

The Infor logo consists of the word "infor" in a white, lowercase, sans-serif font, positioned on a solid red square background. A small trademark symbol (TM) is located at the bottom right corner of the red square.

TM

RETAIL

Optimizing retail inventory through Infor's Networked Supply Chain

Infor's Networked Supply Chain suite propels retailers and brands into the age of artificial intelligence and optimization by leveraging the most sophisticated, modern, and innovative solutions to disrupt retail in a positive way. Due to uber-complex retail networks, traditional approaches to supply chain can no longer be sustained: where humans engage with systems for an overwhelming number of hours to manipulate forecasts, set and manage replenishment parameters, and manually allocate merchandise in arriving POs; or where users manually pull data from multiple sources for tracking and visibility of the location and status of items within supply chain.

Retailers, wholesalers, and their suppliers who invest in a networked view of their supply chains will be able to share information faster and more efficiently, allowing AI and machine learning to optimize the "networked supply chain," leading to a more profitable business while satisfying the ever-changing needs of the consumer.

Consumer and market challenges

Retail today is much different than in years past. These days, consumers have many more options to engage with brands and retailers, and shop for merchandise. With their smartphones always on, consumers weigh the factors of price, selection, convenience, and brand sentiment to determine if, when, and where to shop—whether that’s through a brick-and-mortar store, online, or elsewhere. When a purchase decision is made, customers demand a wide variety of pickup and delivery options, possibly even picking up a different location or delivering to their homes within hours. Additionally, customer behaviors differ by demographics, generation, regionality, and as their needs and preferences change as they age. Some are brand loyal, while others focus more on lower prices found in outlets or private labels, desire eco-friendly and organic products, or want the highest level of convenience.

Retailer challenges

Given this complex customer landscape, retailers face enormous challenges that are rapidly changing. Every day, Wall Street reports on massive store closings, a growing list of bankrupt retailers, and those who are downsizing their organizations. Plus, retailers face immense competition from e-commerce retailers with online store fronts like Zappos, subscription services like StitchFix, and the omni-present Amazon—where they grip the wallets of customers through expanding categories from hardlines into fashion, grocery by way of Whole Foods and Amazon Fresh, IoT subscriptions plus voice activated commerce, and now, by potentially moving into the online prescription drug business.

To combat the increase in competition, retailers are expanding product categories, moving into new domestic regions and global markets while brands are connecting with consumers directly through online or brand-only stores. The role of the brick-and-mortar store is changing as well; for example, many physical retail locations are feeling the pressure to become a destination for events, a microfulfillment location, or a store within a store.

Achieving the responsiveness to detect customer trends, as outlined above, is a big challenge for the retailer. Operational inefficiencies may be the most pervasive problem experienced when trying to keep pace with the ever-morphing customer behaviors, as communication, collaboration, and poor visibility throughout the supply chain lead to poor performance and customer dissatisfaction.

Retailers must innovate to remain relevant and profitable as margin pressures increase. Each company needs to evaluate its mission statement to determine how it can compete across many factors, such as lower prices, better assortments, unique customer experiences, brand loyalty, and the very important integrated value chain. Only then can retailers begin to focus on their unique value proposition.

Infor's innovation to combat traditional flawed approaches

Existing supply chain systems are antiquated and unable to meet today's business requirements. One issue is that data across the organization is siloed, forcing retailers to create numerous manual processes to move data across systems. Spreadsheets have become the most common tool used across planning, supply chain, and holding data for tracking and visibility. It's very typical to throw people at problems; but that's inefficient and extremely costly in labor, often leaves your systems rife with errors, and is unrewarding for the employees.

Traditional demand forecasting

In many instances, retailers have obsolete forecasting applications where the science is flawed, and thus have grown over time to include more models like Crostons, introduced rules to choose the best fitting forecasting algorithms, and even logic for aggregating data up and spreading forecasts down. Given this outdated approach, users need to engage manually to create pooling groups of SKUs and locations, possibly as basic as the same sales percentage per store for all items in a class. Traditional approaches for new products require manual setup of like SKUs or a rudimentary scoring of attributes using zero science, coupled with manual intervention. Over time, these systems have taken on promotional forecasting where the models can incorporate a limited number of causal factors, but will eventually crumble under the weight of too many variables. Another aspect of these outdated methods is the absence of learning from similar items, instead relying on users to fill in the blanks. The results are imperfect, leading many retailers to utilize only baseline forecasts without promotions, or deal with inaccurate results. Additionally, users distrust their systems and increasingly begin to rely on Excel spreadsheets or intervene manually to override results.

Infor's innovative approach to demand forecasting through machine learning

Infor is reinventing retail with machine learning. Simply put, Infor's approach takes advantage of today's post-internet, proven science technology. Modern machine learning takes in all drivers that potentially move demand up or down, including features and attributes of products and locations, competitive data, weather, pricing, promotion, display, and customer data. Feature data expands to include customer reviews, adds to basket, Instagram data on trends, and high likes for product or similar products. By feeding in all the available data about any given item, machine learning technology understands and calculates the many interactions among the factors (2-way, 3-way, 4-way, and more...), discovering unique relationships between all the different demand drivers. Machine learning determines both baseline demand (using product attributes, timebased features like seasonality, location traits, price effect, etc.), and promotional demand, with lift based on various offer mechanics.

When retailers introduce new products, no longer are users required to engage or intervene. Machine learning will evaluate the unlimited number of attributes for products, locations, and channels to accurately predict the demand. For example, as new styles, style/colors, or SKUs are assorted, machine learning will automatically produce a forecast based on attributes like color, fabric, silhouette, skirt length, heel height, flavor, size, brand, screen size, pixels, power, and much more. In fact, the science is so pervasive that forecasts will be updated for new similar styles, style/colors, and SKUs that haven't even started selling.

As retailers craft new and exciting promotions to engage the customer in the store, online, or on the go, Infor's machine learning forecasting model can accurately predict the response of BOGO, coupons, free shipping, buy/get, buy more/save more, targeting of customer groups, instore beacon promotions, and other events.

Machine learning has the power and sophistication to tackle all of today's retail demand challenges. This innovative technology is useful in all retail verticals from fashion and grocery to pharmacy, convenience, electronics, DIY, mass merchants, or any other type of retailer, wholesaler, or franchisee. Improved forecast accuracy leads to increases in sales and margin, with a decrease in inventory levels and supply chain costs—as well as improved user productivity.

Traditional allocation and replenishment

For fashion, seasonal, or initial orders for long-life styles or items, users will typically manually allocate (push) inventory to stores, attempting to meet the needs of those customers shopping in them. Once on the floor, basic and seasonal basic merchandise will be set up on replenishment (pull) that surveys inventory levels and order points to determine reorder needs. These two methodologies are manual in nature, with calculations that contradict each other—inundating users with exceptions that are indecipherable and unactionable, while simultaneously overwhelming the retail organization.

Typical allocation and replenishment tools used by retailers are siloed applications without alerts, leading to a lot of additional manual processes, as well as a reliance on spreadsheets and high numbers of alerts that overwhelm analysts. Also, in many cases, reports and insights are separate, without an actionable connection back to allocation and replenishment. Existing tools either lack a forecast to drive results, or they use disparate and outdated forecasting models with each application.

Traditional allocation systems require users to allocate the POs that are to be received each week, working through their list of ASNs, POs, or expected deliveries. Users are then prompted to select the items and locations, then a series of rules around allocation methodologies, parameters, and more. To get the job done, planning and allocation departments must employ large teams to work through these steps. Given the inordinate number of manual tasks (and the fact that these are typically entry-level positions), there's usually not enough experience, time, or training to get the inventory distributed accurately at a granular level.

Replenishment systems today not only rely on outdated traditional-type forecasting approaches; they also have a wide variety of methods and parameters to choose from—requiring users to learn how each rule affects inventory calculations and their overall plans. The failure of these systems lies in their reliance on users to perform analysis, understand the complexity of methods and parameters, apply omniscience about the changing market around them, and to make the proper adjustments therein. In most cases, the overwhelming number of options leads to a “set it and forget it” approach for ongoing basics.

At times, systems may have rudimentary capabilities of using item codes and rules to change replenishment policies when SKUs move from slow-moving to regular- or fast-moving, but they still depend on users understanding the policies to set rules up properly. Frequently, retailers count on Excel to manage parameters—knowing this is not sustainable as the number of new products increases, the number of channels and locations change, and the complexities of omni-channel grow.

Even when retailers have some type of optimization for replenishment, the deficiencies are still great. In almost all cases, the optimization is a separate siloed routine—essentially doing parameter optimization. This optimization siloes the supply chain as well, attempting to improve each supply chain level in isolation, without true consideration of the impact throughout the network. This erodes all potential benefits of the system. Optimization models in these systems do not produce time-phased results, but rather will set the same parameters for all days and weeks across the planning horizon, essentially removing all value of a time-phased replenishment system.

As omni-channel becomes an essential aspect of the business, current systems lack the capabilities required to meet these ever-changing needs. Demand and intent are often not accounted for properly, nor is the shift of demand between fulfillment locations when inventory shortages lead to fulfillment in other locations. Costs rise greatly as these swings occur, eroding the retailer's margins.

Infor's innovative approach to allocation and replenishment

After hearing untold stories from retailers about the challenges faced throughout allocation and replenishment systems and processes, Infor devised an innovative approach to addressing those challenges through four strategic areas: 1) unify the A&R modeling through optimization; 2) converge the workflow into one seamless process; 3) tackle alerting by surfacing up recommended actions to take based on root causes; and 4) connecting forecasting, replenishment, and allocation to the Infor GT Nexus Commerce Network—which provides a real-time picture of inventory for insightful forecasting driven by collaboration and supply chain visibility. More than 85% of the world's freight flows through the Infor GT Nexus platform, adding up to \$500 billion in goods. Infor's networked strategy benefits retailers through the maximization of margin and revenue through enhanced flexibility and control of inventory across the entire planning horizon, as well as improvements in user productivity and overall supply chain visibility.

Infor understands the historical separation of processes, but views both replenishment and allocation as concerned with the optimal way of moving inventory through the supply chain. With this unique viewpoint, Infor applies the science of mixed-integer programming to both problems, regardless of the lifecycle stage of any given item. Based on various supply chain costs and the maximization objective, margin is optimized based on a few boundaries—like minimums and maximums—to determine the optimal frequency to order, purchase orders, transfers, and the transportation mode required to meet objectives. The network is simultaneously optimized across all levels and the entire planning horizon, considering the impact that every decision has on the next day or the various fulfillment locations. If desired, users can engage in real-time “what if” scenarios to test different theories or to resolve alerts. Using this methodology, allocation and replenishment systems are no longer at odds, calculating inventory needs differently. This approach also eliminates the requisite that users must learn and manage various replenishment methods, parameters, or policies—improving productivity and eliminating much human error that often results in inaccurate inventory levels.

By converging the workflow, style/colors and SKUs can seamlessly flow between lifecycle stages—from initial allocation and in-season management to replenishment and end-of-season emptying of inventory from the warehouse to bestselling stores. Regardless of season length – whether it's six weeks, six months, or six years—the single science and workflow approach works to optimize inventory levels of all product, location, and time. This convergence benefits retailers immensely, from a user productivity standpoint of dealing with only one process and one system, to an IT perspective of eliminating the management of multiple applications, upgrades, and duplication of data.

Infor's innovative approach to alerts

Current non-Infor systems in use today (if driven by exceptions) have too many alerts for users to determine what's causing them, or decide if anything can be done to resolve them. Corrective action often ends up taking place through costly trial and error.

Traditional systems have alerts pushed to users when simple rules and thresholds are exceeded and flagged as exceptions. Inundated with these alerts, users spend countless hours attempting to find resolutions or ignoring the alerts altogether, as the true root cause of the issues are not obvious.

We've designed a unique process of alert management for automatically diagnosing the root cause instead of the symptom: the cornerstone of exception resolution. When Infor alerts are surfaced to analysts on their dashboards, the alerts are presented in priority of financial impact. Also, users are offered the top three actions to take for resolutions based on the root cause(s) of the problem at hand. Simulation can then occur to determine the impact each approach will have on the various business metrics before final resolution—such as adjusting service level objectives, minimums, or transportation mode when possible. Employees can be much more productive with exception resolution when prompted to take specific action, versus a trial-and-error approach that offers only the hope they'll achieve the desired result.

Innovation through a connected commerce network

Supply chain visibility is a primary challenge among retailers as they lack tools and systems to track inventory, purchase orders status, shipments, and estimated arrival dates, all throughout various modes of transportation from import to domestic, without a single view of inventory throughout the supply chain. In many cases, retailers track this data manually in spreadsheets and find it's a time-consuming process to piece together an accurate inventory picture from disparate systems, emails, reports, and multiple supply chain partners including suppliers, 3PLs, carriers, and more. These challenges impact retailers through a lack of flexibility and agility, late deliveries, stock-outs; plus, they increase excess buffer inventory due to uncertainties.

The Infor GT Nexus Commerce Network provides a realtime picture of where inventory is, when it will arrive, and how the supply chain is performing. Participants across multiple functions can access a single platform that combines updates from supply chain partners with sensor data to provide continuous visibility into inventory, from source to customer delivery.

As the network senses problems through early warnings, information such as alerts, status, and estimations on orders, shipments, arrivals, and inventory are made available within the forecasting, allocation, and replenishment process—allowing for alignment of plans and quick response to changes, which increases supply chain velocity, minimizes risk, and reduces costs. Visibility and collaboration with network partners such as suppliers and logistics providers enable swift confirmation and seamless execution of updates plans. This high-resolution picture of inventory throughout the supply chain gives the allocation engine much greater flexibility in allocating inventory.

Visibility and collaboration on the network improve performance for all parties individually, as well as for

the overall supply chain ecosystem. Infor will find the best solution for each organization to drive better results individually. For example, removing redundant excess stock at the supplier means the cost savings can be passed down to the retailer, lowering overall cost. The same can be said for logistic providers and other retailers, where the sharing of data promotes collaboration that drives economies of scale.

The power of the elastic cloud

Infor's solutions utilize the elastic supercomputing power of the cloud, automatically spreading computations over many cores as more power is required. As proof of scalability, one of our customers utilizes up to 16,000 cores over just a few hours, later relinquishing that computing power when they no longer need it, which cuts costs and TCO significantly. No longer do retailers need to invest in hardware capacity for those weekly, monthly, or peak holiday times when massive processing power is required.

Infor drives value to retailers and disrupts through innovation

A primary way for retailers to leap-frog their competitors is to modernize the supply chain and bring their systems into the Age of Artificial Intelligence—where they can focus on supply chain planning and visibility, and operate on an elastic, cloud-based, highly scalable platform. Infor's Networked Supply Chain approach will drive improved profitability, streamline operations, provide complete visibility, and continually optimize the retail supply chain. This modern solution will bring significant value to retailers, including increased sales, decreased or optimally balanced inventory across the supply chain, and a reduction in supply chain costs related to store and warehouse labor, holding, transportation, and logistics.



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