Marketing science: From descriptive to prescriptive
The marketing profession has long relied on data. But as the terabytes grow, progressive marketers are turning to science. They’re using systematic observation, testing and measurement to study broad behavioral patterns, drill down from the aggregate to the individual and produce new insights that can improve business outcomes. Doing this effectively, though, means mastering three capabilities—architecting data, applying science and influencing action.

Big data, more science
Marketing professionals have long used data to measure campaigns and make marketing decisions. The caricature of the marketer as a “creative type” who can’t read a spreadsheet is just that. But with the advent of new channels and devices, marketers now have access to an unparalleled amount of data. That’s both an opportunity and a challenge.

Big data is paving the way for a fundamentally different approach to marketing—one that enables marketers to help identify deeply buried behavioral patterns, formulate and test new hypotheses, predict the future and prescribe the best course of action. In other words, the value of marketing science (as it’s called) lies in its power to improve outcomes.

In an increasingly crowded market, the ability to anticipate shifts and understand nuances that were previously indiscernible provides a crucial advantage. Lead times in many industries are shrinking, and global integration is making the world more complex. So it’s now even more important that marketers can answer key questions, such as: what do our customers really want? How much will they pay for it? How big is the opportunity? Which territories should we enter first? And how can we reach the right people in the right places at the right times?

Rigorous scientific methods can not only describe what’s happening, but also help predict what’s next and prescribe an optimal response. And successfully parlaying those insights into better business outcomes depends on influencing action well beyond the marketing function.

A systematic approach
Managing big data and turning it into meaningful intelligence isn’t easy, though. The sheer volume of data, its variety and granularity, can be quite overwhelming, as many marketers admit. More than 70 percent of the chief marketing officers who participated in the IBM Global CMO Study told us they feel underprepared to deal with the data explosion.¹
Our latest survey of 358 marketing professionals confirms—and expands on—these findings: Only 23 percent claim to be highly effective at uncovering new insights to generate additional business value. Only 25 percent claim to be highly effective at identifying and capturing new markets. And only 32 percent claim to be highly effective at engaging with individual customers.

At the same time, most marketers are under intense pressure to show tangible returns on the money they spend. In fact, nearly two-thirds of CMOs expect return on marketing investment to be the primary measure of their effectiveness by 2015. In this world of big data and tight budgets, marketers everywhere need a more systematic way of capturing and analyzing data, unearthing insights and using those insights to improve business outcomes.

Our research suggests a small contingent of marketers is doing just that. Among the marketers we surveyed, three groups emerged based on their analytical sophistication and span of influence (see Figure 1):

- **Marketing Scientists** exhibit more advanced analytical capabilities and a broader scope of impact, enabling them to be more prescriptive and spur far-reaching changes in their enterprises.

- **Constrained Analysts** have limited strength along one of two dimensions: either they are struggling to move into more prescriptive analytics and modeling, or their scope is largely internal.

- **Traditional Marketers** are venturing into predictive modeling on a small scale, but generally lack the organizational clout and deep, prescriptive insights to effect broad-scale change.

As it turns out, these three groups approach big data quite differently. The variances are most evident in how they architect data, apply science and influence action—the core disciplines of marketing science. And across all three areas, Marketing Scientists consistently outperform their peers.
Architect data

Most marketing functions collect a great deal of data, including transactions, web traffic and customer feedback. But many don’t manage the data very methodically—and, even when they do, these sources of information can only provide a picture of customers in the aggregate.

Marketing Scientists, by contrast, draw on a much wider range of sources (see Figure 2), such as demographic studies, social media discussion, blogs, online reviews, analysts’ reports and government publications. This data can provide insights into what individual customers need and desire. But much of it comes in its raw “natural language” form, complete with typos, idioms and other such challenges.

As a result, Marketing Scientists are more apt to “architect” the data. In other words, they structure and organize all the data they collect in a much more granular form that is digestible and dissectible, storing historical data in such a way that it can be easily retrieved for analysis.

Figure 2. Compared to Traditional Marketers, Marketing Scientists are nearly twice as proficient at architecting data.
Marketing science revolves around in-depth analysis, not just aggregating and reporting on collected data. It’s about developing an understanding of complex market dynamics and using those insights to help predict outcomes and even prescribe next actions. There are two stages to this process: creating, testing and refining hypotheses, just as scientists do when they’re developing medicines or studying the origins of the universe; and building predictive models based on their findings.

Testing and refining a hypothesis sometimes entails conducting experiments to distinguish causal factors from correlation factors, although that’s not always practical. It may also involve using mathematical techniques to understand the interplay among different variables and assess the reliability of the results.

The insights that are generated can then be used to develop a forecasting model. The tools and techniques of computational science may be helpful here. As sophistication grows, models can better predict the impact of different actions and help prescribe the best option, given all the circumstances.

However, surprisingly few marketing professionals currently apply scientific principles in their marketing research (see Figure 3). On average, less than 20 percent of Traditional Marketers and Constrained Analysts regularly use scientific approaches to marketing research, such as hypotheses testing, advanced mathematical and statistical techniques and benchmarking against control groups.

In contrast, 45 percent of Marketing Scientists are fully engaged in more scientific research approaches. Backed by deeper insights, they are better equipped to develop sophisticated analytical models to guide decision making. Consistent with their scientific inclinations, Marketing Scientists also maintain a different skill mix—more researchers with advanced math and science degrees, expertise in developing complex models and experience conducting controlled experiments.
Influence action

There’s obviously no point in predicting the future, though, unless you’re able to act on that information. Here again, Marketing Scientists are ahead of their peers (see Figure 4). They are nearly three times more likely to be collaborating with the rest of the enterprise, both to share insights and to help everyone apply them.

Most organizations employ many more “consumers” than “producers” of data, and some of these consumers may require support while they’re learning how to make better, fact-based decisions. Marketing Scientists are progressing faster on this front. While 82 percent of Traditional Marketers still rely largely on hunches and experience, almost half of the Marketing Scientists have established a pervasive culture of data-driven decision making.

The most obvious decisions marketing can influence are those involving customers. Marketing plays a big role in determining which segments to target, what to offer and how best to serve those populations. But Marketing Scientists go much deeper. They use systematic scientific methods to understand individual customers and tailor the messages, solutions and experiences their companies deliver at various touch points.

It’s important to note that driving the enterprise to act on marketing science requires an additional set of skills beyond those used to generate the underlying insights. Capabilities such as deep business knowledge, salesmanship and organizational change management come into play. And it can be quite challenging to build teams that are fluent in both scientific and business disciplines.

Figure 4. Marketing Scientists exhibit broader collaboration across the business, greater impact on customer engagement and a more pervasive culture of data-driven decision making.
From marketing to marketing science
Marketing science can transform the way marketing professionals make business decisions. It can inject more discipline into the marketing process, enabling marketers to ask—and answer—complex questions they could never otherwise address. Guided by these insights, they can anticipate the future and get a better grasp of how to please individual customers.

This is the aspiration compelling marketers to confront big data. But how can marketing organizations accelerate this transformation? What are some practical steps marketing executives can take right now to equip their organizations?

Our research findings point to three critical enablers: the ability to architect data, apply science and influence action. Although it may not sound exciting, it is important to address how you organize and manage data, designing your data architecture with analysis and modeling in mind.

And to treat marketing as a science, every marketer must become a scientist of sorts—curious, willing to experiment and systematically test new concepts. Even if you’re a consumer rather than a producer of marketing science, each marketer must develop an appetite for scientific insights, know how to interpret and use them, and, perhaps most important, be willing to change how decisions are made.

To make an impact on the business, though, you must be able to translate the science into action. This means Marketing Scientists must be salesmen too, convincing other functions and organizations to rely on science, not “gut feel.”

So, the question is: Are you a Marketing Scientist?
Connect with the Center and share your thoughts at:
ibm.com/ibmcai

About the authors
Ari Sheinkin is Vice President of Client Insights at IBM. In this position, he is responsible for primary, secondary and social research, along with the application of advanced analytics. His organization consults with IBM executives on key business issues such as channel optimization, segmentation, marketing effectiveness and pricing. In previous roles, he helped lead development and execution of strategic sales plans and was a partner in an independent film company. He can be contacted at sheinkin@us.ibm.com.

Derek Franks is a consultant with the IBM Center for Applied Insights. In this role, his focus is on research that provides insight into emerging business and technology trends. Prior to joining the Center, he was part of IBM Retail Store Solutions group where his work centered on how enterprises can use technology to drive improved business results. He has been a speaker at global conferences and collaborated with top companies from around the world. He can be contacted at defranks@us.ibm.com.

About the IBM Center for Applied Insights
The IBM Center for Applied Insights (ibm.com/ibmcai) introduces new ways of thinking, working and leading. Through evidence-based research, the Center arms leaders with pragmatic guidance and the case for change.
Notes and sources


2 We surveyed 358 marketing professionals in Australia, Canada, India, the United Kingdom and the United States to find out how they use data to make business decisions. Our respondents come from a wide range of organizations covering 17 industries: 50 percent work for small companies (100-999 employees); 25 percent work for mid-sized companies (1,000-4,999 employees); and 25 percent work for large companies (5,000 or more employees).