



The Real Role Of Robotic Automation In Retail

Benchmark Report

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Executive Summary

Key Findings

Welcome to RSR's inaugural look at the role of robotic automation in modern Retail. The purpose of this study was to uncover answers to important questions, like how do retailers perceive the improvements robotics and automation can make to their operations –and are they acting on these options now? What do these technologies mean for stores, both on the customer-facing side, and for back-office tasks? What does the next phase of this evolution look like?

Survey responses in this study revealed a difference in views between Line-of-Business decision makers and IT leaders. Those differences became thematic to our analysis. Each group has its own naiveté, and each side also has some real pragmatic vision. This begs the question: ***who is going to drive the justification and implementation of robotic automation in retail?*** Those who seek to sell robotic technologies to retailers must make sure that the use cases presented are practical, pragmatic, and “ring true” to both Line-of-Business and IT executives.

- The **Business Challenges** section of this report reveals that with the increasing volume of eCommerce sales, over-performing “Retail Winners” in particular hope that robotics will help them respond to the dramatic increase in customer inquiries. Another top challenge that causes interest in robotics relates to inventory accuracy in the store. But as we often see in our studies, Winners stay focused on the customer experience, while average and under-performers tend to think about cost-cutting both in the stores and DCs.
- In the **Opportunities** section, we learn that retailers have a solid sense of the business areas they expect to see the greatest benefit from robotics and automation, especially in their distribution centers, both for shipping to stores and shipping direct to consumers. The store, however, is becoming a more enticing opportunity for retailers.
- Once we reach the topic of **Organizational Inhibitors**, we learn that while the majority of retailers are concerned that their existing technology will not support robotics and automation, there is a split opinion between Line-of-Business leaders and IT executives about other inhibitors to adoption.
- In the **Technology Enablers** section, retailers tell us that there is more immediate value from the adoption of robotics in the warehouse than anywhere else. However, IT'ers seem to be more aware of robotic usage to support specific warehouse processes than their business counterparts. When it comes to the store, IT'ers place higher value on the promise of robotics than business leaders, and some of those differences are notable.

As RSR always does, we offer pragmatic go-forward recommendations in our **BOOTstrap Recommendations**. While adoption of robotics is still in its early days (especially in the store), there are concrete steps that retailers can take now to prepare for the future.

We certainly hope you enjoy our first-ever report on the state of robotic automation in Retail!

Paula Rosenblum and Steve Rowen

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Research Overview

Robotics: What Are They Really Good For?

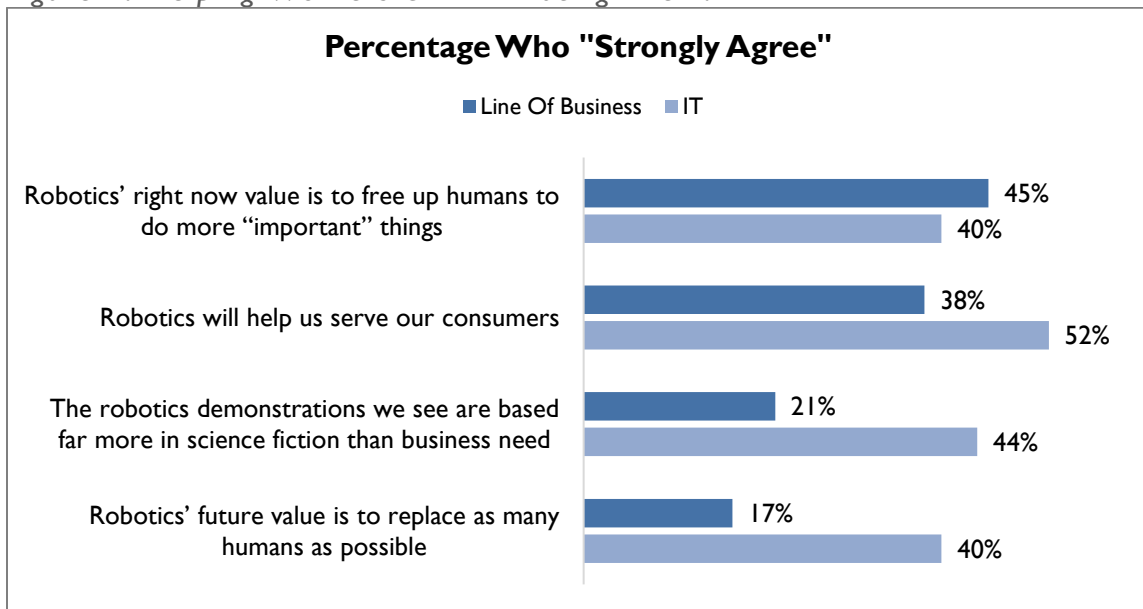
Welcome to RSR's first annual benchmark report on the value of robotic automation in retail. It's a topic many are talking about, and as usual, hype abounds.

Back in early 2017, a rash of articles came out telling us that 7.5 million retail jobs were going to be lost to automation. Never one to just accept clickbait at face value, one of this report's authors (Paula Rosenblum) tracked the data back to the source, and [wrote a piece debunking the notion](#) on Forbes.com. The long and the short of it was the assumption that ALL retail cashiers and salespeople would be replaced by computers. Robots. Of course, this notion was (and is) ridiculous and is a sure way to finish off any differentiation the store might have vs. online.

Having said that, robotics and automation have an important role to play in retail. *Automation* already has made it possible for the largest industry players to scale up to sizes previously unimaginable. And for the purposes of this research, we asked retailers to think of "robotics" as technologies designed to replace workers and "automation" as technologies designed to assist workers through rudimentary tasks.

The notion of robots eliminating jobs has really stuck in retailers' heads, particularly within the IT group. As we can see below in Figure 1, while Line of Business executives are holding to the notion that *robotics* will free up humans for "more important tasks," IT executives generally take a far more jaundiced (and likely honest) view.

Figure 1: Helping Workers Or Eliminating Them?



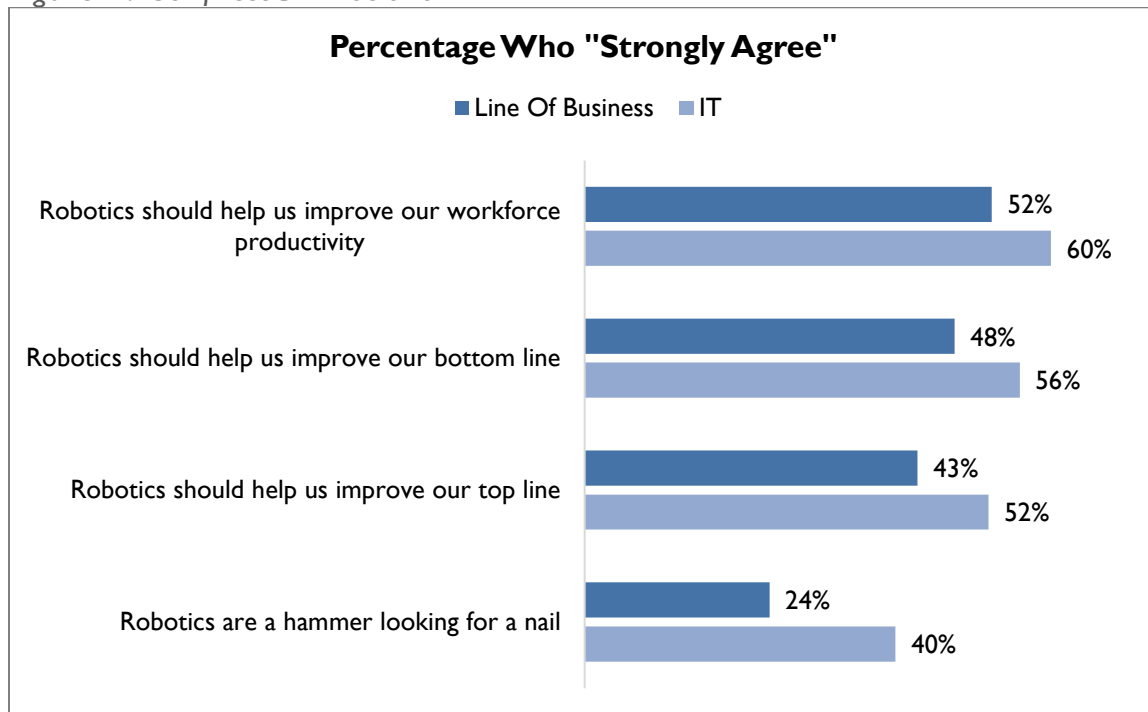
Source: RSR Research, February 2020

While there is some general concurrence that humans will be freed up, and IT strongly believes robotics will help serve customers, IT is jaundiced for the short term and overly draconian for the longer term. Almost half strongly believe that they're seeing science fiction, rather than actual business value, and yet, they believe that at some future date, robotics will replace as many humans as possible.

As you'll see on the pages ahead, this ultimately became thematic to our analysis. Each group has its own naiveté, and each side has some real pragmatic vision. IT executives want to see real use cases, most of which should eliminate human activity, and Line of Business executives obsess on profitably serving the customer. This begs the question: with both sides having somewhat unrealistic expectations, **who is going to drive the justification and implementation of robotic automation in retail?**

In Figure 2 below, we see another peek into the same thought processes.

Figure 2: *Conflicted Emotions*



Source: RSR Research, February 2020

IT practitioners are conflicted. They presume, more than their line of business counterparts, that robotics will help improve worker productivity, boost bottom and (somehow) top line results as well, they are also far more likely to say that robots are a hammer looking for a nail, or essentially, of no discernable value today.

Clearly there's a lot of education that must occur, but **those vendors and consultants who provide that education must make sure the use cases presented are practical, pragmatic and "ring the bells" of both Line of Business and IT Executives.**

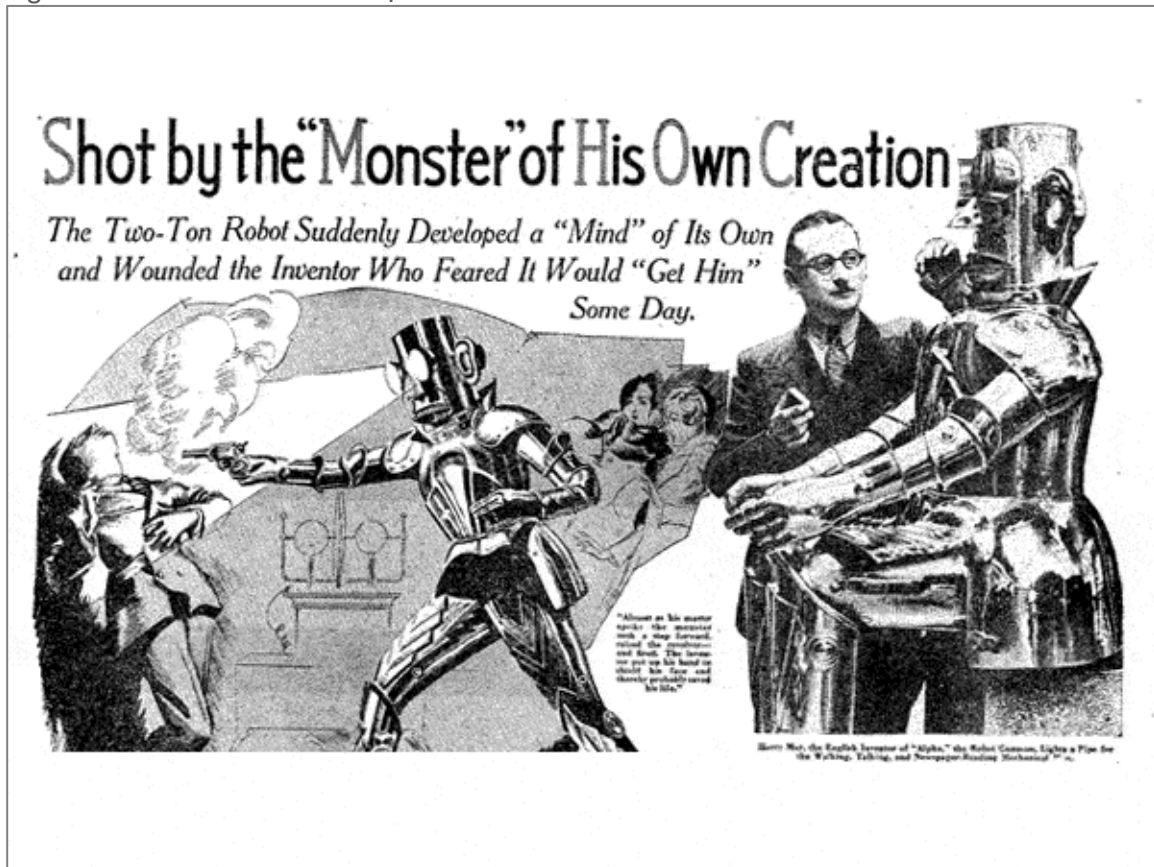
To get a better understanding of why there is so much discontinuity in thought processes, it's worthwhile to take a look at the history of "robots" in popular culture.

Robots In Popular Culture: A Brief History

Images of robots can be found at least as far back as the 1920's. A search on robots yield working models from the United States, Japan, Great Britain (**Shrozo the Robot Girl** is worth a look), and other places around the world. Of course, cartoons are always an indicator of popular culture, and robots were actively promoted, generally to an evil end.

An example of one of these evil robots can be seen below in Figure 3.

Figure 3: The Evil Robot Of The 1920s



Source: RSR Research, February 2020

We also can see from this somewhat mind-boggling paragraph in [Wikipedia](#), that the notion of robots interacting with humans has been around for a long time:

"Inspired by European Christian legend medieval Europeans devised brazen heads that could answer questions posed to them. Albertus Magnus was supposed to have constructed an entire android which could perform some domestic tasks, but it was destroyed by Albert's student Thomas Aquinas for disturbing his thought. The most famous legend concerned a bronze head devised by Roger Bacon which was destroyed or scrapped after he missed its moment of operation. Automata resembling humans or animals were popular in the imaginary worlds of medieval literature."

The evil that robots might do has certainly changed. Now they are ostensibly job destroyers. At the same time, they are meant to improve the top and bottom lines of the retailers they serve.

As we work through the data we gathered, we'll highlight the non-threatening use cases that are available today, and how retailers are responding to them. This is the fundamental value of this report – cutting through the noise, fears, and cultural prejudices to get to the business value and current activities.

Retail Winners And Why They Win

Much of this report will focus on attitudinal differences between IT practitioners and Line of Business executives, but we'll also, as usual, highlight different thought processes between Retail Winners and others.

In our benchmark reports, RSR frequently cites these differences between over-performers in year-over-year comparable sales and their competitors. We find that consistent sales performance is an outcome of a differentiating set of thought processes, strategies and tactics. We call comparable sales over-performers "Retail Winners."

RSR's definition of these Winners is straightforward. Assuming industry average comparable store/channel sales growth of **4.5 percent**, 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."

We'll show a very stark example of these different thought processes in the following section on Business Challenges. Read on through the demographics to see!

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 from November-December 2019 and received answers from 66 qualified retail respondents. Respondent demographics are as follows:

- **2018 Revenue (US\$ Equivalent)**

Less Than \$500 million	19%
\$500 million - \$999 million	30%
\$1Billion to \$5 Billion	30%
Over \$5 Billion	21%

- **Products sold:**

FMCG: C-store, Food & Drug, Health Care Products	26%
Apparel (Footwear & Accessories: Luxury, Men's & Women's, Kids, Personal Care)	18%
Hard Goods: CE, Hard Goods, Home Décor, Improvement, Automotive	14%
General Merchandise: Discount, Mass Merchant	30%
Hospitality, Restaurant, Retail Services, Entertainment, Other	9%
Brand Managers	3%

- **Headquarters/Retail Presence:**

	<u>HQ</u>	<u>Retail Presence</u>
USA	92%	94%
Canada	2%	33%
Latin America	0%	20%
UK	3%	32%
Europe	2%	29%
Middle East	2%	11%
Africa	0%	8%
Asia/Pacific	0%	20%

- **Year-Over-Year Sales Growth Rates** (assume average growth of **4.5%**):

Better than average (“Winners”)	50%
Average	39%
Worse than average (“Laggards”)	11%

- **Respondents Position Within The Organization**

Executive (C-level)	39%
Senior Management (SVP)	20%
Middle Management (VP / Director)	35%
Line Manager	3%
Individual Contributor and Other	3%

- **Functional Area of Responsibility**

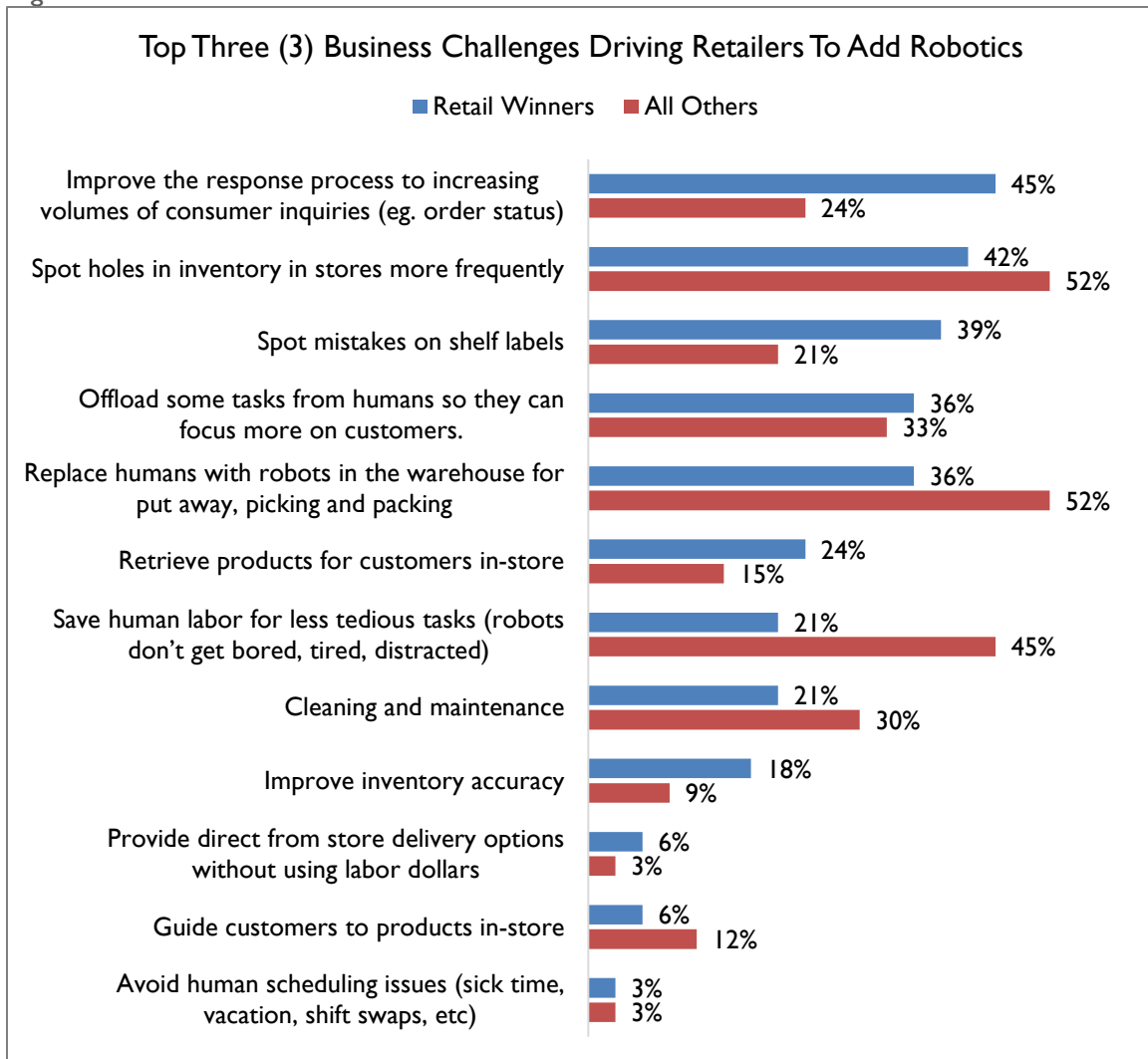
Executive Management	29%
Customer Experience	5%
eCommerce/Direct Operations	2%
Finance, Legal, Human Resources	6%
Information Technology (IT)	38%
Supply Chain	9%
Other (Merchandising, Marketing, etc.)	13%

Business Challenges

Improving Service Levels Vs. Cutting Costs: The Winner's Imperative

In the first section of this report, we promised to show some real difference in perceived Business Challenges between Retail Winners and others. In Figure 4, below, those differences are very evident, as well as interesting.

Figure 4: Winners Lean Towards The Future



Source: RSR Research, February 2020

Winning retailers are clearly alarmed by increasing volumes of customer inquiries. This increase is no doubt driven by the continued rise of eCommerce sales. This is the business challenge they cite most frequently, driving them to consider using robotics and automation in stores and call centers.

The second most frequently cited business challenge is finding and fixing “inventory holes in stores.” It has been well-documented, both in RSR’s research and elsewhere, that inventory accuracy has become a very serious problem across the retail enterprise. Given the high volume of returns generated by eCommerce sales, most especially in apparel, inventory numbers can

become skewed. Inventory accuracy in stores selling fast moving consumer goods (“FMCG”) has always been a problem and continues to be so. Robotics with computer vision are a hoped-for solution to this problem – reporting on issues to those who can correct the problem. Ahold/Delhaize already has 500 shelf-scanning robots deployed on the East Coast of the US, and Walmart [recently announced](#) it is adding shelf-stocking robots to 650 more stores (bringing its total to 1000).

Non-winners, while they share inventory concerns, seem predominantly focused on cost-cutting / people-replacing with robotics. They want to eliminate warehouse personnel and save their labor dollars for “less tedious tasks.” RSR believes that even their focus on spotting holes in inventory is more about labor-saving than it is about the customer experience. This has been thematic to our research for the past several years: non-winning retailers tend to focus on cost-cutting vs. Winners, who focus on the customer experience.

Robotics In The Distribution Center: Hoped For Leaps Forward

Distribution centers have been automated to some extent for decades. Automated sortation, “picking and packing” is a de rigeur practice for store-based retailers and can be very sophisticated. Whenever possible, merchandise is cross-docked, pre-packed in such a way that it can flow through the distribution center quickly.

The “rub” comes in direct-to-consumer orders, and as we can see in Figure 5, below, retailers are hungry for faster, more efficient means to get products into customers’ hands.

Figure 5: Driving Robotics Into The Distribution Center



Source: RSR Research, February 2020

While there is virtual unanimity among retailers on the importance of becoming more efficient, Retail Winners also are more emphatic on the need for speed. Amazon has created the expectation for two-day (in some markets one-day, and for some products one-day) delivery, and whether or not

retailers believe one-day or even same-day delivery is feasible for their individual brand, it's quite clear that Winners believe the consumer expects speed.

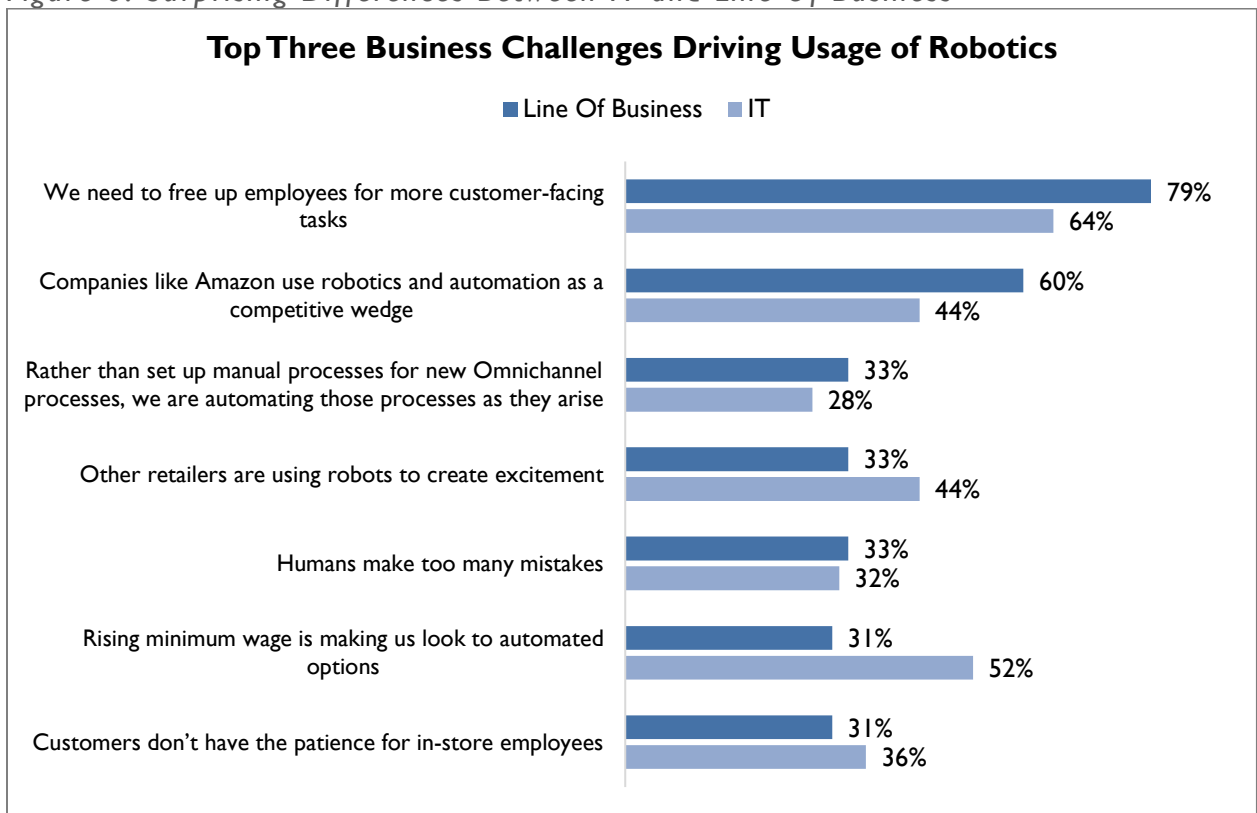
Non-winners give a strong nod to speed, but also tend to be more focused on labor costs and availability. There's no doubt that all retailers feel these pressures, but they rise to the top of non-Winner priorities more frequently than Winners. For Winners, speed and efficiency rule.

Differences Between Line Of Business And IT Emerge

As we mentioned at the beginning of this report, we see a clear pattern when surveying retailers about emerging technologies. Line of business users tend to have very different perspectives from their IT counterparts.

These perceptual differences start to become apparent in Figure 6, below.

Figure 6: Surprising Differences Between IT and Line Of Business



Source: RSR Research, February 2020

We see something close to concurrence on the need to free up employees for more customer-facing tasks, but the reasoning behind that concurrence is surprising.

Line of business executives are more likely to believe competitors are gaining an advantage through robotics and automation, while IT takes the more pragmatic view that rising minimum wages drive their company to automate (and eliminate those “expensive” employees).

IT is also more bullish on the need to generate excitement (something that harkens back to the history of robots in the popular press as described in the overview), Line of Business Executives have some different views.

They pragmatically want to free up associates for customer-facing tasks, something that has been highlighted often in RSR's past benchmarks on the store. To accommodate empowered customers while also keeping profitability going, **retailers consistently seek to hyper-optimize non-selling functions. What better way to do this than with robots?**

Line of Business executives also tend to be more fixated on "fear of Amazon." There's no doubt that Amazon has been eating into store-based retailing for a long time, with its retail operations being subsidized by very profitable Cloud services. It remains to be seen whether Amazon's investors will continue to be patient with its retail profit performance, or if the company's investments in vans for last mile delivery and jets to support all the other miles will generate hoped for profits.

To date, Amazon's retail profits have bounced around from weak to strong and back again. It's hard to find evidence on the company's income statement that this has been caused by technology or logistics investments, unless the company is loading those investments into cost of goods sold (COGS). While there is no real standard around what companies can put into COGS, we have never seen any other company load capital investments into it.

Still, Amazon isn't going anywhere any time soon, which leads us back to the rest of the industry and the very real question: what are the opportunities that robotics and automation bring to the retail enterprise?

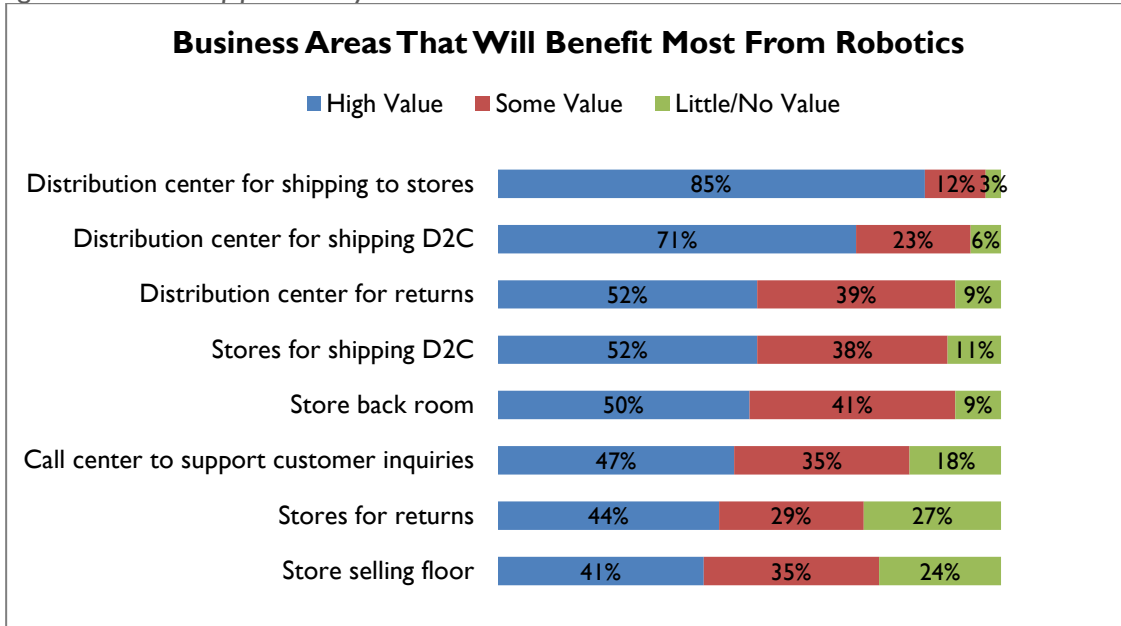
Read on to find out.

Opportunities

Which Departments Can Take Most Benefit From Robotics

Happily, retailers have a solid sense of the business areas they expect to see the greatest benefit from robotics and automation (Figure 7, below). They cleave mostly to the areas where they have reaped the most benefit from automation in the past: their distribution centers, both for shipping to stores and shipping direct to consumers.

Figure 7: The Opportunity Across Business Areas



Source: RSR Research, February 2020

The store, however, is becoming a more enticing opportunity for retailers, most especially in our minds, in fast moving consumer goods. While the percentage who sited ‘stores for shipping direct to consumers’ as a high value opportunity was fairly close between fast moving consumer goods and general merchandise (53% vs. 46% respectively), RSR believes that robotics present the only feasible way for grocers to make money on direct to consumer ordering. Walmart, Kroger and Albertson’s are all experimenting with robotics, with Kroger’s partnership with Ocado garnering lots of industry attention.

The idea is brilliant: let robots pick the low margin commodities, and let humans pick the higher margin, more volatile fresh products. There is no doubt that when it comes to handling merchandise, robots are a great solution.

But what about when it’s time to actually engage with customers?

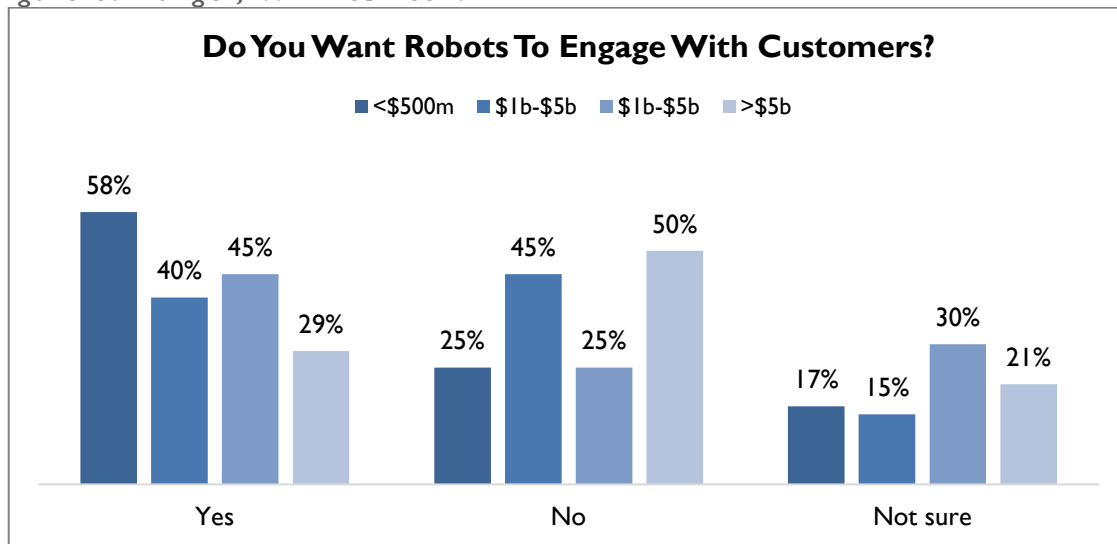
Danger, Will Robinson!

In the overview section of this report, we discussed the long history of robots as a tool to speak with people.

Perhaps it is this cultural memory, or the robot of “Lost In Space,” who acted as a young space traveler’s companion and friend that makes retailers think shoppers will be eager to interact with

robots. As we can see in Figure 8 below, the smallest retailers are far more likely to think this is a good idea than the larger retailers. Still 45% of those with revenue between \$1-\$5 billion think they do want robots to engage with customers (Figure 8).

Figure 8: Danger, Will Robinson!



Source: RSR Research, February 2020

This is a risky proposition, especially in stores. People are inundated with robocalls and robotic “assistants” on web sites. Replicating that experience in stores is a worrisome concept. Will Robinson was a fictional character, and the friendliness of his robot pal will be hard to duplicate without being creepy.

On the flip side, we know there has been a lot of talk around conversational commerce: consumers using Amazon’s Alexa and Apple’s Siri for shopping. However, it’s worth pointing out that none of these “assistants” are objective. Alexa is prejudiced towards Amazon as a seller, and Siri will, if it can, choose Apple’s partners when asked about products.

Conversational commerce and robots really don’t lend themselves to price comparisons, and we live in a world where price sensitivity is predominant.

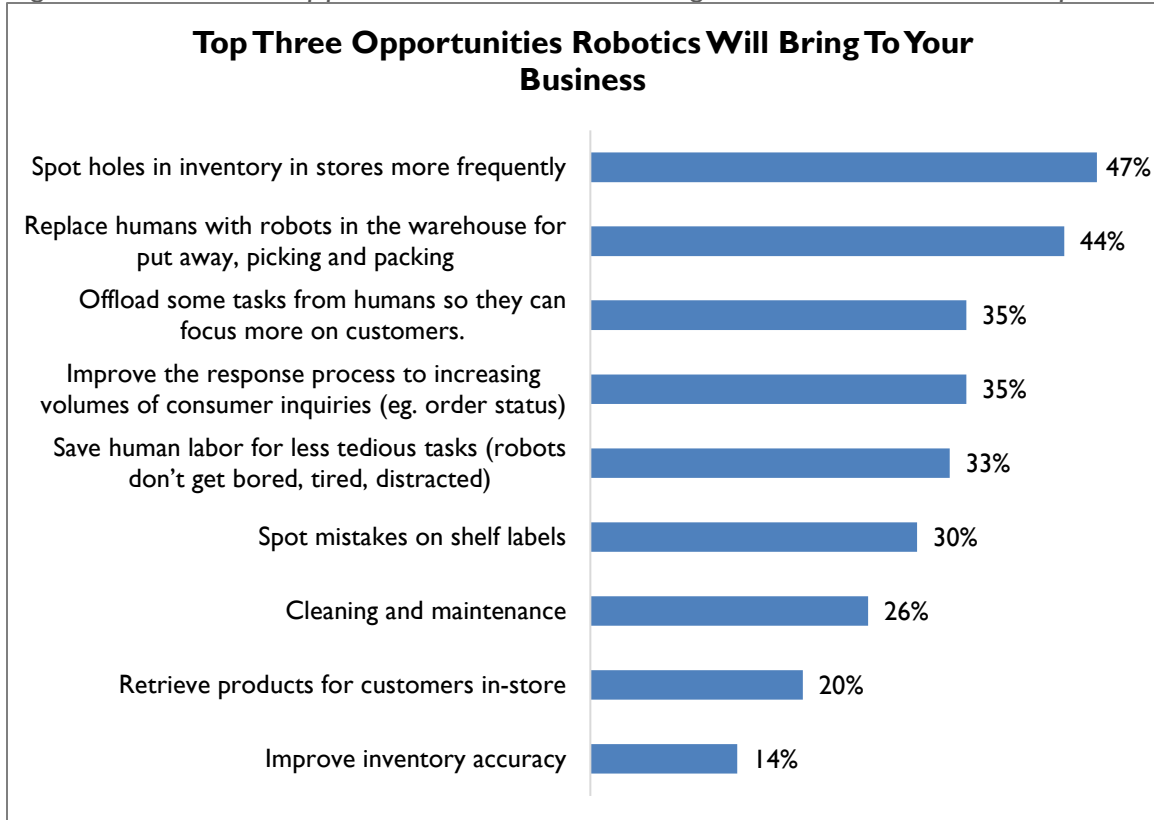
Further, for the largest retailers, the sheer size of the retailer and its stores tend to create an aura of impersonality. Having robots as proxies for human salespeople could tip the scales over into “this store is just too...robotic for me.” And those with sales of \$1-\$5 billion are not immune to this syndrome.

And so, we re-iterate our concerns about using robots to interact with customers in stores. The last thing retailers need is to disincentivize in-store shopping in the name of a “frictionless experience.” We find a lot of presumption around the concept of “frictionless,” and sometimes the greatest friction is one where a shopper has made the effort to go to a store, only to discover few to no humans available to assist them. The obvious question is: Why not just stay home and order on-line?”

The Overarching Opportunities Robotics Will Bring To The Business

After looking at these details, it's worthwhile to take an overarching look at the most frequently cited opportunities retailers believe robotics will bring to their business. We can see these answers below in Figure 9.

Figure 9: The Best Opportunities Lie In Working With Products, Not People



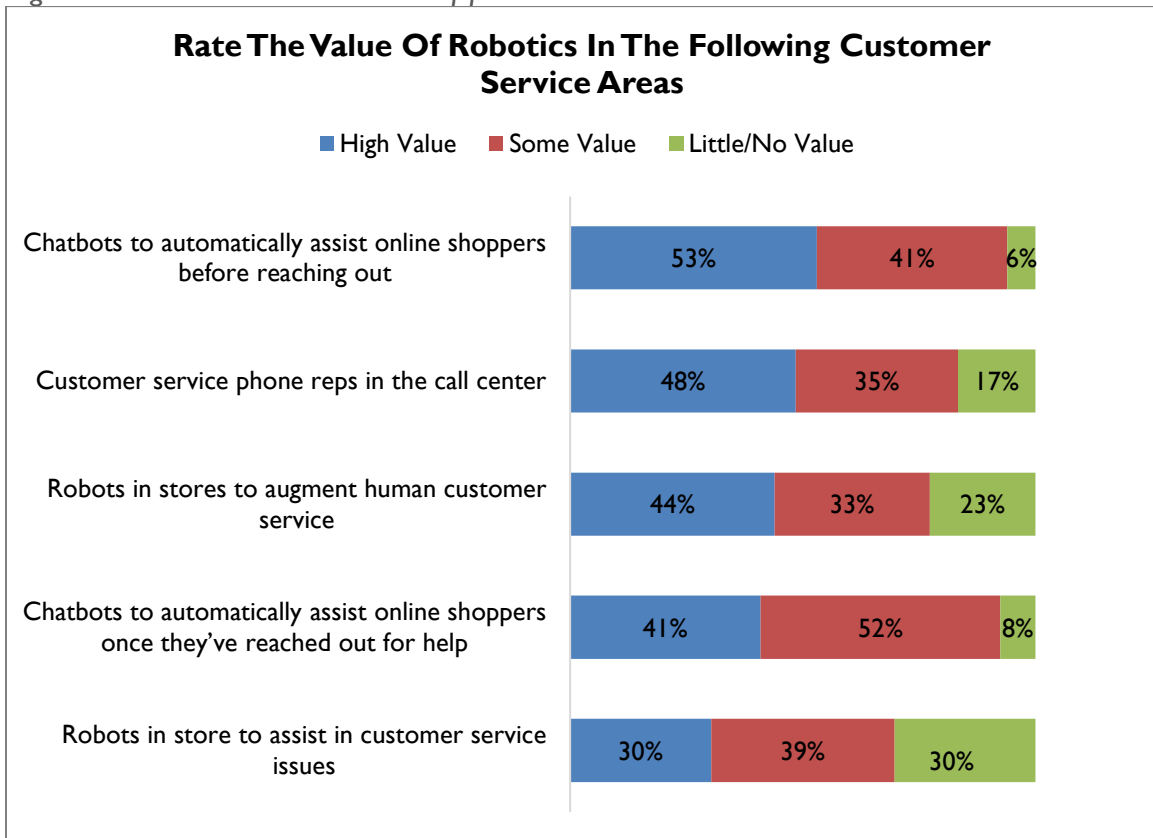
Source: RSR Research, February 2020

Responses are surprisingly split, with robots managing product: spotting holes in store inventory and in using robots in the warehouse for put-away, picking and packing rising to the top. We might have hoped that robots could be used to improve inventory accuracy, rather than fixing problems that are pre-existing, but many technologies have been tried to improve inventory accuracy, and the world of Omnichannel and cost constraints preventing broad deployment. In that world, just solving problems as they are discovered is, in fact, the best available option.

What About Customer Service?

We've already expressed concern about robots interacting with shoppers, but there do seem to be some opportunities retailers feel can be supported by robotics in the area of customer service (Figure 10, below).

Figure 10: How Can Robots Support Customer Service?



Source: RSR Research, February 2020

There does seem to be a preference to use robotics where they can't be seen, on-line and in the call center. It's RSR's belief that the artificial intelligence that will power these robots must improve before they'll be ready for "prime time" in that regard. Consumers are already frustrated with scripted workers whose first language is most definitely not that of the customers. Replacing those workers with robots will likely lead to customers either intentionally trying to "trip up" the robot or becoming even more frustrated than they were with scripted workers who happen to speak without accents.

The Bottom Line

We can see that retailers have a mixture of realistic and unrealistic goals for robotics. Clearly there's room to move forward, as there are some real opportunities available to cut costs while delivering product the way shoppers would prefer.

But what could get in the way of adoption? What internal challenges might retailers face before they can take advantage of robotics? Read on to find out!

Organizational Inhibitors

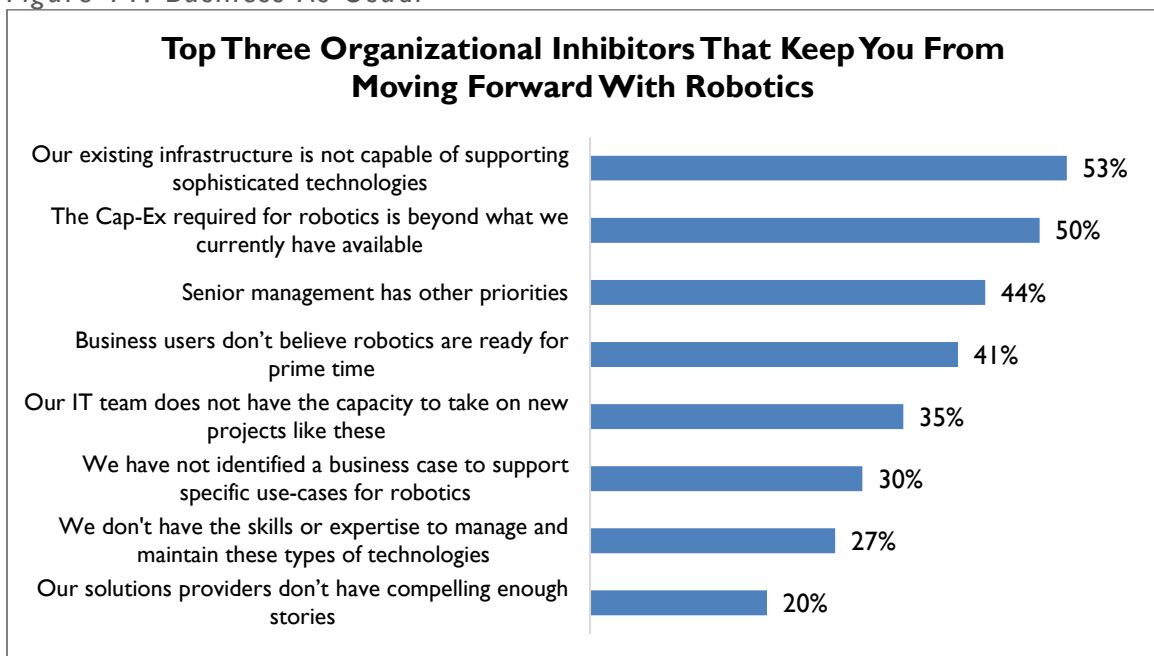
Too Easy An Out?

Retailers are never wont to cite their existing infrastructure as the primary reason they can't move forward with a new technology – it has been this way since RSR started conducting benchmark research in 2007. It was their top roadblock when we asked what would keep them from adopting more mobile strategies right after the iPhone launched, and it has been their top initial roadblock to taking advantage of virtually every new technological advancement that's come along ever since.

So much so, it makes us wonder if this is all becoming too much of a knee-jerk reaction to potential progress. New technological advancement is disruptive – that's part of its very nature. And even though our findings thus far in this research have illuminated an environment where many retailers still see robotics as a hammer looking for a nail (at least in stores), we'd much prefer retailers say as much. That the first reaction to virtually every new technology is "we can't support anything more" tells a great deal about how far behind retailers have fallen – particularly when compared to customers, who, by way of comparison, are incessantly eager to try every new technology the moment it arrives.

Winners do not react this monitoring keeping an eye on its development with an eye for how it can one day be folded into the enterprise in a practical manner. Simply dismissing new technology as something that doesn't work and play well with existing systems is no longer feasible as technology continues to accelerate at an exponential rate: existing systems are inherently designed at a previous point in time. Getting new systems to work with them is an absolutely vital component of staying relevant and will only become more so as the rate of technological advancement speeds up.

Figure 11: Business As Usual

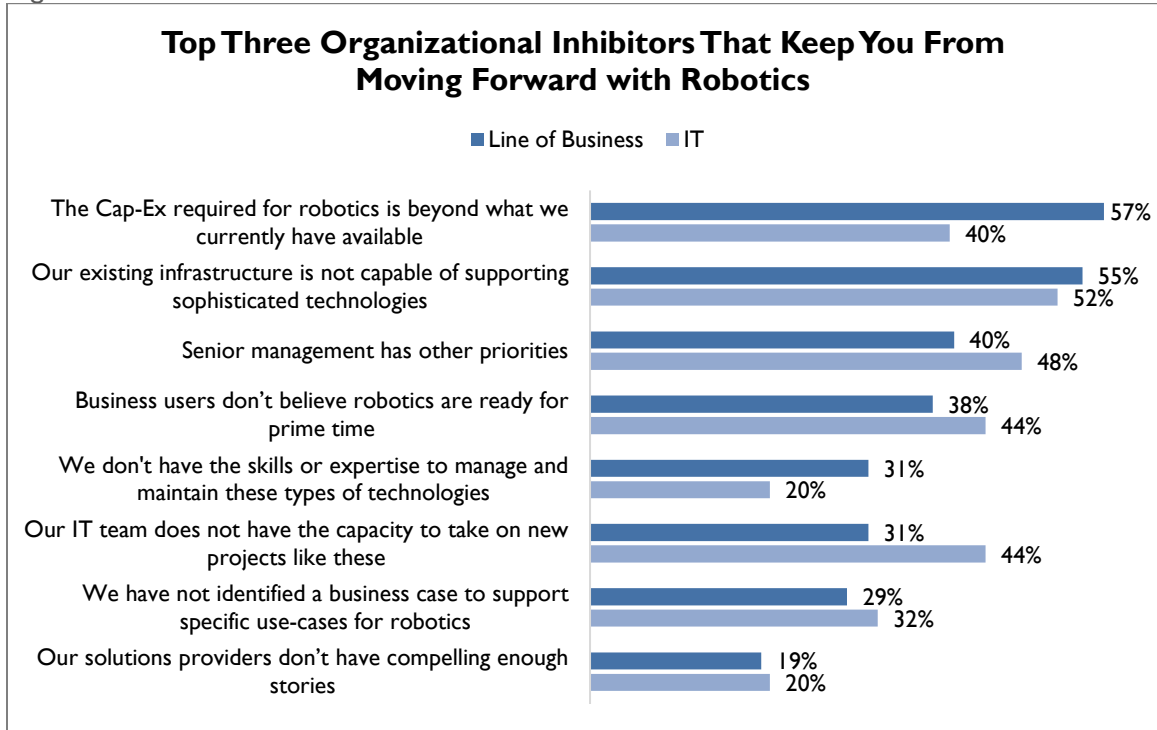


Source: RSR Research, February 2020

The Need For A Consensus Vision

When viewed through the lens of IT vs LOB, the reasons preventing retailers from moving forward with more robotics-based projects becomes more interesting. Line of Business executives point directly to dollars and cents: this technological wizardry is fun to think about – but it’s all pie in the sky until prices come down (Figure 12).

Figure 12: It’s YOUR Fault!



Source: RSR Research, February 2020

What’s incredibly telling about the data in Figure 12 is just how differently tech people and line of business executive view nearly every inhibitor we put before them. Apart from being united in all-too-common knee-jerk reaction of existing processes not being able to handle any more load (discussed in detail just a moment ago), the two groups are completely at odds. IT is more likely to blame the LOB for its lack of vision (“senior management has other priorities,” “business users don’t believe robotics are ready for prime time,”), while LOB points the finger right back: “We don’t have the skills or expertise required to manage and maintain these types of technologies.” When viewed by performance (not pictured), these blaming behaviors are even stronger within the cultures of non-winning retailers.

This is a fairly stark reminder that most retailers do not operate in a state of kumbaya – and the very reason we elect to view our respondents’ feedback by their role within the business. Change, particularly at a time when so many methods and directions for change exist, is difficult. Getting IT and Line of Business to talk to one another in a common – and respectful - language will be a significant forward in any endeavor to modernize the enterprise.

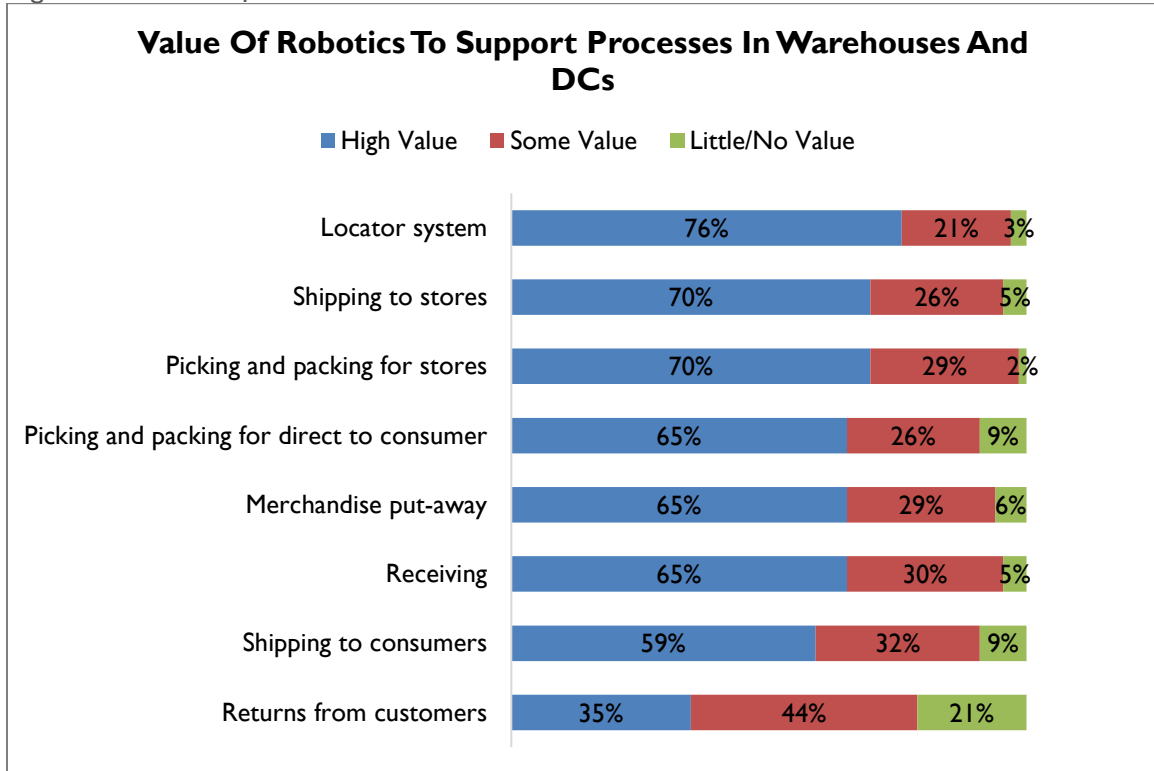
Now let’s see how – and if – technology can help.

Technology Enablers

First Stop: The Warehouse

When asked to evaluate robotics' current value, there is no equivocation: regardless of size, performance, product sold or a respondent's function at the company, our retail respondents see more immediate value in the warehouse than anywhere else. We'll look at store technologies in a moment, but their enthusiasm for such solutions pale in comparison to the statistics in Figure 13.

Figure 13: A Perfect Fit



Source: RSR Research, February 2020

This is very pragmatic, and a function of the fact that retailers have been automating their DCs and warehouses for decades now. As a result, introducing robotics to locator systems, picking and packing for stores and merchandise put-away is nothing more than extension of the work they've already been doing.

IT (not pictured) is even more bullish on many of these tasks:

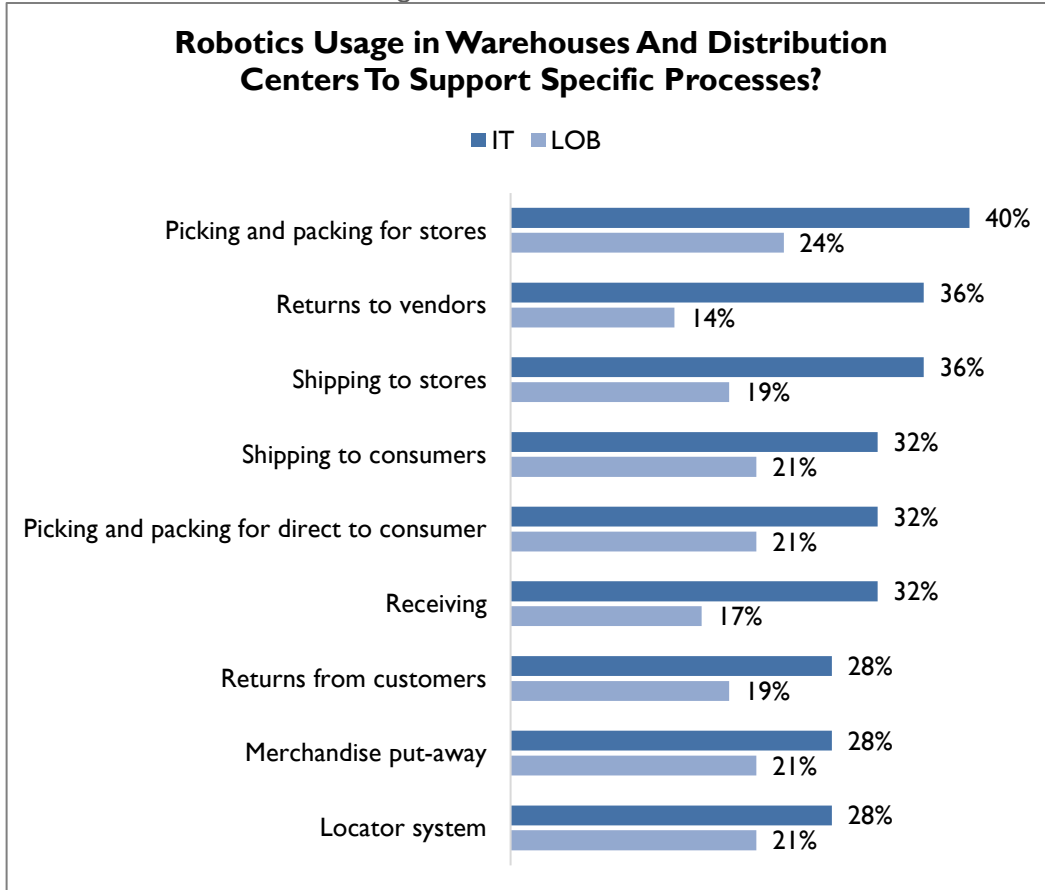
- 88% ascribe high value to robotics' ability to help in shipping from the warehouse to the store (vs. 60% of LOB executives);
- 72% see these technologies as adding high value to receiving functions (compared to LOB execs' 62%);
- And IT is also more convinced that robots can aid in shipping D2C – 68% cite “shipping to consumers”, something only 55% of LOB respondents gave high value.

By all accounts, adding robotics into the warehouse seems like a no-brainer to most retailers.

The Plot Thickens!

However, it would appear that when it comes to adoption, not everyone is on the same page. In fact, Figure 14 reveals that either LOB is unaware of what is already underway –there are quite a few skunkworks projects taking place within retail right now.

Figure 14: Wait... We're Doing What?

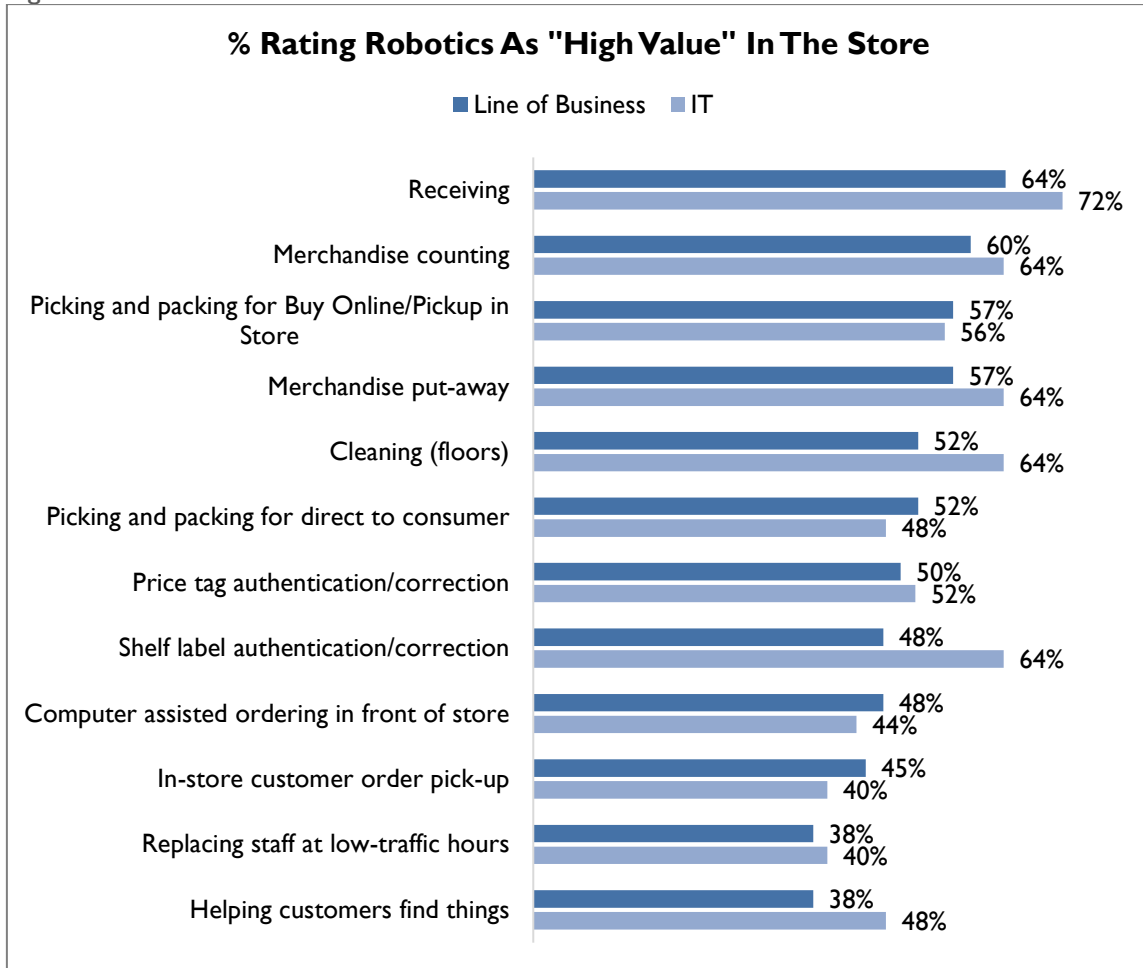


Source: RSR Research, February 2020

Meanwhile, In The Store...

Throughout this report we've identified a lot of differences in perspective between how IT and LOB view not only the value, but also the practical use-cases for robotics within retail operations. This vastly different viewpoint continues into stores, as well (Figure 15).

Figure 15: IT Sees More Value



Source: RSR Research, February 2020

In nearly all cases, IT professionals place higher value on the promises robotics designers are making for stores. In some areas these differences are notable. Take, for example, the fact that 64% ascribe high value to robotics-assisted systems to authenticate and correct shelf labels: that's a significantly higher interest than LOB execs perceive. And IT is far more bullish on robots' ability to help with receiving functions (72% compared to LOB's 64%), cleaning (another 12% gap) and merchandise put-away. What does all this mean?

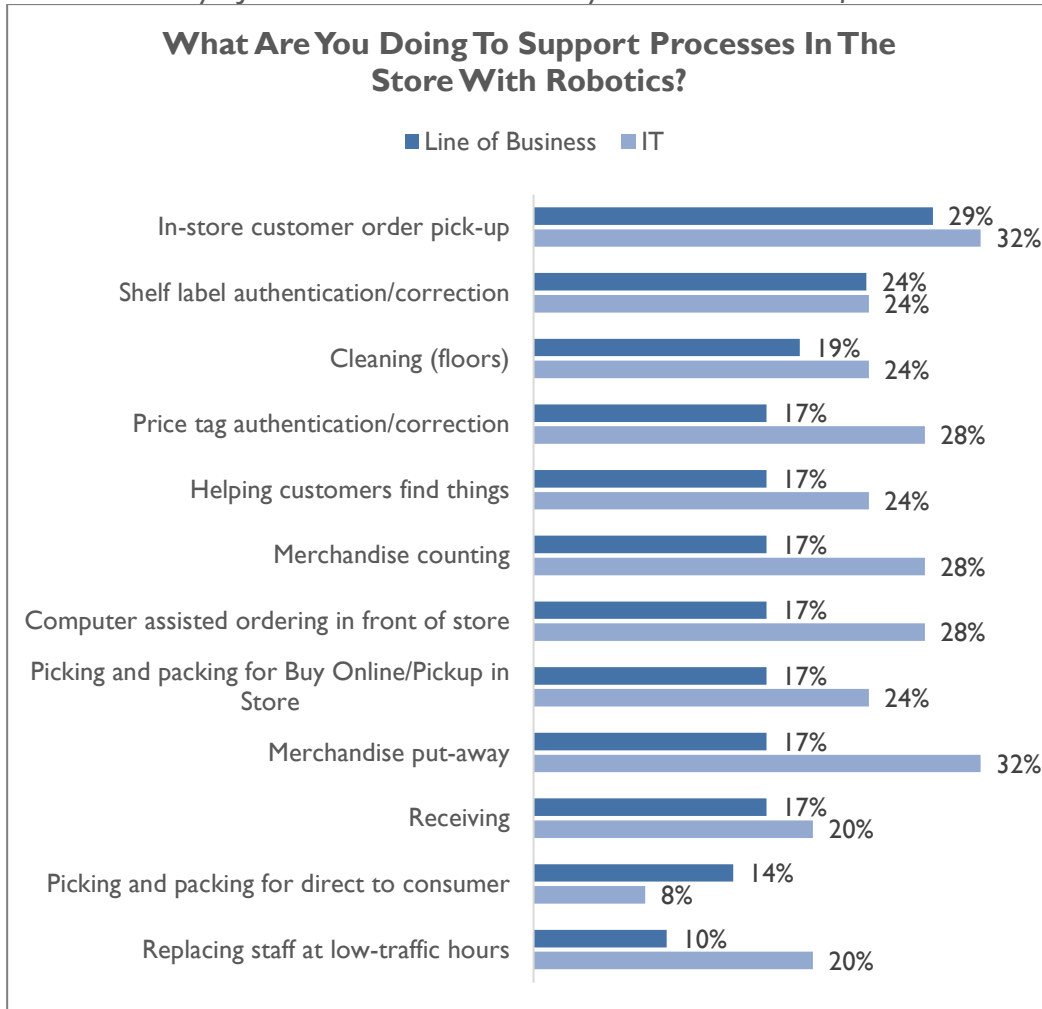
For starters, it would seem the more tech-dependent a member of a retail team may be, the more they see robotics being able to brighten their future. It also, however, points to a harsh reality: just because IT is excited about something doesn't necessarily bring it into existence. For most of us, a visit to our local grocery or big box store currently reveals that the only in-store robotics the line of business has signed off on are for merchandise counting.

Still, though, the value proposition for all of these other retail functions is highly intriguing.

What's Really Going On, Here?

When asked about the use of robotics in the store, the breakdown between IT and LOB only further solidifies. If these early indicators prove true, IT is not afraid to be testing multiple robotics-based pilots without either the knowledge – or the consent – of the Line of Business (Figure 16).

Figure 16: Sneaky? Just Misunderstood? Maybe A Little Bit Of Both



Source: RSR Research, February 2020

In an area of study this new (to retail, at least), the truth is there are multiple ways to explain the data in Figure 16. Maybe LOB doesn't consider certain automation technologies to fall under the "robotics" category, whereas IT professionals, ever eager to be on the edge of tech, are more likely to lump as many automated processes into the realm of robotics. It is also possible that LOB leaders are simply not aware of how much their IT department is truly doing with these next-gen tools. Again – with a field this new – that is entirely possible.

Time will only tell which of these explanations most aptly describes the current landscape. We'll be eager to find that out when we conduct a follow-on benchmark piece next year. Our suspicion, however, is that time will reveal that in the early stages of 2020, a third scenario was really in play: IT folks had a series of skunkworks projects going on that were maybe not *secretive*, but certainly weren't being advertised throughout the organization.

BOOTstrap Recommendations

We are still in the relatively early days of robotics as viable solutions for most retailers' stores. While Walmart, Ahold, and Kroger have taken some very large steps to bring robotics into stores, as mentioned in this document, others don't have the time or resources to roll-out robotics across their chains.

Perhaps the lower hanging fruit is continuing the decades-long push to automate distribution centers and warehouses, and to target specific areas of the stores that have become drags on profit in the Omnichannel area.

With those assumptions in mind, we present the following recommendations.

Its Time For IT And Line Of Business Users To Work Together

It's clear from this study that both Line of Business (LOB) and IT have an interesting mix of pragmatism and science fiction fantasy when it comes to robotics.

It's critical for these groups to come together and establish corporate-wide strategies and direction for robotics and advanced automation. This will help prioritize pilot projects and capital investments.

Understand The Difference Between Automation And Robotics

Certainly, one could argue that robots are advanced automation. This is true on some level, but as a practical matter there's a profound difference between (for example) automated garment sortation systems and robotic merchandise picking. As an evolutionary matter, robotics stand to benefit from many of the supporting technologies growing up around them, including Artificial Intelligence and the Internet of Things. Automation may have existed in warehouses since the 1970s, but these rudimentary systems didn't have smart sensors – or Watson, for that matter – to inform their mechanics.

Understanding these differences (and the consequent cost differences between them) is vital before projects can be prioritized. Again, if IT and LOB work together to set corporate strategies and goals, understanding these differences will become clear.

We are certainly not advocating months of semantic arguments on the topic. We are advocating a clear understanding of capabilities that are needed, and the type of automation required to acquire those capabilities.

Pilot, Pilot, Pilot

LOB respondents seemed to believe there were more robotics projects implemented than are even possible. We believe that IT is, in fact, running pilot projects and skunkworks. It's time to bring the LOB executives into the mix, so that they, too can see the opportunities that present themselves.

Avoid Using Robots As A Proxy For Employee/Customer Interaction

While medieval Europeans may have found satisfaction in having "brazen heads" answering questions, in general modern consumers find that somewhat creepy. It might be fun for the kids, but adults in general would really prefer human-to-human contact.

We must always remember that if a shopper wants to solely engage with machines, she can stay at home and order online. Chatbots seem acceptable in that context.

Having said that, there are times when a shopper really needs and wants to speak with a human. Devising complex automated voice mail systems, that do everything possible to divert the shopper from actual humans, can be frustrating and irritating to shoppers. In fact, it's a sure way to lose a customer if over-used.

Retailers should put themselves in their customers' shoes. We talk all the time about reducing the number of keystrokes required to get to a desired choice on a web site. Yet companies of all sorts, including retailers, seem to place little regard on the number of responses required to get to a human being who deigns to call-in to their customer service center. Sometimes, an issue really does need to be addressed by a human.

Perhaps the day will come when this is no longer necessary, because Artificial Intelligence will have advanced to a point where bots can synthesize what a person is asking for and provide coherent responses. We're not there yet.

The Bottom Line: Pragmatism Must Reign

At the beginning of this benchmark, we presented society's long-term fascination with robots. This report has shown us that some of that fascination remains. It has also shown us that many are looking for any way possible to reduce the number of human beings required in the retail sphere. However, pragmatism really must reign.

If we really want people to come back to stores, a vibrant experience that includes significant employee interaction is an imperative. We would say that in general, the place for robots is in the back room, particularly for Omnichannel order filling, or even for picking merchandise an associate on the floor has requested for a customer. After hours, robots to spot gaps in inventory, clean floors and make sure shelf labels are correct are useful tools on the selling floor, since customers will not be impacted.

Of course, in distribution centers, the more automation the better. The bigger question there is, will traditional automation do the job by bringing work to the workers, or do the workers need to be supplanted by robot proxies. Look for vendors to show successful use cases, and always do the math to make sure long-term capital commitments don't outweigh short-term employee expense.

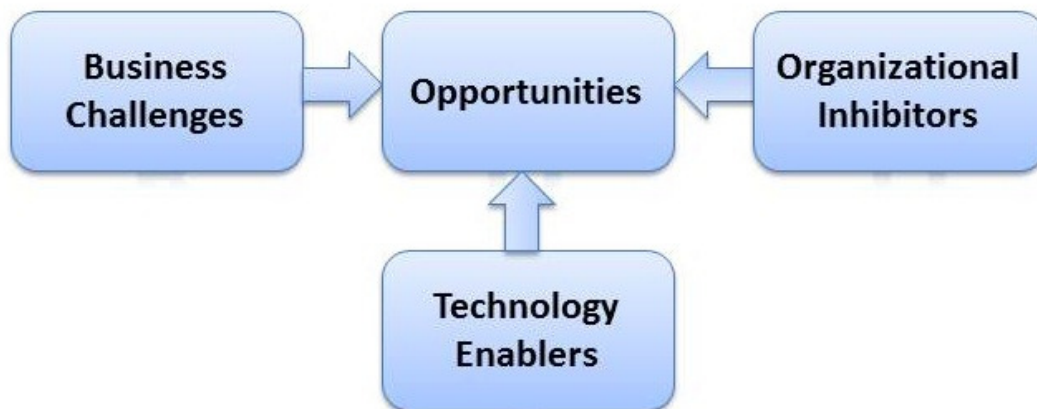
This all sounds obvious, but our industry seems to be captivated by the promise of bright shiny objects. Robotics certainly have real value. It's the retailer's responsibility to prioritize where that value lies, pilot test to confirm the value is real, and then roll-out projects in a timely and economic fashion.

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

CLUDERA

At Cludera, we believe data can make what is impossible today, possible tomorrow. Cludera delivers an enterprise data cloud for any data, anywhere, from the Edge to AI. We enable our customers to transform vast amounts of complex data into clear and actionable insights to enhance business capabilities. Powered by the relentless innovation of the open source community, Cludera advances digital transformation for the world's largest enterprises.

Achieve the impossible with Cludera.

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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