The Evolution of Decision Making: How Leading Organizations Are Adopting a Data-Driven Culture

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Sponsor's Perspective

Much has been made of analytics entering the mainstream. SAS would certainly concede that we now encounter a greater understanding of the value of analytics. Today our customers are more open to the possibilities, the areas of potential impact—the various ways that analytics helps to improve their organizations.

Of course, it is easy to lose sight of the big picture. That picture includes an elusive—if ideal—analytics ecosystem of technology, process, people, and culture, all working together toward the best possible decision making. For this reason, SAS is pleased to sponsor this research project from Harvard Business Review Analytic Services. The survey and interview methodology help us keep abreast of how decisions are made and monitored out in "the real world."

This reinforces our development efforts—to ensure that SAS offerings and initiatives remain aligned with what organizations really need to continue their analytical evolution. In this regard, SAS' track record has been strong with no signs of slowing.

SAS® High-Performance Analytics: 74 percent of this survey's respondents feel pressure to achieve results in less time. SAS High-Performance Analytics is all about getting to the relevant data quicker and speeding the time to insights.

SAS® Visual Analytics: In the survey, more than 70 percent of the organizations that had deployed analytics throughout their organizations reported improved financial performance, increased productivity, reduced risks, and faster decision making. Yet making robust analytics accessible to each division, department, and individual can be daunting. Visualization is a powerful aid in the democratization of analytics. SAS Visual Analytics can be used by anyone within an organization. Unique features make SAS Analytics easy to use, even by those with nontechnical or limited analytic backgrounds.

Education: 52 percent of the respondents say the use of analytics at their organizations required them to enhance their skills, and 43 percent say the use of analytics increased the importance of their function. With this burgeoning interest in analytics, the demand for talent increases—underscoring the importance of relationships between industry and academia. Analytics-savvy graduates will be the ones who are first to succeed in our data-rich business world.

ABOUT SAS

SAS is the leader in business analytics software and services and the largest independent vendor in the business intelligence market. Through innovative solutions, SAS helps customers at more than 60,000 sites improve performance and deliver value by making better decisions faster. Since 1976 SAS has been giving customers around the world The Power to Know®.

Leading analytics users embrace a host of strategies, which evolve into best practices to create an "analytics ecosystem" in their organizations over time.

Executive Summary

IN A RAPIDLY CHANGING global business environment, the pressure on organizations to make accurate and timely decisions has never been greater. The ability to identify challenges, spot opportunities, and adapt with agility is not just a competitive advantage but also a requirement for survival.

People have long preached the benefits of relying on data and insights from business intelligence (BI) and analytics to help make better and timelier decisions. A reliance on data from these tools was expected to deliver better financial performance. A global survey of 646 executives, managers, and professionals across all industries and geographies reveals a significant, albeit subtle, change in decision-making processes and their use of these analytics/BI tools. This evolution is marked by users:

- Enhancing skills. With the ever-quickening pace of business, executives and business users are enhancing their skill sets so they can integrate analytics tools into their normal way of working to uncover strategic insights.

- Balancing data with instincts. These business users are not going on autopilot in using data; they are learning how to strike the precise balance between using analytics and their managerial instincts as well as how to manage business rules in tandem with analytics.

- Forging new relationships. As the use of analytics becomes critical for decision making, leading business users are forging new—and deeper—relationships with analytics professionals, elevating them to the position of trusted internal consultant.

- Developing best practices. Leading analytics users embrace a host of strategies, which evolve into best practices to create an "analytics ecosystem" in their department or organization over time.

These leaders constitute a small group of cutting-edge companies in the survey—about 11 percent of respondents. They are creating decision-making processes inside their organizations with an emphasis on data and transparency by widely distributing data and tools to analyze the data.

Some of the key survey findings and in-depth telephone interviews with a dozen respondents indicate the current practices of decision making, including some frustration as well as enthusiasm over how the process is changing:

- **Compressed time frames:** 74 percent of the respondents felt pressure to achieve results in less time.

- **Decisions lack transparency:** Almost three-quarters of companies have no formal corporate-wide decision-making process; therefore, nearly half of respondents say there is no transparency in how their organizations make decisions.

- **Data drives decisions:** 80 percent say they are reliant on data in their roles, and 73 percent say their areas rely on data to make decisions.

- **Skills being enhanced:** 52 percent of the respondents say the use of analytics at their organizations required them to enhance their skills, and 43 percent say the use of analytics increased the importance of their function.

- **Wider use of analytics pays off:** More than 70 percent of the organizations that had deployed analytics throughout their organizations reported improved financial performance, increased productivity, reduced risks, and faster decision making. Organizations with less widespread distribution of analytics access were typically 20 percentage points less likely to report such benefits.

This report, "The Evolution of Decision Making: How Leading Organizations Are Adopting a Data-Driven Culture," presents the survey data and analysis based on the responses of 646 executives, managers, and professionals, along with more than ten in-depth interviews with individuals whose companies are at the forefront of adopting a data-driven culture. Additional information about the survey demographics and the report methodology will be found at the end of the report on the inside back cover.

The need for more timely decision making is pervasive in an ever more competitive global market.

The Evolution of Decision Making: How Leading Organizations Are Adopting a Data-Driven Culture

FULL REPORT

The imperative to make better decisions faster has increased the pressure on organizations and their employees. Research that the Aberdeen Group conducted in December 2011 found that 65 percent of managers face a shrinking decision window. The call for timelier decision making is even stronger, as reported by respondents to the Harvard Business Review Analytic Services survey: roughly three-quarters of respondents feel pressure to achieve results in less time.
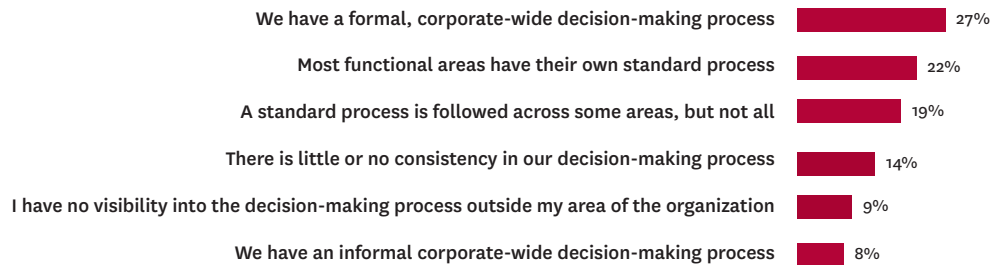
"In the dot-com space, we have in general seven seconds or less to entice the customer; otherwise they will be going to our competitors," says Kerem Tomak, vice president of analytics for Macys.com. "That means we need a laser focus on how we deliver products and services the minute the customer comes to the site."

As a result of such pressures, an evolution is occurring in the development of a data-driven culture, typically based on the use of analytics and business intelligence. The evolution can be delineated by a series of key developments explored in this paper:

- **Time Pressure Increasing.** The need for more timely decision making is pervasive in an ever more competitive global market.

- **Standardized Processes.** Decision-making processes are becoming more standardized, with data as the foundation and starting point for discussions.

- **Emergence of Analytics Leaders.** Mature analytics users have refined their decision-making processes as part of a data-driven culture and achieved superior financial performance.

- **Skills Expanding.** To meet the heightened demands for faster and better decision making, business users are developing stronger skills in using analytics tools and integrating them into the fabric of how they work.

- **More Careful Use of Managerial Judgment.** While the reliance on data is paramount, decision-making processes include adding in industry practices, experience, and other forms of managerial judgment.

- **"Ecosystem" Emerging.** Organizations at the forefront of analytics adoption create an "analytics ecosystem" over time that encourages data-driven decisions. As a part of this, business users are

Decision-Making Processes Figure 1

QUESTION: Which of the following most closely describes your organization's decision-making process?

We have a formal, corporate-wide decision-making process	27%
Most functional areas have their own standard process	22%
A standard process is followed across some areas, but not all	19%
There is little or no consistency in our decision-making process	14%
I have no visibility into the decision-making process outside my area of the organization	9%
We have an informal corporate-wide decision-making process	8%

forging deeper, more consultative relationships with analysts who in the past were simply viewed as "report producers."

■ **Stages of Evolution.** A clear pattern is emerging about the stages of how these analytics ecosystems evolve within organizations.

■ **Best Practices Developing.** A series of best practices evolve as organizations create an analytics ecosystem that prizes data-based decisions. These practices typically include training, sharing KPIs widely, and promoting transparency in decision making.

This paper leverages the survey findings and interviews to trace this important evolution in the use of BI/analytics, the challenges users face, and the frustration some feel about the current way that decisions are typically made.

DECISION-MAKING CHALLENGES

While respondents' companies usually recognize the need to step up decision-making abilities, many don't have all the processes in place to meet the challenge. For example, only a quarter of those in the survey have a formal, corporate-wide decision-making process. One-fifth say their decision-making processes are inconsistent or at best an informal process. Figure 1 And tellingly, companies with flawed decision-making processes are far less likely to use analytics when making decisions.
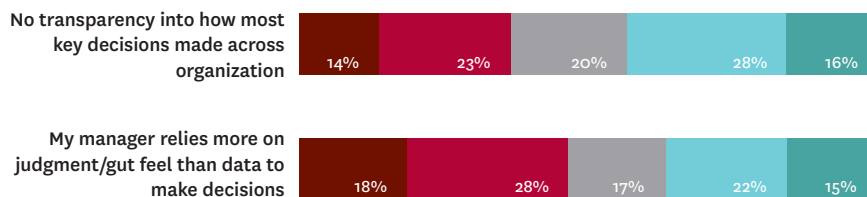
Survey respondents noted frustration with their organizations' current states of decision making.

"The majority of my peers rely on intuition or simply agree with upper management, as they trust they got there for a reason," says a mining company executive. "I am usually alone when voicing concern, which is not done to criticize—it is to point out areas of opportunity to excel." He noted that an overreliance on managerial intuition brings a decided haphazardness to the decision-making process. "Often decisions are made to see if the change works out, and if it doesn't, then we can always go back to how it was or try something new," he says. "With this approach we may get lucky; however, the risk of a negative impact is larger."

Role of Judgment and Transparency Figure 2

QUESTION: Please indicate your level of agreement with each of the following statements.

■ Strongly disagree   ■ Slightly disagree   ■ Neither agree nor disagree   ■ Slightly agree   ■ Strongly agree

No transparency into how most key decisions made across organization	14%	23%	20%	28%	16%
My manager relies more on judgment/gut feel than data to make decisions	18%	28%	17%	22%	15%

Indeed, a sizable number of survey respondents indicate flaws in their organizations' approaches to decision making. More than a third say their managers use judgment rather than data to make decisions. In addition, nearly half of respondents say that there is little transparency about how key decisions are made. Figure 2

ANALYTICS LEADERS: A NEW APPROACH BEGINS TO EMERGE

One group of survey respondents stands apart from the others in the use of data to drive decisions. This group comprises organizations that have integrated the use of analytics corporate wide, and they display a host of other characteristics, according to survey respondents:

- Self-defined high level of analytical maturity
- A data-based decision-making culture
- Decision-making transparency
- Corporate-wide decision-making processes
- Greater use of analytics in real-time decision making
- Emphasis on the use of managerial insights as a supplement to the data
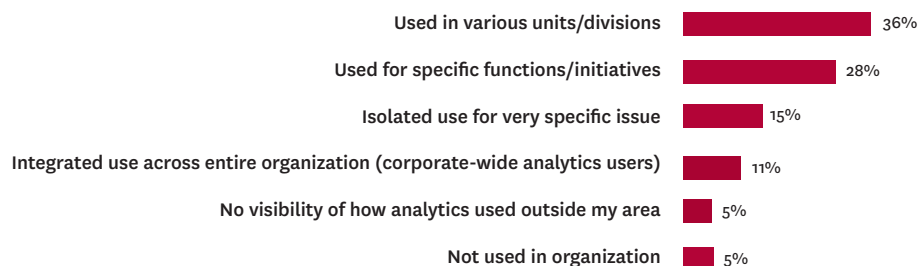- Continual refinement and testing of new ideas

The Harvard Business Review Analytic Services survey finds that 11 percent of the responding organizations are in the group that has integrated analytics across the entire organization. Figure 3

It is important to note that while these analytics leaders come from a wide range of industries, regions, and sizes, it is striking that they share a well-defined approach to decision making that has yielded substantial benefits.

A hallmark of the analytics leaders is the bigger impact made by analytics, as measured by improved financial performance, increased productivity, reduced risks and costs, and faster decision making. Survey respondents who qualify as analytics leaders reported that their organizations are achieving these benefits at a much higher rate than are other organizations. Figure 4

Corporate-Wide Use Defines Analytics Leaders Figure 3

QUESTION: Which one of the following best describes the use of analytics across your organization?

Used in various units/divisions	36%
Used for specific functions/initiatives	28%
Isolated use for very specific issue	15%
Integrated use across entire organization (corporate-wide analytics users)	11%
No visibility of how analytics used outside my area	5%
Not used in organization	5%

It is interesting to note that those most likely to benefit from faster decision making through analytics are the biggest businesses, those with $5 billion or more in annual revenues.

Strikingly, among all the benefits of using analytics, respondents' most frequently cited effect was faster decision making. At Procter & Gamble "analytics accelerates our decisions because everyone is now looking at the same reality," says Filippo Passerini, the group president of global business services and CIO. "Decisions come down to 'what,' 'why,' and 'how.' Many organizations spent a lot of time debating the what because different people had different data. Once everyone has the same version of truth, you can shift to the how—and you are able to do more and more better and better."
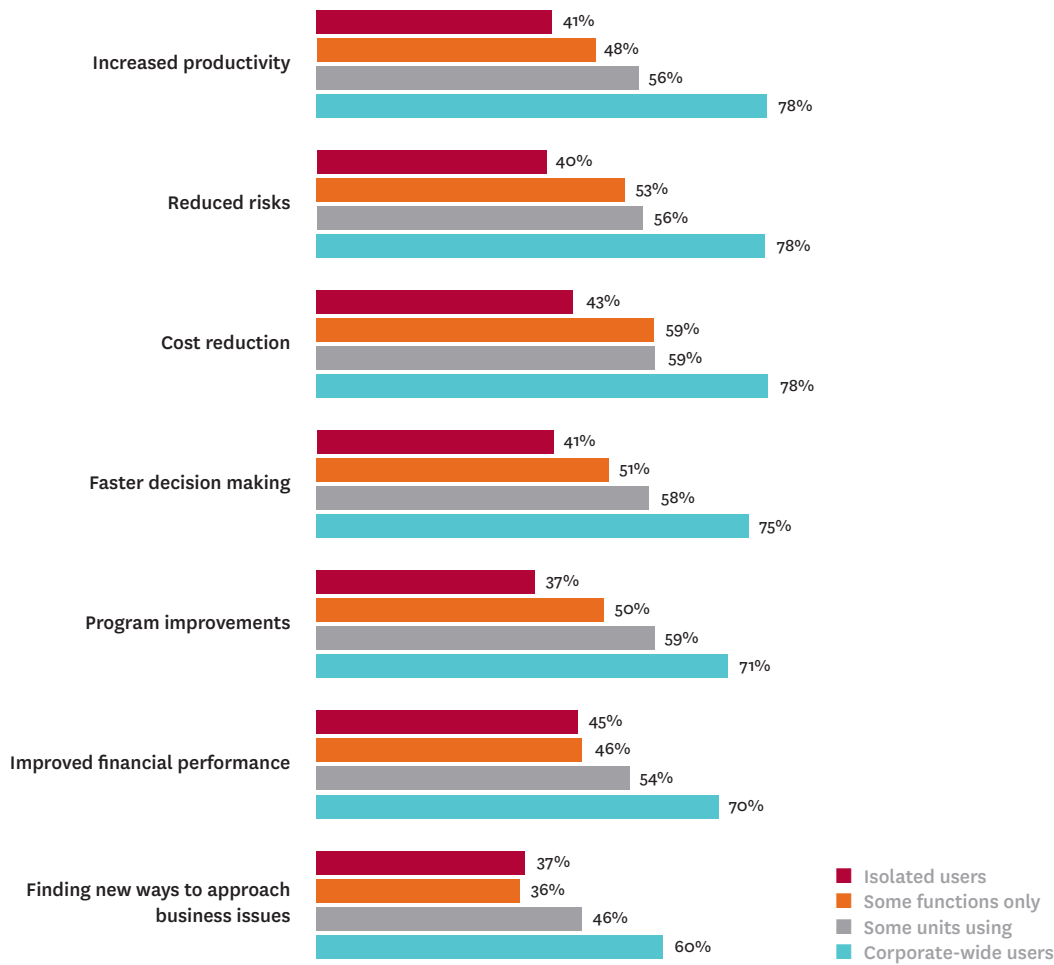
Hastening the speed of decision making can transform an organization. Hank Vermeulen, vice president of informatics for Independence Blue Cross, says that executives who can envision "where they want to be" with analytics can move faster in transforming their companies. Inside health care providers and insurers, Vermeulen says, shortening the "cycle time" between reviewing data and getting critical information into the hands of providers and administrators has become a key competitive factor.

"When people get interested in analytics and in the currency of information, it can change the culture," Vermeulen says. "But you have to be sure you have transparency. You can't make analytics just for the club."

Many of the respondents note that in addition to being able to make decisions faster, they're also making better decisions by using the tools in a data-driven culture. "The economy has become so competitive that you have to use analytics to compete," explains Christopher C. Williams, strategy executive of J.P. Morgan Chase. "The companies that have moved to fact-based, evidence-based decision making—which is honed against managerial instincts—are simply making decisions superior to those of the companies that still make decisions based on gut feel. What these superior companies are doing differently is building an analytics ecosystem that really changes the value of what analysts can contribute, so executives understand all the linkages and connections and historical bases for their decisions. Consequently, they make wiser and more strategic decisions today than they were able to make before."

Benefits from Use of Analytics Figure 4

QUESTION: What benefits/positive impacts have you seen from the use of analytics?

Increased productivity
- 41%
- 48%
- 56%
- 78%

Reduced risks
- 40%
- 53%
- 56%
- 78%

Cost reduction
- 43%
- 59%
- 59%
- 78%

Faster decision making
- 41%
- 51%
- 58%
- 75%

Program improvements
- 37%
- 50%
- 59%
- 71%

Improved financial performance
- 45%
- 46%
- 54%
- 70%

Finding new ways to approach business issues
- 37%
- 36%
- 46%
- 60%

■ Isolated users
■ Some functions only
■ Some units using
■ Corporate-wide users

ANALYTICS IS CHANGING INDIVIDUALS AND ORGANIZATIONS

Another important finding is the way in which the role of decision makers is changing. The deluge of data from social media, emails, videos, presentations, and other nontraditional sources of information gives executives an unprecedented ability to understand their customers and businesses, anticipate challenges, and identify opportunities.

To fully exploit the opportunities and resolve the challenges, executives, managers, and professionals are cultivating new skills to understand what data is important and to dive deeper into the numbers to make and test their assumptions and decisions. At the same time they are forging new—and deeper—relation-ships with analytics professionals, elevating them to the position of trusted internal consultant.

Eight out of ten say they are reliant on data in their roles. Almost three-quarters say their areas rely on data to make decisions. And roughly the same majority also predict that their organizations' overall reliance on internal data will increase in two years.

So it's no surprise that over half of respondents (52 percent) say they have had to improve their analytics skills, while just under half (44 percent) have taken action to improve staff analytical skill levels. Almost three-quarters of the individuals who have identified their companies as analytics leaders say they had to enhance their analytical skills—a key finding about the pathway to becoming an analytics leader. Figure 5

Macys.com provides a telling example of how executives are reshaping their roles through analytics. The retailer uses visualization in its online channel for business and customer insights as well as a way to set the stage for predictive analytics modeling. A significant element is that the impetus for these initiatives comes not from the information technology (IT) department but from the executives themselves who want a deeper understanding of the data. "We are seeing more interest from the C-suite and upper-level management in interacting with the data, so we are deploying interactive dashboards through portals," Tomak says.

For example, the online retailer implemented an international shipment dashboard that can reveal which countries are generating the highest sales. The executive can look at the heat map of the world and drill down to the key issues, such as delivery delays, in each country. "This allows the executives to really understand the driving forces behind key business units and components," he says. "They can visualize the source of the data and get an easier grasp of the connections that are creating different trends. They can make faster decisions that way."

Overall, only 25 percent of companies in the survey report using interactive data visualization to date. However, analytics leaders such as P&G's Passerini stress the need for such tools, which are fairly new, to enable decision makers at all ranks throughout the organization to quickly profit from the use of analytics.

"We've been using analytics for many, many years, but the difference now is we're blending analytics and visualization tools, which makes the analytics much more compelling and much easier to use," the CIO says. P&G employees have access to a visualization-laden desktop cockpit to monitor key metrics in real time as well as to receive alerts. "We have the ability to bring to life for the line managers what is going on in the business in real time, so they can focus on specific issues. Essentially, we are able to manage the business by exception."

While P&G's reshaping of the roles of the entire staff may be unusual, it is clear that the professional lives of decision makers from the corner office to the call center have evolved due to analytics. "It is the democratization of data," says Clifford Hodges, regional manager, General Motors International Operations leadtime reduction. "Before, the data was in the hands of only a few highly trained people. Now, many executives can use pivot tables and formulae and drop and drag information to come to their own informed decisions quickly. You can be your own Jedi master of the data."

Effect of Analytics on Individuals' Roles Figure 5

QUESTION: How, if at all, has the use of analytics in your organization affected your role in your organization?

Required me to enhance analytical skills	52%
Required me to improve my staff's analytical skills	44%
Increased importance of my function	43%
Had no effect on my role	22%
Changed focus of my role	22%

NEW ROLE OF MANAGERIAL JUDGMENT

As the evolution toward data-driven decisions occurs, the current stage of decision-making evolution is to judiciously add management judgment to form real-world insights about the data. As Michael Pierce, customer service manager at Bosch Security Systems, says, "Personally, I run with analysis first, and during the research I will listen to my intuition. When my gut does not agree with my decision—and all analytics show it is the correct one—I pay closer attention to the results." As this suggests, business users are seeing that making the right decision in a timely manner is a matter of balancing data analysis with judgment.

Another key development uncovered by the survey is how the use of analytics is improving the standing of executives, managers, and professionals in their organizations. More than four in ten of those in the survey say that analytics has increased the importance of their functional area within their organizations. Figure 5

FIVE STAGES OF ANALYTICS EVOLUTION

The change in skills and decision-making processes is an evolutionary process. In our interviews with respondents who are analytics leaders, we identified a series of steps in how they initiated and spread analytics throughout the organization, developing the "analytics ecosystem" that marks organizations that are leading the charge toward a data-driven culture. It is important to point out that use of analytics, like most business and technology initiatives, is not a neat and tidy process and that not every company goes through the exact same progression. And in large companies, different departments may be traveling the same road at different speeds and with more or fewer stop signs.

Another caveat: Thomas Davenport, coauthor of the best seller *Competing on Analytics* and other books on decision making, notes that a company can be jump-started into its analytics journey when a key C-level executive who mandates the technology's use comes aboard. In his books and articles he cites the arrival of Gary Loveman as a vice president and later as CEO at Harrah's as the beginning of its transition to a data-driven culture.

That said, there is often a progression in developing an analytics culture shaped around better and faster decision making. Harvard Business Review Analytic Services interviews and other research found five stages.

STAGE 1: OVERRELIANCE ON MANAGERIAL JUDGMENT SUCH AS INTUITION AND INSTINCTS

Companies at the early stages are often start-ups or have leaders who tend to maintain a firm control of all decision making. The way in which they use information is highly unstructured, and often they resist change. The dangers of excessively relying on managerial instinct and experience alone are manifest. As Davenport points out, sometimes intuitive and experience-based decisions work out well, but often they either go astray or end in disaster. The results can range from companies making poor hiring decisions based on hunches to executives pursuing mergers and acquisitions driven by intuition to palliate their egos. As noted earlier, roughly four out of ten survey respondents say that their managers too often based decisions more on judgment rather than on data. Figure 4

Of course, management judgment remains the most common factor in decision making even today—84 percent of survey respondents say it was a strong factor, and a large number of them rated it as the top factor. Notice that internal data is the second-most-influential factor. Figure 6

There is often resistance to move to a data-driven culture. "The initial stage of the evolution was an inherent mistrust of statistics," says Jim Bander, national manager of decision sciences in the Risk Management department of Toyota Financial Services. "They were skeptical that we had it right."

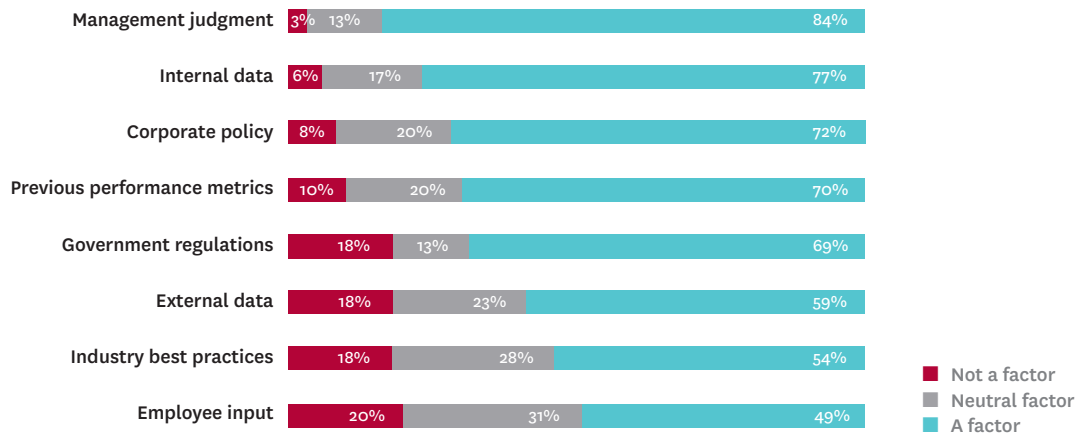### STAGE 2: SILOED USE OF ANALYTICS IN A FEW DEPARTMENTS

Typically analytics first take hold in a siloed manner, where they are not integrated into company-wide decision making. They are usually a response to a specific challenge in a high-profile department, such as finance or marketing. The siloed and focused nature of the implementation often means that workers do not develop a deep grasp of the power of data-driven decisions and so do not develop the necessary skill set to appreciate or use analytics. Top executives and even line managers may lack the analytical skills to "question" data. In addition, the data neophytes are not able to balance the insights from the data with their managerial instincts and experience. Essentially, many individuals at companies in Stage 2 don't understand the possibilities of analytics.

"Having data and knowing how to use it are two completely different things," explains Brian Holman, director of customer support for The Standard, a Portland, Oregon-based insurance company. "Knowing how to use data to understand the marketplace, motivate employees, and drive performance is a learned skill."

Because of the siloed nature of the analytics initiatives, there can be departmental discrepancies and duplicated efforts. These companies can have trouble encouraging interdepartmental collaboration and developing a shared vision of enterprise goals.

Key Factors in Decision Making Figure 6

QUESTION: How significant are the following in setting direction or making key decisions in your organization?

	Not a factor	Neutral factor	A factor
Management judgment	3%	13%	84%
Internal data	6%	17%	77%
Corporate policy	8%	20%	72%
Previous performance metrics	10%	20%	70%
Government regulations	18%	13%	69%
External data	18%	23%	59%
Industry best practices	18%	28%	54%
Employee input	20%	31%	49%

■ Not a factor
■ Neutral factor
■ A factor

STAGE 3: EXPANDING USE OF ANALYTICS IN SEVERAL DEPARTMENTS, NOTED BY AN INCREASING AMOUNT OF COLLABORATION

After companies have had success using analytics to resolve or better manage narrow but important challenges, the technology begins to expand to a few other departments. This stage is typified by structured use of analytics, with a disciplined decision-making process in those units. Executives and line managers have learned to rely on past data to identify trends but also are comfortable using their managerial instincts and experience to consistently pose new hypothesis, launch experiments, and test and improve.

Says J.P. Morgan's Williams, individuals at this stage "look at the past data for information on trends, patterns, or insights, and they ask great questions—'How come?' and then 'What if?'" They also test their theories and then run small experiments so that they can use analytics to verify, reject, or modify the theses quickly and often relatively cheaply.

Companies at this level begin to develop integrated knowledge systems that balance departmental goals with enterprise goals. Analytics becomes integrated in the culture of these divisions—it is recognized as an essential corporate asset.

What is interesting is how this approach mixes both data and managerial instincts. "Gut feel is still valuable because there are always multiple paths for any project, and based on your experience and intrinsic knowledge of a domain you can eliminate a lot of options that don't make sense," says Oseyi Gregory Ikuenobe, an IT architect at Monsanto. "And that permits a more rigorous process for the better options to determine which is the most valuable."

STAGE 4: SCALING DECISION MAKING THROUGHOUT ALL RANKS OF THE ORGANIZATION IN AN INTEGRATED, HOLISTIC APPROACH

As the benefits of analytics become clear, the technology moves deeper into the organization, empowering more workers to make important day-to-day decisions based on data and instincts. Frontline staff gains a higher level of knowledge that translates into faster decisions that enhance customer relationships. This enables individuals throughout the organization to be more innovative and independent and to take calculated risks that align with corporate goals.

Toyota's Bander provides the following example. Customers will often contact the finance unit's call center asking to skip a car payment due to actual or pending financial distress. The company built an analytics model that suggests whether the skipped payment should be allowed, based on numerous criteria such as the customer's payment and contact history and FICO score. But the customer service representatives are better than the statistical model is at determining whether the financial distress is based on a temporary situation such as a medical condition. "This helps us decide what to propose to an individual customer," he says. "The important thing is the ultimate decision is left up to the customer service representative."

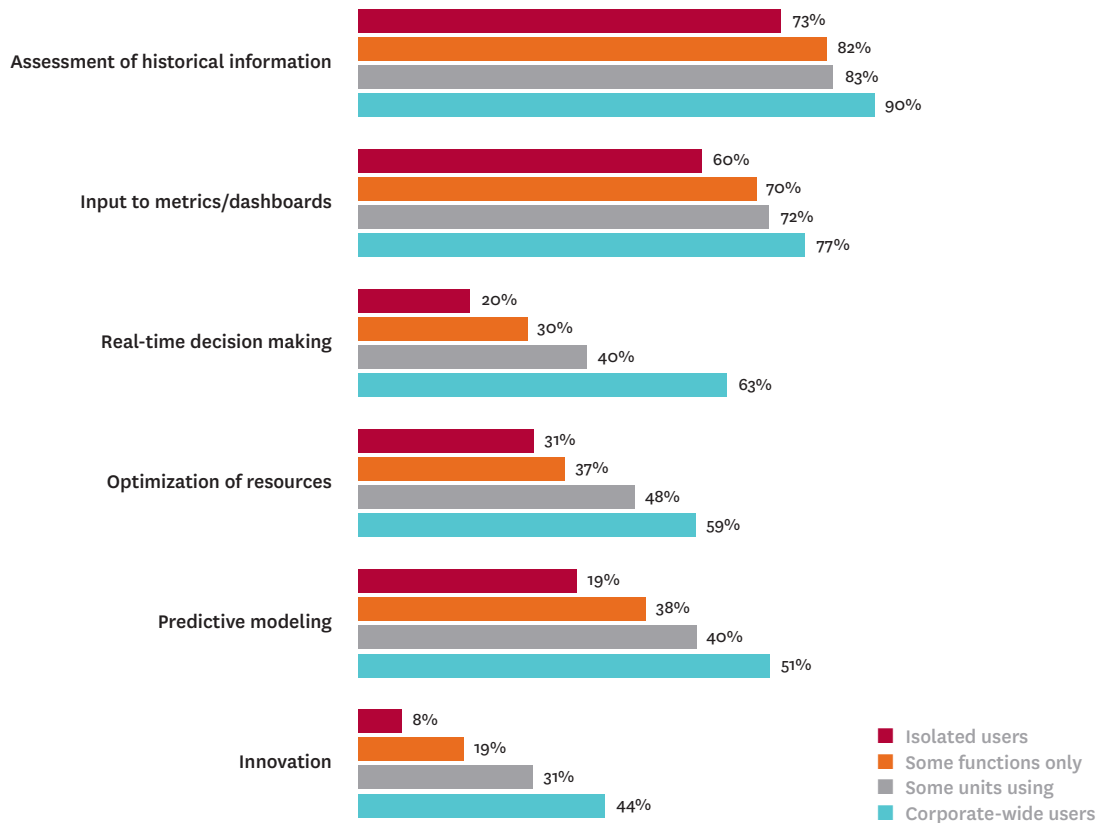### STAGE 5: CONTINUOUS IMPROVEMENT BUILT ON AN EVOLVING CULTURE

"A lot of people miss a key stage," Bander says. "The point of becoming a data-driven company is to become a wiser company by making better decisions. And that isn't simply a matter of data but a matter of fitting analytics into your corporate culture. For example, Toyota has a culture of continuous improvement and respect for people, including consensus building. My job is to fit analytics and data-driven decision making into that kaizen framework. An organization with a different corporate culture—whether it's a mass production manufacturer or a Silicon Valley start-up or a government agency—would find a very different way to integrate analytics into its decision-making processes."

An organization at this stage is marked by the ability to adapt and expand quickly. BI and analytics are key methods of quickly stimulating, testing, and evaluating ideas. Employees become more proactive and creative. A philosophy of innovation is embedded throughout the organization, resulting in a constant flow of new ideas supported by ongoing feedback and collaboration.

A key part of continuous improvement is looking ahead rather than behind. Analytics leaders say analytics provides more value when the tools provide insights about the future rather than a snapshot of the past. They say that predictive modeling, especially to support innovation, is currently the most advanced stage of analytics evolution. Figure 7

Analytics' Roles in Decision Making Figure 7

QUESTION: In which of the following ways, if any, does your area use analytics?

Assessment of historical information
- Isolated users: 73%
- Some functions only: 82%
- Some units using: 83%
- Corporate-wide users: 90%

Input to metrics/dashboards
- Isolated users: 60%
- Some functions only: 70%
- Some units using: 72%
- Corporate-wide users: 77%

Real-time decision making
- Isolated users: 20%
- Some functions only: 30%
- Some units using: 40%
- Corporate-wide users: 63%

Optimization of resources
- Isolated users: 31%
- Some functions only: 37%
- Some units using: 48%
- Corporate-wide users: 59%

Predictive modeling
- Isolated users: 19%
- Some functions only: 38%
- Some units using: 40%
- Corporate-wide users: 51%

Innovation
- Isolated users: 8%
- Some functions only: 19%
- Some units using: 31%
- Corporate-wide users: 44%

Legend:
- Isolated users
- Some functions only
- Some units using
- Corporate-wide users

TRAITS OF ANALYTICS LEADERS

The survey and interviews identified a number of key traits that mark companies that have become analytics leaders.
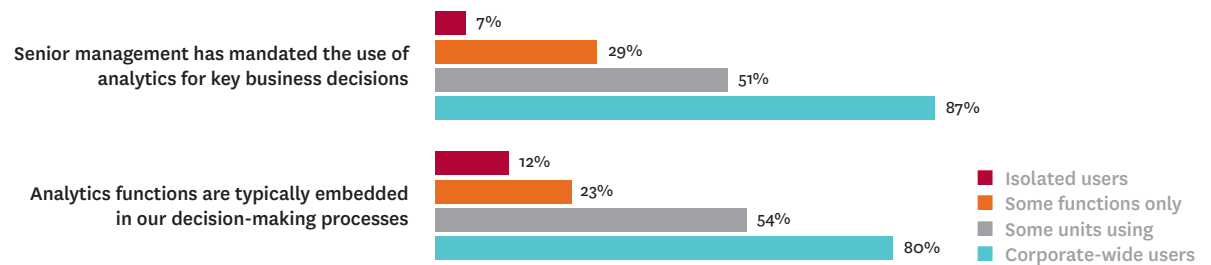
→ **Top executives mandate use of analytics and a well-defined decision-making process.**

Tellingly, respondents from companies that are only partial users of analytics are far less likely to feel that their senior management has mandated their use of analytics for key business decisions. Figure 8 And these companies enjoy much less productivity, reduced costs, or faster decision making as compared to the corporate-wide analytics users, as shown in Figure 2.

In contrast, a clear mandate radiates through every aspect of the analytics ecosystem of the analytics leaders. Where a clear mandate exists, training and talent issues are much less marked; 71 percent of corporate-wide analytics users say they have the talent they need to utilize them. Nearly three-quarters (70 percent) of them feel personally prepared to use analytics results in their work.

Executives' Commitment to Data-Based Decision Making Figure 8

QUESTION: Please indicate how accurate the following statements are in describing your area of your organization (all saying accurate—
4 or 5 rating).

Senior management has mandated the use of
analytics for key business decisions
- 7%
- 29%
- 51%
- 87%

Analytics functions are typically embedded
in our decision-making processes
- 12%
- 23%
- 54%
- 80%

■ Isolated users
■ Some functions only
■ Some units using
■ Corporate-wide users

"Everything is top down, driven by the executive level," Tomak says. "The highest levels at the company started requesting and creating the needed data-driven decisions rather than relying on gut feel for day-to-day decisions. This came from the president, the CFO, and the CMO. When people see the C-suite paying attention and requesting the facts to support making a decision, everyone pays attention. The real analytics challenge is how quantitative the C-suite is in a company and how much value they put into the analytics."

➔ **Analytics leaders use the right metrics.**

Corporate-wide analytics users clearly favor quantitative metrics as a decision-making method, while isolated analytics users are most likely to employ judgment, by almost a three-to-one ratio. Figure 9 The analytics leaders work hardest to ensure that they have the right metrics in place to evaluate their use of analytics and their decision-making processes.

"We have a large emphasis on using metrics to show the value that each step will bring," Monsanto's Ikuenobe explains. "For example, when we bring forward a project to deploy a mobile Web application for a bunch of brands, we dig deeper into the ROI of the individual components as well as the identity of the person who is responsible for the ROI."
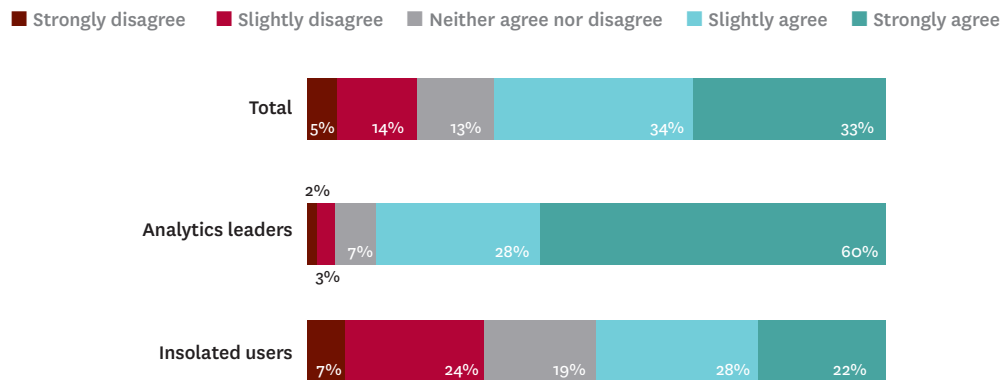
Analytics leaders also disseminate information about metrics widely. "If you want to make an informed decision, you have to measure the right things," says Holman of The Standard insurance company. "To the greatest extent possible, we try to ensure that the metrics we're tracking are aligned with the organization's purposes and priorities. When I interview different levels of employees, I often ask to what degree they see how the work they do every day aligns with our organizational priorities. It's a problem if employees can't see that the measures and data we're using don't align with what actually matters to the customers. You have to identify what matters to customers and tie that to your processes."

➔ **Analytics leaders promote decision-making transparency.**

Those with high decision-making transparency and formal decision-making processes are also much more likely to use analytics to make real-time decisions. Figure 10 "It's hard to overestimate the value of

Use of Clearly Defined Metrics to Evaluate Results of Decisions Figure 9

QUESTION: Please indicate your level of agreement with: "My area uses clearly defined metrics to evaluate the results of our decisions."

■ Strongly disagree ■ Slightly disagree ■ Neither agree nor disagree ■ Slightly agree ■ Strongly agree

Total
5% | 14% | 13% | 34% | 33%

Analytics leaders
2%
| 7% | 28% | 60%
3%

Insolated users
7% | 24% | 19% | 28% | 22%

making data transparent," Holman says. "That allows you to become a self-fulfilling organization and promotes a continuously improving, performance-based culture. People can see another person is performing at the top 5 percent and think of ways to emulate him. Part of how we evaluate employees is how they work with their coworkers and bring their team along."

→ **Analytics leaders share KPIs across the organization to encourage a uniform view.**

"As the online division of Macy's, we almost act like a start-up, and the stores want to be as agile as we are," Tomak says. "We brought to the company the idea of shared KPIs and shared databases based on big data." The process, only a few months old, shares KPIs on traffic, conversion, loyalty, and retention. The merchants care more about the average order of value and size of order.

Such sharing is crucial, given the complexity of decision making. "It's important to have accountability across functions," Holman says. "Few functions talk to the customer and then deliver what he needs without the involvement of other departments. We have to hold each other accountable for each other's decisions to ensure that we are putting the customer first and foremost."
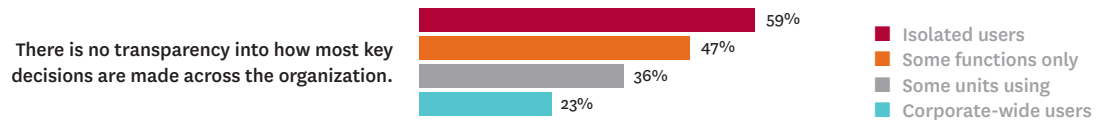
→ **Analytics leaders stress training.**

Analytics leaders have taken the biggest steps to train their areas' workforce to get the most from analytics. However, our interviews reveal it's not training in the traditional sense. Analytics leaders are emphasizing visualization and embedding analytics in processes, so use of the tools is highly intuitive and an extension of how employees have always done their job. Training therefore becomes highly individualized, whether embedded in the tools themselves or in online modules that end users can seek out.

→ **Analytics leaders spread analytics professionals throughout the organization.**

More than one-third of respondents say they do not have sufficient talent to effectively use analytics in their area. Tellingly, isolated analytics users suffer from this challenge the most. In contrast, many

Transparency into Decision Making Figure 10

QUESTION: Please indicate your level of agreement with the following statement (all saying agree—4 or 5 rating).

There is no transparency into how most key
decisions are made across the organization.

59%	■ Isolated users
47%	■ Some functions only
36%	■ Some units using
23%	■ Corporate-wide users

analytics leaders are assigning analysts throughout the organization and closer to end users, according to Davenport and others.

Bander supervises a group of scientists who operate the decision engine for inbound and outbound customer service reps. "Three or four years ago, no one would hire a PhD to run a decision support group in a customer service center," he says. "In the past, this group would reside in headquarters. My team is in the service center, which coincides with our ethic of getting close to where the real work and the real problems are. When I see something in the data, I can walk right out to someone whose job will be affected by the data and discuss it with [that person]." P&G also is seeding analysts throughout the business areas rather than having the data scientists/analysts be isolated in one department of analytics. P&G has implemented a project called "the Business Sphere," where businesspeople and analysts get together in an immersion environment. "The businessperson can address the business issues with the right models, the right analytics, and the business analysis to bring context to the content," Passerini says. "That's an equation that means one plus one equals five."

CONCLUSION

As timely decision making becomes more important, analytics is improving—and changing—the way those decisions get made.
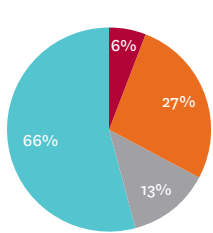
"In any industry—from consumer electronics to fashion design—the speed of product innovation to the market is increasing," P&G's Passerini explains. "In consumer products, you might think there isn't much reason to invest in another new laundry detergent, but consumers respond strongly to innovation. What's different now is the tools allow me to see what was important last year, last quarter, and last week so that I can understand what will happen tomorrow, next month, and next year. That is a huge conceptual shift in thinking. We've used data analysis for 50 years, but we're just beginning to develop predictive ability through business models to anticipate what's coming."

As Passerini and others have noted and as the survey data shows, analytics is not just a tool or a technology as much as a driver of a decision-making discipline that ushers in an era of cultural change—and improved performance.

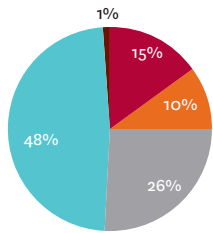## METHODOLOGY AND PARTICIPANT PROFILE

Harvard Business Review Analytic Services received online survey responses from 646 subscribers to *Harvard Business Review* or its email newsletters, along with business executives contacted via other lists. Ten of those respondents also were contacted by telephone for in-depth follow-up qualitative interviews. In addition, Harvard Business Review Analytic Services interviewed best-selling analytics author Thomas Davenport and noted analytics deployment pioneer Filippo Passerini, the group president of global business services and chief information officer of Procter & Gamble.

Participant Profile

Company Size (employees)
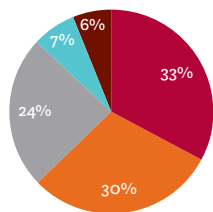- 500 – 999
- 1,000 – 4,999
- 5,000 – 9,999
- 10,000 or more

Company Size (revenue)
- $100 million – $499 million
- $500 million – $999 million
- $1 billion – $4.9 billion
- $5 billion or more
- N/A

Seniority
- Middle management
- Senior management
- Consultants
- Executives
- Other

Region
- North America
- Asia
- Europe
- South/Central America
- MEA

Job function
Almost a fifth of the respondents had marketing or sales roles. Fifteen percent were from financial departments, 13 percent were from the information technology department, and 8 percent labeled themselves as general management. Other job functions represented by the respondents included planning, operations consulting, and administration.

Key industry sectors
Approximately 20 percent of the respondents were from the financial services industries (banking, securities, insurance), while 16 percent were from manufacturing. Utilities, telecommunications, health care, retail, and the hospitality sector also each represented at least 6 percent of the respondents.

Region
Approximately 40 percent of the respondents were from North, Central, or South America. Another 30 percent were from Europe, the Middle East, or Africa, and 30 percent were from Asia.

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