Making data-driven marketing decisions

The retail industry is just beginning to take advantage of big data. This article, adapted from the 2013 edition of *Retail Marketing and Branding*, describes a powerful data-analytics tool: marketing-mix modeling.

Dennis Spillecke and Andris Umblijs

As a retail executive, you want your ads to look good on the TV screen, your products to look good on the shelf, and the bottom line to look good on your company's income statement. Of course, retail management is more complex than that. But precisely because it is complex, retail marketing and sales executives need a solid, straightforward fact base—and a reliable tool for analyzing that fact base—to help them make better tactical and strategic choices about their marketing investments.[1]

Marketing-mix modeling (MMM) is a sophisticated analytical tool that enables retailers to measure the performance of their current marketing mix and optimize it across advertising vehicles and other touch points, including unique retail levers such as pricing and promotions. Using econometric modeling, MMM helps executives in charge of both tactical and strategic retail management—usually the CMO and the commercial director or head of sales—better understand the trade-offs they face.

MMM typically helps them answer three types of questions:

Performance-driver analysis. What are the true drivers of top-line performance? Which of these drivers are under our direct influence (such as advertising, promotions, and loyalty

[1] This article is adapted from Chapter 11 of Dennis Spillecke's *Retail Marketing and Branding: A Definitive Guide to Maximizing ROI,* second edition, West Sussex, United Kingdom: John Wiley & Sons, 2013.

schemes) and which are external factors outside our control (such as competition, overall market growth, economic and demographic trends, and seasonality)?

Impact analysis. What is the impact of various commercial levers on revenue, traffic, and consumer perception? How does the return on investment compare for different line items in the marketing budget (for instance, advertising versus promotions) when applied to a specific market or situation?

Optimization of marketing spend. What is the optimal allocation of marketing and sales funds? How should we split our investments between branded and private-label products? How will budget reallocation influence revenue and profit in both the short and long term?

Ultimately, MMM provides retail managers with the means to investigate the likely consequences of their actions before they act, enabling them to make fact-based decisions instead of relying on intuition. MMM can inform tactical, day-to-day marketing activities (such as campaign design and promotion management), but it can also inform a retailer's strategic positioning, including its quality and price position, competitive differentiation, cross-format policy, and private-label strategy.
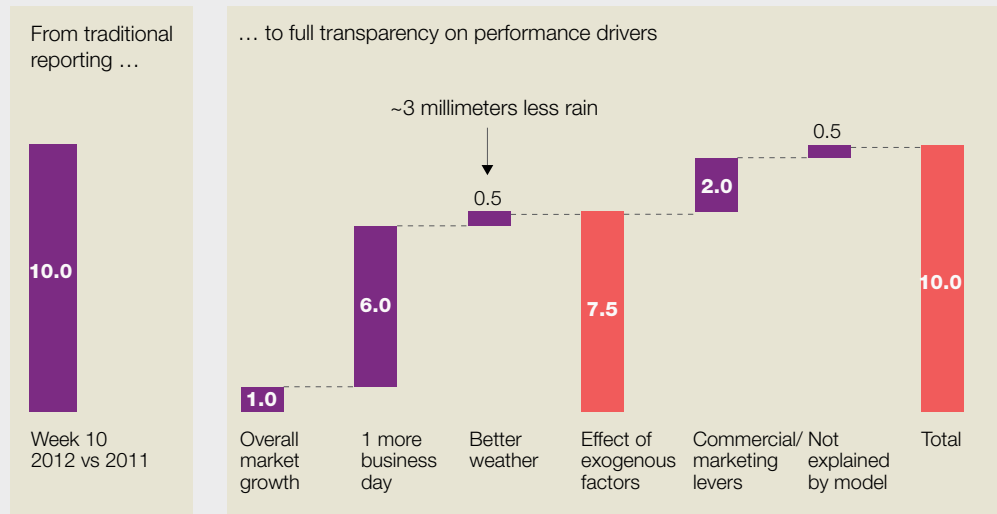
What MMM offers: Transparency across marketing levers

MMM can help executives distinguish between the impact of their actions and the effects of general trends in the market (exhibit). And MMM helps executives understand not only which performance drivers they *should* pull—it also

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Exhibit

Marketing-mix modeling allows retailers to identify the drivers of performance.

Revenue evolution, year over year, %

From traditional reporting …

… to full transparency on performance drivers

~3 millimeters less rain

		0.5
0.5		
10.0	2.0	10.0
	6.0	7.5
1.0		

| Week 10 2012 vs 2011 | Overall market growth | 1 more business day | Better weather | Effect of exogenous factors | Commercial/ marketing levers | Not explained by model | Total |

10% better performance

Quantifying the key performance drivers shows that real performance improvement is only 2.5%

identifies the return on investment for the ones they *do* pull or have pulled in the past.

While some activities generate solid profits and others are bottom-line neutral but tactically necessary, the activities that commercial directors really lose sleep over are the ones that are a waste of money. MMM enables directors to spot these activities—and stop them. MMM also helps retailers track how their marketing activities influence consumers' price perception. Although certain activities are beneficial on both fronts (revenue and price perception), others are either long-term investments designed to fuel consumers' perception of the retailer as a provider of good value or purely tactical moves to drive revenue and traffic in a given market environment. Insights about the impact of different marketing activities on revenue and price perception can be combined to shed light on the trade-offs among tactical maneuvers, short-term moves, and long-term strategy.

MMM, however, cannot quantify the effect of various marketing activities on brand image. To avoid damage to brand equity, retail executives should not rely on MMM exclusively for marketing-mix-optimization efforts. Rather, they should use MMM output as the basis for a broader discussion that also takes into account data from other sources, such as consumer research.

How MMM works: Combining science and art

The logic of MMM is simple and straightforward, but its mechanics require a sophisticated blend of science (econometric modeling) and art (deep commercial expertise). Econometrics has been in use for several decades in the consumer-goods industry, but its application to retail is considerably newer. This is due in large part to recent increases in computational power and platform sophistication, which allow for the automated creation of large data sets and enable retailers to build complex models (for example, separate analyses to explain store sales versus product sales).

An analytical "engine" forms the core of every MMM effort. This engine applies complex statistical techniques to identify each lever—whether it be the CMO's latest loyalty initiative or changes to a competitor's store network—that has a statistically significant influence on sales, traffic, and consumer perception. It chooses, from a range of options, the most appropriate estimation algorithm and regression model and then produces the most mathematically accurate explanation of how the levers influence the dependent variables: revenue, traffic, or consumer perception.

Each retailer should build its own analytical engine, to take account of its unique circum-stances, but three key elements are common to all successful MMM solutions: an input database containing information (including in-house data and publicly available market data) from a variety of sources, an econometric model that is refreshed periodically, and a user-friendly software interface.

What MMM requires: Cross-functional teams

The accuracy of the tool is, of course, highly dependent on the quality of the input factors in the database. The data must be accurate, sufficient in both scope (offering at least two years' worth of weekly or daily historical data) and granularity (distinguishing between product categories—say, dairy products and salty snacks—instead of lumping them together in broad departments like

"food"), and consistently updated. And the tool's data architecture should be fully compatible with the retailer's existing IT architecture so that data sets can be refreshed automatically as new data become available.

In our experience, only a cross-functional team can ensure the integrity of the data, the calibration of the model, and the correct interpretation of its output. Take advertising spending, for example: the marketing or media director might know which marketing vehicles are relevant, but he or she will need a market-research specialist to figure out how to obtain competitors' ad-spend data. Only a financial controller will know how third-party ad-tracking information can be made comparable with in-house figures. And only an IT systems manager can determine which formats and file names will fit the model's operating platform.

Given the data requirements and analytical sophistication, MMM is not a quick fix—but it should not be a one-off effort, either. Its power lies in its continual and consistent application as an integral part of a retailer's management information systems.

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Despite its analytical allure, MMM is by no means a substitute for experience and insight. Rather, it should be considered a complement to—and occasionally, a reality check against—the gut feeling and good judgment of seasoned marketing and sales professionals. It is a decision-support tool, not a retail-management robot. Like any management information system, it depends on the wisdom of its users. ○