

Marketing & Sales Practice

The power—and pitfalls— of dynamic pricing for omnichannel retailers

Former Overstock.com executive Seth Moore clears up some common misconceptions about how dynamic pricing works in e-commerce and omnichannel retail.

by Sara Bondi and Boudhayan Sen



Retailers can benefit tremendously from dynamic pricing—but, if executed poorly, it can destroy value. Seth Moore, former chief strategy and analytics officer of online retailer Overstock.com, has experienced both scenarios. Moore, now a senior adviser to McKinsey, spoke with Sara Bondi and Boudhayan Sen about the lessons he's learned in dynamic pricing. Here are edited excerpts of their conversation.

McKinsey: You've become an expert in dynamic pricing over the past few years, but some retailers are new to it and aren't even sure what it means in the retail context. What's your definition of dynamic pricing?

Seth Moore: I define dynamic pricing as the automation of pricing intelligence, allowing companies to rapidly make nuanced decisions in a scalable way. You automate pricing intelligence by factoring in a number of components—which typically include competitive data, inventory, and demand changes—and building those components into an algorithm. Dynamic pricing can add value because it allows you to price the entire catalog with the same deliberate attention you give to important SKUs.

But it can also destroy value if it becomes an objective in itself. Many retailers get caught in the trap of thinking that dynamic pricing is all about the velocity of price changes. That's a mistake. The answer to "How often should we change our prices?" is "as often as you have enough data to make a better decision than you did the last time you made a price change." People assume dynamic pricing in retail looks like dynamic pricing in airlines, where prices can change every few minutes—but that's not the case. The data don't change fast enough, and retail inventory is much deeper, which has a dampening effect relative to the frenetic pace in the airline and hotel industries. For most retailers, dynamic pricing lets you arrive at optimal prices over the course of weeks or months rather than minutes or hours.

So dynamic pricing increases the rate at which you make good pricing decisions. And it's only as valuable as the intelligence in the algorithm.

McKinsey: You've mentioned one common misconception about dynamic pricing: that it's all about frequency of price adjustments. Are there other misconceptions you've come across?

Seth Moore: Another misconception is that it's an even split between art and science. The reality is that most of the art is testable and implementable through a rules-based algorithm—so it's actually science. Merchants develop their knowledge over time; retailers need to take that knowledge, test it, implement it, and automate it, which will free up merchants to focus on improving assortments and other merchandising levers.

There's also a misconception that dynamic pricing is an algorithm that will magically say, "This is the best price." The truth is that it won't automatically tell you the best price—you have to conduct tests to determine the best price. It's adaptive learning; the algorithm continuously learns. You should assume that a high percentage of the algorithm's initial price recommendations won't be successful. As you add velocity, you're going to have more successes but also more failures along the way, and you need to have some cultural tolerance for that. Once your organization builds that culture—test, fail fast, and learn quickly—then everyone gets more comfortable speeding up the process, taking hands off the wheel, and letting the algorithm drive.

McKinsey: You said retailers should take the knowledge that merchants have developed. Say more about that. What role should merchants play in dynamic pricing?

Seth Moore: Bringing merchants into the process early—so they can contribute to the development of algorithms and strategies—is critical. Involve them in the strategy formulation. Tell them, "We're building an algorithm that will make pricing decisions in your category, using the same logic that you would use."

Seth Moore biography

Vital statistics

Born in 1982 in Albuquerque, New Mexico
Married, with 4 children

Education

Holds a bachelor's degree from Brigham
Young University

Career highlights

McKinsey
(2021)
Senior adviser

Overstock.com
(2018–20)
Chief strategy and analytics officer

(2006–18)
Various senior roles in product management, analytics,
marketing, and customer value

Fast facts

Fluent in Spanish; lived in Argentina for several years
Enjoys chess, fantasy football, and serving as a fishing
guide for family, friends, and clients

About 70 percent of merchants will have opinions on the algorithm: 30 percent will have strong opinions, and the other 40 percent will want to have a say but won't offer any direct feedback on the algorithm logic. Early in the process, figure out which merchants are in the 30 percent who have developed a strong pricing logic. Recruit those merchants. They will help build trust with the parts of the organization that are not involved but just concerned.

At Overstock.com, one of our merchants had a pricing logic that she'd embedded into Excel. We used her logic to build the dynamic-pricing algorithm in her category—so she could see her logic being applied rapidly to all the SKUs in that category. This merchant was well known and loved within the merchandising team, so when the other merchants saw her algorithm in action, they quickly aligned behind the dynamic-pricing effort. Much of your success in dynamic pricing will come from tapping into the pricing expertise that your merchants already have.

McKinsey: Tap into your merchants' expertise—that's great advice. What are some other valuable lessons you learned about dynamic pricing during your time at Overstock.com?

Seth Moore: The quality of your cost data is almost always terrible—and that doesn't become readily apparent until you start making automated pricing decisions. By far the most important thing you can do, even if you don't change anything about your pricing logic, is to fix your cost data. If you don't know your item-level costs, you can't make good item-level decisions.

Retailers often calculate per-SKU costs by averaging out each cost element across multiple SKUs—but SKUs can have very different cost profiles. For example, we had an algorithm that was allocating costs for warehouse space, but it was calculating those costs based on full boxes. Bedsheets were getting dinged with very high warehouse charges because the algorithm was charging each SKU for the entire box, even if that box was sitting in the warehouse already half empty. So our margins on bedsheets turned out to be much higher than we thought they were.

The lesson is that you need to understand your biggest amortized costs—things like warehouse costs, customer-service costs, and shipping costs—at a detailed level. Inaccurate cost data will cause major problems for you in a dynamic-pricing world.

Another lesson is that you should carefully consider consumer perception. Your price changes should never make the consumer wonder, “Am I being gouged?” Figure out what makes sense for your organization and for each product category. Is there a long buying cycle? Do shoppers tend to look at online customer reviews before they buy? Some categories—mattresses, for example—are heavily considered and researched, and there’s no urgency in the purchase process; customers will come back and view the same item a dozen times. But that’s not true of many other categories. So study web-analytics data to inform your dynamic-pricing approach.

McKinsey: Speaking of consumer perception, can dynamic pricing help with personalization? In other words, should online retailers offer every customer a different price for each SKU?

Seth Moore: I recommend keeping base prices consistent so that consumers don’t feel discriminated against: “Why is that person getting a better price than me?” You should factor in promotions and shipping costs when setting your base prices.

But you can offer some level of personalized pricing through discounts. When a customer receives a coupon with “just for you” messaging, it feels like a victory to that customer, so it’s easier for the retailer to get credit for it. This is true in categories with highly promotion-oriented audiences and in fashion-driven categories, where price perceptions are driven by a feeling of “I beat the market” versus “I paid an objectively low price for this item.”

McKinsey: It’s obviously much easier to change prices online than in physical stores. How is the dynamic-pricing process different for omnichannel retailers?

Seth Moore: If you’re an omnichannel retailer or if you have a heavily entrenched brick-and-mortar-pricing process, you’ll need to design simpler and less frequent pricing experiments. You can probably run only a handful of good pricing tests, which you’ll need to coordinate with store operations, per year. You’ll get more impact if you focus your tests on products that are on the extremes—either very high or very low inventory turns or margins.

You can, of course, use your digital business to run more frequent tests and then roll those out into your brick-and-mortar locations. You could also consider designing some of your pricing experiments to have a slightly lower confidence interval but a higher velocity. Obviously, you don’t want to make major decisions for the business on an 80 percent confidence interval, but there are many smaller but still meaningful pricing decisions you can make on that basis.

McKinsey: Any advice for retailers just getting started on their dynamic-pricing journeys?

Seth Moore: Before you build an algorithm, understand your company’s biases and strategic risk profile. That’s where your conversation with the CFO should start: Is the company more concerned about dead inventory or gross-margin erosion? Some brands, for example, are damaged by having their products priced too low because low prices

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undermine the quality image that the products have in the market.

Odds are that the CFO has a view on which direction the price should move. If, for instance, there is concern that the gross margin on a top-selling SKU is too low, the CFO will be comfortable testing a price increase on that SKU but will probably balk at testing a price reduction.

You can build those biases into the algorithm so that, in the initial tests, prices will move in a direction that the CFO will find rewarding rather than punitive. That will be hugely beneficial to building credibility and gaining buy-in. It will help your CFO set expectations with shareholders, vendors, and other stakeholders so that no one hits the panic button and pulls the plug on dynamic pricing. And it will help you accelerate confidently into a safe test-and-learn process.

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