

A SMARTER WAY TO MANAGE FRESH FOODS

Managing fresh inventories is challenging. It doesn't have to be.



GROWING PAINS:

Mastering the challenge of fresh foods management.

There's no question that fresh foods are critical to every grocery retailer's success. In 2022, US produce department revenues were **\$74.5 billion, up 4.8% from the previous year**. When asked about the most important attributes they consider when choosing a grocery store, **80% of shoppers named high-quality fruits and vegetables**, and **77% named high-quality meat**.

But, in many ways, fresh foods management represents the "perfect storm" of inventory management challenges. Because it's dependent on many complex factors – including weather, labor availability and international logistics – product supply is always going to be uncertain. Consumer demand is also volatile, influenced by broad issues like inflation as well as micro trends like the most recent TikTok recipe craze.

Of course, short product shelf life is also a key challenge. As soon as produce is loaded into displays, the clock is ticking. Retailers need to make intelligent decisions, at a rapid cadence, about pricing, promotions and other strategies in order to maximize profits, while minimizing waste.

With so much riding on the success of their fresh foods inventories, it's easy for retail employees to do everything in their power to avoid a stock-out. At every stage of the fresh foods supply chain, there's a natural tendency to add buffer inventory and safety stock. After all, no one wants to disappoint those shoppers who come into the store specifically looking for fresh foods.

But, as everyone works in isolation to minimize that risk, a **bullwhip effect** is created across the supply chain – and actual demand is distorted until it's virtually unrecognizable. This effect was only amplified during the panicky early days of the COVID-19 pandemic, when 75% of human interventions against Blue Yonder's ML forecasts actually degraded accuracy. When store managers or fresh foods department heads place manual orders or override central orders – or when demand planners adjust a forecast because "it looks wrong" – that's the exact opposite of data-driven decisioning. It introduces an entirely new element of risk into the fresh foods supply chain. And yet it's a common practice today.

The great news is that grocery retailers have no need to base their financial and service results on manual processes, flawed calculations, guesswork and human intuition. Automation, artificial intelligence (AI), machine learning (ML), predictive analytics and other advanced technologies provide a fact-based, objective solution. They enable retailers to gather near real-time data – from across the fresh foods supply chain – and translate it into dynamic forecasts, fast-moving ordering and replenishment processes, and profitable pricing strategies that move products off the shelf as quickly as possible, while maximizing both margins and availability.

If you're struggling to profitably manage your fresh foods inventories, it's probably because you're still relying on manual, inefficient and disconnected processes that aren't synchronized with volatile supply and demand.

This eBook outlines how advanced technology is simplifying the complexities of fresh foods management.



FRESH FOODS GROWTH IS AN OPPORTUNITY.

You need to seize it.

It's easy to focus on the many challenges involved in profitably selling fresh foods. And it is, in fact, a complex problem. Traditional planning and forecasting methods aren't built for the dynamic nature of both supply and demand. And product perishability leaves little margin for error.

In a recent study, **65% of shoppers reported that they experienced fresh food stockouts** – and 25% report that this occurs “often” or “almost always.” In today's hyper-competitive, omni-channel retail environment, consumers have plenty of other options – so the cost of mistakes is high.

Instead of focusing on this delicate balancing act as a challenge, smart grocers are seeing it as an opportunity. They're embracing advanced digital tools to accurately forecast, order, replenish and price their fresh products.

They're synchronizing store-level execution with the realities of the extended supply chain, as well as local demand drivers. They're using data science and process automation to react faster, more efficiently and more profitably to changing conditions.

As a result, they're winning in the fresh foods category – and driving increased sales across the store as a result. Research has demonstrated that grocers who implement best practices in fresh foods inventory management can **boost revenues by 10%, while reducing waste by up to 35%.**



USING STALE, OUTDATED PLANNING PROCESSES?

A recipe for disaster.

Historic approaches to fresh foods inventory management simply won't work in today's fast-changing world. They're based on static analysis, carried out by human planners using time-consuming manual processes. They fail to recognize the fast-changing nature of both supply and demand –and they're incapable of gathering and applying the near real-time data needed to make optimal decisions.

Human cognition, and planners' intuition, simply can't manage all the complexities. Fresh foods cost and quality vary day-to-day. Volatile supply and demand rarely align.

The typical response has been to give retail department managers responsibility for managing fresh inventories. But most human planners tend to overstate in-store demand, while struggling to predict online demand. Both stores and warehouses lack the visibility and insight to act strategically, instead relying on intuition or best guesses. Fearing out-of-stocks, nearly every planner in the chain adds safety stock, causing waste to build up.

The end result? Costly mismatches between variable supply and demand. And, ultimately, disappointed customers, over-worked staff, missed waste and sustainability targets, and lost margins. To master the fresh foods challenge, advanced digital capabilities are a competitive requirement.





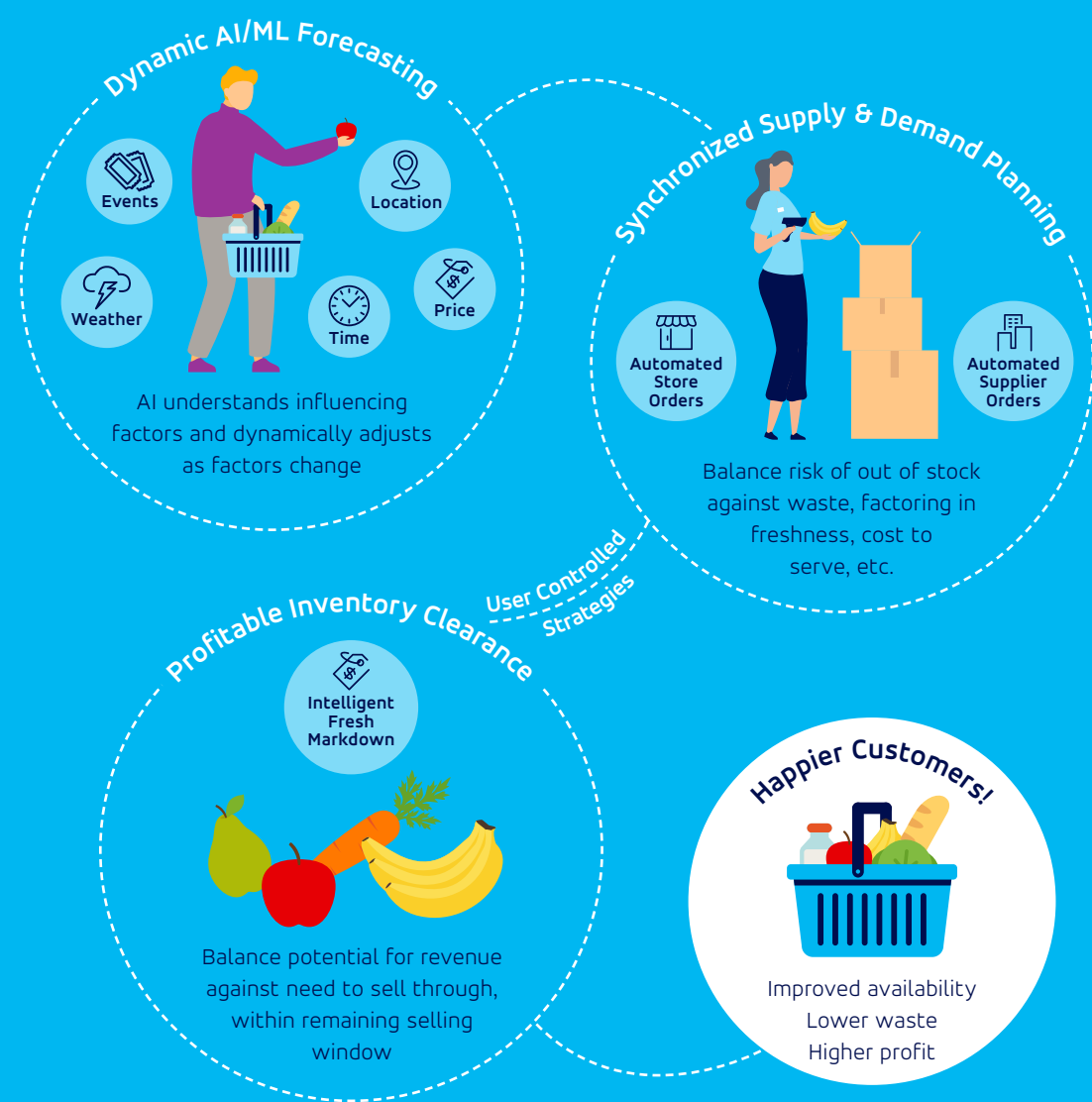
DIGITALIZATION

Digitalization simplifies the complexities of fresh foods management.

Imagine a fresh foods supply chain that's built for uncertainty on both the demand and supply sides. Where intelligent automation simplifies daily operations and improves cost, service and sustainability outcomes. Where optimized inventory levels help drive improved product freshness, greater availability and higher sales. Where fluid pricing maximizes sell-through and margins, while minimizing waste. And where human talent is directed at activities with the highest strategic value.

Digitalization enables the end-to-end supply chain to be driven by dynamic data signals from both the supply and demand sides. Based on these near real-time signals, shared strategic priorities guide a series of cascading decisions and actions across the supply chain, enabling a near real-time response as conditions change. Driven by AI and ML, optimization engines autonomously balance availability versus waste, and revenue versus sell-through.

A Simpler, Smarter Fresh Foods Inventory Management System



As pre-defined cost, service and freshness targets guide activities like ordering and replenishment, human planner intervention shifts to steering and exception management. In the store, automating processes like short code markdowns frees store associates to focus on customer service. Simply put, digitalization eliminates guesswork. It simplifies complexity. **And it ensures the right decision is always made.**

KEY DIGITAL CAPABILITIES

distinguish the fresh foods leaders.

Today's advanced digital solutions are purpose-built to master the complexities of the fresh foods challenge. Digitalization enables five key capabilities that not only improve financial and sustainability performance, but also the consumer's shopping experience.



High levels of automation

Relying on human planners and manual processes simply takes too long – and results in too many errors. Digital solutions, guided by data science, make decisions and execute them in seconds based on predefined financial, service and product freshness goals.



Dynamic forecasting

Consumer demand changes faster, and in more complex ways, than humans can comprehend. And historic sales mean nothing in today's fast-moving world. Advanced forecasting engines, driven by probabilistic algorithms, allow grocers to react in near real time to demand changes at the local level.



Synchronized supply and demand planning

Fresh foods planning processes must be designed to consider supply-side volatility. Product shortages are all too real. Digital tools can assess demand and supply levels in near real time, then match them, store by store and product by product, to maximize profits, service, sustainability and other metrics.



Equally dynamic ordering and replenishment, tightly coupled to demand

Similarly, ordering and replenishment processes need to honor demand uncertainty. It's not smart or profitable to pass a single replenishment prediction to an ordering system, with pre-determined levels of safety stock.

Replenishment needs to be dynamic, aligned with near real-time demand insights. It also needs to be low-touch to maximize efficiency.



Profitable inventory clearance

Digital clearance-pricing solutions not only apply the right data science to maximize margins and minimize waste, but they support a fast, frequent markdown cadence that doesn't rely on human effort and analysis



AUTOMATION

drives increased speed, accuracy and profitability.

Scarce human talent, rising labor costs and distributed decision-making contribute to the challenges of managing fresh foods. Not only are manual planning processes time-consuming, but they're error-prone and limited in scope. It's time for a fresh take on inventory management, driven by automation.

Automation allows the end-to-end supply chain to be guided by a shared perspective on both supply and demand, as well as shared financial, service and sustainability targets.

The fresh foods supply chain, driven by digitalization and automation, looks very different:



Demand Forecasting

Demand forecasting begins not with historic sales data, but with a broad perspective on multiple influencing factors that drive consumer behavior at the store/day level. It incorporates near real-time data sources like weather, news and events. It looks across channels and considers complex purchasing behaviors such as online ordering.



Ordering & Replenishment

Ordering and replenishment are driven by the near real-time forecast, and the risks of over- or under-ordering are clear and quantifiable. The daily order generation cycle is flexible and dynamic, sending inventory where it's most likely to sell. Warehouses automatically re-distribute inventory when supply cannot meet demand in the most cost-efficient way.



Supply Planning

Supply planning is aligned with demand to ensure an accurate, profitable match across channels and retail locations. Suppliers have near real-time visibility into likely future orders to help reduce the "doom loop" that keeps stores in a constant state of out-of-stock or overstock.



Pricing

Pricing is driven by shoppers' near real-time price sensitivity, combined with near real-time information on product freshness. Stores can profitably clear their short-code inventory and create space for new stock based on data and dynamic pricing schemes, instead of fixed rules or employee intuition.



A DYNAMIC FORECAST

minimizes inventory risk and maximizes margins.

Consumer demand is one of the most volatile components in the fresh foods supply chain. Shoppers are simultaneously influenced by many factors including the weather, the day of the week, pricing and promotions, the store location, and upcoming holidays and events. At any point in time, some factors will dominate over others, especially at the local level.

And consumer behaviors are increasingly a moving target. **A full 62% of consumers** reported that they have significantly changed their shopping habits from the previous year, including the brands and retailers they prefer, as well as the times and frequencies of their

trips. Backward-looking sales forecasts – even those that “add on” new sales projections – are insufficient to reflect the fast-changing nature of demand.

Enabled by AI and probabilistic algorithms, Blue Yonder’s forecasting engines not only gather near real-time data from a range of internal and external sources, but they also consider the relative strength of various influencing factors. The result? A view of the full spread of demand at the SKU/store/day level as a probability density.

Blue Yonder’s probability model is superior to a single forecasted value because it reveals the real risks of

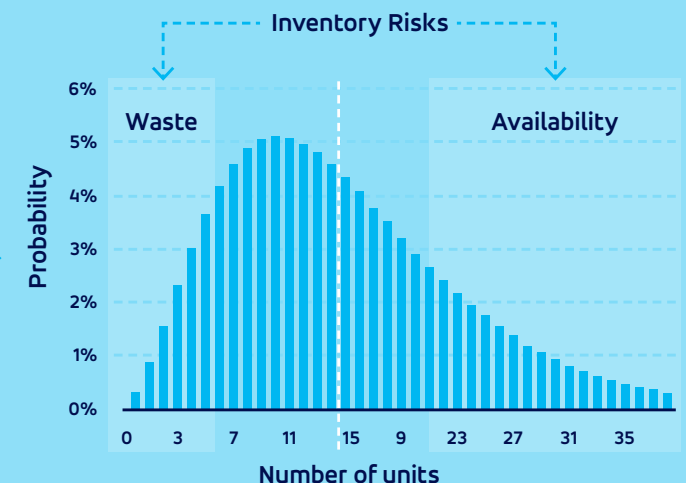
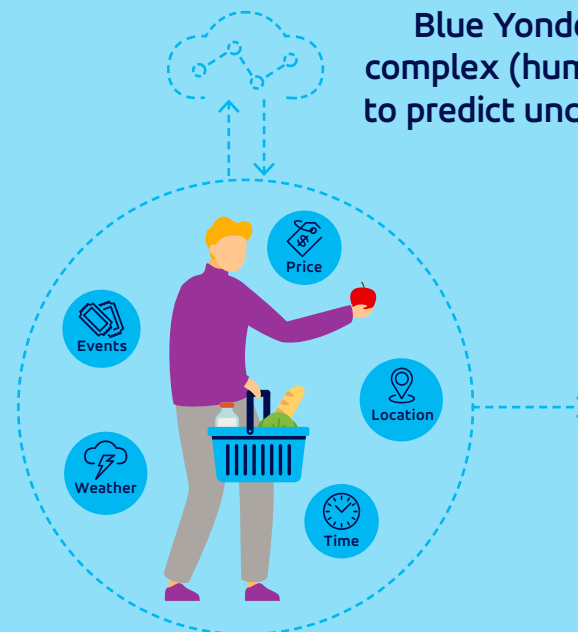
low or excess inventory, which allows retailers to make informed decisions about store ordering – and exert greater control over fresh-foods performance. Fueled by advanced AI, the process of risk identification is automated to support near real-time decision making. The forecasting engine ingests enormous volumes of data about store locations, pricing, day of the week, weather and other influencing factors, then quickly produces a probabilistic prediction that quantifies the risk of waste alongside the risk of out-of-stocks. Grocers can make intelligent choices with a full awareness of their risk exposure.



Blue Yonder helped Supermercados Peruanos improve its forecast accuracy to

95%
for ultra-fresh foods

Blue Yonder AI understands the complex (human) network and uses it to predict uncertain customer demand



BEST-BALANCE ORDERING

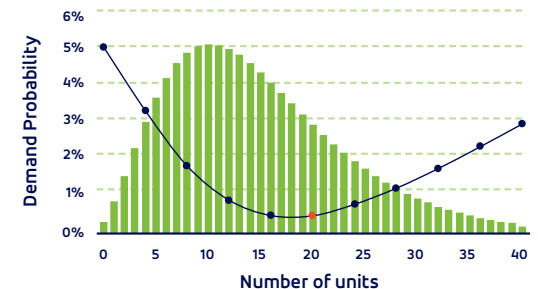
enables retailers to “tune” their fresh foods performance.

Most fresh foods orders today are calculated based on safety stock policies that are designed to compensate for demand uncertainty – but only address the risk of being out-of-stock. They fail to address the equally important issue of excess inventory, or the significant demand differences that exist across stores and across products.

Blue Yonder’s probabilistic forecasting approach enables grocers to eliminate static safety stock policies and adopt a more dynamic, demand-driven approach to ordering. They can create localized orders based on a range of risk factors, considering lost sales on one hand and waste on the other. They can also consider product quality, freshness or other characteristics as they create the perfect order. Blue Yonder calls this approach best-balance ordering. Best-balance ordering equips fresh foods managers to set ideal stock levels for each product in each store, based directly on the localized demand forecast. Best-balance ordering accounts for both the risk of waste and the risk of out-of-stocks — and it enables retailers to “tune” their results. By assigning a relative cost to each competing goal, orders can be automated based on plain language like “I value availability more than controlling waste.” Blue Yonder’s order management engine then automatically calculates orders with the lowest penalties.

The real beauty of best-balance ordering? It transforms uncertainty from a challenge into a strategic asset. As demand conditions change, or priorities change, ideal stock levels also change fluidly and automatically

Best-balance ordering links stock levels directly to the dynamic demand forecast on a store-by-store and product-specific safety stock levels.





REPLENISHMENT

Low-touch replenishment distributes inventory profitably and automatically.

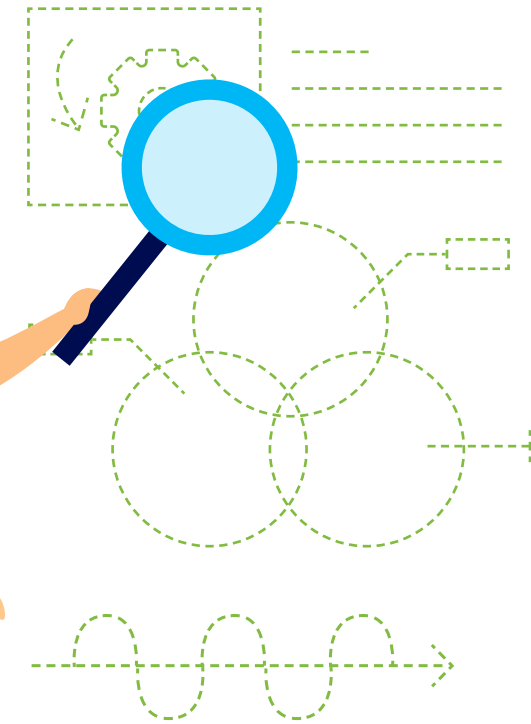
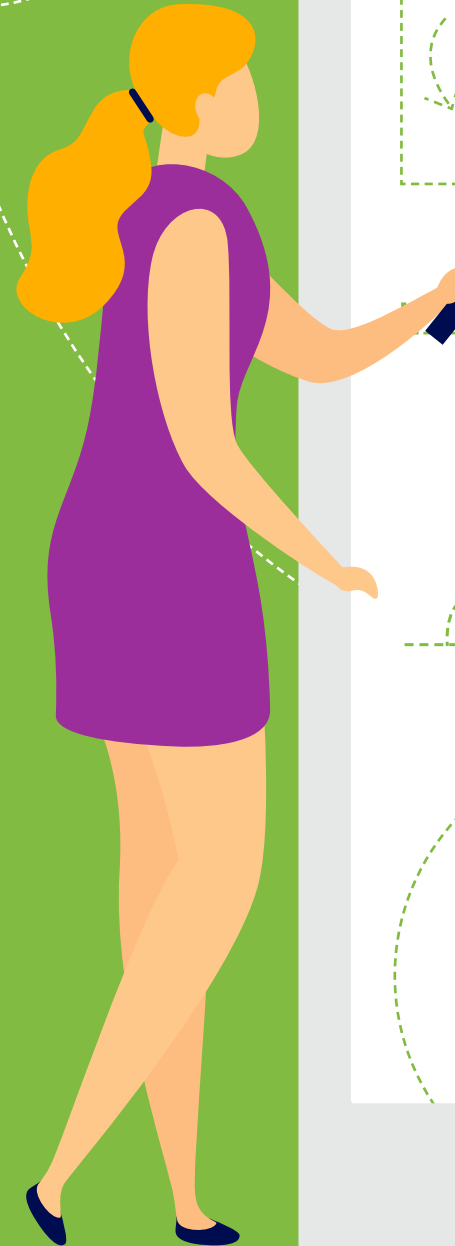
Fresh foods replenishment has historically been seen as almost impossible to automate due to its complexity, so store associates have been left to manage this task on their own. Overstocks, out-of-stocks, lost sales and high levels of waste have been a persistent challenge, as the complexity of this task exceeds human cognition.

In addition to being error-prone, manual replenishment locks store employees into a “head down” task instead of allowing them to interact with shoppers, guiding purchases and improving fresh foods presentation. Since **71% of consumers** report that retail employees have a significant impact on their shopping experience, this represents a high cost to grocers. Especially given current talent shortages, grocers need to maximize the productivity and contributions of their fresh foods associates.

Recent advances in AI and ML make it possible to drive a dynamic replenishment process that, like the ordering process, is linked directly to the near real-time demand forecast. Blue Yonder has taken a leadership role in this area, offering a low-touch replenishment capability that’s accelerated, seamless and incredibly efficient.

Blue Yonder supports a continuous replenishment process that is highly automated, exception-driven and tightly coupled to a simplified ordering process. Stores and warehouses function as a single, synchronized entity, powered by data-driven feedback loops, to ensure the most profitable placement of inventory.

Stores benefit from a lower level of overall inventory and fewer deliveries to the loading dock, with fresh foods flowing directly to the shelf. Store associates spend less time handling inventory and more time ensuring a frictionless consumer experience. Improved availability drives higher sales and ensures fewer substitutions, improving shopper satisfaction and ensuring a return visit.



Blue Yonder helped
Morrisons improve
on-shelf availability by

up to **30%**

while reducing inventory
by 2-3 days

ALIGNING SUPPLY

with demand drives
accurate, achievable
replenishment.

While the majority of stock-outs are created by inaccuracies in the replenishment process, **up to 30% result from supplier shortages**. Demand-side uncertainty gets a lot of attention, but an equal challenge is managing uncertainty on the supply side. After all, even the most accurate forecasting and replenishment processes won't guarantee fresh foods success unless products are actually available.

Blue Yonder's best-balance ordering concept also helps address this challenge. It enables unconstrained orders to be fed up the supply chain, communicating demand uncertainty all the way to the supplier. When product supply is short, or warehouse receipts are over expected volumes, store orders are automatically re-calculated against the available supply in near real time. Best-balance ordering ensures that these calculations are performed strategically and consistently across all stores, minimizing negative impacts when fresh foods supply is constrained. As products become available, best-balance ordering performs new calculations.

It's easy to see why this dynamic approach is smarter and more profitable than static allocation rules. It minimizes supply-induced bullwhips by factoring in demand uncertainty across the supply chain, even in supplier orders and order projections. Best-balance ordering automatically smooths the peaks and valleys of out-of-stocks and excess inventory caused by demand/supply imbalances.

Instead of making on-the-fly decisions such as defining "priority stores" or having warehouse managers make intuitive allocation decisions, today grocers have an AI- and ML-enabled solution that accounts for both demand and supply uncertainty – and drives optimal decisions no matter how quickly, or how often, conditions shift.



INTELLIGENT MARKDOWN PRICING

improves sales and margins.

Given the complexities of fresh-foods inventory management, it's not surprising that **waste can be as high 11% for some categories**. While the inventory management challenge is complex and driven many factors, too many grocers are attempting to manage the last phase – short-code product clearance – via manual processes and frequent, expensive employee touchpoints.

No matter how smart the forecasting, ordering and replenishment processes become, there will always be a need for short-code clearance. Product perishability, as well as real-world consumer behaviors, will never be an exact science. And shoppers rarely respect first-in, first-out principles when choosing fresh foods.

Short-code inventory is an unfortunate fact of life, but retailers can still maximize their margins by making intelligent markdown decisions. The key is relying on digital solutions that have been designed to automate this task, instead of leaving critical clearance-pricing decisions to store employees acting on intuition.

Blue Yonder's short-code markdown capabilities apply machine learning to quantify the uncertainty of the fresh foods clearance process. By calculating price elasticity in near real time on an SKU/store/day specific basis, the Blue Yonder solution positions grocers to predict how responsive their shoppers will be to each new price change. Blue Yonder also produces an intra-day demand forecast that helps build store-specific markdown prices based on the amount of short-code inventory remaining at any point in time.

By leveraging Blue Yonder's industry-leading technology, short-code products can be turned into a positive revenue stream instead of adding to waste. In addition, Blue Yonder helps store associates work much more efficiently in an area that's typically high in effort, but low in return.



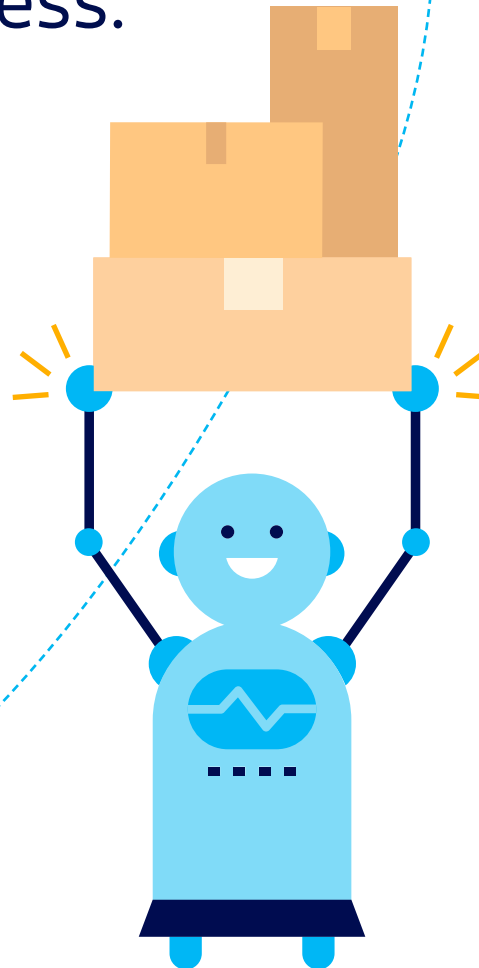


WHY BLUE YONDER?

We offer a fresh approach, based on advanced technology, data science and near real-time responsiveness.

Every day, grocery retailers around the world rely on Blue Yonder solutions to successfully navigate complex challenges like fresh foods inventory management. Blue Yonder was recently named a **Leader in Retail Forecasting & Replenishment by Quadrant Knowledge Solutions**, which evaluated the product portfolio, market presence and customer value proposition of major software providers in this area.

Built on advanced AI and ML, and driven by automation, Blue Yonder's retail solutions span the end-to-end grocery supply chain – and integrate to deliver a synchronized, orchestrated response across functions.



Luminate Demand Edge

Luminate Demand Edge harnesses the power of machine learning to create autonomous, probabilistic forecasts that quantify and minimize inventory risks. **Retailers can gain the highest degree of automation**, processing hundreds of internal and external demand signals and billions of data points to arrive at unbiased predictions that support more profitable business decisions. Demand planners can shift to a more strategic role.

Luminate Store Fulfillment

Luminate Store Fulfillment enables a greatly simplified, repeatable process of automating store orders by intelligently considering multiple factors such as availability, waste, cost-to-serve, presentation and freshness. It eliminates safety stock and supports best-balance, optimized ordering at a scale unimaginable to human inventory planners.

Luminate Pricing Real-Time

Luminate Pricing Real-Time uses proprietary AI to calculate store- and item-specific price elasticities alongside multiple demand factors such as inventory level, weather and events – then delivers these to stores in real time. Markdown prices are automated and executed by an in-store tool, maximizing employee productivity.

Ordering Management Microservices

Order Management Microservices deliver real-time inventory visibility to support profitable omni-channel commerce. **Shoppers can see product availability, reserve products for purchase, and understand their fulfillment options**. On the retail side, an intuitive mobile application optimizes the process of receiving, prioritizing, picking, packing and delivering consumer orders.



WHY BLUE YONDER?

Only Blue Yonder delivers an end-to-end, connected platform to optimize omni-channel retailing.

There's no doubt that the world of grocery retailing has changed dramatically. Online food and drink purchases **have grown from 3.4% to 10.4% of total sales since 2019**. Not only are consumers buying more groceries online, but they're also demanding more flexible fulfilment and delivery options.

Have retailers evolved quickly enough in their capabilities to successfully address these changes? Many consumers don't think so. Frustrated by out-of-stocks, **44% of consumers believe retailers lack the technology infrastructure** needed to cope with demand changes. Over a quarter of shoppers question the capabilities of grocers' supply chain systems.

There is good news. As the retail landscape has changed, Blue Yonder has developed leading-edge capabilities, backed by the most advanced AI and ML, that position grocers to master the challenge of omni-channel selling.

Blue Yonder's end-to-end solution portfolio enables grocery retailers to create the kind of seamless, consumer-focused experience that can only be delivered when the supply chain is connected, and when workflows are orchestrated across functional silos. Blue Yonder allows the end-to-end supply chain to operate as a fluid ecosystem, synchronizing solutions across planning, execution, labor, e-commerce and delivery. From the warehouse through the final sale, retailers can adapt to demand shifts, smooth supply-side shortages, grow their sales across channels, manage talent shortages and other resource volatility, and meet consumers' price and service expectations via an orchestrated approach that delivers the most value.

Online food and drink purchases equate to

10.4%

of total sales since 2019

ASDA

"Omni-channel is at the heart of our strategy and customer proposition, where we want to provide a great customer experience and a seamless user journey. We have been extremely impressed by Blue Yonder's OMS microservices, which we will deploy across our grocery, clothing and general merchandise segments."

Chief Information Officer, ASDA

44%

of consumers believe retailers lack the technology infrastructure needed to cope with demand changes



WHY BLUE YONDER?

Blue Yonder's customer results speak for themselves.

Blue Yonder has helped dozens of the world's top retailers improve their revenues, margins and service levels. In fact, **68 of the top 100 retailers worldwide use Blue Yonder software**. Following are just two customer success stories focused on fresh foods management.



Supermercados Peruanos SA

Supermercados Peruanos Achieves Accurate, Low-Touch Daily Forecasting

Supermercados Peruanos (Peruvian Supermarkets) is the largest supermarket chain in Peru, with 600 stores. A long-time user of Blue Yonder's replenishment solutions for its consumer packaged goods (CPG) and center-of-store categories, the retailer was challenged to accurately forecast demand for fresh and ultra-fresh foods. Supermercados Peruanos chose Luminare Demand Edge, which considers real-time external variables.

"Forecasting fresh foods requires extreme accuracy; you need to balance the risk of waste with the risk of lost consumer loyalty that might never be recovered. Luminare Demand Edge improved our accuracy from 65-70% to 90-95% for some products" says the retailer's planning and supply manager.

[Learn More](#)



Morrisons

Since 1899

Morrisons Simplifies Fresh Food Clearance with Blue Yonder

One of the UK's largest grocers, Morrisons operates nearly 500 stores serving 11 million customers weekly. A key differentiator is its fresh food counters. Morrisons was conducting three manual markdowns daily. Often, the price was too low and eroded margins or, conversely, it was too high and products failed to sell. Morrisons, which was already using Blue Yonder's demand and replenishment solutions, chose Luminare Pricing Real Time.

"We now have one daily markdown touch point that allows us to make a significant saving in labor costs and improved store associate productivity. We have an AI optimized price for each item, defined by store-specific sales history, store-specific forecasted sales and store-specific stock on hand, linked to events outside our control such as weather" says Morrisons' head of supply chain development challenges. The retailer estimates that it will save millions of pounds in labor.

[Learn More](#)



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