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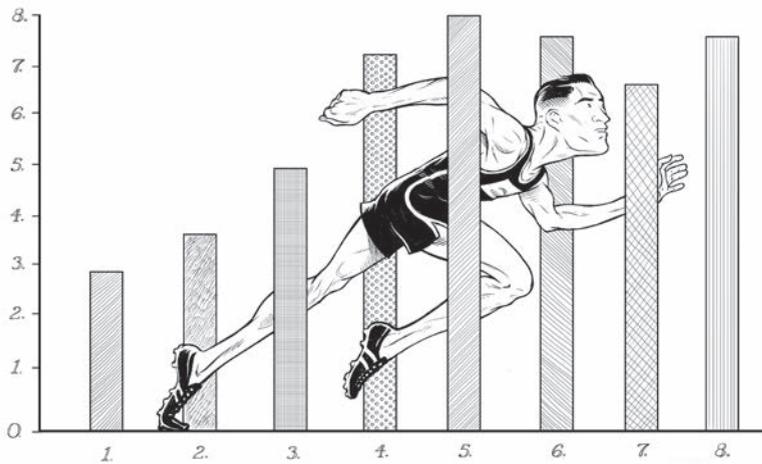
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Many companies have a conflicted relationship with the data they gather about themselves and their customers. They undertake dozens of analytical information-gathering initiatives—on cross-selling, up-selling, customer acquisition, new product introduction, or inventory management. Novel and ambitious projects at the outset, they tend to have very short shelf lives. Each remains isolated from the rest, providing only glimpses of insight for narrowly defined purposes. In the end, despite years of investment in data analytics programs and technology, most business leaders would admit that these initiatives have not yet improved performance in any sustained way.

However, a few companies have bucked the trend. The pioneers and leading experimenters in this field—Amazon, Apple, Capital One, Facebook, GE, Google, Pratt & Whitney, and Walmart—are learning to think of data as a long-term strategic asset and not a source of quick hits. They collect and analyze a wide range of data about customers, partners, operations, the marketplace, employee activity, product performance, and competitors—even before they know what to do with that data. They use analytics to spur previously unimagined ideas for customer offerings—and to deliver customized products and services, targeted at their individual interests. Most importantly, these companies deploy data analytics to design the distinctive capabilities that make them stand out from their competitors. Before long they reach a tipping point. Data and insights begin to fundamentally change the leaders' perception of the enterprise, and become transformative and integral to their survival and growth.

Our name for this kind of data-driven business strategy is *the quantified core*. It is the enterprise equivalent of the "quantified self" movement, the tracking of individuals' health and daily life patterns for the sake of improving both. Tens of thousands of "quantified selfers" around the world use an array of sensors to monitor the food they eat, the quality of the air they breathe, workout regimens, sleep patterns, moods, blood pressure, and a host of other metrics. The quantified core similarly uses a variety of sensors to collect data from all parts of the enterprise, and then analyzes that data comprehensively to improve and refine the business.

Companies that successfully adopt the quantified core approach do not change their operational or financial performance overnight. But as the data accumulates and the organization embraces a data-centric mind-set for growth initiatives, the analyses become more creative and sophisticated—and more widely used throughout the business.

Most quantified core companies create a direct link between the vast amounts of data they collect and the products and services they sell. Pratt & Whitney, for example, tracks the performance of its jet engines during commercial flights. This allows it to provide its airline customers early warnings of possible malfunctions or maintenance needs. Because Pratt & Whitney fixes any problems proactively before they spiral into serious incidents, the airlines benefit through reduced downtime and lower maintenance costs. In turn, Pratt & Whitney develops closer ties with customers, which translates into trusted relationships

and potential future sales. Finally, both Pratt & Whitney and its customers benefit from the huge database of engine performance insights the company compiles, covering every phase from installation to the end of the aircraft's life. This propels efficiencies and improvements in the design and manufacture of next-generation equipment.

Google stands as a more consumer-oriented example. Through its search engine and integrated apps and offerings, such as TV, Play, Wallet, Mail, Maps, and Chat, Google continuously collects rich data from customers about their preferences, personalities, shopping habits, and purchasing and computing behavior. The company serves this knowledge back to its customers in the form of enhanced products and customized services. Google is the very essence of a quantified core company: It considers no data irrelevant and all data strategic. Indeed, other companies are finding that they have to rely on Google—and, to a degree, Apple, Amazon, Facebook, and other companies that have similar coherent quantified core strategies—for access to knowledge about their own customers.

Quantified Core Capabilities

Measurement gets you only so far, as many individuals who struggle to lose weight know from personal experience. The same holds for business. Developing a quantified core requires a high degree of discipline, innovation, and agility that most companies cannot easily manage. Often, institutional inertia and technological confusion stand as obstacles. But companies can overcome. A quantified core capability has five mutually reinforcing attributes. Together, these represent the building blocks of a self-aware, data-savvy growth company.

1. A catalog of data and applications. You cannot put data to use unless you have a clear idea of what data your company already stores and what it might collect in the future. This information is beyond the reach of most business leaders. Although senior executives may understand the parameters of a particular data project or analytical experiment, they rarely have a full view of the range of data throughout the organization that is—or could be—curated, stored, and analyzed. IT departments may be more knowledgeable, but they are rarely attuned to the relationship between their data and leadership's strategic priorities. Asked to describe the information available about customers, products, partners, markets, and competition, most IT departments will produce dictionaries covering every repository in every server—but no guidance as to its value.

You may thus need to conduct a rigorous, business-focused cataloging effort. One financial-services firm began its company-wide data-for-growth campaign by preparing a comprehensive review of its information assets. The catalog included a roster of internal and external data sources, the current sources and recipients of each, and a plain-English definition of each data collection. Through this exercise, a common data language was created that allowed users throughout the company to see what data was available in the enterprise and the types of applications it was powering. This gave the company a meaningful platform for analyzing opportunities to make the most of its data. And it provided business executives throughout the enterprise with a shared set of facts with which to determine data challenges and priorities.

2. Open knowledge sharing. To develop a quantified core, you need to be a right-to-know company. This means adopting an explicit knowledge-sharing model that gives all internal teams the license and means to query, extract, and massage the company's data at any time, so long as privacy and confidentiality safeguards are in place. The right-to-know model reduces costs and makes the exchange of information much more convenient for employees, thus increasing their interest in using data for day-to-day business purposes and growth-oriented initiatives.

But most corporations find open knowledge difficult. They are need-to-know enterprises, burdened by data gatekeepers who demand use-justification and cost-benefit analyses before granting access to information repositories and analytical models. Often, privacy and compliance restrictions are brought up as arguments against broad-based data distribution. Not surprisingly, the business side is put off by this bureaucracy. People either find a workaround, which usually results in duplication, wasted expenditures, and lost opportunities, or they give up altogether.

Contrast this with the approach of a large retail bank that has fully adopted a right-to-know model. Over time, as internal users incrementally built data usage skills, the organization released more data and ways to access it. The enterprise collected a treasure trove of data that people throughout the business could draw from and analyze in any manner they needed. Privacy and systems stability are handled through rigorous procedures that separate operational management of the data

(including customer and employee identification) from analysis and insight generation. Right-to-know practices like these require higher levels of sophistication and organization for managing sensitive data and confidentiality. Instead of developing standards piecemeal with every request coming in from the business, the enterprise designed a mandatory company-wide set of protocols that govern the safe use of more broadly disseminated information.

Perhaps the biggest challenge for right-to-know companies is how few non-IT managers possess robust data skills. A consumer products company addressed this issue by requiring its MBA hires to go through an intensive orientation on data and its use, which includes placing recruits on the data team for some time. This program has enabled the company's business side to develop a wellspring of talent in this field: It now has people who understand the company's available data assets and know how to deploy them in creative ways to drive business decisions.

3. Cross-functional proficiency. A quantified core strategy requires a wide range of skills. Business leaders, department heads, and line managers are supposed to adapt data sets into growth strategies. To use information repositories to develop new products and services, they must be proficient in both analytics and innovation. When data leads information technology specialists to see breakthrough ideas, they must bring them to the operating units' attention. The IT specialists must not perceive their function as that of a service bureau. Rather than producing software to the business specifications, they must know how to credibly and cogently present opportunities that they have noticed.

An analysis of job postings shows how seriously quantified core companies take this perspective when they are hiring. For example, Amazon's requirements for a senior marketing manager include not just marketing competence, but technical skills in quantitative analysis and experience with data modeling tools like SQL. A good rule of thumb is that operating units should be able to handle 80 percent of data and analytical needs on their own. Highly specialized technical and analytical experts housed as a central resource for the business units can manage the rest.

4. A growth-oriented CDO. Although it's a relatively new position, the chief data officer (CDO) role is becoming more common at large companies. By one measure, there are more than 100 CDOs in Fortune 500 firms now, double the number of a couple of years ago.

Unfortunately, the CDO role in most of these companies is a gatekeeping function, tasked with ensuring data integrity and compliance. This limits the possibility that data will be actively and widely used for revenue growth. Instead of policing the rules, the CDO should foster connections between the company's data assets and its businesses—particularly the frontline staffs of marketing, service, and sales. The CDO should focus on helping the business use its data to drive growth, and on ensuring that newer, more valuable data sources are continually identified, sourced, experimented with, and then rolled out through the businesses.

At one large payments company, the CDO position was expanded specifically to play an active role in driving the growth agendas of the business units. Responsibilities included seeking out and coordinating data acquisition and investments, and figuring out how to use the data received through partnership agreements with digital technology, media, marketing, and analytics firms. In some companies, the CDO is linked directly to the business function by reporting to the head of strategy, digital, or channels.

5. Semi-centralized funding. Project funding is one of the biggest and most common barriers to achieving quantified core success. In some cases, funding may suffer from being too decentralized. The costs for data projects in these companies are borne by business units and their IT groups, which diminishes the possibility of sharing the data, leveraging investments across the organization, or harvesting what is learned from individual analytics exercises. In other instances, funding may be *too* centralized, which inevitably slows decision making and may not provide the critical levels of investment business units need to get the most out of projects. Such shortfalls severely limit the enterprise-wide commercial impact of data projects.

The most effective funding and oversight model is centralized—but only to a point. Data investment strategies in this structure are developed, overseen, and partially funded by a corporate executive team. The team ensures that data and related capabilities are shared across business units, emphasizing both economies of scale and opportunities for collaboration.

But the rest of the funding is decentralized. The business units fund data design and modeling, ensuring that there is no duplication of investments. The central author-

ity monitors progress against the company's stated data strategy, and business and functional leaders are accountable for driving the growth agenda and executing the strategy.

Walk, Jog, Run

The evolution of technology—whether in storage, networks, hardware, software, infrastructure, offshoring, or outsourcing—always outpaces the ability of companies to take advantage of it. Today, as IT costs rapidly fall, your company can use the windfall to build a quantified core capability. To accomplish this,

you cross that tipping point, and data consistently and automatically influences operations and growth strategy, you become a quantified core enterprise. You are deeply knowledgeable about your own performance and the external conditions affecting your future, and this makes you more innovative and distinctive in the marketplace, especially compared with your industrial-era competitors.

Here are the steps in a developmental path for building a quantified core. We recognize that there are proficiencies to build. But you

increase the share of business from existing customers, and to launch new products in partnership with other companies.

Top management realized these separate initiatives posed a real danger of redundancy and waste. To maximize the use of their quantified core capabilities across the businesses, they instituted more coherent company-wide oversight. They put in place a common data infrastructure, coordinated schedules and time lines without centralizing, and established a plan for sharing investments and resources across initiatives where there was overlap. None of the initiatives were canceled or even appreciably delayed. Instead, the company established a new collaborative approach, marked by cooperation among technology and business groups. That became a starting point for more advanced work.

As IT costs rapidly fall, your company can use the windfall to build a quantified core capability.

you'll need a data strategy: a map for getting from here to there.

A data strategy is not the sum total of individual initiatives bubbling up from parts of the enterprise. Rather, it is a company-wide endeavor that determines what those initiatives should be, in line with the enterprise's overall strategy. Analytical insights from data assets are woven into the heartbeat of an enterprise. The efficacy of data becomes a more general benchmark, indicating (for example) how often new customer value propositions are introduced, how well these match customers' changing preferences and expectations, how responsively the business operations can be adjusted when they need to be, and how broadly all these performance metrics are available to everyone in the organization.

It takes time to integrate data into an organization this way, and there are no shortcuts. But when

can grow your capability along with your business—in effect, walking and jogging before you run.

Walk. Use data to support current growth plans. Make data believers out of business leaders by exploring ways to improve existing revenue growth initiatives, using the data that your company is already collecting.

For example, a large financial-services company was in the midst of executing a number of growth-oriented campaigns across several business units. These data efforts, projected to cost hundreds of millions of dollars over three years, had been launched separately by business units based on individual cost–benefit justifications and financial return thresholds. Although they all had different roots, they had many features in common. They used consumer and marketplace insights to acquire new customers, to

If you're the CIO during this "walk" phase, your team has a significant implementation task. You must continue to enhance the technological capabilities of your enterprise. You may, for example, need to implement new analytical and data access tools; develop a next-generation IT infrastructure to support those tools; improve real-time data capture, analytics, visualization, and mapping capabilities; and take advantage of multiple platforms, such as mobile and desktop, so that all employees can access data and analytics from anywhere. You must do all this in the context of the growth initiatives, so that your funding and execution decisions are closely tied to the strategy.

Jog. When you're ready to pick up the pace, use new data to enhance and accelerate current growth plans. Encourage top executives to discuss and explore novel approaches

for using data to generate revenue not included in existing growth initiatives.

For example, if you're a financial-services firm: Could the real-time lookup of income data from government tax databases hasten loan approvals, thereby increasing customer satisfaction? Could a student's grade-point average be a good predictor of credit risk and thus help you make targeted offers that will win over the millennial generation? Could retailers set up a digital billboard near the mall that flashes sales on particular items, just as customers who searched for those products on their smartphones drive by?

The possibilities are legion. But your company must have a quantified core mind-set to take advantage of them in a sustained manner, as opposed to an episodic, one-off way. Your senior leaders should advance their perspective during this phase—from viewing data as an enabler to viewing it as a driver.

Jogging also involves continuously seeking out new kinds of data that can shed light on previously unknown areas of the business. Identify data that can replace the kinds of estimations and assumptions made previously, and establish relationships with technology, media, data, and analytics companies adjacent to the business that are collecting ancillary but relevant data. Use this information to continually enrich your modeling capabilities. Top executives and other key decision makers will truly believe in the power of data when they see firsthand how these new efforts generate growth.

Run. As you speed up, the potential for returns rises. Create brand-new sources of revenue, outside your core businesses, and then focus on integrating the new businesses with your existing business. For example, to offer customized products and services in ways that respond rapidly to changes in customer orientation, you may need to expand into new product categories, which may require enhancing your existing capabilities or developing new ones. Data-oriented products and services may be very different from the current core business of the enterprise, and it will be necessary to integrate them while moving at high speed.

One prime example of an organization in the run stage is an asset servicing firm that moved rapidly to build the data analytics capabilities that enable it to grow. The company, which maintains voluminous data from client investment activities, has developed a suite of products that aggregate, analyze, model, and interpret this information—scrubbed of confidential individual identification points—for businesses to purchase and use in their own internal analyses and revenue growth efforts.

Your industry and your company's value proposition will suggest similarly well-tailored uses of data at the run stage. A digital-TV manufacturer might analyze the behavior of consumers who use equipment to access the Internet, and develop value-added services for some consumer segments. This might move the company to interact directly with consumers for the first time, instead of operating through retailer and wholesaler sales channels. A package handling company may develop the ability to mine social networks for customer attitudes about product shipments, and use that data to forecast returns volume and efficiently balance fleet deployment.

The sustained competitive edge from big data does not come from any single big idea. It comes from building an in-depth enterprise-wide capability that enables the use of data analytics to deploy dozens of big ideas quickly, continuously, and skillfully.

Implemented correctly, the five quantified core attributes can serve as a foundation for excellence and market leadership gained from using data on a scalable, sustained basis. But for that to happen, data should be part of a company's strategic orientation, woven into the DNA of the enterprise. It should be available, accessible, easy to understand, and a constant part of the conversation when growth campaigns are designed. Indeed, it's startling that so few companies have realized the promise of data in their efforts to grow their businesses—despite the enormous time, trouble, and financial resources that many of them have poured into hundreds of one-off projects. Now is the time to pull your efforts together, build a quantified core capability, and make data central to your business. ✚

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