



Parsing the Pricing Space: A Guide to Retail Pricing Solutions

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Retail Pricing

Few aspects of retail command as much attention—or carry as much strategic weight—as pricing. As the market for price analytics and optimization reaches its 30-year milestone, it is a valuable opportunity to reflect on where the pricing solutions landscape stands today and what it reveals about the broader evolution of analytics.

Once guided by intuition and basic rules, pricing has transformed into a data-driven discipline that increasingly shapes business decisions across the retail landscape. By understanding how pricing solutions have developed over the decades, retail leaders can gain insight into the growing influence of analytics and how such analytics continue redefining how we operate in a competitive and dynamic marketplace.

This eBook is designed to be an educational guide for retail business and technical leaders, providing a look at where the pricing solution market is today and what this shows us about the evolution of analytics that increasingly drives more and more of our business.



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Understanding Pricing in Retail

Pricing is a deceptively broad term. For most retailers there are many different types of pricing used across a wide variety of products and each having its own objectives. A common challenge within the pricing solution space is adequately matching the capabilities of pricing systems and processes with the business needs for pricing.

Because much of pricing is objective-oriented using rules and constraints the solution space is best divided via objectives. While there is overlap, four pricing objective types dominate retail:

1) Pricing Managed Inventory:

For retailers that own their inventory, managing the level and age of inventory is crucial to profitability and ROI. Pricing is, of course, a primary driver in stimulating demand for slower-selling or over-inventoried products and for enhancing the margin for higher-demand products.

Management of inventory is an implicit management of lifecycle. Almost all considerations of the best price to maintain or manage-down inventory level come with a parallel objective of the period in which this inventory level should be achieved.

These pricing solutions look to balance the cost of holding inventory against the cost of liquidating inventory. The measure of such trade-offs comes in the form of reduction in profit erosion and lower inventory carrying costs.

Inventory-managed pricing is most prevalent for seasonal, discontinued, and one-time fashion goods for retailers who must purchase their inventory in or pre-season. Markdown Optimization or Clearance Analytic solutions were the first completely optimized solutions in the retail pricing space and still are popular today with fashion, department stores, big-box, and seasonal retailers.

2) Demand-Driven Pricing:

While inventory management is all about reducing the costs of inventory, for many other retailers, pricing is a more direct driver of sales and margin than inventory. In fact, across much of retail, inventory is not owned but replenished. And it is here that pricing solutions are used to drive sales growth, revenue growth and profit.

These systems balance operational constraints and rules against an understanding of price effect vs demand. The trade-off in this type of pricing is about balancing the opportunity to drive margin against the risk of reducing sales. This requires an understanding of price effects. There are immediate price effects – lower demand when price is higher – but also many more subtle price effects such as overall price competitiveness, cannibalization of price changes to other goods, and overall price-value messaging impacts.



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3) Rules-based Optimization:

Product pricing rarely exists in a vacuum. Prices of products have relations, rules, and policies. Regardless of price response or mathematical model results, prices of products should make sense in relationship to other products and categories. Price offers must also be consistent with the value messaging of the retailer.

Taken as a whole, these price relationships make up a Price Architecture. This architecture can be evaluated and optimized independently or, commonly part of a more comprehensive pricing process where architecture rules are optimized as constraints that layer onto other price goals such as inventory or sales goals.

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4) Constrained Pricing:

A final category of pricing covers special cases of pricing environments that have specific constraints in terms of market, regulatory, legal or operational. While there is an overlap with rules-based price architecture, sometimes pricing is subject to external forces that largely override retailer-specific policies. An example would be governmental constraints on how and when a price can be changed or a vendor relationship where pricing is set market wide.

These highly constrained pricing areas still have opportunities for pricing improvement but the pathways to optimization include very industry or market-specific pricing variables and goals for such pricing activity may be first and foremost compliance and after that are other factors considered.



Success in pricing projects hinges on a precise evaluation of the pricing environment and a thorough understanding of the factors a retailer can control. Equally important is a clear definition of pricing goals to ensure alignment with overall business objectives.

Most pricing solutions aim to optimize the trade-offs between multiple objectives: margin versus sales, revenue versus growth, or price image versus profit, to name a few. Because pricing inherently involves balancing competing goals, it's important to approach single-objective pricing goals with caution.

For instance, setting margin maximization as the sole goal of a pricing solution is insufficient. Margins can be increased simply by raising prices—at least temporarily—until customers begin to leave. In reality, a margin objective should reflect a trade-off: maximizing margin while achieving a specific sales target. Effective pricing solutions recognize and navigate these complexities, ensuring that strategic objectives are balanced and sustainable.

Exploring Pricing Solutions

Understanding the solution landscape is just as critical as assessing the pricing environment and defining goals. With over 100 pricing solutions currently available to retailers, these options employ vastly different approaches, making it essential to evaluate their levels and capabilities. Broadly, pricing solutions can be categorized into five types, though significant overlap exists between them.

The most advanced solutions often integrate capabilities from multiple approaches, but aligning the solution's capabilities with the retailer's specific needs is key to success. For instance, a highly sophisticated system designed for pure optimization may be ineffective in a highly constrained, rules-based pricing environment. Conversely, a rules-based solution will fall short in scenarios that demand robust demand modeling to uncover price-effect relationships. Matching the solution to the retailer's unique pricing context is vital for achieving optimal results.

Price Information

The most basic solutions in the retail pricing space are solutions that gather and organize data in support of pricing and price decisioning.

By far the biggest segment of price information is the competitive price gathering. The challenge to getting good competitive price information is being able to match the competitive product offer. It can be challenging in many areas of retail to get an accurate SKU- for-SKU pairing allowing for direct price comparisons. More often these systems are reliant on category level or product line offerings and can provide only competitive indices.

A second category of price-related information involves solutions

tailored to regulatory and legal compliance, often specific to certain industries or products. For global retailers, this can involve navigating a highly complex matrix of price compliance requirements. These solutions are frequently offered as subscription services, providing the critical utility of keeping retailers informed and compliant with ever-evolving rules and regulations worldwide.

A third area of price information solutions are those that serve to aggregate internal price information and some level of price drivers from a retailer's own data. Most often these are considered reports, generated internally for a retailer.

Price Analysis

There are a multitude of pricing solutions that serve to identify and analyze factors that impact pricing decisions. Often these take into account price information in combination with retailer performance metrics to provide a deeper level support of pricing.

These solutions can be very powerful in understanding the influence of business decisions on pricing impacts within a specific business. Often these solutions provide a cross-factor analysis that correlates pricing moves with other business factors.

Some of these solutions can be real-time and even support processes such as price testing but most also rely heavily on historical analysis. A hallmark of these systems is that they stop short of price recommendations.



Price Planning

Price planning is a pricing activity that is more commonly folded into other planning processes. In short, price planning is the process of determining the future price and impact of future pricing on planned sales, orders, revenue and margin.

This is a solution area often overlooked by retailers who make simple and broad pricing decisions related to future plans. Simplistic plans use category-wide AUR's along with inflation and category trend factors to make price assumptions that underpin plan relationships between units and revenue.

Currently, only the most forward-looking retailers have organized their planning process to include pricing specialists who are able to provide more precise and detailed guidance on price trends to planned results.

The most prevalent area of price planning is related to promotional planning where planners seek understanding of the future price effect of temporary and market support price offers in building marketing and merchandising plans.

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Price Management

Managing the various relationships, rules and policies that drive final pricing is a complex, labor intensive task. Often competitive positioning as well as regulatory compliance are non-optional requirements. There is a wide breadth of solutions that provide a platform for the management of prices.



These Price Management solutions provide a strong framework for writing rules at an aggregated level, such as category, that govern SKU/store level price output. These systems have robust alerting when prices need review or conditions and rules that result in an infeasible price. (an infeasible price is where two or more rules combine to allow no price that will meet both rules)

Price Management touches the pricing process across four key elements:

- Regulatory pricing: making sure that no price change activity falls outside of government policies
- Competitive positioning: making sure that prices stay within a desired threshold of competitors' prices or market pricing
- Price relationships: managing the relative pricing between products within a category, across categories, by brand and by product positioning and value offer.
- Performance boundaries: checking that pricing stays within key limits in terms of margin or mark-up or cost.

As retailers work to extract maximum value with pricing, small changes can have ripple effects across large areas of the business. For example, automatic adjustments to maintain margin when costs change can put products out of compliance or above competition or simply make the prices on the shelf nonsensical to consumers such as where a smaller quantity of a product is cheaper per unit than a larger quantity. Price management systems are a must for all retailers.

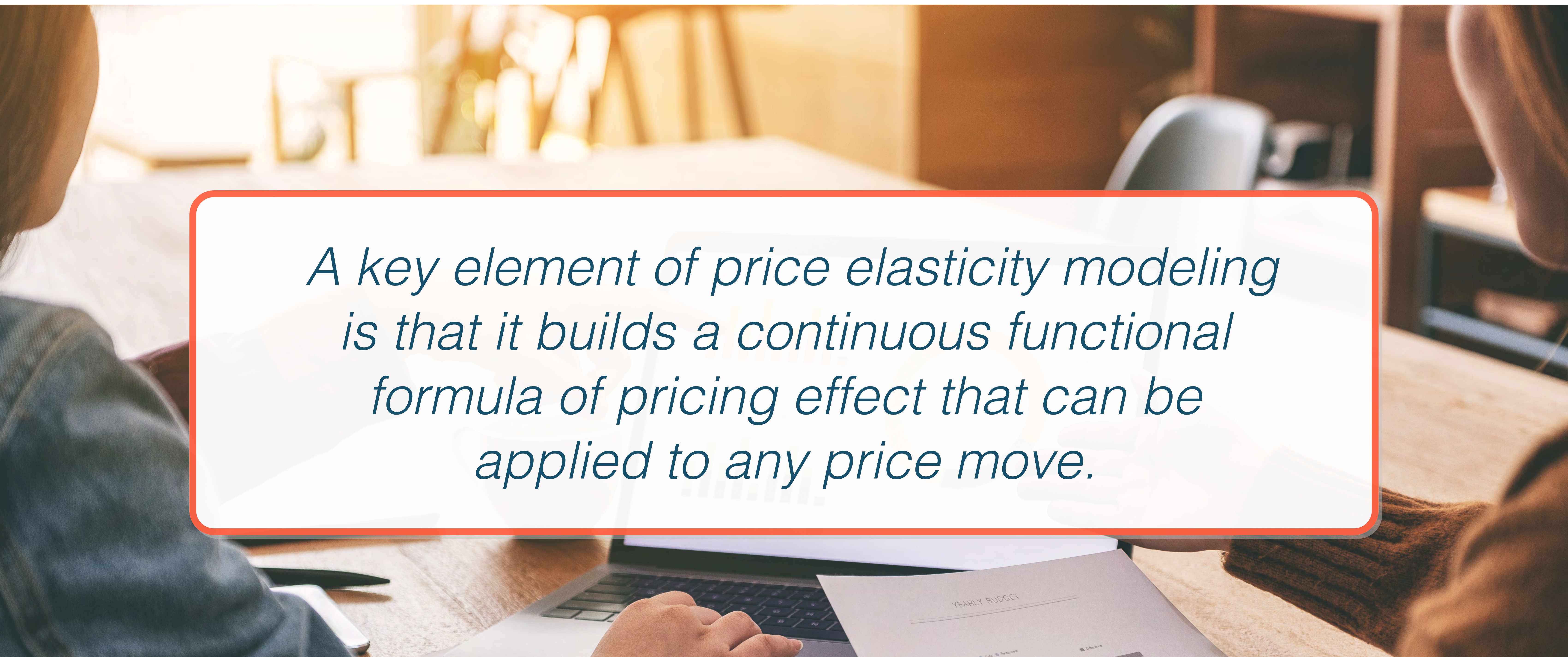
Price Optimization

The most advanced systems combine aspects of information, management, and planning but also have evaluative science and algorithms to make the best pricing decisions. These optimization systems add two elements of advanced analytics: Price effect and demand forecasting.

Price optimization systems crunch a large amount of historical data to the purpose of understanding at a store/SKU level how demand is affected by price change. This price effect is typically modeled as an elasticity model that recognizes that prices follow a non-linear relationship to demand.

A key element of price elasticity modeling is that it builds a continuous functional formula of pricing effect that can be applied to any price move – regardless of whether there is history for that price move. This provides an optimization system with much greater power in evaluating a wide range of price changes, allowing simulations that model the incremental impacts of price changes in terms of sales, revenue, and margin even without historical precedent.

The other unique aspect of price optimization systems is that they pair the understanding of price effect with a forecasting model so that the system can look at future demand, not simply history. This becomes very important in retail environments where demand shifts over time, by season, and even by area or product type.

A person is working at a desk with a laptop and papers. The background is a blurred office setting with bookshelves. A white text box with a red border is overlaid on the image.

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Choosing the Right Pricing Solution

While in general, a more sophisticated pricing system will produce better results from pricing, there are a lot of real-world considerations when thinking about how your business can benefit from a pricing solution.

- **Data Quality:** Do you have good pricing information and data? If competitive positioning is critical to your business, investments in price information systems will be the best first step. The quality of analysis and optimization depends on the quality of price data you can feed these systems. It may also be true that good price information is not possible to find. Examples would be in non-comparable product areas like private labels, a rapidly changing product mix such as in fast fashion or retail segments where pricing information is not public.
- **Regulatory Constraints:** Is your pricing heavily constrained by regulatory or policy considerations? If there are not a lot of options that your pricing can take, analytically driven pricing is not worth the trouble. Instead, price management solutions that stress rules compliance may be much more useful to your business.



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- **Market Dynamics:** Is your pricing strategy constrained by the market? Highly competitive markets where prices are very transparent can lead to more of a follow-the-leader strategy that highly constrains the options for price moves. In these situations, perhaps price information is relevant but analytical modeling is not.
- **Business Goals:** Are the goals for pricing benefit aligned to the goals for the pricing solution itself? While many systems allow the setting of a multitude of price goals, it's still good to make sure your own business goals are well supported. For example, a price management system will fall short of a price optimization system if your pricing team's objective is to find margin opportunities.
- **Future Planning:** Is what you need really price planning? Sometimes, it's not the price changes that drive consideration but visibility and planning for the pricing moves. This is more common in seasonal or fashion businesses where there is a strategy of initial price and a cadence of price reductions both to drive inventory goals and to attract different customer segments through a season. In these cases, the price moves can certainly be optimized but price coordination across time and products becomes key. Price plans allow for better store execution of price moves and a coordinated price execution sends a stronger customer message to drive demand through a season.

The Future of Pricing Solutions

Integration: Horizontally and Vertically

Pricing systems have been traditionally structured around specific type of pricing given that the analytics evolved was bespoke to singular pricing analytics. This niche approach is replaced by horizontally integrated pricing solutions that look at the pricing process more holistically. Whether its lifecycle pricing in fashion, unified pricing and management in long lifecycle or promotion planning and pricing across multi-channel retail, the future of pricing is unification.

Horizontally integrated pricing solutioning avoids the silos and poor trade-offs of single-point solutions. Too often, despite different product lifecycle phases, pricing made at one time for a product affects the price decisions that can be made later. Early discounting or aggressive promotions can shape demand elasticity that reduces margin and demand for the balance of a product's life. Understanding the full effect of all pricing is a requirement moving forward for any pricing process or solution.

Vertically integrated pricing recognizes that pricing is but one of many in-season levers used to shape demand. Today retailers integrate the execution of pricing, promotions, allocation, assortment, fulfillment, merchandising and marketing. Pricing needs to be integrated as much as possible with other systems to make the best decisions overall for the business.



The future of pricing is unification.

AI Innovations

Artificial Intelligence (AI) is transforming how pricing challenges are addressed by tackling areas that traditional modeling approaches struggle to manage. AI excels at uncovering associations within and between unstructured data sets, making it especially valuable in the pricing solution space. Key improvements brought by AI include:

- **Accurate Demand Insights:** AI enables the re-evaluation of historical sales data to identify and exclude outliers or one-time anomalies, offering a clearer view of true consumer demand. By focusing on actual demand rather than simply relying on last year's sales, AI ensures more accurate and actionable insights.
- **Comprehensive Price Response Analysis:** Traditional pricing models are often limited by the variables chosen by the individuals setting them up, inherently reflecting their biases and assumptions. AI, however, evaluates a broader array of data related to product sales to uncover the real drivers of price response. This approach eliminates guesswork, enhancing elasticity modeling to deliver more precise and detailed price recommendations.
- **Understanding Cross-Product Price Impacts:** Pricing decisions often ripple across products and categories, making it crucial to assess these interdependencies. AI's pattern-recognition capabilities in large data structures provide a deeper understanding of these cross-product and cross-category effects. This is particularly valuable for businesses managing long-lifecycle or interrelated product assortments, ensuring optimal category performance and profitability. By leveraging AI's unique capabilities, businesses can move beyond traditional constraints, uncover new insights, and achieve pricing precision that drives growth and competitive advantage.

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Moving Toward a Platform Approach

The market for pricing has evolved significantly – producing increasingly specialized and effective solutions. Advancements in technology, coupled with the expertise of industry leaders, have set new benchmarks for success. Most retailers recognize that an optimal pricing strategy is critical to the success of their business, and most are utilizing some form of analytic pricing today. AI has certainly raised the bar, enhancing the precision and detail of pricing solutions.

Years ago, retailers would report that pricing systems simply could not provide the support to scenario planning, were too slow and inaccurate for detailed recommendations and there was wide-spread distrust of the system recommendations. Today those limitations are largely overcome, thanks to modern AI-driven approaches.

However, new challenges emerge from the success of modern solutions. The key call-out is how to integrate pricing processes and the solutions that support them into the other retail functions. With more than 50% of retailers reporting that integration between systems, including price solutions, is a top concern it's clear that there is work to do in the efficient utilization of pricing as well as other retail solutions.

This concern is driving a rethink in the way all solutions, and especially price solutions, are delivered. The answer, increasingly, is moving away from the traditional point solution approach and embracing a retail platform approach. By integrating pricing capabilities within a wider retail solution platform, retailers can leverage the benefits of AI-driven pricing across all aspects of their merchandising process. Platform pricing allows pricing intelligence to be accessed by planning, assortment, allocation, fulfillment, and marketing functions. Platform-based solutions allow for greater configurability which is a key aspect to designing the

solution to fit a retailer's needs rather than retailers having to change their process to fit the solutions. In the era of AI, where diverse data integration drives groundbreaking insights, platform integration emerges as the most effective way to unlock the full potential of these advanced tools.

As pricing solutions continue to evolve, retailers must carefully assess their needs, goals, and constraints to select the most effective systems. Success lies not just in adopting advanced technology but also in aligning processes and objectives to maximize the value of pricing initiatives. By understanding and leveraging the latest innovations, retail leaders can drive sustainable growth and maintain a competitive edge in an ever-changing market.

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About the Author

David Barach, SVP of Solutions Strategy at Digital Wave TechnologySM, leverages his deep expertise in analytical solutions such as inventory optimization, demand forecasting, planning, allocation, price optimization, and AI to drive impactful outcomes for clients. With a background shaped by leadership roles at top retailers and solution providers, David plays a critical role in enhancing Digital Wave Technology's offerings, ensuring customers achieve higher profitability, efficiency, and accuracy.



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Digital Wave Technology'sSM AI-native ONESM Platform empowers retailers with unmatched agility, intelligence, and insight by unifying data across departments—product information, customer insights, supply chain, and pricing—into a single, extensible data model. This centralized approach replaces siloed data with real-time, actionable insights that drive strategic growth and unlock new revenue opportunities.

Combining native AI with a robust Master Data Management core, the ONESM Platform powers enterprise-grade solutions like Product Information Management, Merchandise Financial Planning, Assortment Planning, Order Management, Lifecycle Pricing, and GenAI Content Management. These solutions automate key processes, optimize workflows, and free teams to focus on growth.

Unify the product journey—from creation to pricing and advertising—to boost sales, profitability, and customer engagement.