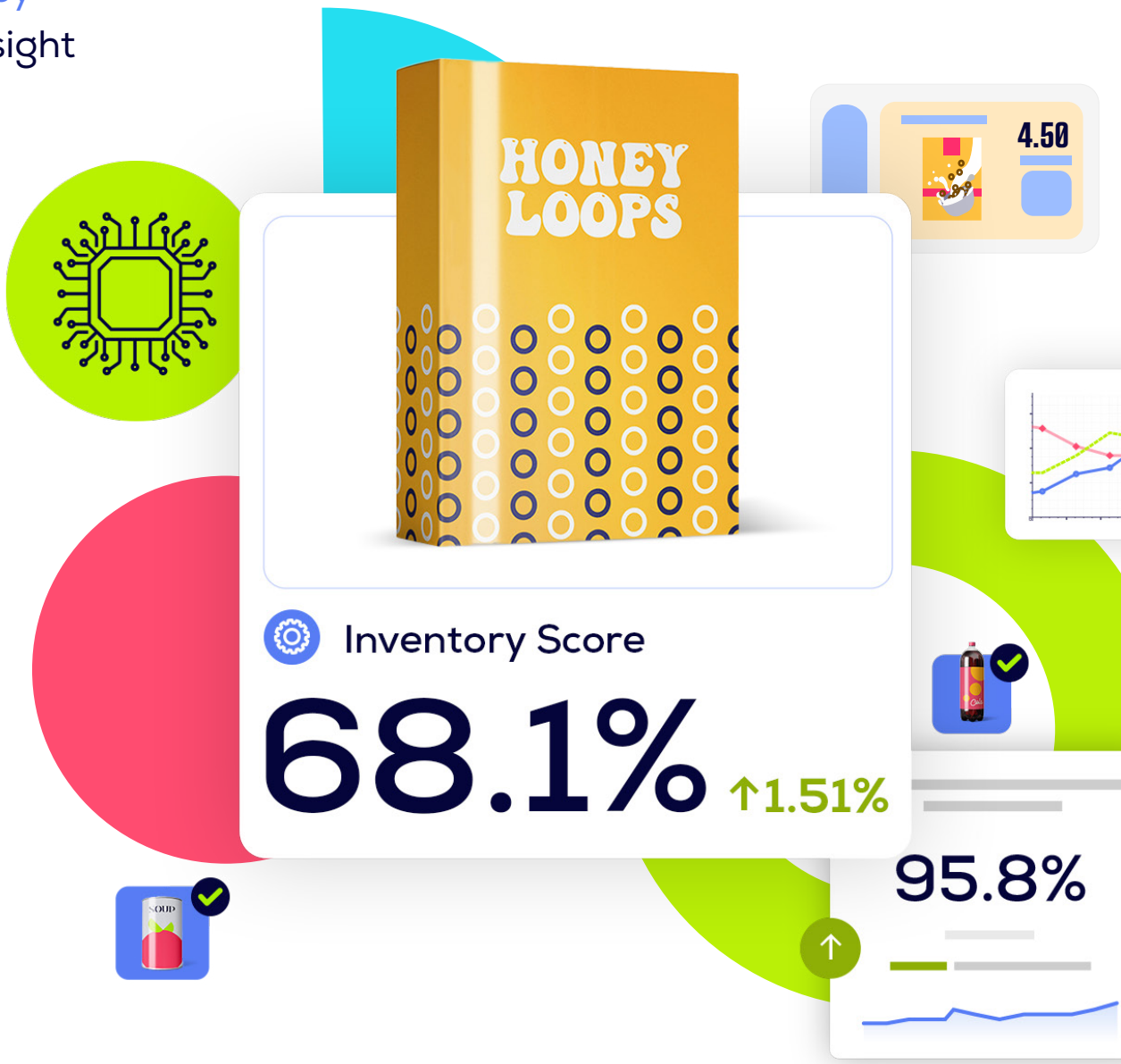
Retail Insight

Future-Proofing Retail:

Tackling Inventory Accuracy Through Innovation

Written by

Retail Insight



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FOREWORD

Dear Reader,

A retailer's inventory file is as fundamental as the foundation of a building – it underpins the entire structure of retail operations, and any flaw or inaccuracy can significantly undermine performance.

The reported inventory levels influence a vast array of essential retail processes. From ordering and replenishment to customer fulfilment and restocking, having an accurate understanding of actual stock levels can be the critical factor in meeting customer demands effectively.

Despite its importance, inventory accuracy is often overlooked, as retailers and technologists tend to focus on obvious challenges in store operations. Common questions include:

- How can I build the most effective order?
- How do I prevent waste and shrink in-store?
- How do I optimize my workforce planning?

Many seek answers through ambitious capital expenditure projects, investing in the latest end-to-end solutions, such as enterprise resource planning (ERP) systems and workforce management tools. While these technologies offer significant value, their effectiveness is compromised when they rely on inventory data that is typically only 60% accurate. Inaccurate data leads to poor decisions, undermining the potential benefits of these advanced systems.

This whitepaper examines the true impact of inventory accuracy. We will explore the sources of inaccuracy, the reasons why retailers wish to resolve it, and advocate for data and analytics as the optimal solution to this fundamental retail challenge.

Warm regards,
Paul Boyle

> If a large supermarket chain, with an average of 60,000 SKUs per store and approximately 1,000 stores were to audit its inventory records, it would discover an average of 36 million inaccuracies across its entire network.
>
> Research indicates that if the supermarket chain were to achieve 100% accuracy in its records, this could represent a sales opportunity of 4%-8%.

INTRODUCTION

According to research commissioned by ECR Retail Loss, 60% of retailers' records on stock-keeping units (SKUs), often over 30,000 of them per store, are wrong[1]. This discrepancy adversely impacts retail sales, customer satisfaction, and labor productivity. The research was conducted by Christoph Glock, Yacine Rekik and Aris Syntetos in 2019 and indicates that improving the accuracy of inventory records can boost sales by 4-8%[1]. In cases where negative inventory variance occurred, or less stock existed than initially thought, a 10% sales uplift was achieved when inaccurate records were corrected[1]. Interestingly, there was also an 8% increase in sales when positive records, or having more stock than initially thought, were corrected[1].

ECR Retail Loss defines **inventory record inaccuracy** as 'the discrepancy between the inventory level recorded in the inventory management system and the actual inventory level found in the store'. **This means that if an inventory count is off by even one unit, the record is inaccurate.**

Inventory management has become more complex than ever due to the growing digitalization of stores, online shopping trends, gaps in order picking and fulfillment, self-checkouts, and supply chain disruptions. Adding to this complexity, there are also more SKUs in stores, supply chains are focused on speed over accuracy, and stores have fewer and less tenured colleagues in store. All of these changing dynamics have increased the ways in which inventory records can become inaccurate.

To adapt to a rapidly changing environment, some retailers have gone so far as to establish a discrepancy zone, where a unit or percent of a unit recorded for a particular SKU is assumed to have no existing errors – even if that isn't the case. In contrast, other retailers use a binary basis definition, as followed by ECR Retail Loss, which does not leave any room for errors or discrepancies.

Figure 1. Phantom inventory causes stockouts[1]

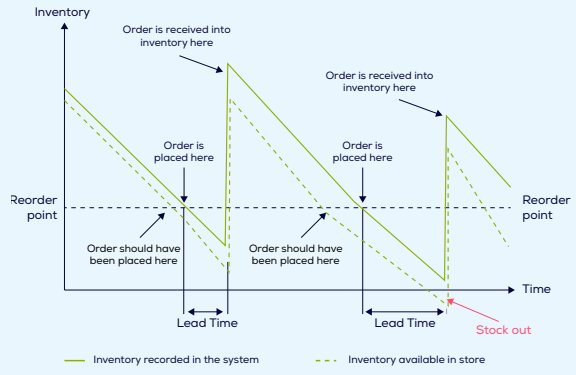
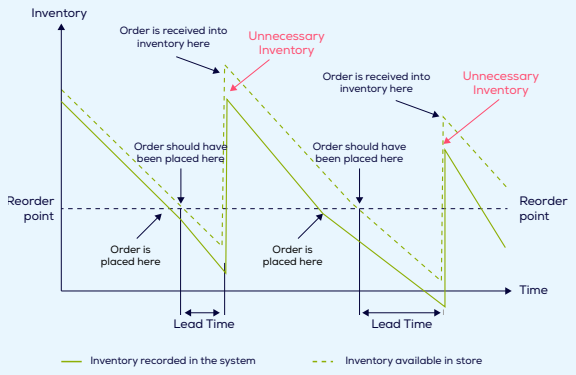


Figure 2. Shadow inventory causes overstocking[1]



As shown in Figures 1 and 2, inaccurate inventory records open retailers up to significant risk, even if they are using a zone of discrepancy. For example, if as shown in Figure 1, your inventory record shows there is more stock than is truly on hand, replenishment will happen too late. As a result, there is an increased risk of stockouts leading to lost sales.

Figure 2 shows the inverse, in that having more stock on hand than is represented in your records will lead to premature replenishment and excess stock and carrying costs. A challenge that can often result in a high volume of waste.

[1] Measuring the sales impact of improving inventory records: How improving the accuracy of inventory records can grow sales by 4-8%, Christoph Glock, Yacine Rekik and Aris Syntetos. ECR Group, 2019.

Why does this matter and why is this topic important

Inventory inaccuracy has been estimated to cost the retail industry more than $1.7 trillion annually[2]. As retailers worldwide grapple with these losses and rising costs – from inventory and operational expenses to store overheads and rapidly changing labor dynamics – innovation and agility are essential to survival.

In response to these market conditions, retailers are making significant strides, spending billions each year on advanced ERP, forecasting & replenishment (F&R), and inventory & supply chain management systems. These investments are well placed; however, they are only as good as the data they are built on.

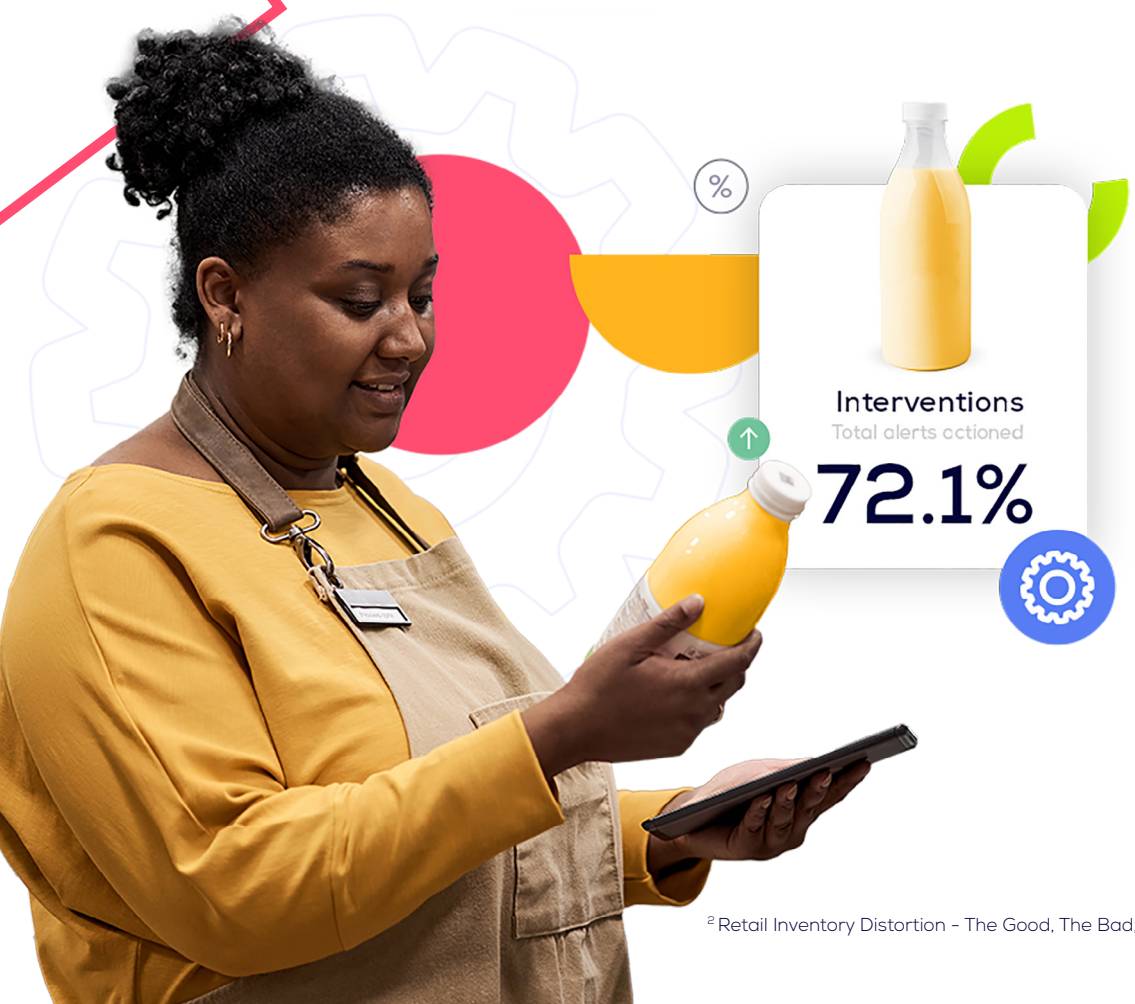
Based on the data shown in Figures 1 and 2, a poor inventory position can lead to both overstocks and understocks, neither of which benefits a retailer nor their customers.

Fundamentally, a retailer's inventory file impacts all retail systems and decisions. When improved, this can translate to less waste, greater control over shrinkage, and significant sales uplifts. So, making investments to improve the long-term health of your inventory file is beneficial.

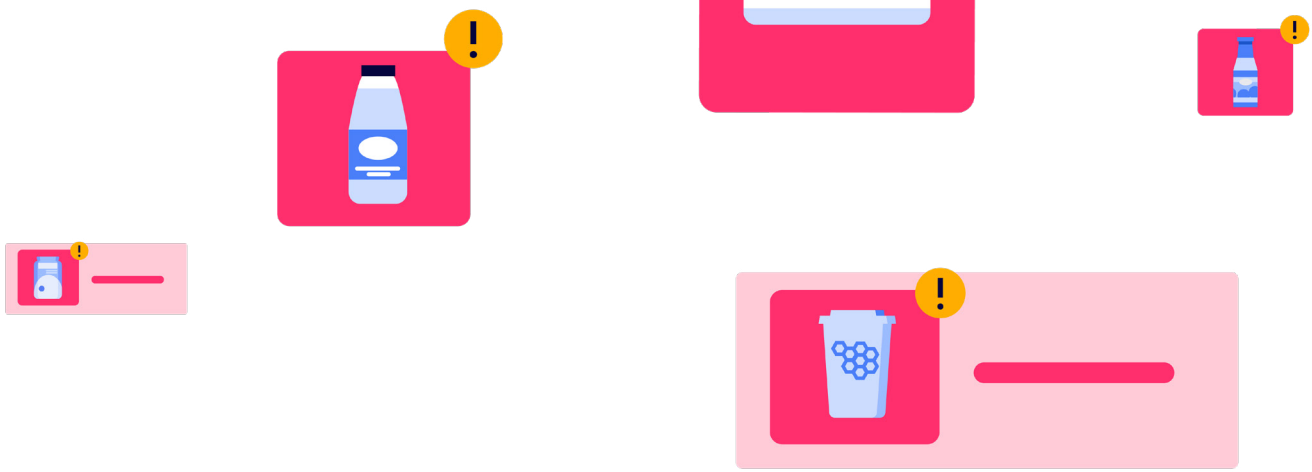
This is easier said than done.

In this whitepaper, we dive into a comprehensive view of:

- The factors contributing to inventory inaccuracy;
- The role of data in solving inventory inaccuracy; and
- How technology can enable retailers to enhance accuracy with precision and drive profitability.



[2] Retail Inventory Distortion - The Good, The Bad, The Ugly. IHL Group, 2023.



THE ROOT CAUSES AND IMPACT OF INACCURATE RECORDS

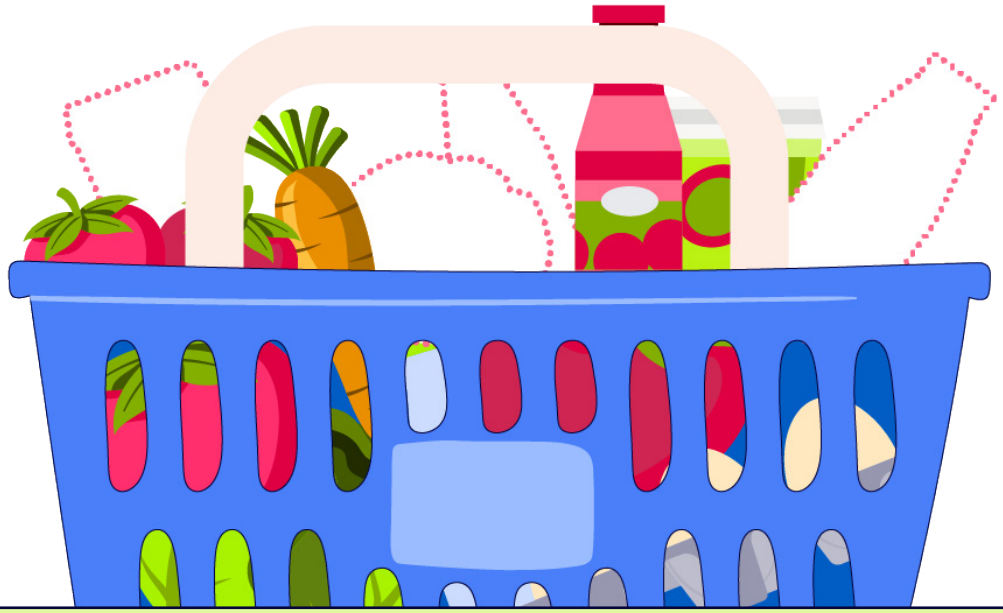
It's clear having inaccurate inventory records can negatively impact your operations and bottom line. To rectify this, it is crucial to understand the root causes of inventory inaccuracy. Without this understanding, it's impossible to make meaningful improvements.

By examining the root causes and consequences, we also gain insight into how shoppers perceive on-shelf availability and the ramifications that inaccurate inventory has for each shop. At Retail Insight, we conduct an annual consumer research survey to better understand some of these ramifications.

Our 2024 results highlighted that 33% of UK adults would reduce or completely stop shopping at the supermarket in question if out-of-stocks became a regular occurrence. A startling 21% indicated that encountering a shelf gap would make them abandon their shopping mission altogether without buying any other items in their basket.

In the US, 31% of those surveyed said that if an item was unavailable, they would look for that item at another store (an increase of 7% year-on-year).

These results all highlight one recurring theme: **out-of-stocks translate to wasted time and frustration for shoppers.**



Consider this example:
A 40-item basket with ten unavailable items will undoubtedly take longer to shop for compared to a shop in which perhaps only one or two items need to be substituted. We also need to factor in the potential for multiple store visits in one trip and the frustration caused by missing ingredients for a specific recipe or purpose.

Whilst the above scenarios are very much targeted at the in-store experience, inventory records play a significant role in product availability across all retail channels. Indeed, the online experience is much more susceptible to shopper migration, as tolerance levels and barriers to entry are lower.

In fact, 30% of all online shopping sessions experience one or more out-of-stocks, and it was found that 50% of online pickers rely on judgment when deciding which items to substitute[3]. Unsuitable product substitutions and missing inventory caused by the imbalance between in-store and online stock levels continue to pose challenges for both suppliers and customers[4].

Shopper migration, or customer loyalty, is one of the biggest barriers to long-term success for grocery retail stores. Mitigating the effects of this migration is key to operational and financial harmony—the more loyal customers an outlet can retain over a long period, the better its store viability and financial health will be.

As already demonstrated, product availability is intrinsically linked to customer loyalty. If retailers can ensure shoppers can buy what they want, when they want, and where they want, they can ensure customer retention. This isn't an easy task given the variables at play; however, perhaps the most important place for retailers to start is their inventory record accuracy.

So how can retailers create a more accurate view of their inventory data? Start at the beginning and seek out the root causes of inaccuracy.

[3] Online Substitutions conversation with ECR Retail Loss and Professor Corsten. ECR Retail Loss. 2023, June. YouTube: https://www.youtube.com/watch?v=fG0LR8BEU90.
[4] Strawberries instead of bin liners: poll reveals strange supermarket delivery substitutions. The Guardian Online, March 2023.

Whilst these are varied and come with different levels of complexity when attempting to solve them, we have sought to identify several major root causes of inventory inaccuracy. This list is not exhaustive, but the root causes mentioned present a significant opportunity for retailers to increase their sales uplift.

1 Human error: Even the most meticulous manual counting can falter, especially when products are scattered across multiple locations, including back rooms. This human error is a significant contributor to inventory inaccuracies throughout the supply chain.

The cost: Incorrect manual data entries can cost a business **30%** of their revenues[5].

2 Master data errors: The devil is in the details, especially when those details are incorrect. Misconfigured data files, particularly those related to promotional displays, can wreak havoc on inventory accuracy.

The cost: In 2023, out-of-stocks and overstocks due to inaccurate data cost retailers **$1.7 trillion**[2].

3 Distribution center mixups: A single mistake at the distribution center can ripple outwards, impacting inventory accuracy rates at the store level.

The cost: An estimated **4%** of all goods are lost or damaged in distribution[6].

4 Wasted stock: Damaged, spoiled, or out-of-date products that aren't properly accounted for can silently erode the accuracy of inventory records.

The cost: In 2023, overstocks were estimated to have cost retailers **$562 billion** in sales losses[2] and excess carrying costs have skyrocketed up to **30%**[7].

5 Theft: Theft is a major culprit in inventory shrinkage, distorting inventory records and costing retailers dearly. In fact, retail shrinkage amounted to a staggering $94.5 billion in the US in 2021[6].

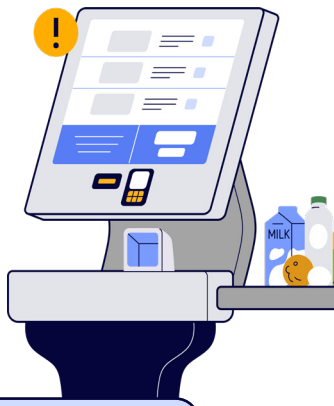
The cost: Retail theft in total costs retailers **$407 billion** per year, with **$94.5 billion** of that in shrinkage[6].

6 Supply chain disruptions: If disruptions in supply are not managed correctly, unexpected shortages, and the resulting delays in transfers or returns can lead to distorted inventory records.

The cost: Supply chain disruptions are estimated to cost up to **10%** of annual revenues[8].

7 Self-checkout errors: While self-checkouts are now a common sight in grocery stores, they're not without their issues. Some retailers are rethinking their reliance on these unmanned tills, recognizing that they can be a hotbed for mis-scanning and theft. In fact, some data shows that retailers using self-checkout technology experience loss rates more than twice the industry average[1].

The cost: More than **$10 billion** in lost profits happen every year due to self-checkout errors[9].



Each of these root causes is a significant challenge for retailers to solve, made harder by the inherent links that exist between them. The chaos of the store box also means that at any one time, multiple may be in play at once.

Consider that 15% of a store's inventory can be stored in a back room. However, the competition for a store associate's time can create the temptation to zero out inventory not out on the shop floor. This human error leads to excess inventory which may create wasted stock and lost revenue.

[1] Measuring the sales impact of improving inventory records: How improving the accuracy of inventory records can grow sales by 4-8%, Christoph Glock, Yacine Rekik and Aris Syntetos. ECR Group, 2019.
[2] Retail Inventory Distortion - The Good, The Bad, The Ugly. IHL Group, 2023.
[5] The next S-curve of growth: Online grocery to 2030. Mckinsey, 2022.
[6] National Retail Security Survey 2022. National Retail Federation. 2022.
[7] Why and How to Reduce the High Cost of Too Much Inventory. Retail Owners Institute. Accessed 2024.
[8] The Business Costs of Supply Chain Disruption. The Economist Intelligence Unit. March 2021.
[9] Retail-theft expert has an answer for Walmart, Target and Kroger. TheStreet. November 2023.

USING DATA TO ENHANCE RETAIL HEALTH

The significance of retail data cannot be overstated. It serves as the cornerstone for informed decision-making, empowering retailers to optimize various facets of their operations. It's also produced in significant quantities, from sales to inventory or range data, a retailer's data holds significant untapped potential to improve profitability.

It not only enables retailers to improve their operations, but retail data as a commodity has been predicted to be the next largest revenue growth engine for retail, worth more than $2 billion in 2020 and forecasted to grow by nearly 22% through 2029[10].

It is important to note that the idea of leveraging retail data – whether for better decision-making or to sell - is not a new idea, but it's very easily dismissed for newer and more exciting technological advancements. However, these solutions make decisions based on your inventory record, so, if this is inaccurate, any technology using it will underperform.

In this chapter, we explore the various use cases where leveraging owned data can enhance inventory accuracy, profits, operational efficiency, and customer satisfaction.

Forecasting & Replenishment:

Accurate forecasting lies at the heart of efficient inventory management in the grocery sector. By leveraging historical sales data, market trends, and even supply chain patterns, retailers can refine their demand forecasts, minimizing overstocking or stockouts. For example, systems that leverage product information down to pack sizes can help retailers predict consumer purchasing trends and drive more precise replenishment strategies. With this type of technology, retailers can optimize their assortments and replenishment, which reduces carrying costs and has been shown to cost retailers up to 30% of their revenue[7].

Loss Prevention:

Data analytics serves as a potent tool in the battle against shrinkage and theft within grocery stores. Through advanced analytics algorithms, anomalies and suspicious patterns can be detected, enabling proactive intervention to mitigate losses. By identifying areas of vulnerability and implementing targeted measures, such as improved surveillance or enhanced security protocols, retailers can safeguard their assets and preserve profit margins.

[7] Why and How to Reduce the High Cost of Too Much Inventory. Retail Owners Institute. Accessed 2024.
[10] Data Monetization: The Next Big Revenue Stream For Brands? CDP.com. Accessed 2024.

On-Shelf Availability:

Poor on-shelf availability not only leads to lost sales but also disrupts the shopping experience for customers. Leveraging data analytics, retailers can gain insights into inventory movement patterns, enabling them to maintain optimal stock levels on the sales floor. Real-time monitoring of inventory levels facilitates timely replenishment, minimizing instances of out-of-stocks and maximizing sales opportunities. As a result, customer satisfaction and loyalty are bolstered, driving long-term profitability.

Shrink Reduction:

Inaccuracies contribute significantly to shrinkage, posing a considerable challenge for grocery retailers. By harnessing data analytics, anomalies indicative of shrinkage can be identified and addressed promptly. Through the implementation of targeted strategies, such as enhanced inventory controls or staff training programs, retailers can curtail shrinkage, thereby safeguarding profit margins and optimizing operational efficiency.

Data Management:

Effective data management is paramount for deriving actionable insights and driving informed decision-making. Retailers must adhere to best practices in data collection, storage, and analysis to ensure accuracy and reliability. By maintaining clean and standardized data sets, retailers can minimize errors and discrepancies, laying the foundation for robust analytics-driven strategies.

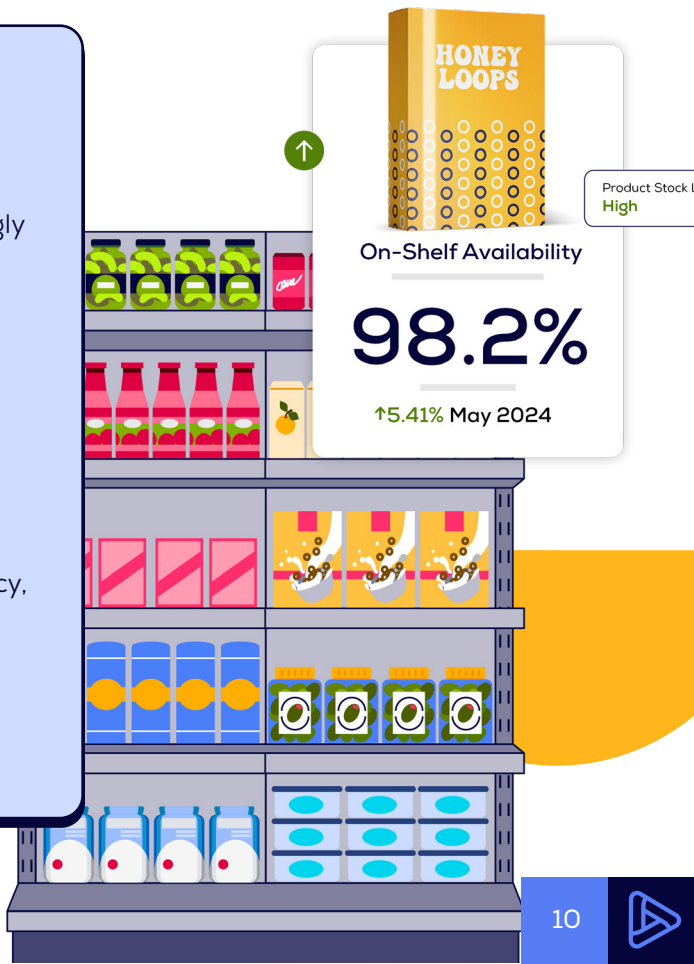
Inventory Drift:

Perpetual inventory systems offer real-time visibility into stock levels, but they are susceptible to inventory drift over time. Data analytics can help identify discrepancies between recorded and actual inventory levels, allowing retailers to rectify inconsistencies promptly. By implementing corrective measures and refining inventory management practices, retailers can mitigate the impact of inventory drift, preserving data accuracy and operational efficiency.

The potential that data holds to benefit a range of different use cases within the store box is evident, and for retailers that take advantage they can optimize inventory management practices, minimize losses, and cultivate lasting customer relationships in an increasingly competitive market landscape.

But every retailer will be at a different stage of their journey. Some will have established F&R systems or be trialing the latest camera technology to tackle shrink; others may be at the start of their technological transformation.

Wherever a retailer sits, there will always be several different approaches to tackle inventory record accuracy, and the crucial step is to properly evaluate the right solution for your business. Whether it be the cost of implementation, the ROI or how accurate the data is, it's pivotal that retailers understand the strengths and weaknesses of each.

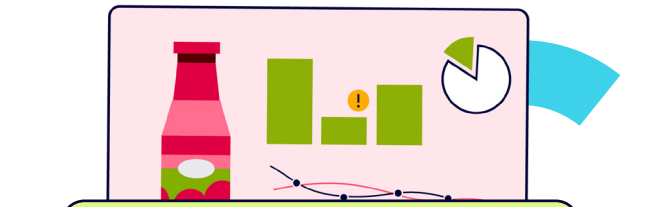


SOLUTIONS TO IMPROVE ACCURACY

In today's dynamic market, maintaining inventory accuracy has become a formidable challenge for businesses. However, advancements in technology offer promising solutions to this perennial problem. Retailers can significantly improve their inventory accuracy if they choose to integrate predictive forecasting, AI and ML correction, advanced camera technology, RFID technology, 2D barcodes, or a blend of these solutions.

In this section, we identify the most common technology that retailers leverage as well as provide an assessment of their strengths and weaknesses.

Predictive forecasting stands at the forefront of the inventory accuracy technological revolution. Tools that leverage historical data and AI algorithms can predict future inventory needs with remarkable accuracy. By anticipating demand spikes and lulls, businesses can adjust their inventory levels proactively, reducing the risk of overstocking or stockouts. This predictive capability ensures that businesses meet customer demand without tying up excessive capital in inventory, but if they don't identify and correct record inaccuracies – than their forecasts could be significantly off.



Data accuracy: High

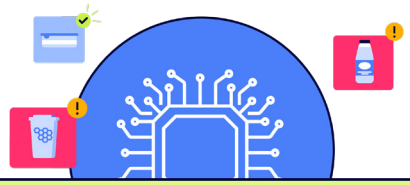
Inventory coverage: Full end-to-end supply chain

Capital investment: Yes, high setup costs and integration can be costly

Cost: $$$$

ROI: ~2.5x - 5x

AI/ML detect-and-correct technology is a new yet critical tool for improving inventory accuracy. This technology continuously monitors inventory records, automatically identifying and correcting discrepancies. Whether it's a miscounted item or a data entry error, auto-correction swiftly rectifies the issue, maintaining the integrity of inventory records in real-time. The granularity offered by AI and ML-enhanced inventory systems means that retailers can better adapt to the dynamic nature of retail and the complexities of product categories, seasonal trends, supplier dynamics, and regional variations. This real-time accuracy is invaluable for businesses, improving the overall accuracy of the entire inventory ecosystem, and enabling them to make informed decisions based on reliable data.



Data accuracy: Very high

Inventory coverage: Shop floor and full end-to-end supply chain

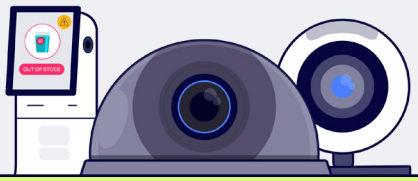
Capital investment: No

Cost: $$

ROI: 30X

Book a demo to find out how AI/ML technology can improve your inventory accuracy.

Computer vision and robots are becoming increasingly popular with retailers. Shelf-edge or ceiling cameras that provide real-time views of product availability can extract significant amounts of data from a single image. Equally, roaming robots equipped with cutting-edge cameras, can navigate through aisles, performing shelf audits with unparalleled precision. They can identify out-of-stock items, verify price accuracy, and even detect misplaced products. This automation not only enhances inventory accuracy but also frees up staff to focus on customer service and other critical tasks, like helping customers or actioning waste prevention processes.



Data accuracy: High

Inventory coverage: Shop floor and warehouse

Capital investment: Yes, camera and robot hardware needs to be purchased and maintained

Cost: $$$$$

ROI: ~2.5x

Electronic Shelf-edge Labels (ESLs) are not just a useful tool for informing customers of product or price changes. They are an intelligent solution that can alert staff to where attention is required on the shop floor. By alerting to where there are inventory discrepancies on shelf, such as low stock levels or mismatches between actual stock and system records, ESLs enable staff to take immediate action to ensure inventory problems are rectified promptly.

Data accuracy: Average

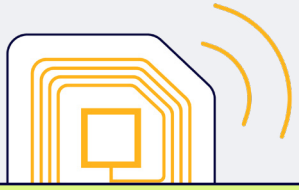
Inventory coverage: Shop floor

Capital investment: Yes, hardware needs to be purchased and regular wireless infrastructure upgrades maintained

Cost: $$$

ROI: ~5x

Radio-Frequency Identification (RFID) technology offers another layer of efficiency in inventory management. By attaching RFID tags to items, businesses can track their inventory in real-time. This technology enables automatic inventory counts, drastically reducing the likelihood of human error. Moreover, RFID can provide valuable insights into product movement, helping businesses optimize their stock levels and reduce instances of theft or loss.



Data accuracy: High

Inventory coverage: Shop floor and full end-to-end supply chain

Capital investment: Yes, RFID tags need to be purchased along with readers and regular system updates

Cost: $$$$

ROI: ~2.5x

2D barcodes, such as QR codes, are the latest innovation in inventory management and will revolutionize inventory data management. Unlike traditional barcodes, 2D barcodes can store vast amounts of additional information, including product details, pricing, and even the item's manufacturing date. This wealth of information can be accessed instantly, allowing for more efficient inventory management and improved accuracy.

Data accuracy: High

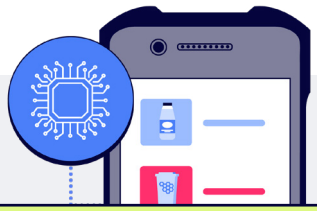
Inventory coverage: Shop floor and full end-to-end supply chain

Capital investment: Yes, requires system updates and label redesigns, as well as scanner purchases

Cost: $$$

ROI: ~5x

Lastly, it's important to recognize that blending **traditional audit methods** with modern technologies can significantly enhance your inventory accuracy. If your stores still rely on implementing cycle counting, audit procedures, and adjustment processes, these can be augmented with innovative technologies like AI and ML detection solutions, to not only preserve the essence of tried-and-tested methods but also elevate their effectiveness.



Data accuracy: Poor (traditional) to High (when augmented)

Inventory coverage: Shop floor and warehouse

Capital investment: Yes, labor resources can become costly to execute manual audits on top of audit service costs

Cost: $$$ - $$$$

ROI: ~2.5x

By harnessing these technologies, businesses can not only improve their inventory accuracy but also enhance their overall operational efficiency. They represent a new era of inventory management, one where accuracy and efficiency go hand in hand.

A CASE STUDY OF SUCCESS

Inventory accuracy is a challenge that plagues grocery retail. Whether it's theft, poor process compliance, or mis-scanned items, to name a few, the causes of inaccurate inventory are varied and complex. Given the research in this paper, it isn't surprising that Asda also faced many of the same accuracy challenges.

Asda has over 800 locations and 18 million customers per week, so they inevitably identified the effects of phantom inventory – specifically understated stock - and were looking for a scalable solution that was easy to integrate across their estate.

Retail Insight has worked with Asda since 2008, helping them tackle on-shelf availability using our AvailabilityInsight solution. The tool identifies lost sales patterns and directs their store colleagues to intervene by restocking or reordering. It also provides a system record and measure of availability per item, per store, per day – critical for the supply chain team for forecasting & replenishment. However, they still struggled with inaccuracies as they were completing their restocking activities, often finding some items had inaccurate record discrepancies. This was costing them more than 2,000 hours each year in lost labor productivity.

So, in July 2023 we introduced InventoryInsight to their stores to start tackling phantom inventory. Given that we use foundational store data, the technology is easy to implement and use - it was this approach that excited Asda the most about our capabilities. Their primary focus was on improving the accuracy of the alerts that we delivered to their in-store colleagues and driving improvements in product availability and sales.

The results?

Over a
12-month
period

63x ROI
from **1.2m**
inaccuracy alerts

1.6m
units of phantom inventory have been removed

19
units removed, on average, per alert.

"Given the impressive results we received at trial, we were excited to conduct a full roll out of the InventoryInsight solution. We have not been disappointed by that decision, with metrics that have exceeded our expectations. The ability to accurately identify phantom inventory across our estate is a huge advantage for our business, and goes a long way in enabling us to deliver a better in-store experience for our shoppers"

Neil Fairclough
Senior Director of Retail Transformation, Asda

CONCLUSION

In today's ever-evolving retail landscape, maintaining accurate inventory records is not just important, it is essential. But that is easier said than done when grocery retailers globally manage an average of 30,000 SKUs per store and have complex supply chains1. Within this environment, it should be no surprise that inventory inaccuracy is inevitable, but that doesn't mean it has to be acceptable. The opportunity to grow sales by 4% to 8% simply by correcting inaccurate inventory creates a clear burning platform for action[1].

But what action should retailers take, and where do they start? As with any industry-wide challenge, there is no silver bullet, and a solution will be nuanced depending on the retailer's circumstances. However, the process to get to the answer is fairly consistent and can be broken down into three clear steps:

Identify the root causes of inaccuracy

Whether it is human error, theft, or wasted stock, it's imperative to understand what is driving poor record accuracy. In doing so, you can better understand which levers to pull and where to make necessary investments. Indeed, your data is a great place to start, and can provide a rich vault of information for your retail business.

Sweat your owned data

From sales to audit, waste, or inventory, your owned data is perhaps one of the biggest sources of opportunity. Using the right AI or ML-led solutions to improve inventory record accuracy can release untapped potential to better understand your root causes of profitability. In doing so, not only can you unlock more sales, but you can then more clearly see how to tackle other recurring operational issues.

Layer in technology to meet your needs

Choosing the right technology to implement across your estate can be complex and costly. Having inaccurate data flowing through that technology is even more costly. By layering in solutions that improve your overall inventory health, the rest of your technology stack becomes more accurate, efficient and reliable.

Naturally, retailers will be at different stages of maturity, and may have already invested in predictive ERPs or camera technology, but the simplicity of leveraging data to identify and correct inaccurate inventory records means that no matter where a retailer is on their innovation roadmap, these steps can be applied.

Looking ahead, it is clear that the retail landscape will continue to evolve, driven by advancements in technology and the relentless pursuit of efficiency. Retailers who invest wisely in inventory accuracy solutions will position themselves at the forefront of retail innovation, ready to meet the demands of tomorrow's consumers. The journey is ongoing, and the destination is clear: a world where precision in inventory management is not just an aspiration but a reality.

[1] Measuring the sales impact of improving inventory records: How improving the accuracy of inventory records can grow sales by 4-8%, Christoph Glock, Yacine Rekik and Aris Syntetos. ECR Group, 2019.

GLOSSARY OF TERMS

Throughout this paper there are a number of terms that are specific to our industry and are used to help bring context and meaning to the points made. Here you'll find a collection of the key terms and phrases used that might require a little definition for those who may be new to the industry or would like a refresher.

2D Barcodes

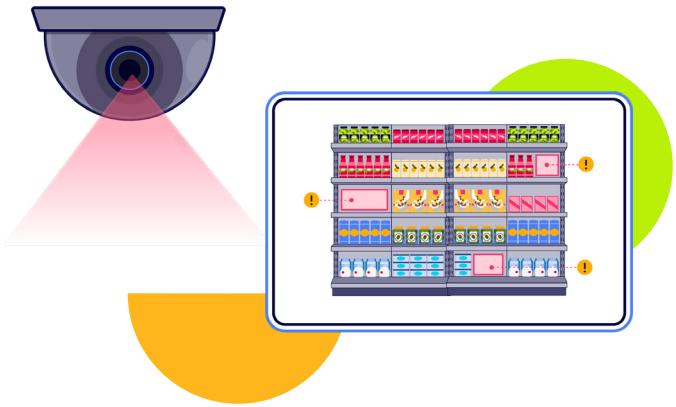
2D barcodes are the next generation of barcode technology. Unlike 1D barcodes, which provide limited information, 2D barcodes – such as QR codes or Data Matrix – can store a wealth of data like expiry dates, lot numbers, serial numbers, ingredients, allergen information, product pictures, videos, consumer reviews, and more.

Artificial Intelligence (AI)

AI refers to the development and deployment of computer systems that can perform tasks typically requiring human intelligence. At Retail Insight, for more than 10 years our AI-driven solutions draw from over 500 combined years of retail and consumer packaged goods experience, enabling us to create intelligent tools that enhance decision-making, automate processes, and improve overall efficiency.

Computer Vision

Computer vision in retail refers to the application of computer technology using cameras and sensors to visualize store shelves and floors. It uses images and video paired with algorithms that create realistic planograms, or sometimes called "realograms" to recreate the shelves and identify where gaps or issues are.



Electronic Shelf-Edge Labels (ESLs)

ESLs are digital devices that replace traditional paper shelf labels, and can be updated centrally to instantly provide the most up-to-date information on prices, promotions, and product information – with no manual intervention. They could even alert staff to when there is a restock or replenishment required.

Hand-offs

In grocery retail, hand-offs refer to the transfer of responsibility or tasks between different stages or entities within the supply chain. These transitions occur as goods move from suppliers to distribution centers, from distribution centers to stores, and finally from stores to consumers. Effective hand-offs are critical for maintaining product availability, minimizing waste, and ensuring a seamless shopping experience.

Inventory Drift

Inventory drift is the gradual loss of accuracy in your inventory system. It occurs when stock levels do not align with target sales due to shifting consumer demand over time. It can also occur due to lag in adjustments, unplanned events, inaccurate replenishment, all leading to a cumulative effect from small discrepancies.

Inventory Record Inaccuracy (IRI)

Inventory record inaccuracy (IRI) refers to discrepancies between the recorded inventory levels in a retailer's system and the actual physical stock available. Retail Insight's definition follows the industry established binary approach to inventory inaccuracy. This means that if an inventory count is off by even one unit, the record is inaccurate.

Machine Learning (ML)

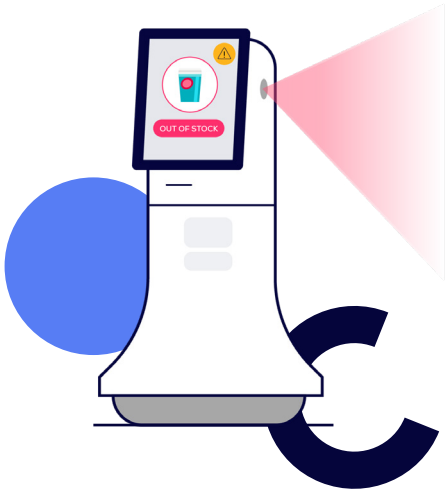
Machine Learning, a subset of AI, empowers computer programs to learn and enhance their performance based on experience, all without explicit human programming. By automatically learning from data, ML algorithms adapt and adjust their actions, making them well-suited for tasks like pattern recognition, prediction, and decision-making. At Retail Insight we've been using ML for over a decade to help retailers and CPG businesses streamline their operations and make more informed decisions.

Radio-Frequency Identification (RFID)

Radio-frequency identification (RFID) technology is a way for retailers to identify items using radio waves. It transmits data from an electromagnetic RFID tag to a reader, providing accurate, real-time tracking data of your inventory.

Robots

A grocery store robot is an autonomous machine designed to perform various tasks within a retail environment. Equipped with advanced technologies such as sensors and cameras, these robots navigate store aisles and assist with functions like restocking, inventory monitoring, and even customer interactions



Shopper Migration

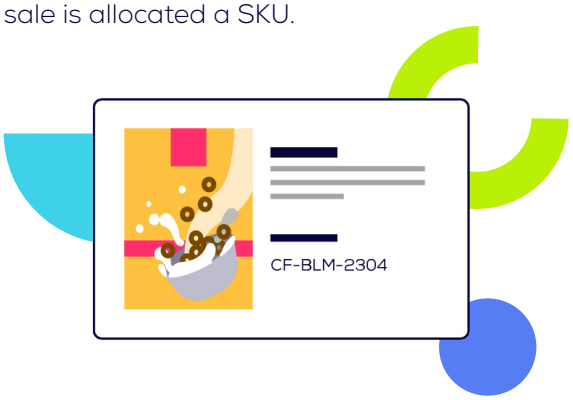
Shoppers with ample choice of retailer will switch to cheaper alternatives than their usual grocery store in search of the best price/experience possible, proving the fragility of customer loyalty to a particular brand or retailer.

Shrink

Retail shrink refers to preventable inventory losses caused by error or deliberate efforts, also known as "shrinkage." We recognize that shrink can occur due to a variety of reasons - be that theft, misplacement, food waste, or other reasons. We define shrink simply as a physical unit of inventory count reducing without being recorded.

SKU

Stock-keeping unit – the unit of measure in which the stocks of a material are managed. In a retail store, each product offered for sale is allocated a SKU.



Video Analytics

Video analytics is computer-vision technology, frequently powered by AI, that enables stores to monitor and analyze visual data from security cameras. By transforming video footage into intelligent data, retailers can improve business processes, enhance security, and optimize operations.

Retail Insight

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