Creating Great Grocery Trips

Perspectives from Zebra Technologies

Your Authors

Natalie Berg

Retail analyst and thought leader

Natalie is a retail analyst, author and founder of NBK Retail. Renowned for thought leadership, Natalie offers valuable insights and strategic guidance on retail trends.

Natalie is the host of the popular podcast, Retail Disrupted, and has co-authored two acclaimed books on retail, including Amazon: How the World's Most Relentless Retailer Will Continue to Revolutionize Commerce.

Mark Thomson

Retail Industry Director, Zebra Technologies

With over 30 years in retail, Mark has built up formidable insight and expertise in the sector: experience he puts to use as a renowned industry speaker, visionary and tech-evangelist.

Mark partners with retailers on their long-term strategies, advising them on digital transformation, from the supply chain, to stores, and across omnichannel experiences.

Pedro Roman

Director, Retail Solutions Sales, EMEA, Zebra Technologies

Pedro's retail experience spans three decades. He works closely with retailers on the flow of stores. He has a particular interest in how self-checkouts, personal shopping solutions, kiosks, bioptic scanners, and the latest data and analytics software can lead to enjoyable and convenient experiences for shoppers, with precise data insights that drive ongoing improvements for retailers.

Margaret Reynolds

Senior Manager, Product and Solutions Marketing, Zebra Technologies

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Margaret has forged a two-decades-long career in technology across retail and hospitality. Margaret has a deep interest in the customer experience and how new technologies and data-led insights can help retailers create precise and personalised shopping experiences that are more enjoyable for customers and profitable for retailers.

Foreword by Natalie Berg, Retail Analyst

Twenty twenty-five: the midpoint of a turbulent decade. The nature of disruption may have shifted, but the pressure on retailers is as relentless as ever. A shifting geopolitical landscape, unforeseen cost headwinds and accelerating tech innovation require continuous adaptability.

Retailers must ensure they're operating as efficiently as possible in this climate. From shrink rates to tariffs, the cost – and uncertainty - of doing business continues to accelerate. Embracing agile operating models and investing in resilient supply chains and digital capabilities is essential to maintain a competitive edge and meet the needs of today's shopper.

Shopping expectations are becoming more dynamic and complex. Customers are seeking value, but they're also demanding great experiences. Meanwhile, seamless, hyper-personalised, real-time interactions are becoming the norm. Some great examples of this include Kroger providing shoppers with customised digital offers in-store and Sainsbury's allowing shoppers to skip the till by paying directly on its handheld SmartShop devices.

And, while reducing friction should be a priority for every retailer, it should never come at the expense of providing customers with choice. There is no 'one-size-fits-all' approach in retail anymore. The demand for individualised experiences is growing, and AI will only intensify this shift. What seemed like fantasy a few years ago is now our reality. And we're about to enter an exciting new era of agentic AI, which will redefine shopping for both customers and retail staff.

We often hear that retailers must adopt a customer-centric approach, but I would argue that employee centricity is the foundation for long-term success. Retailers must empower their front line, providing the relevant tools and incentives that enable a compelling customer experience. Freeing up associate time to focus on more valuable, customer-facing tasks boosts shopper loyalty and conversions and also translates to greater job satisfaction. Tech-enabled human touch is the future of retail.

And while technology can allow retailers to go beyond, surprising and delighting their best customers, it's also essential retailers continue to iterate on the basics. No customer is going to tell you they want longer queues or less convenience. Our on-demand culture has made us all a bit less patient. As a retailer, how are you serving these customers? Are you an innovation leader or laggard?

This guide will give you some insights into the question. It covers the latest developments in grocery retail with reference to brands like Target and how they are using new technology. You will find ideas, from shaking up inventory, to making the job more enjoyable for associates, to further progressing shoppers' experiences from personalisation to the meaningful adoption of AI. There's also an interesting take on 'omni-everything'. This vision for the future of retail is perhaps closer than we realise and describes a fully connected landscape where there are no data silos, and where operations – from demand planning to inventory management – are ever more automated and self-driving.

Contents

1. The Evolution of Inventory

The Inventory Challenge

$1.77 TRILLION

the cost of inventory distortion[1]

57%

of shoppers left stores last year without all their items[2]

86%

of retail leaders want to improve inventory management[3]

A simple expectation is top of mind for shoppers: Finding What They Want In-Store.

But managing inventory is complex. Across thousands of supply chain workflows, there remain pockets of low visibility. Meanwhile, missed gap scans, shrinkage and incomplete shipments from suppliers often mean point-of-sale (POS) inventory data contrasts with what's on shelves. Retailers regularly tell us it's not until associates are picking for home deliveries that items are found to be missing. In this scenario, offering substitutions, or free delivery to compensate, adds to the significant costs of inventory gaps.

Based on our discussions with retailers, a good rule of thumb is that every out-of-stock item costs **3X** its value.

[1] True Cost of Out-of-Stocks & Overstocks – Can Retailers Handle the Truth?. [2] Zebra's 17th Annual Global Shopper Study, The Retail Imperative: Thriving in a World of Infinite Choice. [3] Zebra's 17th Annual Global Shopper Study, The Retail Imperative: Thriving in a World of Infinite Choice

Accuracy, Automation and AI

So, what can be done to ensure shoppers find their desired products…always? Technology is evolving and offers modular steps to greatly improve your view of what's happening. These include:

- **Empower associates:** While the majority of stores use mobile devices, some still have an element of manual processes, and many share device pools. By simply equipping every associate with a handheld computer, and reminding them via a task manager to conduct gap scans as required, you will create the opportunity to significantly boost inventory visibility. And, when using their devices' intuitive instant voice and message tools, associates can contact colleagues and ask for items to be quickly replenished.

- **Deploy 20:20 vision:** Computer vision and augmented reality solutions are becoming more affordable and offer a realogram view of shelves. Our new AI Merchandising Agent (see Section 3) works with the cameras on our mobile devices and applies image recognition and augmented reality to alert teams to fix issues like shelf gaps, misplacements, and inaccurate pricing and signage. Tasks are generated autonomously. Emphasising the need for innovative solutions to optimise inventory, some grocers in the UK, are embarking on a rollout of computer vision across grocery stores using fixed cameras, while also testing roving 'inventory bots' to check shelves. We expect such deployments to gather pace.

- **Embrace actionable intelligence:** The more data is collected, and made available in real time, the more effective AI becomes. Our Workcloud Inventory Visibility software uses a combination of real-time and time-lapsed data sources, to explore, prioritise and communicate critical information to decision makers and front-line staff, with recommended courses of action. A simple example is identifying when items, which normally sell at a certain rate at set times, are not trading as normal. An automatic task can be sent to associates to check shelves. Ultimately, through data-led decision making, you can improve demand planning, associate productivity and the profitability of stock held on each site. And, of course, ensure customers can buy the products they came in for.

Alongside always finding what they want, there are new and engaging ways to improve shoppers' experiences. We look at these in the next section.
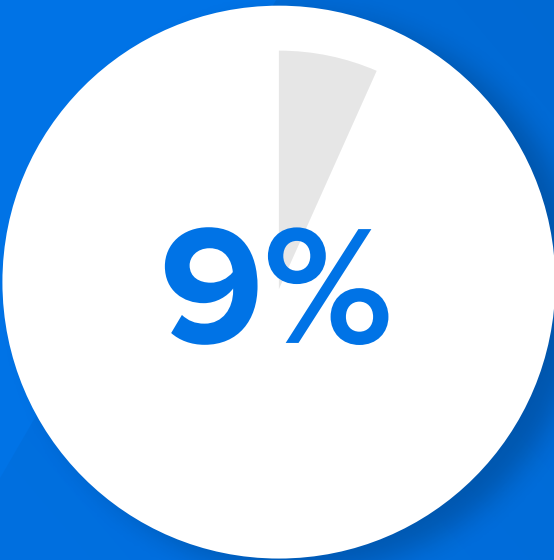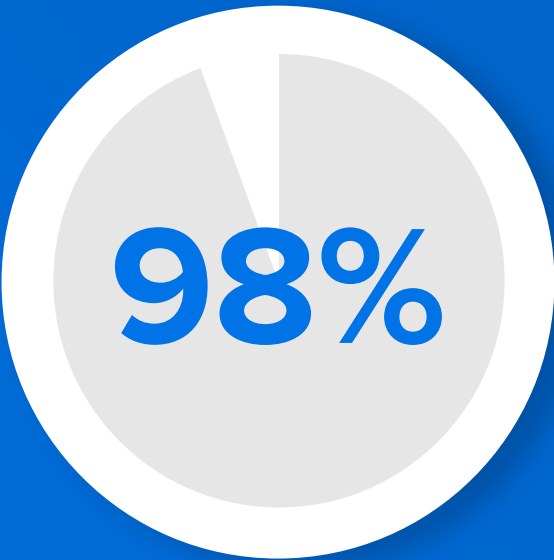
Enhancing Inventory: Typical Outcomes

When deploying a range of solutions, including mobile devices for more frequent gap scans, computer vision, and our Workcloud solutions, we typically see:
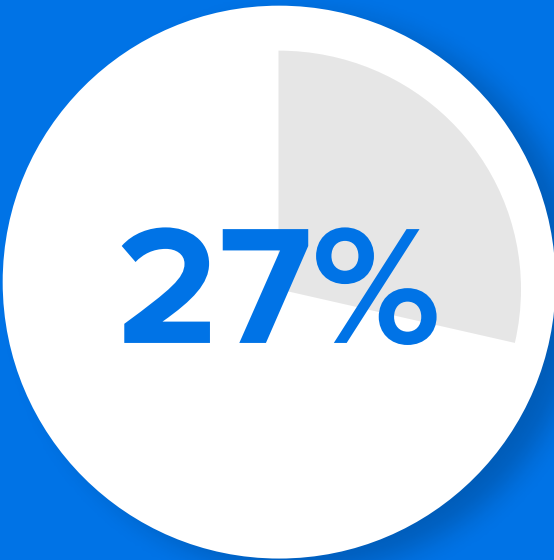
27%
fall in shrink rate

9%
forecast accuracy improvement

98%
inventory accuracy[4]

One Key Thing to Improve Inventory: Mark Thomson

"The full potential of AI for inventory hinges on linking fragmented data sources. A well-defined roadmap for connecting data is my number one tip to avoid project derailment, even if it requires a longer planning cycle. I'm also excited by the fact we're getting to a position where we can start to create digital store twins to enhance decision making. The models allow teams to simulate scenarios, like shelf configurations, and predict sales outcomes, with store managers benefiting from visual traffic light alerts that signal areas needing attention with the option of using AI to prioritise and automate tasks sent to associates."

[4] Zebra Modern Store Framework, Achieve Optimised Inventory. (Actual performance may vary depending on, among other things, store environment, product mix and process adherence.)

2. Elevating Customer Experiences

Retailers who provide 'a pleasant store experience' have a **2.4X** greater likelihood of being growth champions[5]. So, what helps create a pleasant experience? With research data, and discussions with our customers, revealing several key requirements, and expectations evolving fast, we recommend:

- **Offering choice at checkout:** We all value supermarkets that offer a range of checkout options, from staffed lanes to personal shopping devices and self-checkouts. We're also seeing more interest in mobile payments, with associates able to help customers pay anywhere in-store at busy times. Our PS30 Personal Shopper device also takes payments, and several major retailers are planning to offer checkout through the device. While we advise that an area of the store near the exit should be geofenced, so that payments work only in that area (to minimise shrink), the approach creates a more frictionless experience compared to completing the transaction at the self-checkout (SCO). You can also reconfigure your stores because more people can check out in a smaller space compared to fixed SCO units (which are more expensive too). Across our customer base, where retailers are using a mix of checkout technologies, we see checkout speed boosted by **32%** and wait times cut by **23%**[6].

- **Being accessible (with a smile):** McKinsey says access to "Friendly and helpful staff" is key to making shopping more enjoyable, yet **70%** of shoppers say it's hard to find assistance[7]. In Section 3 we look at how to free up your staff to focus on more meaningful tasks – which is a key part of the solution here, as are kiosks. The latest kiosks are attractive, engaging and easy to use and appeal to the **51%** of shoppers who want instant service[8]. Kiosks can be used for a wide range of tasks, such as logging arrivals for click & collect, ordering items, viewing endless aisles and automated returns. You can also use kiosks to inspire shoppers, with avatars, for example, of celebrity sommeliers offering fun wine-pairing advice.

[5] McKinsey & Company, Europanel, EuroCommerce, The State of Grocery Retail 2025. The report looked at 127 grocers across 11 European countries to determine what the growth champions of the past five years had in common. [6] The Modern Store by Zebra: Elevate Your Customer Experience. [7] McKinsey & Company, Europanel, EuroCommerce, The State of Grocery Retail 2025. The report looked at 127 grocers across 11 European countries to determine what the growth champions of the past five years had in common. [8] Jay Baer, Time to Win: The Consumer Patience Study
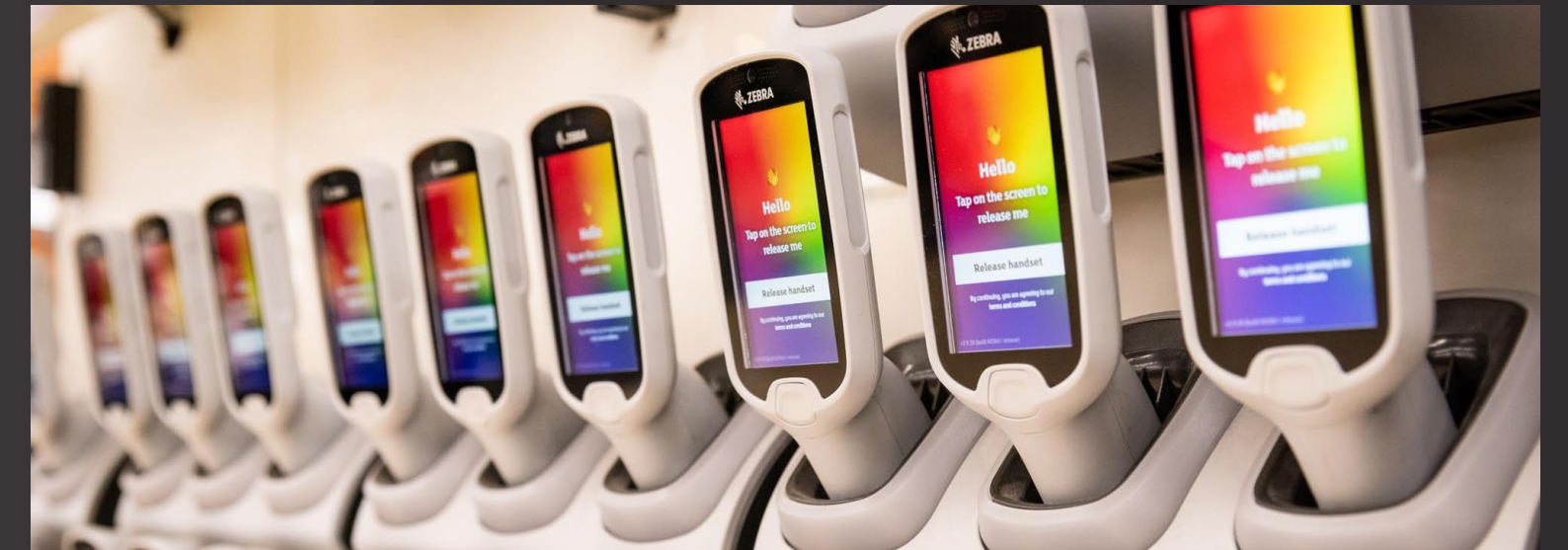
Retailer Insight: Sainsbury's

Sainsbury's, the leading UK grocery retailer, is enhancing its SmartShop (scan and shop) service by allowing customers to pay using the PS30 Personal Shopper. The service is being trialled in two stores. Shoppers tap to pay on the device and either pick up a receipt at a physical bay or request an email. Commenting on the approach, Darren Sinclair, the retailer's Director of Future Stores and Customer Experience, says:

*"I think about this as trying to reduce friction, improve payment and simplify the shopping journey, as well as future potential space...From a heatmapping perspective, we can see how people shop. We don't see the physical customer, just the heat, so we can see which ends are looked at, which screens are looked at and the flow around the store. That's massively insightful when we are working out store formats, or when we are doing Nectar screens for suppliers [Sainsbury's loyalty programme]." **

*The Grocer

- **Personalising to please:** We expect to see personalised offers online. But historically, there has been a reluctance to use similar techniques in-store due to privacy and user acceptance. But times change and with a generation of shoppers embracing personalisation, it's time to throw off the shackles: **56%** of shoppers say they will become repeat buyers after a personalised experience[9]. And with only **25%** thinking retailers are doing a good job in this area, there's scope to lead[10]. The easiest way to connect with shoppers is when they scan their loyalty ID and use a device like the PS30 (you can allow them to control personalisation settings in your app). The PS30 is adept at deepening relationships. Imagine providing people with a guided route to find their shopping list, reminding them to buy staples, and offering recipe advice and origin information. And, with generative AI, you can use location solutions to flash up offers adjacent to shelves, based on sales and preference data. As 'earn and burn' loyalty programmes are plateauing, you can use the enhanced data collected by the PS30 to offer a broader range of incentives, such as, for health-conscious Gen Zs, offers to visit the store pharmacist for wellbeing services.

- **Putting the smarts in carts:** We expect smart carts to become a familiar feature, offering more choice about how we shop. A likely approach is that customers will scan their loyalty card to release a tablet device, which they clip to their cart, and, similar to the PS30, the screen can be used to present a range of personalised prompts and offers. The larger screen size creates opportunities to augment your in-store media strategy. Selling advertising space is especially lucrative for retailers, with the Boston Consulting Group estimating that margin is **70% to 90%**[11]. It's worth considering given that retail advertising in Europe is forecast to reach **$31 billion by 2028** (digital and in-store), with **52%** of buyers shifting budgets away from linear TV and into retail media[12].

As we touched on above, ensuring your associates have time to help customers is perhaps the number one factor in influencing service perceptions. Next, we look at how to make this happen.

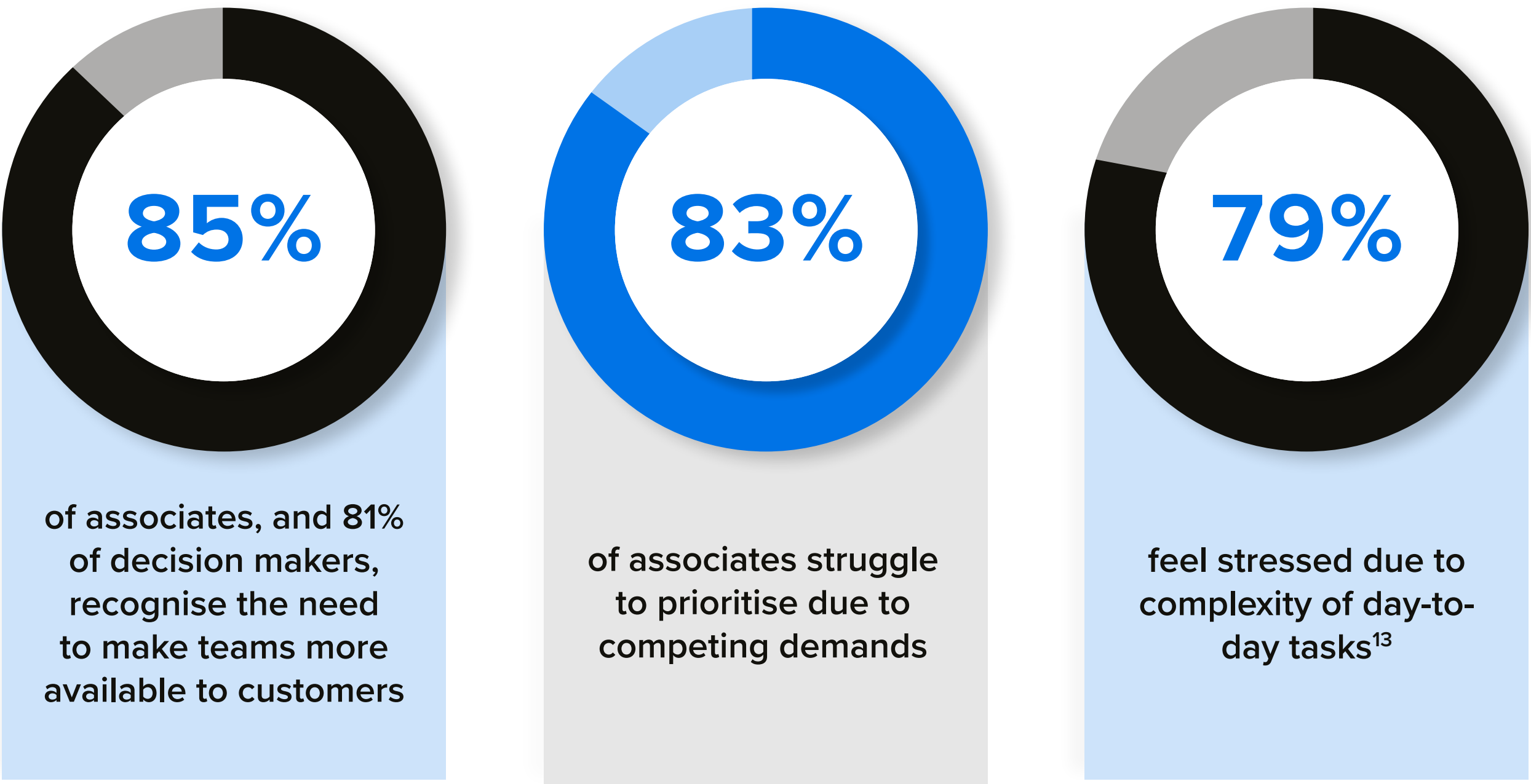## One Key Thing to Improve Shopper Experiences: Pedro Roman

"Deploying a device like the PS30 is a proven way to offer more convenience to shoppers. Across our retail customers, on average, around 30% of their shoppers use the PS30 regularly. The device lowers costs to serve, while users are higher spending and more loyal. This is all tied to the benefits of personalisation. It's important, too, to note we can heatmap trips in detail from PS30 data, and update inventory solutions in real time when we see people have picked items. This, combined with user insights, provides valuable intelligence to better configure store layouts, replenish shelves and refine your discounts and offers."

[9] McKinsey & Company, Europanel, EuroCommerce, The State of Grocery Retail 2025. The report looked at 127 grocers across 11 European countries to determine what the growth champions of the past five years had in common. [10] McKinsey & Company, Europanel, EuroCommerce, The State of Grocery Retail 2025. The report looked at 127 grocers across 11 European countries to determine what the growth champions of the past five years had in common. [11] https://www.bcg.com/publications/2022/how-media-is-shaping-retail
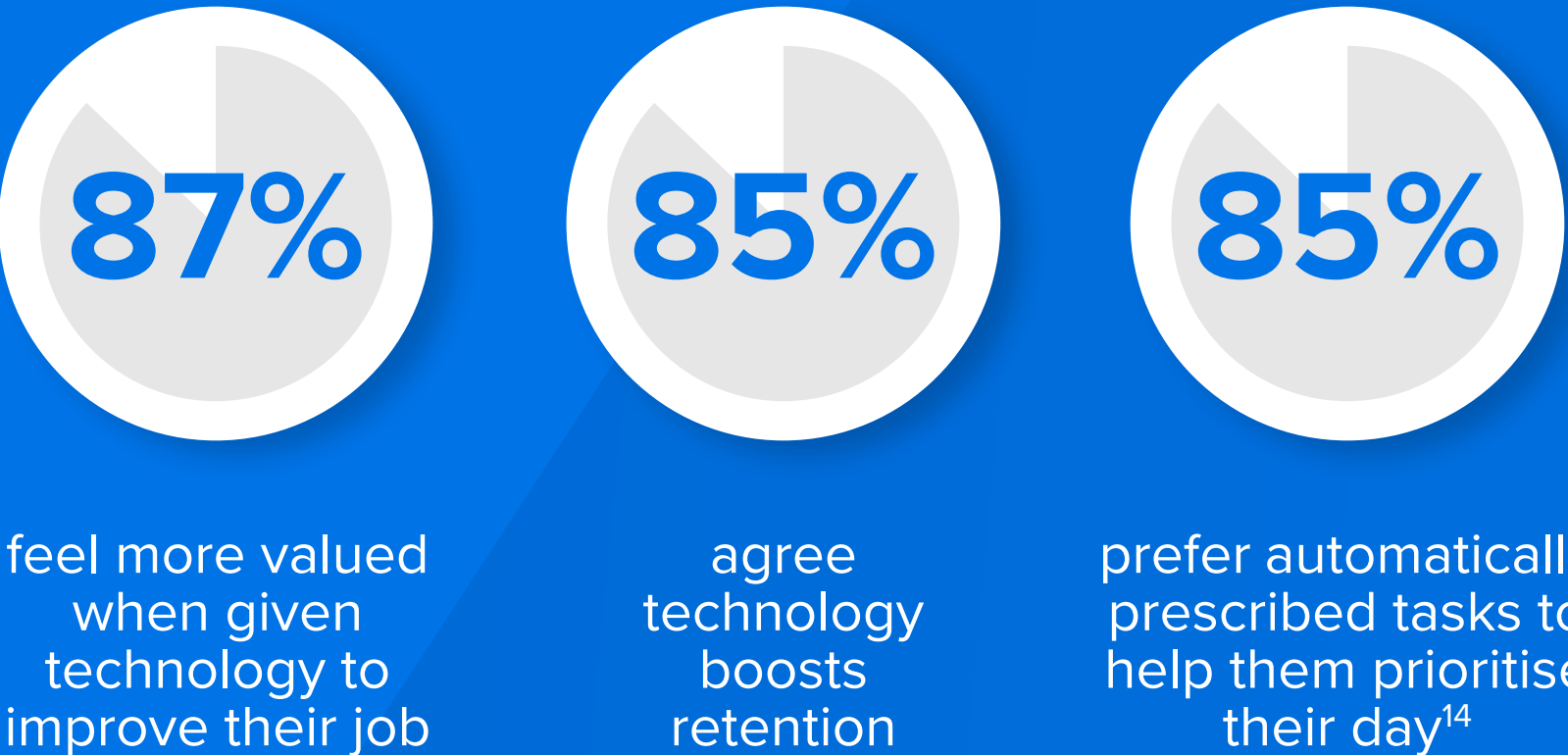[12] World Advertising Research Council (WARC).

3. Helping Associates to Serve

The challenge of recruiting and retaining retail associates remains a hot topic and the pressure on teams is high:

85%

of associates, and 81% of decision makers, recognise the need to make teams more available to customers

83%

of associates struggle to prioritise due to competing demands

79%

feel stressed due to complexity of day-to-day tasks[13]

So, what can be done? We are confident in saying that, with advances to mobile devices, and AI applications, technology has created the right solution at the right moment.

The Benefits of Supporting Associates

87%

feel more valued when given technology to improve their job

85%

agree technology boosts retention

85%

prefer automatically prescribed tasks to help them prioritise their day[14]

Let AI Take the Strain From Associates

New AI agents are a major leap forward in empowering associates to work with greater confidence and focus on more enjoyable work. And, by offering advice, and prioritised action lists, agents immediately ease the pressure to balance what may feel like equally pressing tasks. Through innovation with Qualcomm, Google and Android™, our Zebra Companion agents are optimised to run on Zebra mobile devices, and to continually learn from your team's prompts. Agents include:

- **Knowledge Agent** – provides conversational access to job aids and your standard operating procedures (SOPs). It assists with faster onboarding and offers associates the information they need, when they need it.

- **Sales Agent** – helps with product-related enquiries, real-time availability and pricing, and suggests cross-sell and upsell opportunities during customer interactions.[15]

- **Merchandising Agent** – as mentioned in Section 1, by using image recognition and augmented reality to compare what is happening on shelves with what should be happening, associates can be sent alerts to address merchandising, out-of-stocks and mis-pricing issues.

- **Device Agent** – offers tools and capabilities to reduce downtime and extend lifecycles by proactively identifying device issues before problems emerge, helping users troubleshoot issues and use their Zebra devices in an optimal way.
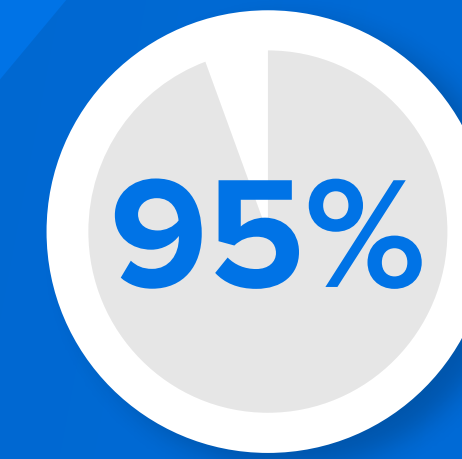
Technology is also better at supporting managers too.
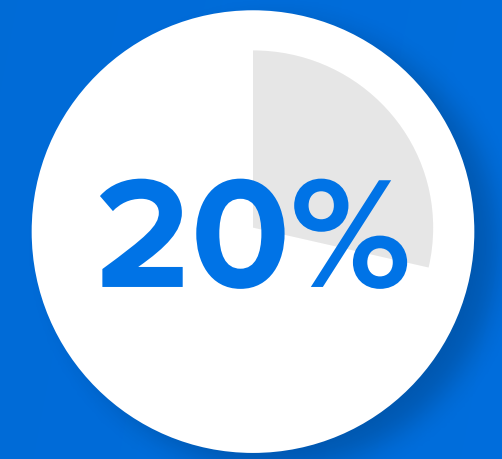
Empowering Associates: Typical Outcomes

When associates have access to modern devices, running AI agents and our Workcloud solutions, we typically see these kinds of results:
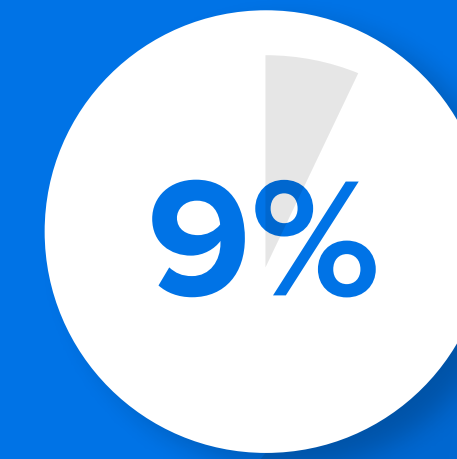
9%
fall in attrition rates

95%
on-time task completion

20%
increase in time spent with customers[15]

[15] The Modern Store by Zebra: Transforming Workers Into Engaged Associates

Retailer Insight: Lowe's

Recognizing the importance of seamless communications, Lowe's implemented Zebra's enterprise Workcloud Communication. Lowe's has enhanced associate productivity and store simplicity by focusing on mobility first. Zebra's mobile solutions enabled the retailer to converge multiple computing and communication devices onto the same Android™ enterprise-grade operating system (OS). This flipped the ratio of time store associates spend with customers versus completing tasks from **40%/60%** to **60%/40%**.

Read the full story.

Enhancing Managers' Decision Making

Retail has long been a spreadsheet-run business, with demand, merchandising and operations teams pouring over time-lapsed data to surface valuable insights. Now, with the advent of greater data integration across separate systems, cloud computing and faster device processors, we're creating a far more dynamic, immediate and agile way of working, through our connected technologies and enterprise Workcloud solutions. Dedicated applications for retail include:

- **Workcloud Workforce Optimisation –** tools to schedule and dynamically prioritise tasks based on business metrics and share action lists with associates.

- **Workcloud Enterprise Collaboration –** engaging apps including Push-to-Talk and instant messaging, which enable secure, natural and engaging collaboration between associates.

- **Workcloud Demand Intelligence –** data-driven insights through intelligent forecasting, pricing and demand analysis to accurately understand and predict customer demand.

- **Workcloud Inventory Optimisation –** a connected inventory view across the supply chain and into stores and across channels to identify and resolve issues and ensure stock on hand aligns to demand.

A number of retailers are using our new AI-driven software solutions to help their associates focus on priority issues, enhance decisions and spend more time helping customers. See the following page.

One Key Thing to Empower Associates: Mark Thomson

"When you have thousands of staff, providing everyone with a mobile device can seem like a big ask. But when you consider the extended lifecycle of our devices, and investment offsets, you're looking at a very low cost per user, per month. And, with the new AI agents, and scheduling and assistant tools available, the payback in terms of increased productivity, staff retention, improved service and better inventory is huge. I've been in retail a long time and I'm certain this period of agent innovation will transform team performance."

Retailer Insight: Currys

Currys is a leading tech and electronics retailer in the UK. They streamlined task execution with Zebra Workcloud Task Management and Workcloud Scheduling. "Previously, Task Management was only used for a select few compliance tasks like health and safety checks," explained Brad Porter, Process Product Support Manager, Currys. "Now, we have expanded it to include 25-30 weekly or monthly tasks, giving us greater control and efficiency."

The expanded use of Workcloud Task Management resulted in streamlined task execution across 296 stores, eliminating 90,000 store schedule adjustments during peak seasons and optimizing schedules, reclaiming approximately 900 management hours to spend on the store floor over the span of two months.

Read the full story.

Retailer Insight: Target

Target is exploring Zebra's Merchandising Agent to optimize inventory management, ensuring that shelves are consistently stocked. Additionally, they aim to enhance staff availability to better meet customer needs.

Read the full story.

# 4. Reducing Shrinkage: Creating Secure Environments

Aside from the focus on AI, if there is an issue on all our minds in retail right now, arguably it's shrinkage. And notably theft. While there is no silver bullet here, changes to store layouts – placing valuable items in high-traffic areas or locking them up – are reducing incidents. But making products inaccessible can frustrate shoppers. We recommend positioning kiosks so customers can easily message associates to unlock items.

When we speak to retail leaders about theft, it's clear that consensus around a multi-pronged strategy is taking shape. It includes installing more in-store cameras, using RFID to help improve the tracking of expensive items (e.g. alcohol and electronics), and using AI to gain a better understanding about shrink, and therefore how to tackle it. We would also add that ensuring associates have access to immediate communications, such as instant messaging or Push-to-Talk, can increase their feelings of safety, while important developments at the checkout are helping too.

### One Key Thing to Tackle Shrink:
Margaret Reynolds

"What catches the eye with AI is how fast it's evolving. With our multi-plane scanners, like the MP72 Series Multi-Plane Scanner/Scale, you have the option of integrating computer vision into the system. Our partners are using this feature to create sophisticated recognition and anomaly detection solutions using AI, which are mind-blowing in their accuracy. When you add the technology to your checkouts, it more than pays for itself through the ability to identify common types of fraud. Shoppers can also be prompted to check activity, allowing them to rectify issues be they unintentional or otherwise."
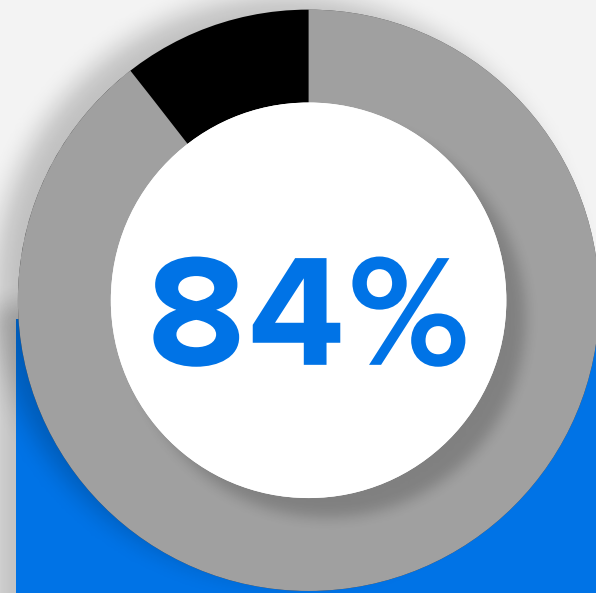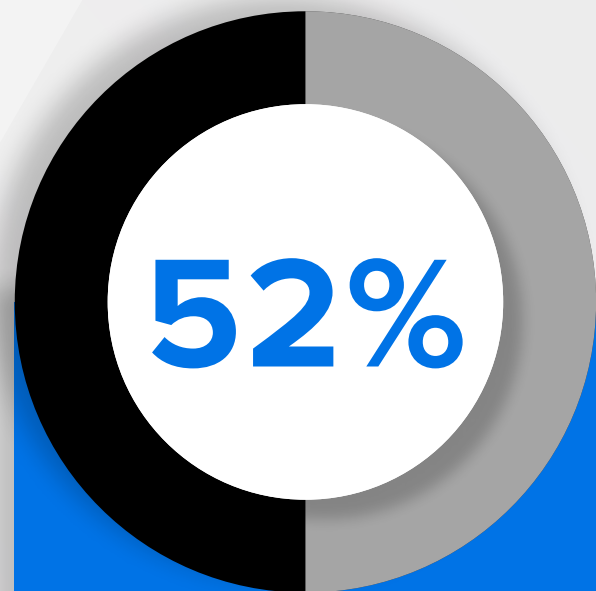
84%
of associates are concerned about their safety
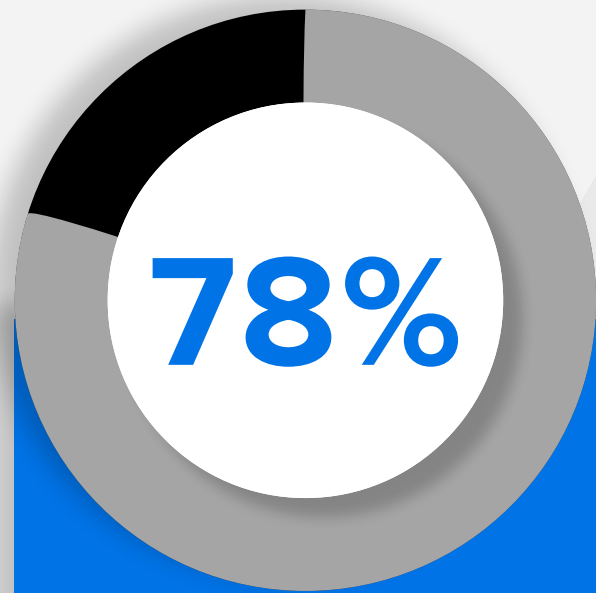
78%
of shoppers are frustrated when products are locked up
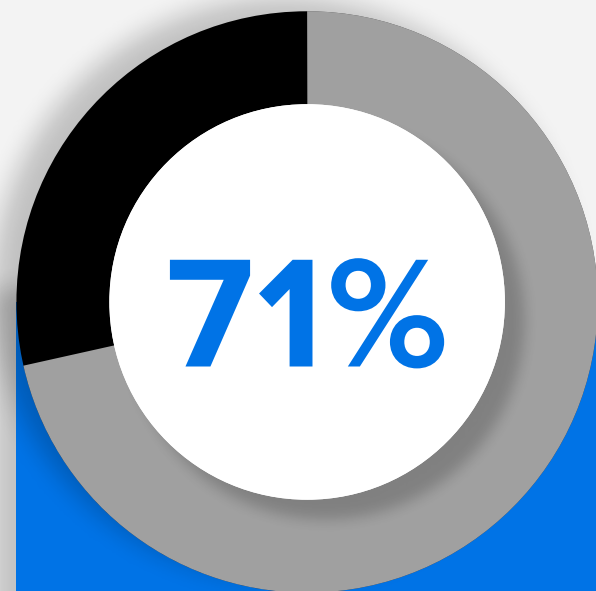
71%
of shoppers are concerned about theft

52%
of retail leaders report an increase in retail shrink in the last 12 months[16]

[16] All stats: Zebra's 17th Annual Global Shopper Study, The Retail Imperative: Thriving in a World of Infinite Choice

Smarter Checkouts

The latest SCOs and staffed lanes can include advanced scanning technology to accelerate and ease transactions. Take our MP72 Series Scanner/Scale. It has been refined from years of checkout experience and includes technologies to reduce operator fatigue, such as intelligent illumination that dims the laser when not in use, a larger weighing area to make it easier to weigh items, and an extra-large field of view to scan items effortlessly.

The MP72 also has the option of an advanced colour camera. When used in conjunction with computer vision applications, it can mitigate against fraud, such as ticket switching or sweethearting, with the potential for loose item recognition too[17].

There are, of course, other sources of shrink, with an area ripe for improvement being food waste.
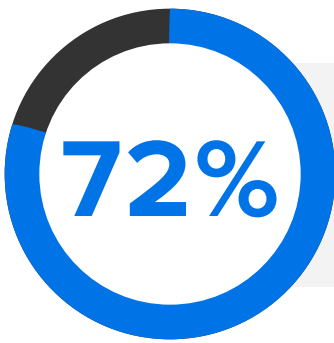
72% of consumers are concerned about food waste[18]
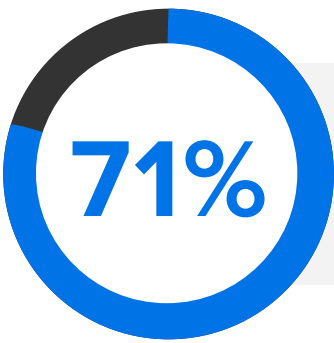
71% feel retailers should focus more on the issue (UK)[19]

New approaches to managing perishable foods are making big inroads into the issue. Zebra partners, like Smartway, use AI to enhance markdown calculations based on product type, seasonality, volume, weather and intraday sales to calculate the optimal price and markdown time. Apps like Too Good to Go are also popular, with people alerted when 'Surprise Bags', which include food approaching sell-by at heavily discounted rates, are available from many retailers, including Morrisons and Morrisons Daily stores. Morrisons says each bag saves the CO2 equivalent of 598 smartphone charges*.

The energy and innovation evident in these initiatives is in keeping with an industry going through an intense period of change. In the final section, we look at what this means for the future of store experiences.

*[**Morrisons**](#)

[17] Applications developed by partners. [18] Capgemini Reflect. Rethink. Reconsider. Why food waste is everybody's problem. [19] Grocery Gazette, Food Waste Reduction a Key ESG Priority for 70% of Consumers, 14/04/25

5. The Connected Store: The Future Is 'Omni'

As we look forward, we will progress toward stores where everything is connected and data flows unimpeded between systems.

To get to this point, which will be a little way off yet, several things need to happen. More progress needs to be made in tackling data black holes and silos – like in the supply chain, where roll cages are often scanned off trucks into stores, but a lack of item level scanning, either using RFID to automate this, or via manual scanning using barcodes, means items may be missing. Logistics can also be improved. Using GPS tracking, and enhanced data collection at the warehouse, store teams can be notified of when trucks are arriving, and exactly what they are carrying, so associates are not waiting around for vehicles and know in advance what is being delivered.

More data points also need to be collected in-store. We touched on computer vision, which can greatly improve shelf-edge insights, while smart temperature sensors can build a more detailed picture of the status of perishable items to help new AI solutions make recommendations to further reduce waste. Then, of course, there's data integration, with further connectivity needed to ensure no system is an island and any data point is accessible and usable.

With the evolution of data and AI, we expect to inexorably move through a process of continual improvement and innovation.

While many technologies that make this happen are already in use, their sophistication will increase, transforming store operations. The changes mean forecasting will become ever more accurate. Associates' tasking will improve based on more parameters, from the hours they have worked, to their skills and performance compared to peers. Insight into shoppers will reach new levels to offer them more relevant discounts and promotions. Store managers will be able to react in seconds to issues like extended wait times and out-of-stocks. Checkouts will become more frictionless. Advertising revenues will grow, and partnerships with consumer packaged goods companies will deepen as they get access to shelf-edge data in real time.

And, with AI-driven autonomous decision making, the likelihood that inventory, forecasting and demand planning systems could become self-driving is increasing, with grocery shopping an ever more seamless, personalised, efficient and sustainable experience.

For more information, or to chat with the team, contact us below.

ZEBRA

NA and Corporate Headquarters
+1 800 423 0442
inquiry4@zebra.com

Asia-Pacific Headquarters
+65 6858 0722
contact.apac@zebra.com

EMEA Headquarters
zebra.com/locations
contact.emea@zebra.com

Latin America Headquarters
zebra.com/locations
la.contactme@zebra.com