Getting Your Money's Worth with Analytics

WHITE PAPER

Table of Contents

Analytics leads to undiscovered territories

Analytics can uncover insights that compel us to view the world in new ways. Take professional baseball, for example. For years, it was a truism that winning teams were bought, not made. The teams with the most money bought the best players and used them to win. But the management of the Oakland Athletics, a team with one of the smallest player budgets in the league, uncovered a secret. The combination of intuition and traditional statistics used by other teams to identify the best draft prospects – fast pitchers and strong hitters – was misleading.

In reality, it is the ability to get on base and to collect more ground-outs than strike-outs that make the difference between a winning baseball season and a losing one. Oakland used this game-changing discovery by baseball statistician Bill James to achieve unanticipated success on a shoestring budget. In his book *Moneyball*, which describes the A's come-from-behind rise, Michael Lewis showed how analytics can successfully challenge conventional wisdom (even in the die-hard traditional sport of baseball) – and change the way decisions are made – through the creative use of analytics.

The 21st century's economic turbulence and technological advances have fostered a ripe environment for creating unique opportunities for all businesses – not just professional sports. Technology and the seemingly unlimited amounts of data – on customers, competitors, suppliers, you name it – now provide the ability to understand and address business issues in unprecedented ways. By using business analytics, organizations can tap vast quantities of information available from traditional and new sources to reassess their course for the future and thrive in tumultuous times.

Business analytics: *the practice of iterative, methodical exploration of an organization's data with emphasis on statistical analysis.*

Research shows that companies that use business analytics strategically gain a competitive advantage, improve productivity and add more to the bottom line. Organizations have gotten this message and have upped their games in the past several years. And it's important that organizations leading the analytics charge continue forward because many others are eager to catch up. In fact, according to a 2011 study by Bloomberg Businessweek Reserach Services[1], the percentage of companies using some form of business analytics rose from 90 percent in 2009 to 97 percent in 2011.

In addition, IDC[2] predicts the market for business analytics software will top $33 billion in 2012 with a cumulative annual growth rate of more than 8 percent through 2015.

Companies are turning to business analytics to tackle big issues – reducing costs, growing revenue, managing risks and improving the bottom line – as reported by Bloomberg Businessweek Research Services. But even with the high adoption rate, organizations are still in the emerging stage in their use of advanced analytics.

[1] "*The Current State of Business Analytics: Where do we go from here?*" Bloomberg Businessweek Research Services, August 2011, sponsored by SAS.

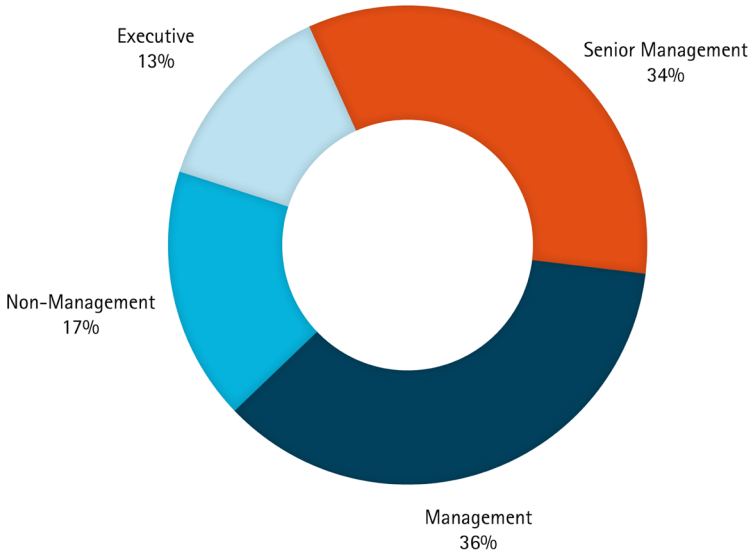
[2] "*Worldwide Business Analytics Software, 2011-2015 Market Forecast and Vendor Shares 2010*," IDC, September 2011.

A fresh perspective on the state of business analytics

In the fourth quarter of 2011, the Accenture SAS Analytics Group conducted follow-up research among 258 US business professionals that further explores the effectiveness of business analytics. This paper illuminates the findings from that study.

The study is based on an online survey among 258 business professionals in North America from a broad range of industries. Sixty-three percent of the respondents work for organizations with 10,000 or more employees. In addition to the survey results, we also interviewed respondents from eBay, Staples, and a major banking institution that were identified by the survey as "front-runners" (companies in the survey with measurable gains) to gain insights from their analytical successes. Comments from these interviews are used throughout this report to provide richer context to key research findings.

Respondent Role



Leading the charge: A call for talent

As companies continue to warm to the concept of fact-based decision making, investments in business analytics are heating up.

According to the survey, 45 percent of businesses increased their spending in 2011, and even more – 65 percent – plan to increase spending in 2012. The major focus for the coming year? Talent upgrade. Eight in 10 respondents making investments in business analytics over the next 12 months plan to upgrade their analytical talent by improving current staff analytical skills (69 percent) or hiring new analytical talent (55 percent).

Auction powerhouse eBay has cited business analytics as instrumental in moving its business forward. It hosts an annual global data conference for its employees. Attendance is high, with some 600 employees sharing ideas on new technologies and methods. Analytics is a critical part of eBay's business model because executives expect each decision to be supported by data, so much so that even its human resources organization has aligned job descriptions to explicitly attract analytical thinkers.

Robin Chiang, formerly eBay's Director of Experimentation Management, currently with PayPal, an eBay company, says that work teams "need to integrate analysts as part of their core team and to be receptive to new ideas. We develop high-functioning teams through strategic hiring and we address the skill gaps with training and a lot of coaching – the organization needs to have deep analytical talent, not just data pushers."

The idea that talent improvement is the No. 1 focus for business analytics investments in 2012 is no surprise, considering that more than six in 10 respondents report that their organizations have some sort of analytical talent deficiency – either from a technical or business perspective, or in some cases, both.

"Having the right analytical talent isn't something easy to hire in one group. The group must have inquisitive minds, have the skill set to understand data in marketing, product development and technology."

Robin Chiang,
formerly eBay's Director of Experimentation Management, currently with PayPal, an eBay company

Businesses struggle to keep their knowledge workers up to speed on current technology, and the competition for analysts is fierce, given the surge in the use of business analytics. Even more difficult to find are people who have both strong technical ability and the skills to apply the results to critical business issues.

The talent gap is a challenge to the emerging state of analytics in the organization. As companies move to implement more business analytics in their decision making, the knowledge supply has not kept up with the demand. In many cases, the desire to employ business analytics to solve problems may be leading companies to invest in the tools – hardware and analytics software – before they have the capabilities to use them effectively.

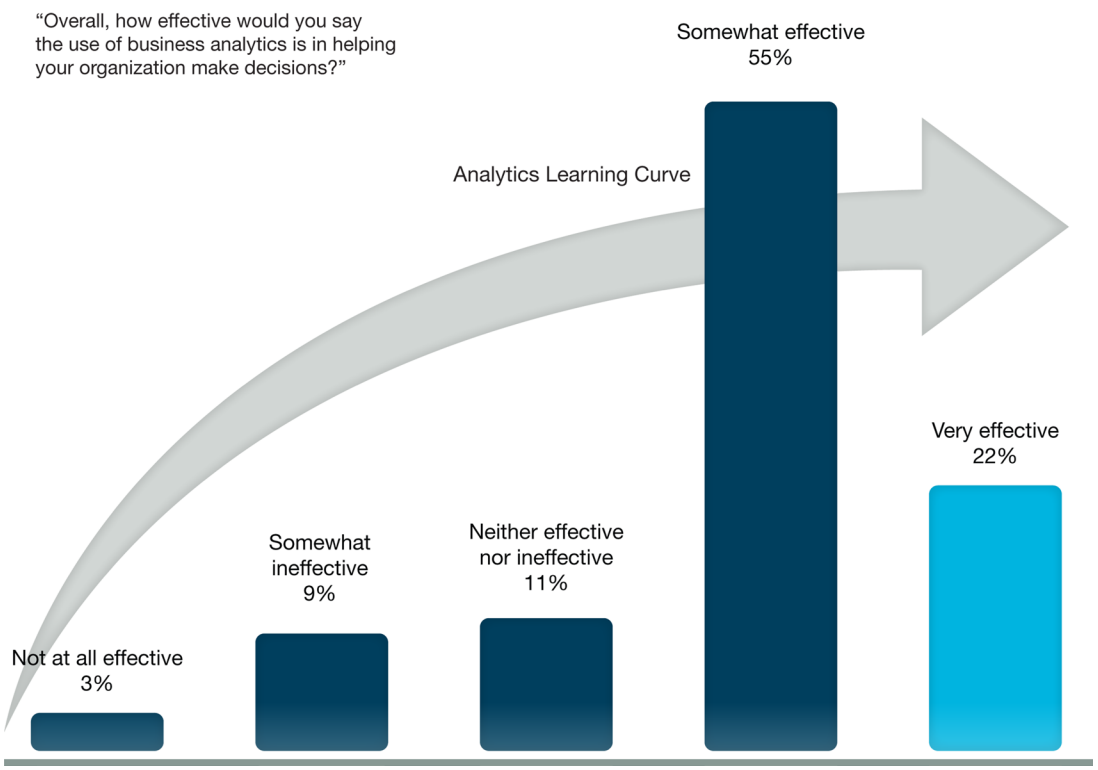
The research bears this out. For example, only one in four survey respondents indicated that the use of business analytics was "very effective" in helping their companies make decisions. Only a third reported that they had achieved or exceeded return on their business analytics investments.

The most distinctive differences in analytical performance between the analytical front-runners and other segments is how they perceive their data and talent. High-performing companies see their data as an asset and report that quality data, and access to the right data, is available. Those companies believe they have the right talent in place.

Clearly, companies making a foray into business analytics face a learning curve. Moving to fact-based decision making requires the right technology and talent as well as a cultural shift.

About the research:

The study is based on an online survey among 258 business professionals in North America from a broad range of industries. Sixty-three percent of the respondents work for organizations with 10,000 or more employees. In addition to the survey results, we also interviewed respondents who were identified as analytical "front-runners" to gain insights from their analytical successes.



Companies are on a learning curve to gain effectiveness from their analytics.

The use of business analytics in many organizations starts as an ad hoc endeavor, sometimes narrowly focused on one issue or in one department. Currently, 22 percent of organizations (as reported by survey participants) use analytics for a specific function or an isolated issue. Over time, analytics use may expand to other areas of the organization, often through grass-roots efforts. But the lack of a clear analytics strategy is the No. 1 factor given for less than optimal use of analytics. This gap underscores the need for companies to assess their needs not just in terms of technology, but also from talent, process and cultural perspectives to develop a sound analytics strategy.

Quality data trumps intuition

Intuition is seldom, if ever, as good as cold, hard facts, but some still cling to the idea that intuition and experience are more important than data. Some of the specific comments respondents made about intuition overriding analytics include:

- "Data is not available or data integrity is questionable, resulting in a fallback position of relying on intuition."
- "Data is not strong enough to support analytics."
- "Don't believe the data or don't want to believe the data."
- "Not enough hard data available or data is not easily accessible and measurable."
- "Trust their gut more; [we] don't trust the data."

According to the survey, intuition trumps analytics in an average of 39 percent of business decisions. Survey participants provide two main reasons for tossing the results of analytics in favor of intuition. The first reason is a lack of confidence in the data. This mistrust of analytics due to data issues has merit. Economist Intelligence Unit recently published a study[3] that cited data quality and accuracy as a key problem for nearly half of all companies. Without a foundation of accurate and reliable data, the results of analytics are obviously in question.

Most organizations have data located across a large number of heterogeneous data sources. These organizations are spending most of their time gathering and processing data and little time analyzing it. With an effective data management approach, organizations have their data in order and access is simplified so they can spend more time in analysis that could enable better decisions.

[3] *Big Data: Harnessing a Game-Changing Asset*, Economist Intelligence Unit, September 2011, sponsored by SAS.

The second reason survey respondents gave for overriding analytics with intuition is the idea that "the executive knows best." This executive instinct is sometimes a function of lack of understanding of analytics in general. Analytics advocates in the organization – those who have used analytics successfully and want to push for more fact-based decision making – clearly face challenges combatting the instinct of the experienced executive, particularly in organizations where the "bad data" card can also be played. Related comments from the survey:

- "People often believe that their business experience trumps analytics. There's a general lack of education in technical disciplines like statistics."
- "Long-term cultural framework, lack of education of executives, fear of mathematics."
- "Many senior executives grew up in the industry without analytics. Familiarizing them with the benefits is often a challenge."
- "Business decision makers do not always have knowledge of analytics."
- "Gut feelings of key senior executives who feel that their knowledge of or feelings about a given business situation should carry more weight than the analytically based data to the contrary."

Beyond the need for a cogent analytics strategy, data issues plague many organizations. Data quality and access are key inhibitors in at least four in 10 organizations. Forty-two percent of respondents indicated that they are uncertain how to integrate analytic insights into their business decisions.

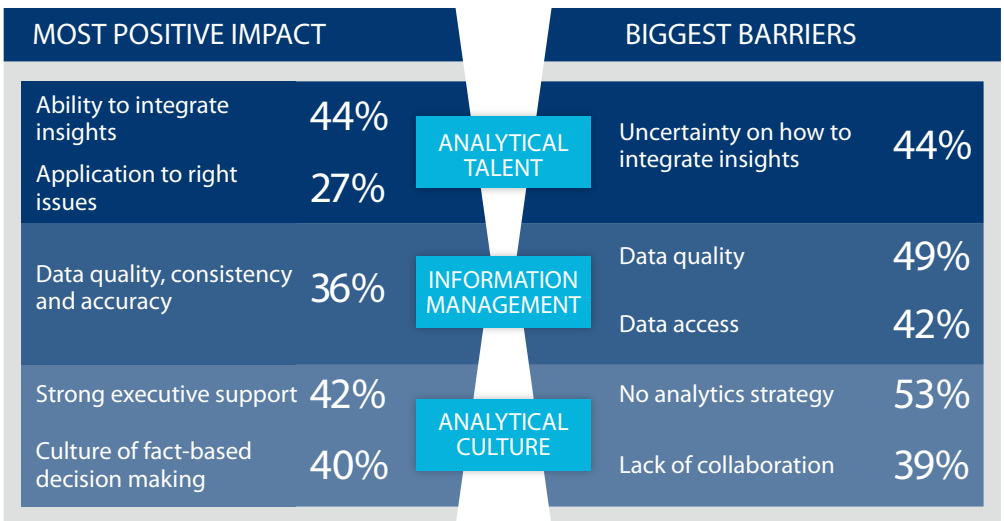
But it is the validation that analytics can provide that allows organizations to recognize hidden insights. Staples gained some unexpected insight when it turned to analytics to improve its business. It did this by examining data that had been ignored previously: During campaigns were customers shopping in stores, online, or both?

"The discovery we made is that we saw who purchased online versus in the store, but we couldn't determine who went to the website and didn't make a purchase. We were missing what was happening in the middle," said James Foreman, Staples' Director of Circulation and Analytics. "We turned to Web analytics to validate that we were getting a good response rate to the campaigns, but they weren't turning into purchases. Through Web analytics, we discovered certain Web pages that were cumbersome for users to read and navigate, resulting in a drop-off point for the consumer – so we optimized our Web pages, and it has made all the difference."

The culture gap

The other factor holding companies back in their use of analytics is a lack of collaboration across the organization. Collaboration, particularly in the area of data management, is essential for an effective analytics strategy.

According to the survey, having access to the required data and collaboration difficulties (these often go hand in hand) are more prevalent among larger organizations – those of $5 billion or more in revenue – than in their smaller counterparts. As businesses increase in size, their data becomes more dispersed, silos are more likely to form and access and collaboration become more difficult.



How important is it to overcome these challenges? Organizations that have reached a high level of analytical proficiency indicate that analytical talent and culture play the most significant role in their use of business analytics.

The banking industry provides an example of an organizational culture that is embracing analytics. Banks are data-driven creatures. A bank looks to its data to validate its decisions.

At one major US bank, the director of analytics found that, culturally, people ask for a lot of data that invites further exploration and often reveals that they don't know what they are really looking for. That probing, if energy and resources allow it, reveals great insights.

"If not, you need to work with the requester to better define the questions, which takes time. Our culture is defined with standardized reporting that we all use to calibrate our business – we are all looking at the same reports, the same data. All of this extends to benefit our customers because the customer gets the right offer because of our research, which directly impacts the bottom line," the analytics director said.

The ability to integrate analytical insights into critical business decisions, as well as executive support for analytics and an analytical culture, top the survey list as having the most positive impact on the use of analytics. These outrank the data issues that plague organizations still working toward optimizing their use of analytics – again emphasizing the importance of talent and culture in making analytics effective.

Effective use of analytics defined

There is, not surprisingly, a strong relationship between effectiveness and analytical ROI, although a few companies report being effective without yet achieving ROI, and some indicate they've achieved ROI but are not particularly effective yet. Of particular note, however, is that nearly one in four respondents surveyed *do not know* if their organizations have achieved a return on their analytics investments. This suggests that these organizations have not defined metrics to evaluate analytical ROI, that they are unable to quantify ROI, or perhaps that they lack a culture of measurement.

	FRONT-RUNNER	FAST FOLLOWER	DABBLER	TRAILER
EFFECTIVE USE OF BUSINESS ANALYTICS	Effective	Somewhat	Moderately	Not particularly
BREADTH OF ANALYTICS	Relatively high	Some integration	Some integration	Very low integration
VIEW OF OWN DATA	Data quality and access have positive impact on analytics	View data issues as barrier to use of analytics	Data quality and access have positive impact on analytics	View data issues as key barrier to their use of analytics
PERCEIVED ANALYTICAL TALENT	Have the right talent in place	Lacking in business and/or technology talent	Lacking in business and/or technology talent	Lacking in business and/or technology talent

The respondents were categorized in four segments based on their responses to questions about their effective use of analytics, breadth of analytics, view of company data and analytical talent.

Front-runners

Front-runners are those organizations that are successful in their use of business analytics as measured by the effective use of analytics in decision making and the return on investment for analytics expenditures. The most obvious difference between this segment and others is that these organizations have put the right talent in place. Most front-runners have increased their spending on analytics over the previous year, reporting an average increase of 20 percent. Front-runners report that strong executive support for analytics and a culture that supports fact-based decisions are two of the main reasons their efforts are successful. In general, they also indicate that having their data in order is an important element to their effective use of analytics. While not yet completely integrated across the company, analytics in most front-runner organizations has spread beyond individual functional and department use.

Using data mining, we found that the respondents can be divided into four distinct segments based on the effectiveness and ROI of their business analytics efforts: front-runners, fast followers, dabblers and trailers.

Fast followers

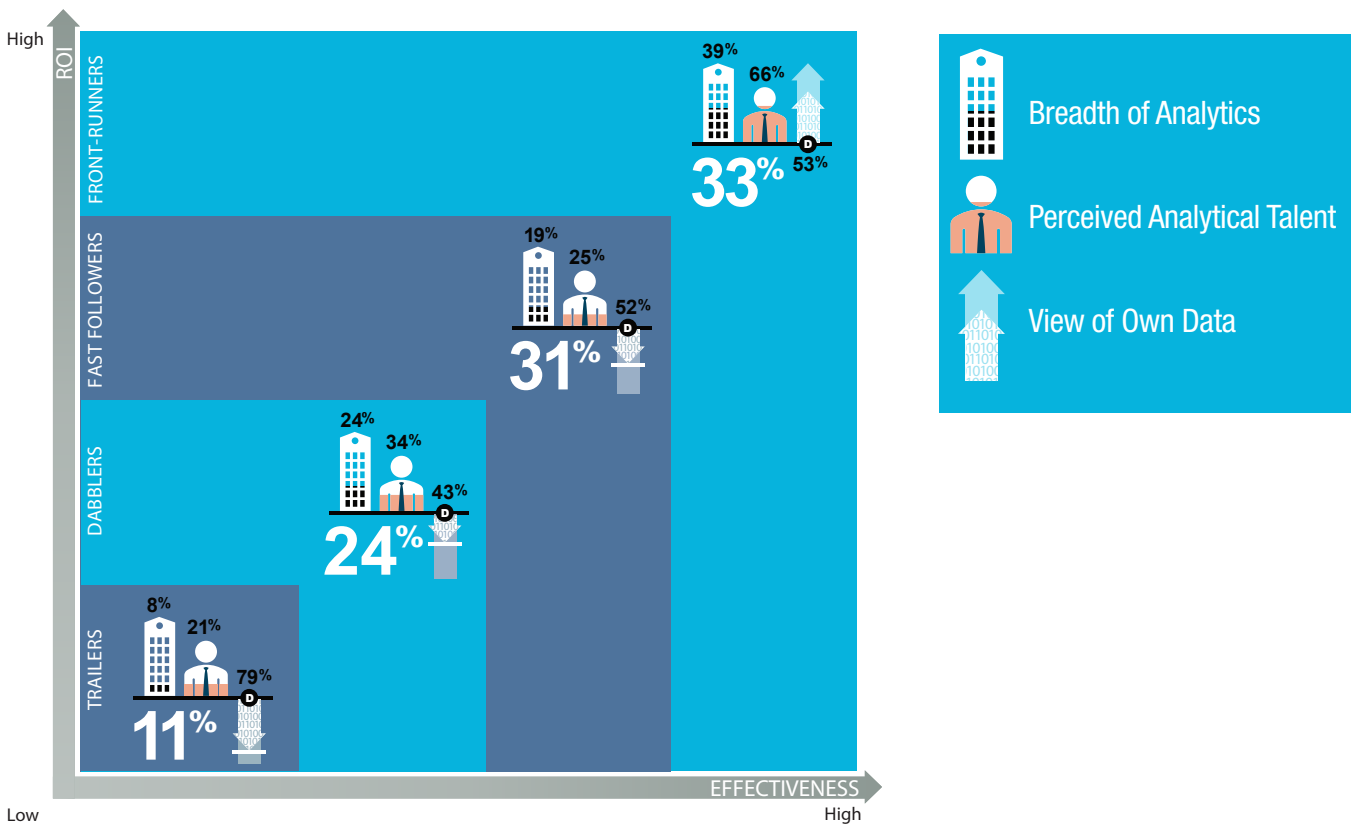
Fast followers are defined primarily by evidence that they have not yet turned the corner on their return on analytics investments. They tend to view their analytics efforts as relatively effective, but they are not as mature in other areas as the front-runners. About half of this group increased analytics spending over last year, at an average of 16 percent. A critical factor separating fast followers from front-runners is that the vast majority of them don't have the right analytical talent in place. They are also plagued by data issues: accuracy and access. Some have executive support for analytics, but their culture is not typically one of fact-based decision making. Few fast followers have integrated analytics across the organization – not surprising, considering their lack of analytical talent and data issues.

Dabblers

Dabblers are organizations that have ventured into the use of analytics without a lot of structure. They seem to be doing a fair job getting value from their analytics, but they have difficulty determining whether they have recouped their investment because they typically don't have metrics in place to measure ROI. These organizations increased their spending on analytics modestly this past year and are still at a deficit with their analytical talent, but not to the same degree as the trailers or even the fast followers. In general, they see themselves on about par with their competitors in using analytics, but a surprising percentage of them don't know where they stand. They've done a better job than fast followers or trailers at moving analytics beyond departmental or functional areas, perhaps in part because they seem to have better data management capabilities.

Trailers

Trailers are organizations that appear to be in the early stages of their use of business analytics. These organizations have not reached a point of effectiveness and haven't gotten a return on their analytics investments, or they have come to an operational crossroads and are stymied because they don't know which way to turn. They tend to view themselves as behind the curve compared to their competitors. They, too, are lacking the necessary analytical talent, but unlike the fast followers, they haven't made the investments in analytics over the past year. Data issues are a significant barrier to their use of analytics, and primarily because of this, executives tend to override the results more than half of the time. The use of analytics is typically fairly isolated, and collaboration is a key issue.



This graphic shows the distribution of companies based on ROI, effective performance and application across the company. It also highlights the analytical talent within the categories and its perception of information management as a positive or negative contributor to analytical success. The front-runners had the greatest application (39 percent) across the enterprise, felt that their analytical talent was appropriate (66 percent) and viewed their data as an asset (53 percent).

Conclusion

What these segments teach is clear – effective use of business analytics, including achieving a return on analytics investments, is driven by three key areas:

Right talent: Business analytics is more than technology. Organizations must upgrade their business and technical analytical skills to make full use of the available technology, to help ensure that the right infrastructure is in place, and to apply the results of analytics to the appropriate business issues. Talent upgrades can come by way of training current employees or hiring new analytical workers. A key is to attract, retain and continuously refresh the knowledge workers who understand the use of analytics in business decisions while balancing the technical and business perspectives.

Data quality and access: At its core, business analytics is about using data to discover insights that can change the way an organization operates. Without a strong foundation of accurate and reliable data that is also accessible, the results of analytics are suspect and likely to be overridden by executives – as is shown by the results of this survey. With upgraded technical and business analytics talent, these issues can be addressed through a sound information management strategy, and collaboration and integration across the organization can be improved.

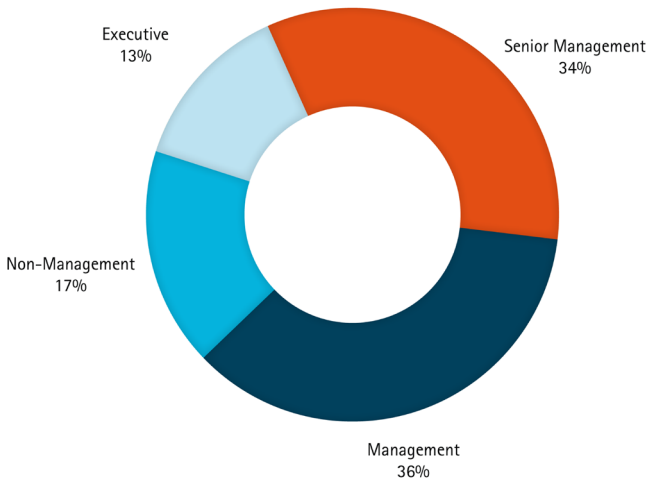
Culture: The less tangible component cranking up the effectiveness of business analytics and getting value for the investment is the culture. Clearly, integration of analytics across the organization is a marker of analytic success, but it's not necessarily the cause. Support from executives from the outset helps address many of the challenges companies face in their movement up the analytics learning curve: Talent issues are more likely to be addressed, collaboration will improve, fact-based decision making will be valued more highly, and data issues more readily solved if directives come from the top. Grass-roots analytics efforts can be successful, but the research indicates that the path is shorter and smoother when the culture is ripe for fact-based decision making. When the results of analytics become the reliable foundation of business decision making, integration across the organization will likely follow.

The results of this research indicate that companies interested in improving the effectiveness of their analytics and getting more value for their money should consider these three key steps: find the right talent mix, get their data in order and foster a culture of fact-based decision making.

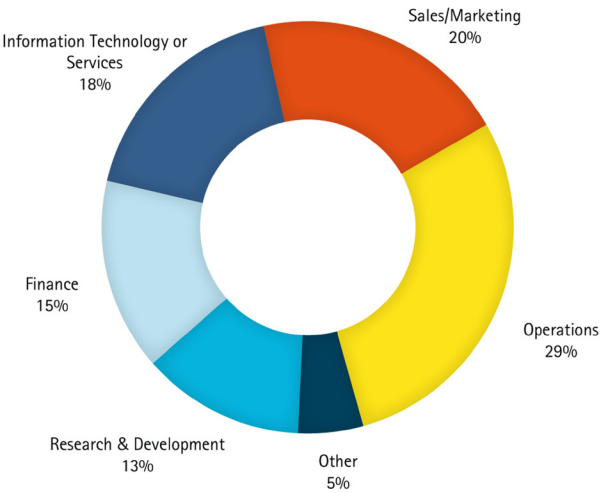
Appendix

The study is based on an online survey among 258 business professionals in North America from a broad range of industries. Below are the demographics of the respondents.

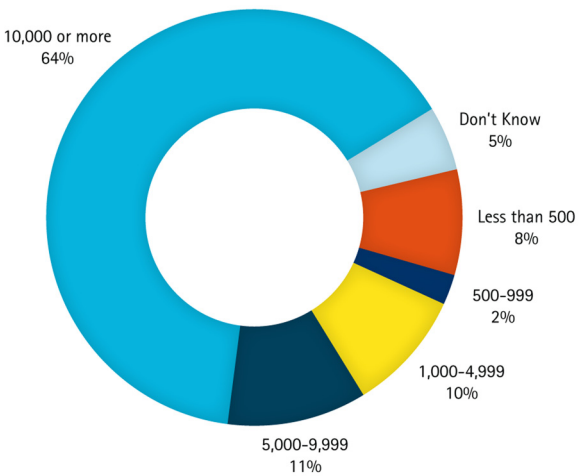
Respondent Role



Respondent Function



Number of Employees



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About SAS

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SAS Institute Inc. World Headquarters +1 919 677 8000

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