Prescriptive analytics put powerful recommendations into the category manager's hands

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To keep up with the rapid changes of today's omnichannel world, retailers are turning to prescriptve analytics to improve pricing, promotions and assortment to drive revenue growth.

In the dawn of the big data era, retailers hired data scientists who used descriptive analytics to understand the causes of previous successes and failures to help improve future pricing, promotions and assortment. Today, data scientists at many big retailers use predictive analytics to get directionally accurate forecasts for a handful of scenarios. But since these analyses focus on past results and don't provide detailed recommendations, they can't help retailers make the quick changes required in today's omnichannel world and especially in stores to maximize revenues and profits.

We're now entering the age of prescriptive analytics. Machines can now do more than crunch mountains of data – they can also recognize patterns humans can't, learn from their mistakes and make specific, real-time recommendations that people without doctorates can understand. Using the new approach, retailers can tap into in-house and external data to identify the handful of SKUs with the biggest impacts on basket size and profit and then make simple weekly or even daily recommendations to category managers to adjust pricing, promotions and assortment in each brick-and-mortar and online store to boost revenues, profits and customer loyalty. In fact, we expect prescriptive analytics to raise same-store sales by 2-5%.

Descriptive Analytics

What promotions performed best last quarter? Why?

Analyzes past data, such as the results of promotions, to provide insights on why they succeeded or failed, to help the retailer launch more successful promotions. It categorizes consumers in large groups, offering few insights into individual behavior.

Predictive Analytics

In a handful of scenarios, what is likely to happen in our stores next quarter? Why?

Analyzes current and historical data to make general forecasts and predictions, such as the probability of an event recurring in a region. Can guide some basic decision making but does not provide specific recommendations.

Prescriptive Analytics

How should category managers adjust pricing, promotions and assortment in every aisle of every store this week to boost revenue, profit and loyalty?

Using machine learning and tapping into a wider array of internal and external data, it reveals previously unknown patterns and links that drive results at the individual store, product and shelf level. Data management is automated, and the system can make real-time, easy-to-understand recommendations about pricing, assortment and promotions in each category in each store.

Prescriptive analytics is far more scalable and enables retail managers to get insights that direct them to take better actions. It's also more powerful because it combines two enormous strengths: machines' new pattern recognition power and managers' knowledge and real-world experience.

Millions of people benefit from prescriptive analytics every day when they use a navigational tool like Waze. In a few seconds, the software gathers and analyzes gigabytes of real-time data, calculates probabilities and then recommends a route based on traffic, time of day, road conditions and so on. The driver decides whether to accept or reject the recommendation based on his or her local knowledge and other information not available to the app.

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Retailers' decision making is far more complex, of course. Customer preferences vary week by week, by region and even by neighborhood; competitors online and offline frequently change pricing, promotions and assortments; and suppliers have their own agendas. No manager can possibly know how all of these factors will affect sales of wild salmon this month or the ideal price for silver one-piece bathing suits. But prescriptive analytics can offer recommendations whose impacts on profits and revenues will be quickly apparent.

Prescriptive analytics can also provide category managers with fresh insights to help them have richer conversations with suppliers and internal teams about which customer segments are most valuable, which products will do more to increase basket size and loyalty, and what prices will drive profitable growth in each category.

Retailers now making the leap into prescriptive analytics are transcending descriptive and predictive analytics to make better decisions at scale – setting the right pricing, promotions and assortments in every store at finer levels of granularity to delight their best customers and drive loyalty.

Why the time has come for prescriptive analytics

The new, much more sophisticated tools have arrived just in time for many retailers. Data is piling up faster than they can analyze it, data science talent is harder to recruit and retain, and shoppers can now compare the products and prices of a wider range of competitors, including discount and specialty stores. Online retailers, the biggest threat to many inherently brick-and-mortar stores, are now gathering and crunching so much data that they can adjust prices on thousands of products throughout the day to take advantage of opportunities as they arise.

These kind of price adjustments, executed quickly and multiplied by tens of thousands of SKUs, are helping to drive the growth of the most successful online retailers. To put it simply, they're finding new ways to manage enormous complexity efficiently. Prescriptive analytics are helping to level the playing field for all retailers, but especially brick-and-mortar stores because the tools make timely, tailored, granular sets of recommendations that category managers can marry with their real-world experience and business knowledge and the tool's decision support.

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Today's advanced analytics applications are possible because of huge advances in computing power, avalanches of new data, new data cleaning, storage and access methods, and more flexible algorithms. Together, these advances allow retailers to automate more of the data science originally performed by humans, expanding their capacity for planning and management. Research and experience show that in retailing, as in many other complex activities, from flying jets to navigating traffic, humans and machines working together are much more powerful than either working alone. Each has information and abilities that are inherently unavailable to the other.

Making the necessary organizational and mindset changes

Harnessing prescriptive analytics takes time. To get the full value of the new tools, workflows and methods, most store managers need to change the way they think and work. In our experience, widespread adoption also requires testing, patience and the right champions.

The best category managers are experts in the products they sell. Most also have strong relationships with vendors and believe they know shoppers well. Naturally, they tend to resist changing the way they make decisions based on the advice of a data scientist in headquarters who's never created an assortment or negotiated with a vendor.

So how can a company persuade category managers to incorporate prescriptive analytics in their decision-making process – especially when recommendations go against their gut instincts? In our experience, most companies need to start small and gather success stories.

Prescriptive analytics uses pattern recognition to anticipate opportunities and recommend the timing of promotions and price and assortment changes in specific categories to raise foot traffic, basket size or any other KPI.

For example, if a manager wanted to consider the impact of cutting the "long tail" of SKUs in a category, the prescriptive analytics algorithm might recommend keeping certain low-selling specialty products on the shelves because they attract some of the best shoppers, and that taking them off the shelves might cut profits in other parts of the store – something the manager might not be able to anticipate on his or her own.

Predictive analytics, in contrast, would not provide him or her with these types of granular, aisle-by-aisle recommendations every week or keep up with the constantly changing nature of the endless aisle. Instead, it would give data scientists forecasts for a narrow range of scenarios, and the scientists would need to translate those forecasts into simple information category managers might be able to use. Prescriptive analytics uses pattern recognition to anticipate opportunities and recommend the timing of promotions and price and assortment changes in specific categories to raise foot traffic, basket size or any other KPI.

In our experience, when managers try and test the recommendations that go against their gut feeling and quickly see clear improvements in metrics such as basket size and same-store sales, they become champions of prescriptive analytics tools – and they tend to have more influence over their peers than data scientists. After all, nearly every manager knows that in the blur of day-to-day category management, patterns can be hard to spot. In certain cities, avocado and chip sales might rise 5% on the Friday before a typical big game, for example, but the prescriptive tool might recommend stocking 20% more avocados and chips in stores where the local teams are likely to make the playoffs.

In assortment, humans can set parameters then run a range of scenarios. Prescriptive analytics can then identify an optimization curve, recommend specific assortment changes, and estimate the dollar value of those changes. The simplicity and clarity of these interactions is part of what makes prescriptive analytics so powerful.

Home Improvement Retailer Case: Delivering growth by lowering prices in one category

A home-improvement retailer used prescriptive analytics to learn what its best shoppers had in common. Moving boxes topped the list. People buying boxes spend much more than the average customer, presumably because they're moving or remodeling and more likely to buy lumber, power tools, paint, flooring and even kitchen appliances. The retailer accepted the system's recommendation to make deep discounts on moving boxes – and saw immediate and measurable revenue improvements across the store.

One of its great advantages is that it can remove much of the math from category managers' daily routines. Instead of wrestling with mountains of data, managers get specific, easy-to-understand recommendations for each product category.

The managers willing to set aside old assumptions, at least temporarily, are more likely to find that prescriptive analytics can improve results. They'll see those results quickly, instead of having to wait until the end of the month or the quarter, and get prompt, actionable feedback.

The process will be iterative; not every recommendation will deliver immediate benefits, and some benefits will be small. But small advances in each brick-and-mortar and online store, aisle by aisle and SKU by SKU, add up.

The next horizon

In the retail environment, we expect the next prescriptive frontier in category management to be optimization through personalization and localization. Shoppers in Rome and Milan have different wine preferences, of course, and they vary by season, local competitors' moves and so on. Indeed, preferences for thousands of store items may vary widely among neighborhoods in Rome. With prescriptive analytics, retailers will be able to manage that complexity for the first time, squeezing more value from pricing, promotion and assortment decisions in every aisle of every store every week.

In the next three to five years, taking a page from the online playbook, leading retailers will present shoppers with customized recommendations and offers based on their purchase histories, zip codes, Google searches, day of the week, time of day, social media posts and even which aisle they're in. Each shopper could receive his or her own unique discount coupon each week, and the analytics tools will use artificial intelligence to review the impact of these offers and make daily improvements to the algorithm.

As retailers clean and more regularly update their master data, it will yield increasingly powerful insights. Retailers don't need to change their assortments in every store every month to create real impact. Instead, prescriptive analytics will allow them to ignore a million options and focus on the few hundred that will make the biggest difference to the most important customers and vendors, while empowering them to make quick tweaks in online stores.

Commercial and category management teams will work more closely with operations, store management and IT. They will work also with vendors as thought partners to achieve their common goals – serving shoppers' wants and needs – by developing win/win category strategies that benefit both parties.

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In addition to helping retailers improve pricing and assortment, the new tools will offer valuable insights into where to build new stores, how to improve each store's assortment and layout to appeal to local shoppers, how to personalize the endless aisle for each customer, and how to reduce shrinkage and increase the efficiency of advertising, purchasing, inventory and shipping.

Some retailers are likely to collect insights that are valuable to vendors. For example, if a national grocery chain discovers that major trends in soft drink sales begin in Texas, how much would the details be worth to a beverage company? A few retailers are now debating the challenges and implications of monetizing insights like this.

Next steps

Making hundreds of small, steady improvements in-store every week and keeping up with the volatile nature of digital stores won't require armies of human analysts – the prescriptive systems are scalable because the rocket science is built in. The pioneers will grow their bottom lines and gain subtle but powerful competitive advantages, building customer loyalty and changing the nature of brick-and-mortar retailing and stepping up their online game.

Prescriptive analytics is much more than software and data science – it's a way to combine the strengths of humans and machines to make better, faster decisions. Using it to make significant performance improvements, therefore, requires organizational and mindset changes. In our experience, making those changes requires real business partners who provide data management and enrichment, advanced tools and expert support and training, including change management.

Indeed, prescriptive analytics is at the core of Periscope solutions, which are built on best practices from more than 40 years of McKinsey marketing & sales leadership and a wealth of proprietary benchmarked data.

To find out more about our retail analytics expertise, please visit www.periscope-solutions.com.

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