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10 Insights: A First Look at The New Intelligent Enterprise Survey on Winning With Data

10 Data Points: Information and Analytics at Work

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10 Insights: A First Look at The New Intelligent Enterprise Survey

How do you win with data? *SMR* surveyed global executives about turning the data deluge and analytics into competitive advantage. Here's an early snapshot of how managers are answering the most important question organizations face.

BY MICHAEL S. HOPKINS, STEVE LAVALLE AND FRED BALBONI

FROM THE EDITOR

Last May, at the MIT Sloan CIO Symposium main-stage discussion on "Emerging Stronger from the Downturn," one panelist listened with a growing private smile as his fellow speakers described example after example of how technology-driven information and analytics applications were transforming their companies. The stories were of data and analysis being used to understand customers, parse trends, distribute decision making, manage risk; they foretold of organizations being reinvented and management practice being rethought. They told of change, basically. A lot of it. Driven by ever-emerging technology and the new things it could do.

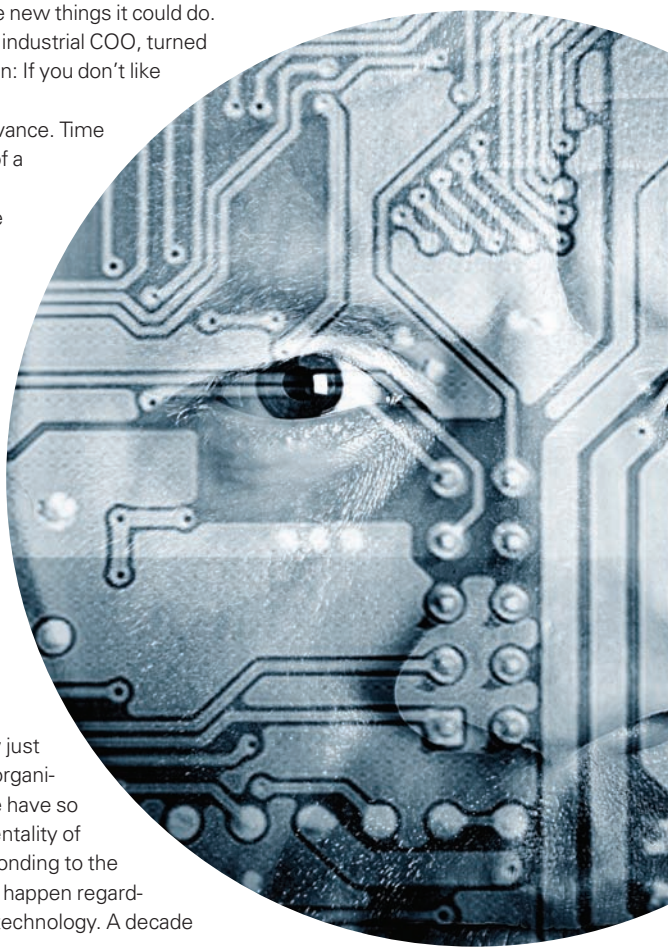
That was the point at which the panelist, a multinational industrial COO, turned to the audience and unofficially summarized, "So, the lesson: If you don't like change, you're going to like irrelevance even less."

He's right. Change is here. Failure to adapt means irrelevance. Time and progress march on, but at a Moore's law pace instead of a clock's.

However, the focus on exactly what's changing can be misplaced. For all the swiftness with which technology is shifting — getting smarter, more powerful, more cognitively "human" — it's sometimes true that the attention we pay to the next new technology is a distraction. It distracts us from the changes that organizations could make with *no more new technology at all* — the changes organizations could achieve just by capitalizing on how current technology can enable them to capture, analyze and act on information. (Though the "just" in that sentence may be ill-advised.)

MIT Sloan School's Erik Brynjolfsson, director of the MIT Center for Digital Business, talked about that kind of change in an interview with *SMR* (find the edited interview at sloanreview.mit.edu/x/51330):

"Although most of what I've been talking about has focused on changes in the technology, I think the biggest changes are going to be in the way the companies *use* the technology. If some catastrophe happened and technology just froze for the next couple of decades, I believe the pace of organizational change would continue just as rapidly, because we have so much catching up to do. Specifically, I think this cultural mentality of using data more effectively, running experiments and responding to the environment and replicating it is something that is going to happen regardless of what additional advances we see in the underlying technology. A decade



THE LEADING QUESTION

What do surveyed executives say about how they compete on data and analytics?

FINDINGS

- **Executives name innovation their top business goal.**
- **There is a striking correlation between an organization's analytics sophistication and its competitive performance.**
- **The biggest obstacle to adopting analytics is lack of know-how about using it to improve the business.**

from now, I expect companies to be far more responsive, far more innovative, far more analytics-minded."

Brynjolfsson gave experimentation special emphasis, but his observation fits other information-enabled practices found under the big tent of analytics. The technology is here. The data are available. How will companies use them to win?

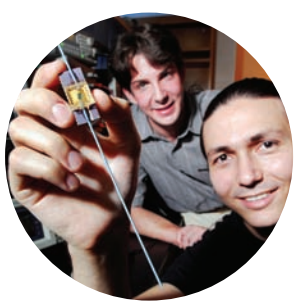
To answer that question, *SMR* has teamed with the IBM Institute for Business Value to build a new innovation hub and research program called "The New Intelligent Enterprise."

Through the *SMR* and IBM IBV collaboration, The New Intelligent Enterprise aims to help managers understand how they can capitalize on the ways that information and analytics are changing the competitive landscape. What threats and opportunities will companies face? What new business models, organizational approaches, competitive strategies, work processes and leadership methods will emerge? How will the best organizations reinvent themselves to use technology and analytics to achieve novel competitive advantage? How will they learn not only to *be* smarter, but to *act* smarter?

In the months ahead, this inquiry into the makeup of The New Intelligent Enterprise will consist of survey research, in-depth interviews with thought leaders and top corporate executives worldwide and the most relevant academic research and case study work in the field. The next few pages contain (very) early returns on that research — especially on the first annual New Intelligent Enterprise Survey, a global survey of nearly 3,000 executives who told us about their top management goals, their uses (and misuses) of information and analytics as they attacked those goals and the management practices in play in their organizations. In both this article and "10 Data Points," which follows on page 28, we call out some of what we're learning. The articles have been coauthored by core members of The New Intelligent Enterprise team: Steve LaValle, IBM Global Strategy Leader for Business Analytics and Optimization; Nina Kruschwitz, *SMR* Special Projects Editor; Rebecca Shockley, IBM IBV Global Lead for Business Analytics and Optimization; and Fred Balboni, IBM Global Leader for Business Analytics and Optimization.

Please note: What's here is only preliminary — a true "first look" at the themes, benchmarks and questions that are surfacing. Next on the schedule: conclusive analysis of the survey and stage-one interview findings will be published in a New Intelligent Enterprise Special Report on October 25. Selected interviews will be published online through early winter. And in late December, the Winter issue of *SMR* will include further exploration of the key ideas in October's Special Report. Please visit sloanreview.mit.edu for updates and publications.

For now, though, consider the following notes — and the survey statistics in "10 Data Points" — as a collective reminder to reexamine your own practices and plans. As the gentleman said, If you don't like change, you're going to like irrelevance even less.



Here are 10 observations and questions about analytics-driven management that have popped out of research and interviews so far, and which we'll be exploring more deeply in the major reports ahead.

1 The Big Picture: Make It New (Or, the Innovation Imperative)

What's the challenge that information and analytics need most to help solve? Innovation, say New Intelligent Enterprise Survey respondents. They named "innovating to achieve competitive differentiation" their top business challenge (see "Innovation Is the Top Business Challenge," p. 28), significantly ahead of runners-up "growing revenue," "reducing costs" and "acquiring customers." Top performing companies put an even higher premium on innovation than lower performers did.

Innovation's dominance as a strategic need may explain a lot about the current management emphasis on data exploitation in general and analytics in particular. Think of Thomas Malone on aggregating insight via collective intelligence, or Andrew McAfee on informing human intuition with the rigor and insight of machines. Or think again of Brynjolfsson and his observa-

tion about the underlying catalytic force of *measurement* alone, which is just one of technology's innovation-enabling traits:

"What we're going to see in the coming decade are companies whose whole culture is based on continuous improvement and experimentation — not just of specific processes, but of the entire way the company runs. I think this revolution can be fairly compared to the scientific revolution that happened centuries ago. Great revolutions in science have almost always been preceded by great revolutions in measurement. Management historically has not had that kind of careful measurement or experimentation." Now it does. Or it could, at least.

Next question: What specific ways are companies inventing to aid and abet innovation with analytics?

2 Analytics = Performance?

Correlation is not causality, but results from The New Intelligent Enterprise Survey support anecdotal reporting and interviews by revealing a striking connection between organizations with high analytic sophistication and top performance, relative to industry peers. Top performers are three times more likely to be sophisticated exploiters of data and analytics than lower performers.

Thought leaders who were interviewed noted that productivity studies also offer support for viewing analytics as a key performance driver, showing that as organizations increase their leveraging of technology and information, they recognize disproportionate productivity gains.

Whether causal or just correlative, the link is strong enough to have bred one of several storylines being explored in ongoing survey analysis: the notion that one sure journey a company can take toward competitive outperformance of its peers is the journey from analytics "starter" to analytics "sophisticate."

That leads to the next questions: What are the mileposts on that journey? What organizational characteristics need to be either nurtured or pruned in order for a business to advance along those steps? What processes are critical to install, and at what points?

3 You Can't Graft Analytics on to Your Business Without Modifying Its Culture, Too

Turns out it's wishful thinking to expect that inserting analytics into a business is like adding a room to a house — a move requiring no structural changes elsewhere in the operation. Culture (and talent, see below) is among the less well understood impediments to comprehensive analytics adoption. (See "Sophisticates Welcome Challenges to the Status Quo," p. 31) for a glimpse of just one way in which advanced analytics users are different from the norm. Compared to many companies, they're both paradoxically more distributed (information, decision making and experimentation all need to happen close to the ground) and more centralized (data has to be governed in order to be shared). Traditional 20th-century organizations find none of that easy.

Question: Which culture attributes need to be developed first?

4 Help Wanted (The Analytics Talent Challenge)

Survey results, expert interviewees and field commentators all suggest that there's a gap between the size of the analytics opportunity and the amount of talent needed to seize it.

The gap is created by the peculiar requirements of the ideal analytics-driven managers. They have to combine expertise in statistics, experiment design and interpretation and analytics with fundamental business knowledge and acumen. These analysts need the ability to ask the right questions and pose the right hypotheses. They need to know how to get data to tell them the things that matter (and not the things that don't).

Question: Given the shortage of such individuals, can organizations structure analytics management and execution so that individuals with some of the needed talents can work together to complement each other and constitute an effective whole?

5 Where in Organizations Is Analytics *Done*?

Three shorthand points:

- Both the survey and field research show that IT departments aren't leading the analytics charge but are integral to its success.
- Back to the story of analytics-sophistication evolution: It appears that analytics typically take root at point of need when companies begin the sophistication journey. Point-of-need applications remain present in about the same quantity, but as companies evolve, they first grow additional analytics

capabilities at the unit or line-of-business level and finally at the central enterprise level.

■ Several interviewees have suggested that a dedicated executive role may emerge — a "Chief Analytics Officer."

6 Where Are the Leaders Going?

The leaders — the top performers, the analytics sophisticates — are going further, as fast as they can. The survey reveals that despite already being ahead of the pack as data-driven organizations, they disproportionately feel pressure to capitalize on analytics even more; improving their information usage is a higher priority than for non-leaders; and they are more likely than less sophisticated businesses to look outside their walls for benchmarks and lessons.

A case of: The more you know, the more you know you want to know more. (Also, see #7 — Seeing Is Believing.)

7 Seeing Is Believing (and Understanding, and Using, and Collaborating)

One more place the leaders are going: toward methods of making information come alive for users throughout their organizations — methods of making information *real*. Data visualization and simulations and scenario development are just some of the ways companies are trying to turn information into an active, rather than a passive, engagement. (See "What Matters Is Changing," p. 30.)

A research question: Which will work best?

8 Strategy: Plan Less, Experiment More

Almost all thought leaders — and many executives — cite the rise of experiments and the necessity for the analytics capabilities that underpin them. Practitioners use terms like "test and learn" and "sense and respond" to describe an approach that at its most rigorous includes a hypothesis and a control group, and at its least rigorous still demands an information sophistication not all companies have. Experiments can be large and organization-wide or tightly targeted and miniscule (which they more often are). Either way, they can powerfully supplant traditional methods of plotting a business's course. Survey respondents may have had that supplanting in mind when placing "strategy and business development" significantly behind only "financial management and budgeting" as the business activity to which they apply analytics.

9 Analytics Plays No Favorites

There's a conviction that the analytics-driven company does best in a consumer-facing game — or even better, in a born-digital, consumer-facing game (prototypically, Amazon). The survey results say otherwise, suggesting that organizations in any industry can *and do* use analytics as a competitive differentiator.

10 Experts vs. Executives — The "Ideal State" Assessment Gap

Among the questions asked of both thought leader interviewees and executive survey respondents was: "Imagine an organization transformed by better ways to collect, analyze and be prescriptively guided by information. How close are you to that ideal? Please rate on a scale of 1 to 10, where 1 = Not at all close, and 10 = Very close."

This self-assessment question was one of the revealers of analytics "sophistication." And the answers in aggregate, averaged, suggested how far the corporate world believes it has already come along the evolutionary path to being sophisticated about exploiting technology and data — and presumably to being rewarded with the competitive benefits that seem to attach. The average answer? About 4.5 on that scale of 10.

We asked the same question of interviewees — scholars and professional thought leaders who were asked to grade corporations as a whole — and got average answers 50% lower. Why? It could be testament to unduly high self-regard on the part of executives or unduly low critical assessments on the part of experts, but we think it's something else. We think it's about a sense of possibility — a differing notion between experts and executives of where the ceiling is. It's not that the interviewed experts denigrate the corporate world's progress to date; it's that they know enough to envision just how far that progress might extend.

We think the experts are right.

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10 Data Points: Information and Analytics at Work

Early returns are in from the first annual New Intelligent Enterprise Survey. Here are major highlights of what executives and managers said about how they are — or are not — capitalizing on information.

BY NINA KRUSCHWITZ AND REBECCA SHOCKLEY

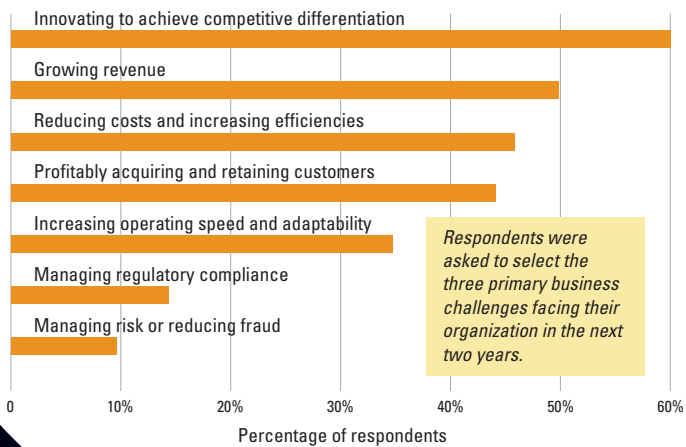
THE NEW INTELLIGENT ENTERPRISE inquiry is all about the intensifying wave of data that organizations are facing, and its implications for managers. Companies are becoming data driven in ways that are new, raw and — in many cases — untested. And now so are we: We're trying something new by letting the data come first, without a lot of editing or parsing. Here is a slice of the raw goods, a kind of behind-the-scenes look at the data we gathered from our survey of nearly 3,000 managers and executives from every major industry and all regions of the globe.

We chose these 10 charts to share because they captured our attention. Some are provocative, some are telling, and some raise questions we haven't even tried to answer yet. They're by no means comprehensive, and our final report will cover many more points accompanied by rigorous analysis. But we do think you'll find these graphics worth a look if for no other reason than that they allow you to do some immediate benchmarking. How does your organization compare with others? What are your peers doing, and how might that influence decisions you're considering right now?

The survey respondents answered two questions that allowed us to group them and their answers in some interesting ways. One question asked

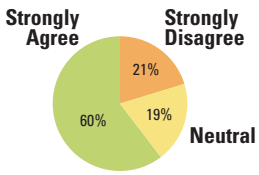
INNOVATION IS THE TOP BUSINESS CHALLENGE

More than 60% of all respondents chose innovation for competitive differentiation as their main business challenge over the next two years. In a recessionary business climate, doing more with the resources and talent you already have is always a favored strategy. When we parsed the data, we found that Starters (new users of analytics) were entrenched in "survival mode," focused on cuttings costs and creating efficiencies as their main challenge. Intermediates (moderate users of analytics) were in "growth mode," focused on growing revenues. Sophisticates (advanced users of analytics) were in an "expansion mode," focused on growing revenues and expanding their customer base through acquisition or retention strategies, perhaps because their use of analytics had already helped them optimize their operations and general growth approaches.



THE DATA DELUGE IS REAL

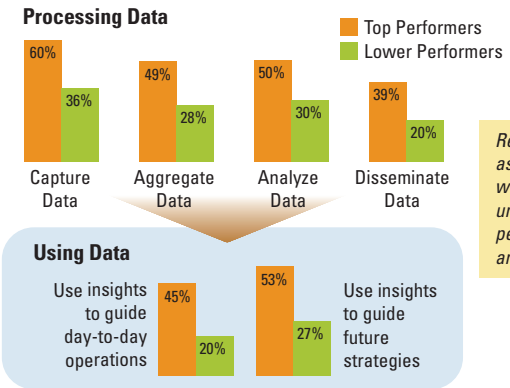
Organizations are overwhelmed by the amount of data they have, and struggle to understand how to use it to achieve business results. When we analyzed these responses, the nuances were striking. Almost two-thirds of non-Sophisticate organizations believed this to be true, while two-thirds of Sophisticates did not. It may be that as organizations become more adept at processing and using information, they are less likely to feel overwhelmed by its volume.



Respondents were asked to rate how well the statement "The organization has more data than it knows how to use effectively" described their organization.

TOP PERFORMERS USE ANALYTICS

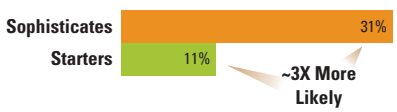
Top performers have a much greater ability to manage and act upon the data they capture. Fifty-three percent use insights they glean from analyzing data to guide strategic decision making. Nearly half use it to guide day-to-day operations — which is even more challenging. Lower Performers are not very skilled at managing the data they capture, or at using analytics to help them perform better.



Respondents were asked to rate how well their business unit or department performs information and analytic tasks.

ANALYTIC SOPHISTICATES ARE TOP PERFORMERS

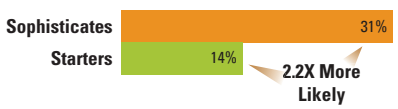
Organizations that identify themselves as substantially outperforming their competitors, or Top Performers, in their industries are three times more likely to be sophisticated in their use of analytics than Lower Performers. In fact, only 9% of Sophisticates considered themselves as underperforming their peers.



Respondents were asked to rate their organization's competitive position relative to peers within their industry on a five-point scale.

SOPHISTICATES KNOW THEY NEED TO BE EVEN BETTER

Analytically sophisticated organizations were twice as likely to feel intense or significant pressure to adopt new analytic techniques than those just starting on the analytic journey. That may be because organizations that are just starting to use analytics don't know what is possible, what data they **really** need or how far behind they are. Sophisticates have already experienced the challenges and the benefits, and expect continued use of analytics to increase their competitive advantage.



Respondents were asked the extent of pressure they were under to adopt new or advanced information.

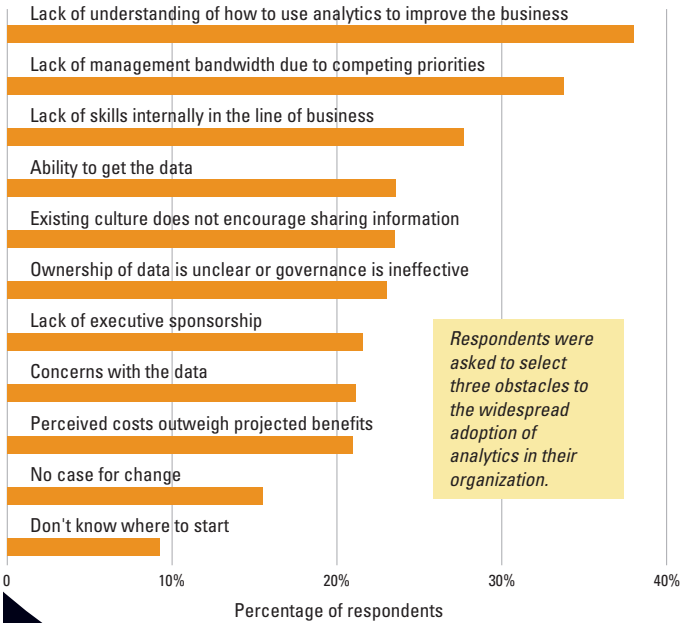
them to assess where their organization is along the journey to an ideal state: an organization that has been "transformed by better ways to collect, analyze and be prescriptively guided by information." Those that were farthest along that path we deemed Sophisticates; those who were midway became Intermediates; while those that were just beginning to look at data and analytics we called Starters.

We also asked them to describe their organization's competitive position. Those that rated themselves as substantially outperforming their industry peers we named Top Performers. Those that were underperforming we labeled Lower Performers. You'll note both groups called out in the accompanying charts.

(continued on page 30)

WHAT ARE THE OBSTACLES TO ADOPTING ANALYTICS?

Organizations are struggling to understand how analytics can help them improve business results — and managers don't even feel they have the time to figure it out. There are also cultural impediments around the organizational ownership and sharing of data. One interesting data point here is the perceived lack of skills. Our initial findings suggest that many organizations may have unrecognized talents within their midst — employees who consider themselves at least proficient in the use of analytics, but who are only occasionally asked to use them — especially in low-performing organizations.



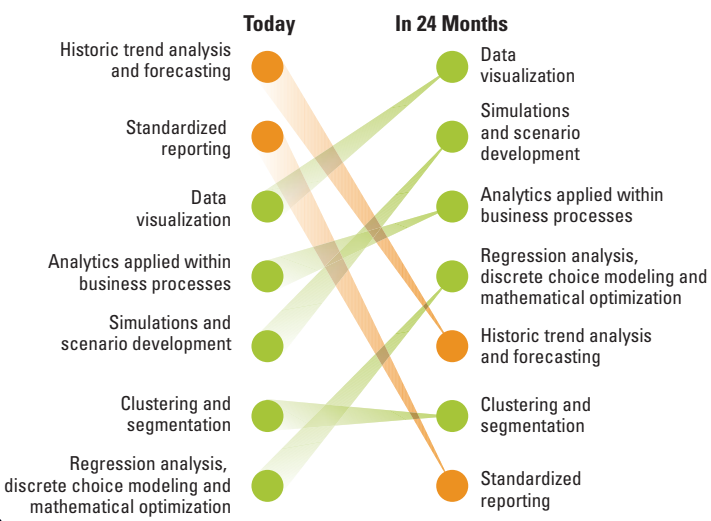
Respondents were asked to select three obstacles to the widespread adoption of analytics in their organization.

> Sophisticates expect continued use of analytics to increase their competitive advantage.

> Analytics may provide a way out of an entrenched "that's-the-way-we- have-always-done-it" mentality in organizations.

WHAT MATTERS IS CHANGING

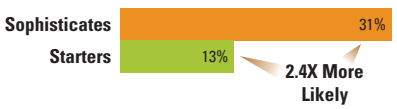
Organizations expect that the ability to visualize data differently, and to use it for simulations and scenarios that will help strategies and decision making, will be most valuable in two years. Other techniques and activities — such as standardized reporting and trend analysis — that are delivering the most value today will still be done, but will be passé tomorrow.



Respondents were asked to identify the top three analytic techniques creating value for the organization, and predict which three would be creating the most value in 24 months.

SOPHISTICATES WELCOME CHALLENGES TO THE STATUS QUO

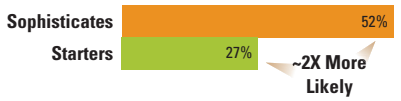
Analytically sophisticated organizations were significantly more likely to have a flexible culture than Starters. About two-thirds of Sophisticates believe they can challenge the status quo, while only two-fifths of Starters do. It may be that organizations with more developed capabilities also possess more confidence, are less easily threatened and recognize employees as a source of innovation. Analytics may also provide a way out of an entrenched "that's-the-way-we-have-always-done-it" mentality in organizations.



Respondents were asked to rate how well the statement "Employees are encouraged to challenge current practices and approaches" described their organization.

IS ANALYTICS A COMPETITIVE DIFFERENTIATOR?

Top-performing organizations are significantly more likely to say that their use of analytics differentiates them from competitors.



Respondents were asked to rate how well the statement "Business information and analytics differentiates us within the industry" described their organization.

TOP PERFORMERS TEND TOWARD ANALYTICS OVER INSTINCTS

This chart compares the likelihood that an organization will apply a lot of analytics vs. a little analytics within a given function. Overall, top-performing organizations are almost three times more likely to use analytics in their business activities than Lower Performers. One implication is that organizations that don't rely on analytics are relying more heavily on instinct to make decisions — and thus performing more poorly.

Respondents were asked to what extent their organization applied analytics to business activities.

"Sophisticates' use of analytics has already helped them optimize their operations.

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