Inside the mind of Generation D

What it means to be data-rich and analytically driven

A new class of enterprise is emerging with a fresh approach to improving business. This group, Generation D, is made up of data-rich, analytically driven enterprises. They understand the unique and powerful value of data and analytics, and they know how to combine that with cloud, social and mobile technologies to transform their enterprises.

It's one thing to buy into the current belief that data and analytics can transform business. It's another thing to live it.

In our global study of more than 1,000 enterprises, the majority of respondents say they believe data is transforming both their industries and the way they work. Yet only one in five say they use more advanced forms of analytics to inform the majority of processes and strategic decisions in their organizations. Since seven out of ten respondents say they aren't lacking data, the key to driving business value is how enterprises *use* data and sophisticated analytics.

Data-rich and analytically driven enterprises think and act differently than their peers in terms of using data and analytics to better understand their customers and businesses. These enterprises also approach cloud computing and how they interact with their customers differently. They deploy analytics in the cloud to maximize agility and scalability and apply insight to drive customer engagement at a more personal, granular level. Fundamentally, these enterprises take a systematic approach to infusing insights across their business.

These enterprises report benefits on many fronts. They are turning insight into innovation and competitive advantage, creating efficient new approaches to business processes, and informing strategic decision making. But perhaps most impressive is how leading enterprises are outpacing their peers on key performance indicators such as share of wallet, customer and employee retention, and revenue from digital channels.

These data-rich, analytically driven enterprises are Generation D.

About the study

To better understand how enterprises are using data and analytics, cloud computing, and social and mobile technologies to engage customers, employees and partners, the IBM Center for Applied Insights conducted a telephone survey of 1,089 enterprises across 22 countries. We also performed 50 in-depth interviews to gain deeper insight into respondents' views and behaviors. The application of a k-medoids clustering algorithm revealed four distinct behavior patterns related to data and analytics.

Meet Generation D

Our analysis revealed four distinct approaches enterprises are taking with data and analytics today, distinguished by the breadth and variety of data they use and their level of analytic maturity (see Figure 1).

- **Traditionalists** use a limited number of structured data sources and typically apply only descriptive analytics.
- **Analytically ambitious** enterprises use a wider variety of data sources and view data and analytics as a high-priority area for investment.
- **Analytically enabled** enterprises pull data from many different sources and are beginning to realize the business benefits of more sophisticated analytics; but this behavior is typically still fragmented and not systematically applied across the business.
- **Data-rich, analytically driven** enterprises, those we've labeled **Generation D**, routinely leverage varied data sources, including structured and unstructured data, and apply prescriptive analytics to inform most processes and strategic business decisions.

Analytics – Three primary types

Descriptive
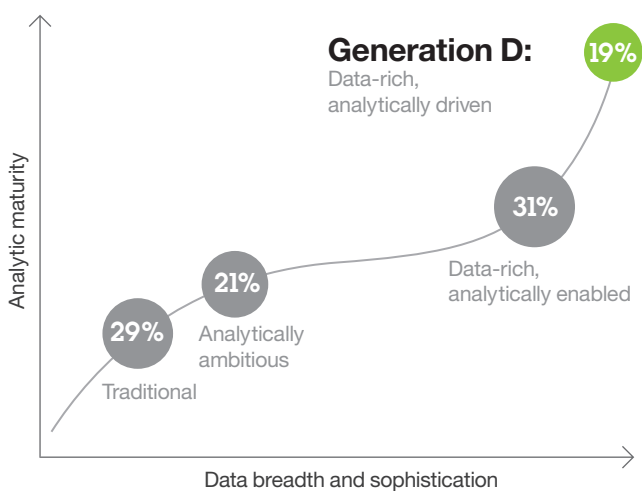A basic form of analytics that describes what happened

Predictive
A more advanced form of analytics that forecasts what may happen in the future

Prescriptive
Sophisticated analytics that shows the likely result of a variety of options and then recommends a course of action to achieve a desired outcome

Four approaches with one group that uses insights, cloud and engagement very differently

Figure 1. Among more than one thousand organizations, data-rich, analytically driven enterprises stand out from their peers.

Generation D enterprises are taking advantage of sophisticated data and analytics and report greater benefits than enterprises that don't. These leading enterprises are three times as likely to excel at developing a deep understanding of their customers and the markets they compete in, and two times as likely to automate processes and decisions based on insights they gain from analytics.

Generation D's innovative thinking extends to how these enterprises view and take advantage of other enabling technologies, such as cloud computing, mobile devices and social platforms. These enterprises are twice as likely to believe that cloud is transforming their business models, and twice as likely to engage with customers via mobile and social. Instead of viewing these technologies as discrete, Generation D enterprises orchestrate them to deliver more value, using cloud as a platform for analytics and applying the insight gained to improve interaction with customers.

Most importantly, Generation D reports excelling in areas that are strategically important to their business (see Figure 2). These enterprises report better results than other respondents on key performance indicators (KPIs), such as:

- Share of wallet[1]
- Promoter/advocate scoring[2]
- Annual revenue generated through digital channels
- New product or service development initiatives released to the marketplace

These enterprises also rate themselves more effective than others at developing new revenue streams, penetrating new markets and improving interaction with customers. And they report a stronger ability to operate efficiently, manage risk, respond to security threats, and quickly release new products and services (see Figure 3).

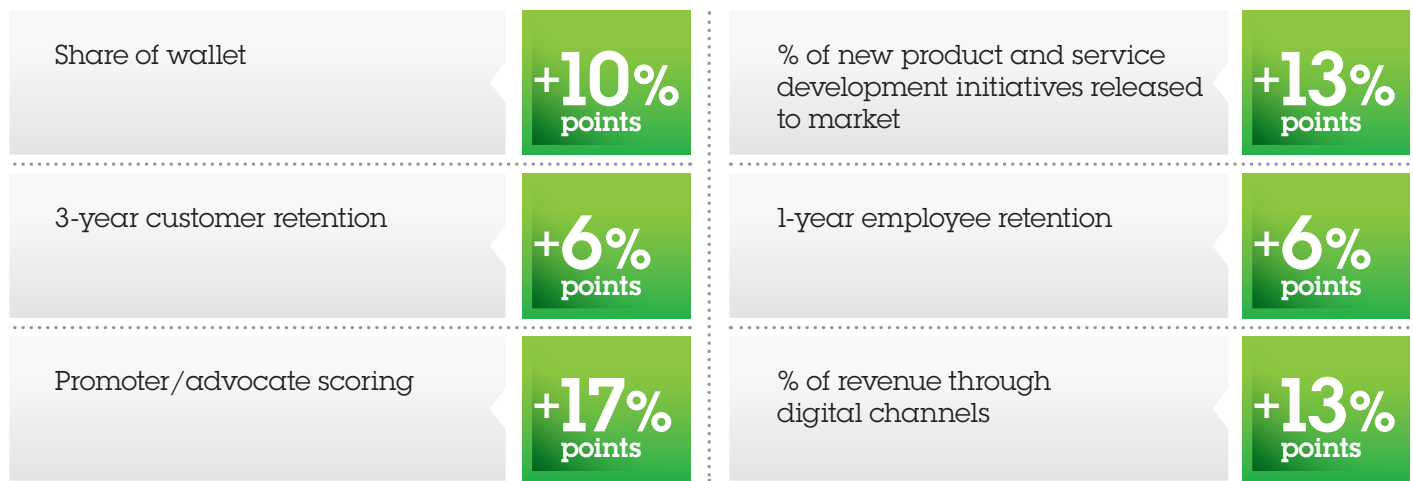**Generation D reports improved performance over peers on KPIs**

Share of wallet	+10% points	% of new product and service development initiatives released to market	+13% points
3-year customer retention	+6% points	1-year employee retention	+6% points
Promoter/advocate scoring	+17% points	% of revenue through digital channels	+13% points

Figure 2. The Generation D approach correlates with above-average performance.

More Generation D enterprises are extremely effective at addressing business challenges
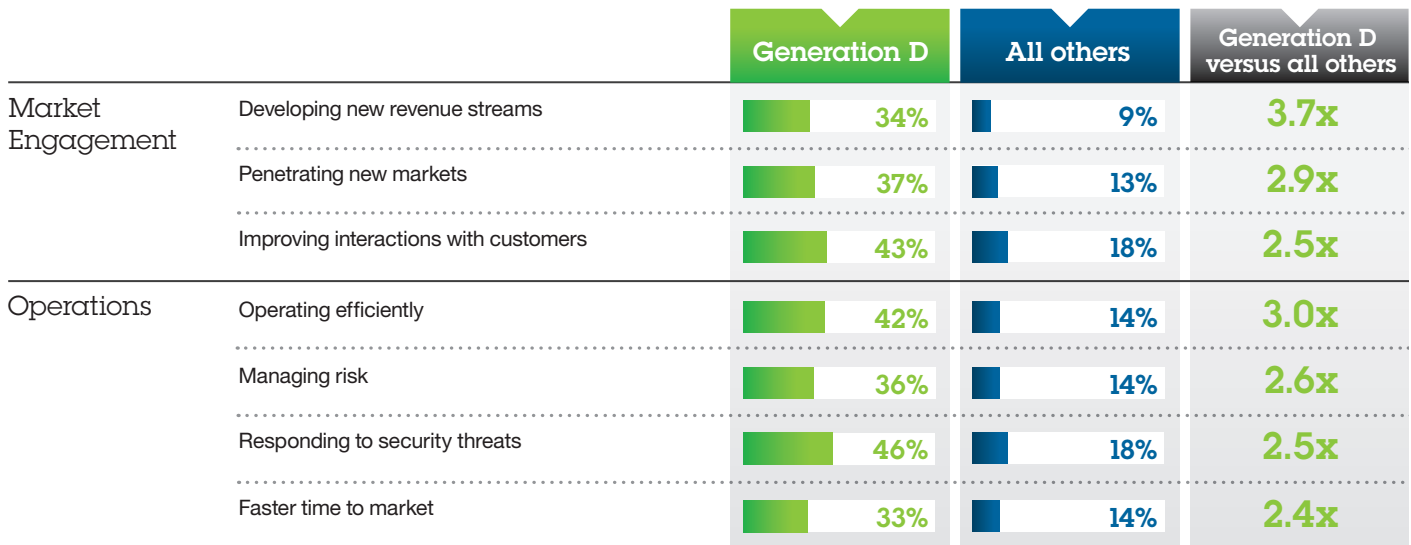
		Generation D	All others	Generation D versus all others
Market Engagement	Developing new revenue streams	34%	9%	3.7x
	Penetrating new markets	37%	13%	2.9x
	Improving interactions with customers	43%	18%	2.5x
Operations	Operating efficiently	42%	14%	3.0x
	Managing risk	36%	14%	2.6x
	Responding to security threats	46%	18%	2.5x
	Faster time to market	33%	14%	2.4x

Figure 3. Generation D enterprises see themselves as better able to address critical imperatives.

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$ ¥

"The biggest opportunity is the ability to provide customers with services that they haven't yet realized they need. We have to know our customers better than we do today, and potentially understand their needs better than they do themselves."

– VP of IT, Financial Services Firm

Advanced data sources and sophisticated analytics

Compared to their peers, Generation D systematically taps more and different sources of data to glean insight. These enterprises also employ more sophisticated analytic techniques to help make decisions and move the business forward (see Figure 4).

According to Gartner, more than 30 percent of analytics projects will deliver insights based on a combination of structured and unstructured data by 2015.[3] Generation D enterprises understand the importance of tapping unstructured data (66 percent are using it) – they are more than twice as likely as other enterprises to use advanced data sources such as unstructured text, audio and video.

For example, by analyzing aerial photography data, one insurer has slashed the number of homes it physically inspects from 100 percent to just 40 percent, while better detecting discrepancies and potential fraud. In the retail industry, another company is using video footage of shoppers' navigation patterns to optimize store layouts. "Video gives us a unique opportunity to actually see patterns of how people move through the store – and then rearrange aisles to fit consumers' styles," the IT Director shared.

Generation D also finds value in combining information from seemingly unrelated sources to create a more complete picture and drive better outcomes. By analyzing its sales, customer loyalty and staff scheduling data simultaneously, one restaurant chain has been able to put the employees who sell the most on the busiest shifts, boosting revenue by about two percent.

These enterprises understand the importance of developing and using sophisticated analytics that go beyond describing what happened to predicting what may happen, and even prescribing the best course of action. In telecom, customer churn is a major challenge, as up to a quarter of a company's clients can defect in a single year. One enterprise we spoke to has adopted a proactive approach to retaining customers. It has created a predictive analytic model that draws upon roughly one hundred factors. The model considers basic data points, such as contract expiration dates and network outages, but also more advanced sources. For example, it measures customer dissatisfaction based on social media posts and call center recordings. Ultimately, each customer is assigned a "propensity to churn" score, allowing the company to make targeted efforts at retention.
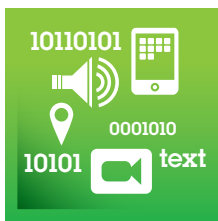
"If you can pick the right product and you can get into the market early and get out before it goes the wrong direction, you're the winner. We're using predictive analytics to help us do that."

– CIO, Jewelry Retailer

Generation D enterprises are more likely to combine advanced data with sophisticated analytics

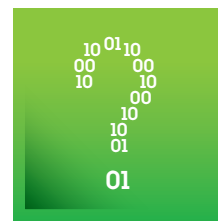Data breadth and sophistication

2.2x

more likely to use **advanced data** sources such as unstructured text, location data, audio, video and mobile application data

1.5x

more likely to use traditional data sources such as transactional, CRM, supplier, log, publicly available and purchased data
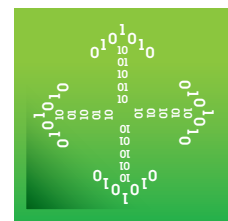
Analytical maturity

2.9x

more likely to use **predictive analytics**, and

4x

more likely to use **prescriptive analytics**

to inform most processes and strategic decisions within the enterprise

		Generation D	All others	Generation D versus all others
Analytic capabilities	Engage in video/audio analytics	93%	29%	3.2x
	Use natural language text analytics	89%	23%	3.9x
	Conduct next best action modeling	74%	42%	1.8x
	Use simulations	67%	44%	1.5x

Figure 4. Generation D enterprises are successfully taking advantage of a wide variety of data to guide business strategies.

Cloud as a platform for data-driven business

Generation D enterprises' forward-thinking approach extends to how they leverage cloud computing (see Figure 5). Sixty percent of these leading enterprises view cloud as a key enabler of business model transformation. That's nearly double the 31 percent of other respondents.

These enterprises are harnessing the flexibility and scalability of cloud platforms to perform more sophisticated analytics and deliver insights at the point of decision. "The biggest advantage of the cloud is having the ability to access data in real time," explained one Director of Development of a large restaurant chain. "In the restaurant business, where the margins are very slim, that gives us an advantage over the competition."

A US-based real-estate company uses cloud to store and organize various data sources and make them available in real time to employees. With this information, the company has built in-house analytic models to better predict and target vacancy rates in different geographies and enable employees to prioritize purchases. "Cloud gives us huge benefits in terms of the ability to make quick decisions and share data internally and externally," explained the company's CTO.

Cloud computing can help Generation D deliver improved customer experiences. One media company is using a cloud-based solution to transcode every single news video it produces into 49 different versions, each with a unique combination of speed and format. Through the cloud, each of its viewers now automatically receives a form of the video optimally suited to his or her device.

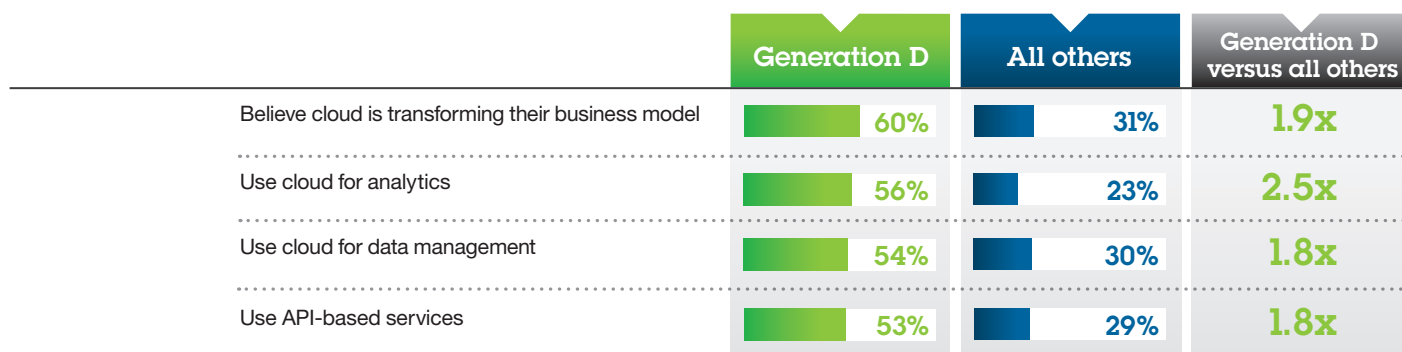**Generation D enterprises view cloud as key to enabling transformation**

	Generation D	All others	Generation D versus all others
Believe cloud is transforming their business model	60%	31%	1.9x
Use cloud for analytics	56%	23%	2.5x
Use cloud for data management	54%	30%	1.8x
Use API-based services	53%	29%	1.8x

Figure 5. Extending the cloud footprint is an important part of the Generation D approach.

Engagement driven by insight

Generation D enterprises are also more likely to use the insight generated by data and analytics to engage more granularly with customers, employees and partners. More granular insights can help them better understand their customers and offer more individualized service, to collaborate more effectively across their employee base and to coordinate better with partners. They are also twice as likely to embrace new ways of engaging, such as social and mobile (see Figure 6).

One retailer is using an analytics-driven mobile app to sell more effectively and counter rivals' digital channels. Based on customers' purchasing histories and feedback, the app sends customers personalized coupons and alerts shoppers to price-matching offers on items they had previously expressed interest in. The app can also redirect customers who are faced with an out-of-stock item in the store. "If we don't have a product that they're looking for, our app leads them to our online store or tells them which nearby location has it in stock," said the retailer's director of IT operations.

For Generation D, mobile and social technologies inspire new ways of interacting and new chances to provide flexibility and convenience for their customers. "Our customers can now deposit checks from the comfort of their home," highlighted one financial services executive. "We allow them to begin a transaction on their mobile phone and drive up to an ATM and complete that transaction. To be a premium financial services provider, you have to adapt technologically and service customers in a way that entices them to stay."

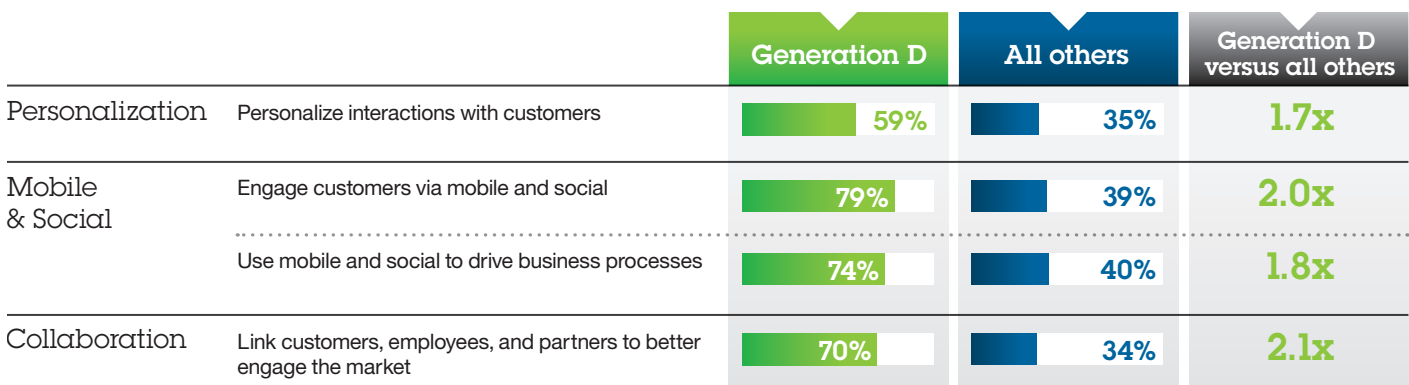**Generation D enterprises are embracing new ways to engage customers, employees and partners**

		Generation D	All others	Generation D versus all others
Personalization	Personalize interactions with customers	59%	35%	1.7x
Mobile & Social	Engage customers via mobile and social	79%	39%	2.0x
	Use mobile and social to drive business processes	74%	40%	1.8x
Collaboration	Link customers, employees, and partners to better engage the market	70%	34%	2.1x

Figure 6. Taking advantage of varied or many data sources and using powerful analytics allows Generation D to transform stakeholder experiences.

Share this

60 percent of Generation D applies analytics in real time

Developing a Generation D systematic mindset

Within each area – analytics, cloud computing, and mobile and social engagement – Generation D has more advanced capabilities. But what really sets these enterprises apart is how deeply engrained these new ways of thinking and behaving have become. Generation D is not just using analytics, cloud, mobile and social as discrete technologies within functional silos; they're employing a more systematic, enterprise-wide approach (see Figure 7).

Mobile and social are rapidly becoming their *primary* channels for engaging customers – 56 percent say one of these is already primary. The *majority* of their decisions and business processes are now infused with analytics. This even extends to their security posture; 71 percent of Generation D enterprises are enabling more proactive security via data and analytics. And cloud is becoming their go-to platform for analytics and real-time application of insights.

Analytical speed gives Generation D an edge. Compared to others, these enterprises are 1.5 times more likely to provide data and analytics in real time. As one retail executive put it, "We can't afford to analyze things at the end of the day. That's too late. The point where we need to intervene is at purchase. Inability to do that is a lost sale."

The ability to deliver insights at the pace of business is transforming how work gets done in these enterprises. "It's a whole different world than it was just two years ago," one marketing executive stressed. "We're doing analytics on a minute-by-minute basis. The days of six-month ad campaigns, planned in advance, are done. Now, it's six-day campaigns." At one insurance company, real-time analytics have totally overturned conventional methods for pricing policies. "The system is smart enough – because of how we've programmed it – to make pricing decisions in real time," explained the analytics manager. "Developing an entirely new rating plan used to take six to nine months. Now we build it in six to eight weeks."

Generation D takes an enterprise-wide approach

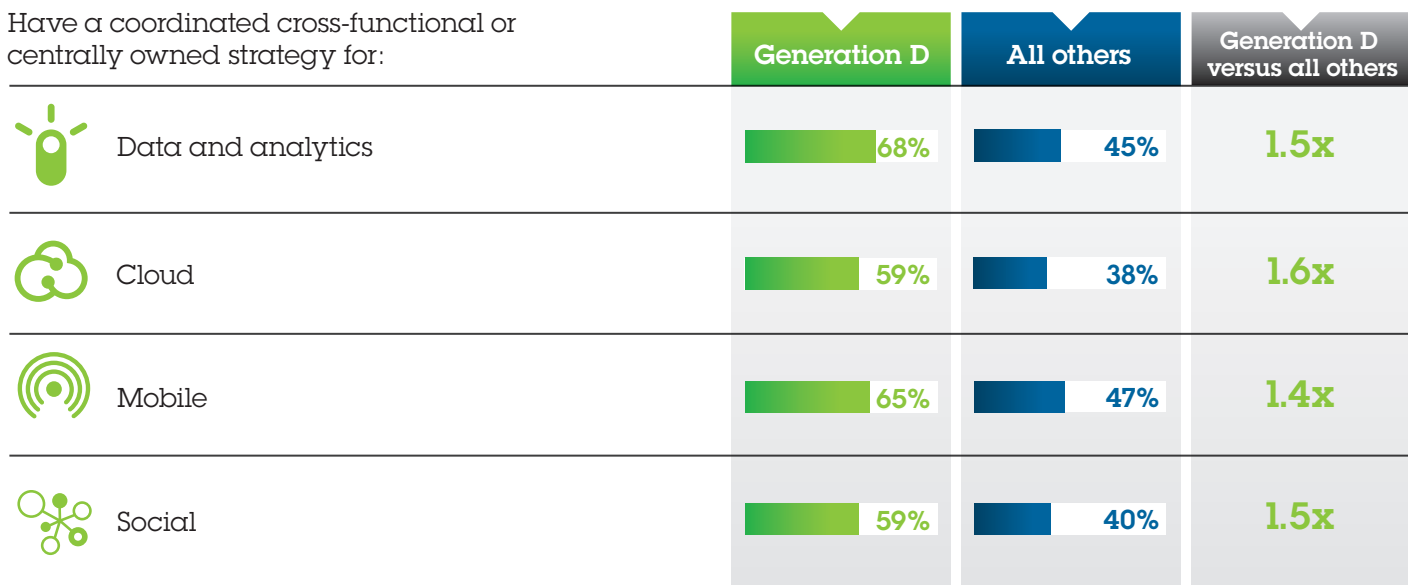| Have a coordinated cross-functional or centrally owned strategy for:	Generation D	All others	Generation D versus all others
Data and analytics	68%	45%	1.5x
Cloud	59%	38%	1.6x
Mobile	65%	47%	1.4x
Social	59%	40%	1.5x

Figure 7. Generation D enterprises coordinate and centralize strategies across the business.

This growing dependence on data and analytics is also prompting Generation D enterprises to establish new positions. "If you'd asked me five years ago what a data scientist is, I wouldn't have been able to even render a guess," joked one financial services executive. "Today, we're hiring them." Perhaps more important, these organizations are recognizing the need for focused leadership and expertise, given the prominence and importance of data and analytics. "For the first time in the history of our company, we now have a Chief Data Officer," reported one insurance executive. Such a role can help design and execute enterprise-wide strategies for data and analytics.[4]

For Generation D, this transformation is just as much about culture as it is technology (see Figure 8). Driving their business based on data requires that all employees – not just the analysts and data scientists – are comfortable with analytically derived insights. Generation D is ready: they're more than twice as likely as other companies to educate and train employees on the use of data and analytics. "Our data maturity has moved light years ahead the past couple of years," emphasized one retail executive. "There's been a push from the top to create a data-driven culture, to base opinions and decisions on facts and metrics rather than the gut."

Looking forward, Generation D shows no signs of slowing down. These enterprises continue to invest in new data and analytical capabilities, more cloud-based models and better ways to interact with customers. But their core philosophy remains constant:

"Data really is our backbone. It's how we test our way into new programs. It's how we optimize current programs. It's how we select which customers to target. You really can't underplay it at all," explained one retail marketing executive. "It's the cornerstone of everything we do."

How about your enterprise? What part will data and analytics play in your future? Are you prepared to join Generation D?

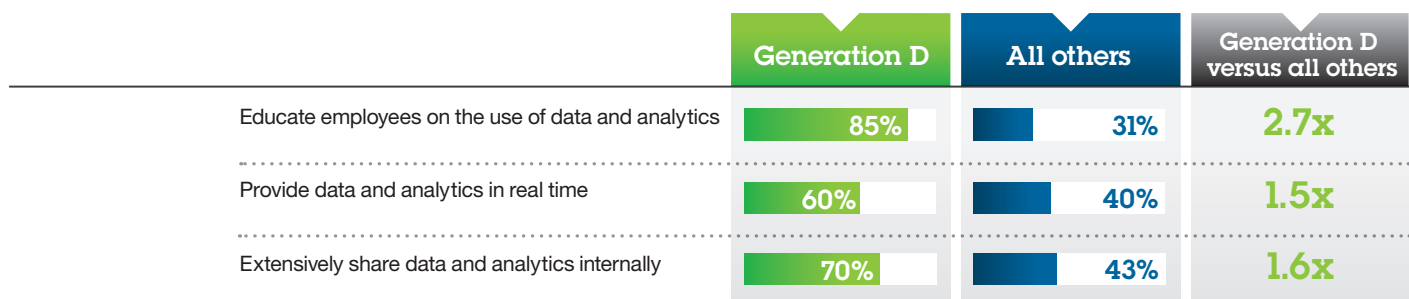**Generation D enterprises infuse data and analytics throughout the business**

	Generation D	All others	Generation D versus all others
Educate employees on the use of data and analytics	85%	31%	2.7x
Provide data and analytics in real time	60%	40%	1.5x
Extensively share data and analytics internally	70%	43%	1.6x

Figure 8. Generation D enterprises are far more likely to treat data and analytics as a dynamic, living capability.

About the authors

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[1] Share of wallet is the percentage of an average customer's total spending captured in a given category.

[2] Promotor/advocate scoring is the percentage of a company's customer base that say they would recommend it to others.

[3] "Gartner Says Business Intelligence and Analytics Need to Scale Up to Support Explosive Growth in Data Sources." Gartner press release. January 2013. http://www.gartner.com/newsroom/id/2313915

[4] *Your Chief Data Officer: Re-imagining the Business of Data.* IBM Center for Applied Insights. September 2014. http://ibm.com/ibmcai/cdostudy