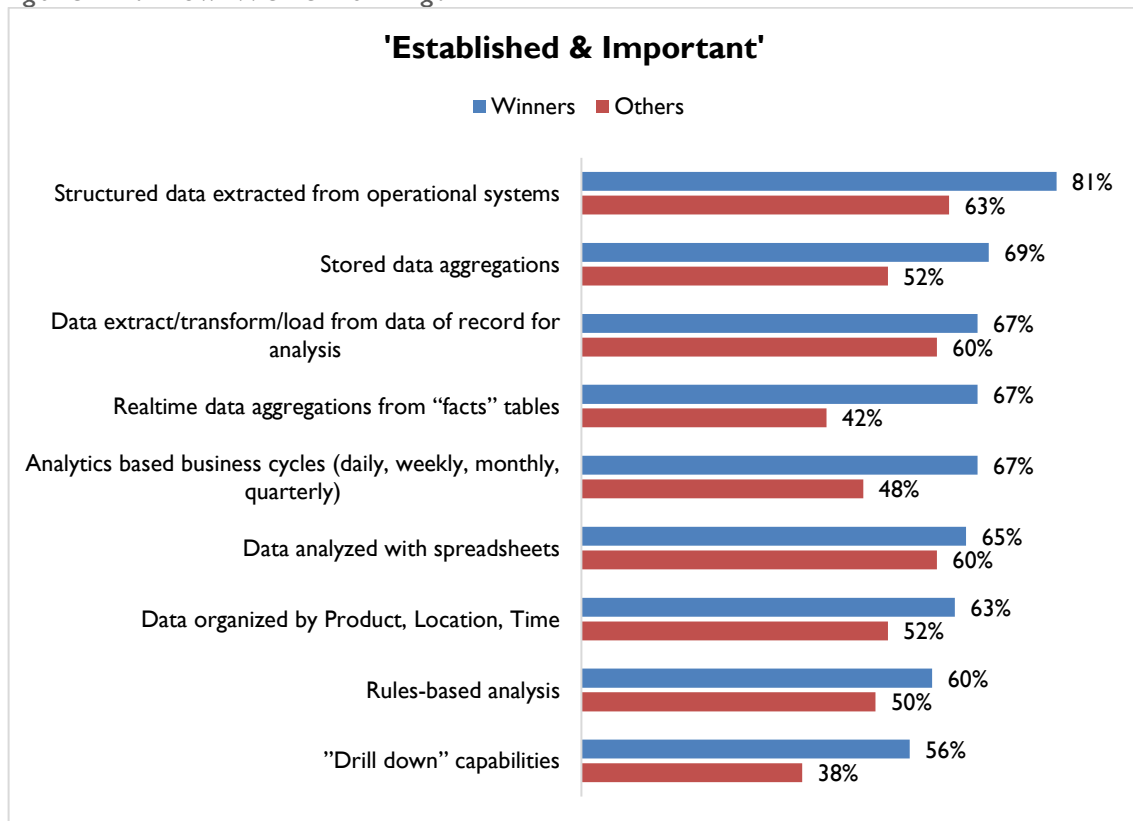
Sixty-three percent of our respondents say that that data is still analyzed with spreadsheets. This is hardly what comes to mind when one thinks of the future of retail – but as is so commonly said these days: it is what it is. The good news is that nearly 30% of retailers say this process is losing importance. In a similar vein, nearly half of our respondents identify drill-down capabilities as in use and valuable, but nearly 40% say that capability is falling out of vogue.

In short, retailers have increasingly mixed feelings on which of the things they've been doing for years are now worth doing *the same way*. And that signifies something worth calling out: even if retailers are slowly warming to the concept of AI as a real-world asset, they are – quite clearly – beginning to question their old processes and tools. Change cannot come without this critical step, and this data clearly shows that for the majority of retailers, this is the stage they are in.

Change Is Gonna Come

As is so often the case, however, the best performers show us why they are Winners. In Figure 22, Winners show us what matters most to them, and as we've learned to expect, they are much further down the road than their average and underperforming peers in several key areas.

Figure 22: Now We're Talking!

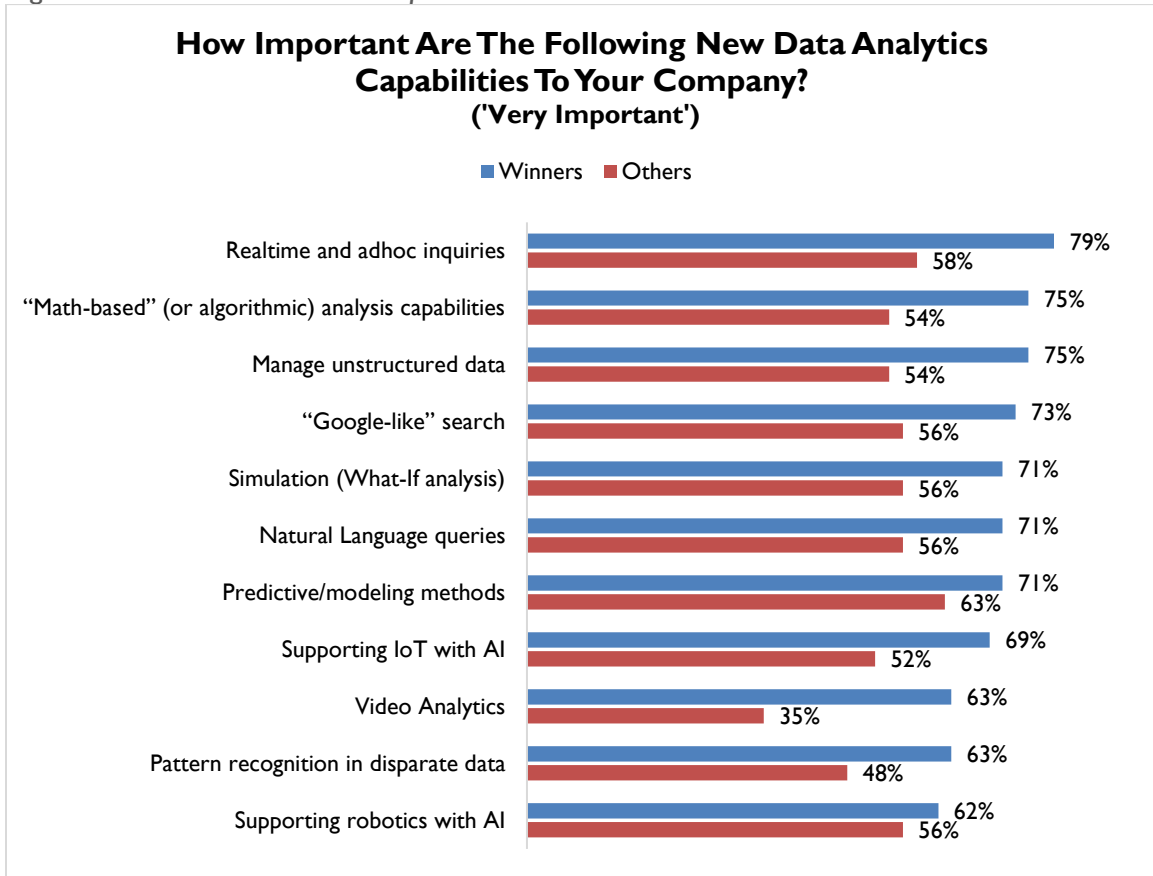


Source: RSR Research, October 2022

Winners, just like everyone else, still do a lot of analysis with spreadsheets. But they place a much higher priority on structured data (nearly 20%), and the same can be said for their implementation of real-time and store data aggregations.

What's more, Winners have different ideas about which data analytics capabilities stand to benefit them most in the foreseeable future (Figure 23).

Figure 23: What Will Be Important...

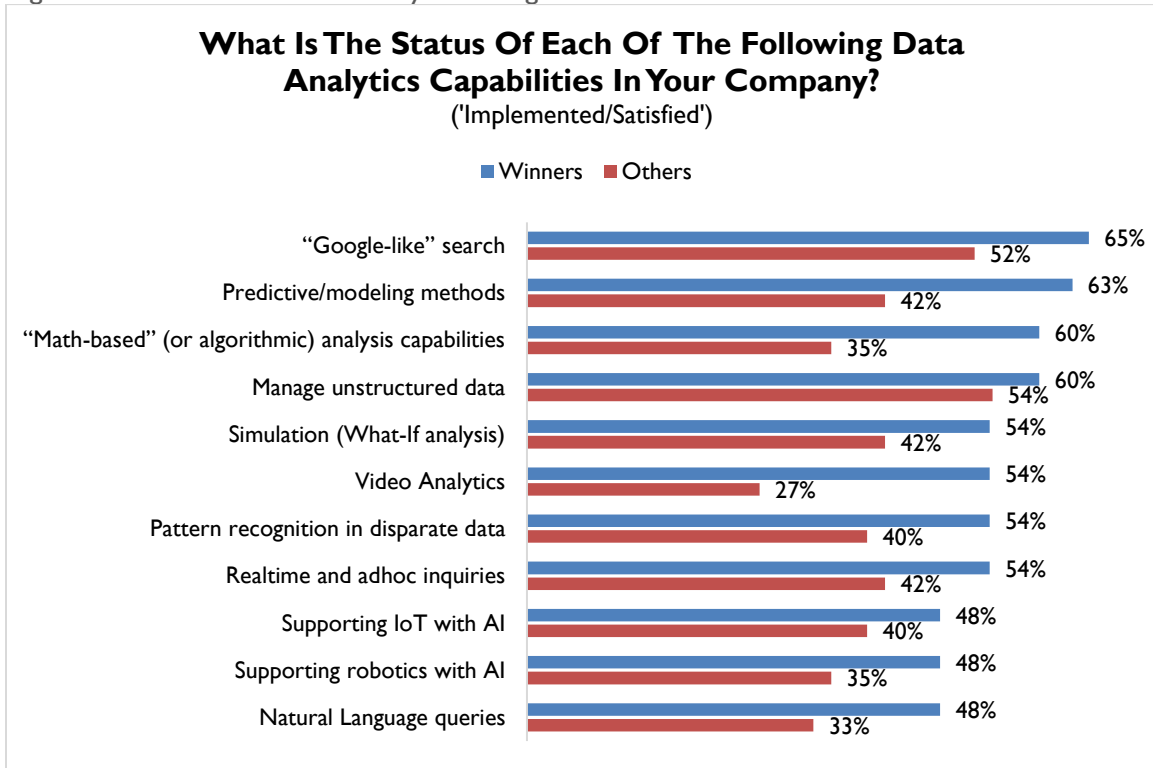


Source: RSR Research, October 2022

As Figure 23 shows, Winners’ response to which analytics hold most value is “yes”. They place more value on math-based analysis (21% more than average and underperformers), what-if-analysis (by a measure of 15% more), and when it comes to video analytics, their appetite is nearly 30% greater than that of their peers. They just want more.

It should come as little surprise, then, that when we look at the status of these same capabilities, Winners are vastly more engaged in the types of analytics that they say hold the key to success in the future (Figure 24).

Figure 24: ...What's Actually Getting Done



Source: RSR Research, October 2022

Quite simply, the future is brighter for those who are already doing best. Retail Winners have gotten to where they are by looking at challenges and opportunities differently, and AI adoption is no exception. Are they moving as quickly as they could? Perhaps not. But they are moving towards a future where AI-infused analytics help assist in all kinds of decisions at a rate faster than average and lagging retailers are.

And as it turns out, that's fast enough.

Now let's make some recommendations based on all we've learned from these findings.

BOOTstrap Recommendations

As with every report we conduct, RSR concludes by offering some baseline recommendations that all retailers can keep in mind as they continue on their paths – in this case, as it relates to their AI-enabled journey. This is a unique field of inquiry for us, and due to its growing importance, one we may choose to fold into every topic within retail we study going forward (Merchandising, Supply Chain, The Store, etc.).

With that in mind, here our recommendations for how retailers should be thinking about AI in the meantime:

Don't Fear The Reaper

While no one can 100% guarantee that mankind's ultimate demise *won't* come at the hands of robot overlords operating via AI protocols that have begun thinking for themselves and are now too powerful to stop, one thing is for certain: those quasi-sentient beings won't be trying to determine the best price set for a pallet of soy milk rapidly approaching its sell date.

AI – for the purposes of the retail industry – is just another tool in the toolbox. One that is really powerful, and can help retailers make even smarter decisions – about a whole raft of things they have to decide every day – than they currently do. Staffing decisions, merchandising decisions, supply chain decisions: all stand to benefit. The time for AI in our industry is well at hand, and retailers need to start acting faster to leverage its benefits - before the real nemesis (their competitors) do.

Use These Tools To Help Do What You Said You Could

COVID-19 shook the retail industry to its core. The wildly fragile nature of the just-in-time supply chain was revealed to anyone watching (including shoppers), and – seemingly overnight – the “supply chain” became conversation among people who had likely never heard the term before 2020. As a result, one of the things retailers continually tell us in all of our recent research (this project, included) is that they need to improve their reaction to supply chain shocks. Customers are, in essence, demanding it. They have quickly grown intolerant for out-of-stocks (either online or in-store) and are always one Amazonian click away from leaving a brand who can't deliver what it said it could. Don't be that brand. Retailers need to utilize every tool at their disposal to keep Amazon.com from becoming the shopper's “default mode.” AI holds tremendous opportunity to combat that very thing by helping retailers to precisely deliver the right products to the right places at the right time and in the right quantities to meet local demand – without over-inventorying.

Think About The Merchandising Opportunities

For many years now, Over ten years ago, RSR analyst Paula Rosenblum sounded the alarm about a “sea of sameness”: the phenomenon brought about by many (if not most) retailers selling remarkably similar products. We all understand how we got here: the goal is to provide enough ubiquitous products so as to eliminate shoppers' need to visit multiple stores.

The problem is that when too many retailers are selling the same “stuff,” what makes one store more attractive than another has relatively little to do with the product mix. And when nearly everything a retailer sells can also be bought at a big box store, the chances to compete become far slimmer. The need for differentiated products has never been greater. Can AI really help

determine what some of those products might be? Can it help with creating a differentiated mix? Winners think the answer to these questions is “yes”. We do too.

Think Outside The Box

There’s no shortage of ways to leverage the teachings that can come from math-based analytics. While many retailers may not have been early to the AI party, decision makers should take some time outside of the normal routine to think about what processes could be improved by smarter, math-based analyses. Each brand is different, so while it is difficult to recommend that people carve out the time to “think differently”, that is precisely what we are doing. Retail decision makers need to think about their brand, what makes it different from the competition, and if there’s anything that could benefit from a “smartening up” of that process. The more unique that “it” is, the better.

Think Inside The Box, Too

Retailers that operate stores should consider all the ways math-based analyses could help allocate any (or all) of the things that happen within the four walls. Staffing requirements by store, season, and time of day, employee training and scheduling, product pricing – all could benefit enormously by algorithmic analysis of not just historical trends, but also “what if” scenarios. Winners are disproportionately interested in scenario-based testing and are well underway in pilot programs with many such store-focused solutions. This is not the time to let them pull away beyond the point of being able to catch up.

Take A Page From Winners’ Book

Lastly, those who engage with an RSR analyst for any length of time will invariably hear the phrase “Winning is not an accident.” It’s not. It’s an outcome that results from looking at the world in a more curious and less staid manner. And Winners are no different when it comes to AI.

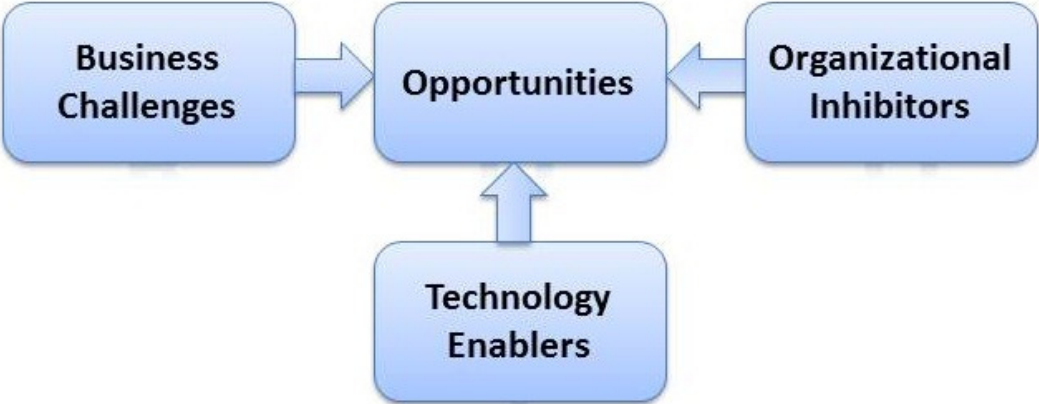
It’s easy – even tempting – to dismiss artificial intelligence as the stuff of science fiction, the stuff of “one day.” It’s not. AI is already helping the best retailers across the world rationalize what they buy and in what quantity, how to get those products where they need to be, where they will sell best and at what price – the list goes on and on. Winners are embracing the potential. Everyone should.

Appendix A: The BOOT Methodology[®]

The BOOT Methodology[®] is designed to reveal and prioritize the following:

- **Business Challenges** – Retailers of all shapes and sizes face significant **external** challenges. These issues provide a business context for the subject being discussed and drive decision-making across the enterprise.
- **Opportunities** – Every challenge brings with it a set of opportunities, or ways to change and overcome that challenge. **The ways retailers turn business challenges into opportunities often define the difference between Winners and “also-rans.”** Within the BOOT, we can also identify opportunities missed – and describe leading edge models we believe drive success.
- **Organizational Inhibitors** – Even as enterprises find opportunities to overcome their external challenges, they may find **internal** organizational inhibitors that keep them from executing on their vision. Opportunities can be found to overcome these inhibitors as well. Winning Retailers understand their organizational inhibitors and find creative, effective ways to overcome them.
- **Technology Enablers** – If a company can overcome its organizational inhibitors it can use technology as an enabler to take advantage of the opportunities it identifies. Retail Winners are most adept at judiciously and effectively using these enablers, often far earlier than their peers.

A graphical depiction of the BOOT Methodology[®] follows:



Appendix B: About Our Sponsor



SAS is the leader in advanced analytics. Our solutions help enhance merchandise & assortment plans, drive deeper customer insight, better plan for demand, and optimize inventory & pricing. That's why over 1,400 retailer and consumer goods companies worldwide – including the top 7 global Consumer Goods - companies rely on SAS.

Visit www.sas.com/retail for more information.

Appendix C: About RSR Research



Retail Systems Research (“RSR”) is the only research company run by retailers for the retail industry. RSR provides insight into business and technology challenges facing the extended retail industry, providing thought leadership and advice on navigating these challenges for specific companies and the industry at large. We do this by:

- **Identifying information** that helps retailers and their trading partners to build more efficient and profitable businesses;
- **Identifying industry issues** that solutions providers must address to be relevant in the extended retail industry;
- **Providing insight and analysis** about a broad spectrum of issues and trends in the Extended Retail Industry.

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