

# OPENING UP BUSINESS INTELLIGENCE TO THE ENTERPRISE

## 2012 SURVEY OF DATA PROFESSIONALS ON SELF-SERVICE BI AND ANALYTICS

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## EXECUTIVE SUMMARY

Data keeps growing, and along with it, opportunities for unprecedented insights into customers, sales, markets, and processes. With information now being generated from all corners of the enterprise, executives, managers, and professionals can ask and get answers to questions they have never been able to consider. For companies that are able to offer business decision makers rapid and easy access to business intelligence (BI) or analytic data from which they can assemble their own interfaces and reports, this means competitive advantage. However, today's BI systems still present obstacles to realizing this vision.

These are some of the findings of a new survey of 250 data managers and professionals, conducted by Unisphere Research, a division of Information Today, Inc., for Tableau Software. The new research confirms a movement toward self-service BI systems that can potentially help decision makers gain insights where and when they are needed. However, organizations are still lagging when it comes to making such capabilities pervasive across their organizations, and questions about data quality, data timeliness, and organizational support need to be addressed.

Respondents to the survey—who are among the readership base of *Database Trends and Applications*—represent a range of organization types and sizes. A total of 27% are in IT management positions (from project manager to CIO level). Another 19% consists of professionals on the front lines of database and system administration. About 16% are IT or data consultants, and 15% are developers. More than one-fourth of respondents come from very large organizations with more than 10,000 employees, but there is also a significant contingent of small-to-medium-size businesses represented in the survey as well. In terms of industry groups, the largest segment seen in this survey consists of organizations involved in technology services, identified by 14% of respondents, with another 11% in the business, consumer, and information services sector. Another

leading category is financial services and insurance, identified by 10% of respondents. (See Figures 23–25 at the end of this report.)

### The survey also uncovered these key findings:

- The latency of BI information, difficulty in using tools, and challenges in finding appropriate data are the main complaints heard about today's business intelligence and analytic systems. In addition, only a handful of people in respondents' organizations have direct access to the information they need.
- Self-service BI is now offered to some extent in half of the organizations surveyed. However, in most companies, fewer than one out of 10 employees have access to BI and analytic systems.
- Financial analysis, forecasting, and business activity monitoring are the areas most likely to be enabled through self-service BI. In the majority of cases, self-service BI is being extended to executives and managers, along with marketing departments. The main goal of the self-service approach is to make BI and analytics applications easy to use.

The survey documents the evolution to end-user-driven IT, in which users rely less on IT to provide reports and services. Many organizations see the benefit in enabling their end users to directly access self-service portals, view their own dashboards, run their own reports, and perform their own analyses. This is easier and faster for users, and reduces the IT workload. This is enabled by an increasingly lower entry cost for BI capabilities.

On the following pages are the results of this survey, highlighting the opportunities and challenges data managers and professionals are facing in supplying and accessing timely, actionable information to today's data-driven enterprises.

## TODAY'S BI AND ANALYTICS LANDSCAPE

**The latency of BI information, difficulty in using tools, and challenges in finding appropriate data are the main complaints heard about today's business intelligence and analytic systems. In addition, only a handful of people in respondents' organizations have direct access to the information they need.**

As many survey respondents are typically the data managers in charge of information delivery for BI and analytics systems, they see first-hand the frustration many users are experiencing with their current environments. A majority of respondents, 52%, cite issues with the latency of information—which they say needs to be delivered faster or be more timely to make a difference. Another two-fifths of the group report that members of their organizations are experiencing difficulty with the complexity of the tools and solutions they have in place. A similar amount report that they and their end users have difficulty finding the right information needed in data stores across their organizations. In addition, 37% of respondents say they face budget headwinds. (See Figure 1.)

As one respondent put it, his company's management just doesn't understand the urgency in purchasing and installing more advanced BI solutions. "Analytics is not part of our core business so making a large capital purchase for an enterprise analytics platform is a hard sell," the respondent says. "Executives believe in the information, they just don't want to pay for it."

A lack of management support may undercut efforts to overcome latency in the timing of the information delivered as well. At another respondent's company, the major challenge is an "inability to allow our users access to data closer to real time. Also, one of our major systems is not as reliable as desired. Our problem is that it will take a large investment to replace."

Decision makers or information workers may be under-served by many existing BI solutions and environments, in which access to data is out of reach to all except IT and selected power users. Reliance on a few information gatekeepers to answer critical business questions results in decision makers' frustration with time delays, while burdening already stressed IT departments. Efforts to introduce wider access to traditional IT tools are often hampered by complexity and long training cycles.

Ultimately, the biggest challenge isn't provisioning portals and dashboards—it is a lack of a unified view of the enterprise. There tend to be many different types of BI and analytic solutions and tools scattered across enterprises. The leading tool employed for BI, in fact, is a spreadsheet, which serves as an ad

hoc workaround to the restraints of online enterprise data. Close to four-fifths of respondents, 78%, report that spreadsheets are the BI tool of choice within their enterprises. Along with spreadsheets, the survey finds there is a wide assortment of tools and solutions are currently employed in respondents' organizations. Leading tools and solutions include dashboards (65%), standard reports (62%), data warehouses (57%), and data mining. (See Figure 2.) Many of these solutions simply don't integrate completely, resulting in siloed views of the business. For example, current tools may provide a dashboard view of sales, but do not deliver views in the context of the entire enterprise.

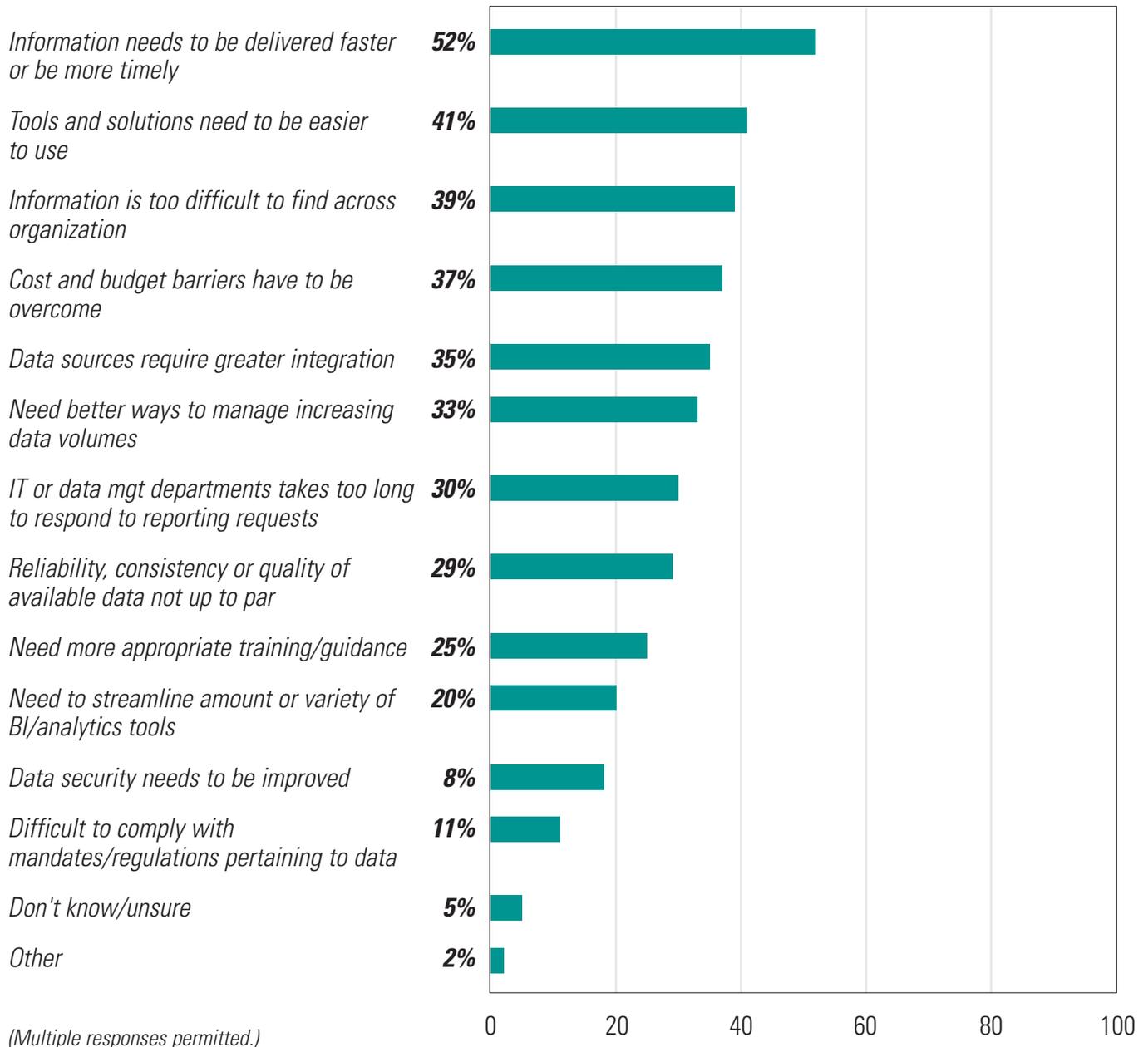
To complicate matters further, only a handful of people in respondents' organizations have direct access to the information they need. At this point, only 9% can say that a majority of their employees have access to BI or analytics tools. (See Figure 3.)

The leading employee end users of respondents' BI or analytics tools and solutions include executive management (74%), line-of-business managers (62%) and production/operations staff (43%). (See Figure 4.) About half say they extend BI and analytics capabilities to external end users as well. Most likely, these end users will be customers or clients (37%), with a smattering offering access to production partners (16%) and suppliers or vendors (14%). (See Figure 5.)

Where do respondents apply BI or analytics within their enterprises? A majority employ financial analysis (52%). Additional leading BI categories include customer relationship management (41%), forecasting (40%), business activity monitoring (39%) and IT systems monitoring and management (39%). (See Figure 6.)

Big Data may be introducing a wide range of unstructured data types—such as video and documents—to data sites, but organizations continue to narrow their BI and analytics reporting to traditional, structured data from transactional databases. By far, traditional RDMSs lead the way, cited by 77% of respondents. In addition, a majority (53%) say they pull data from Excel spreadsheets. Column-store databases are seen as data sources among 18% of the respondents, while 15% rely on unstructured data sources, as well as Google Analytics. (See Figure 7.)

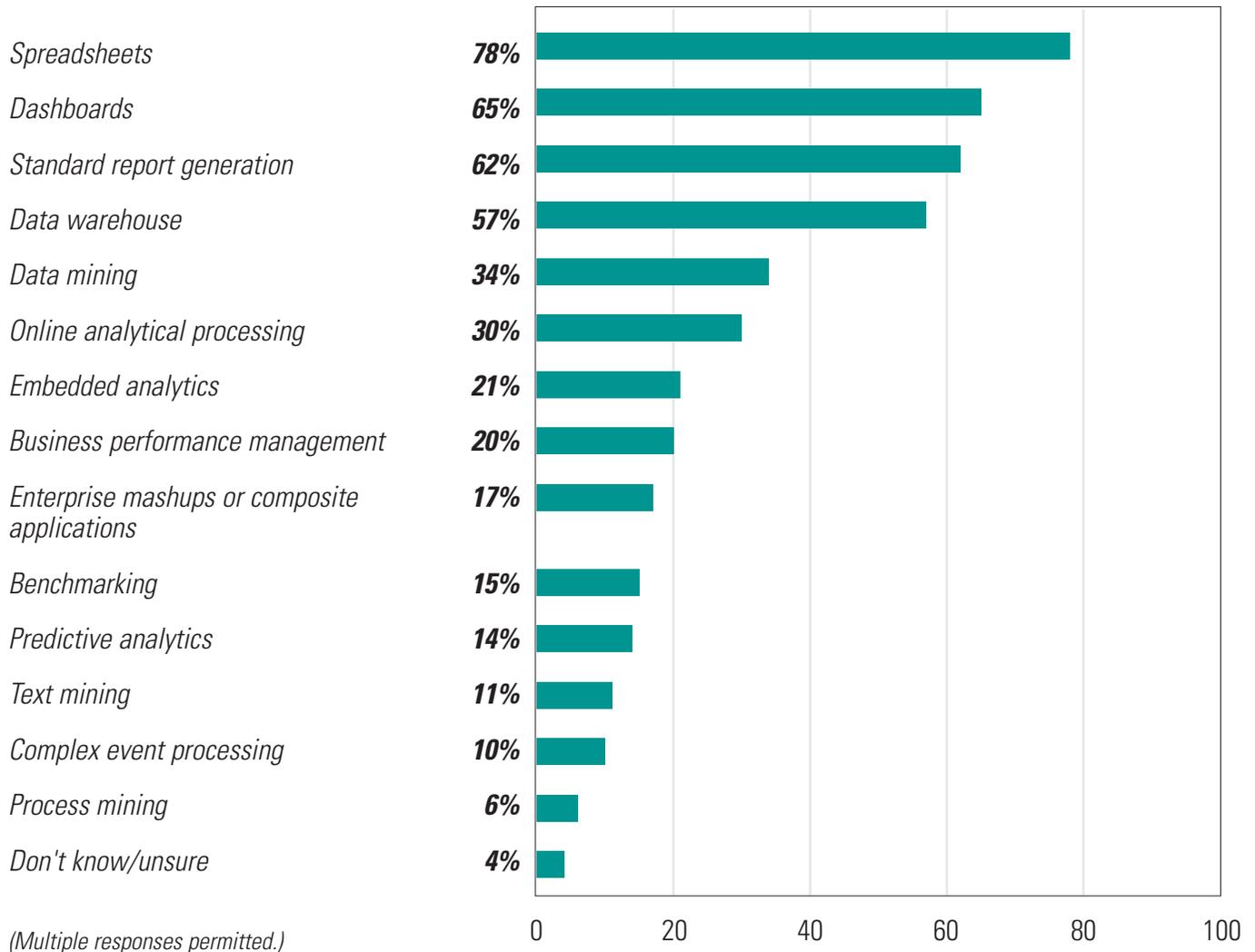
## Figure 1: BI and Analytics Challenges



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Data collection and analysis performed with SurveyMethods.

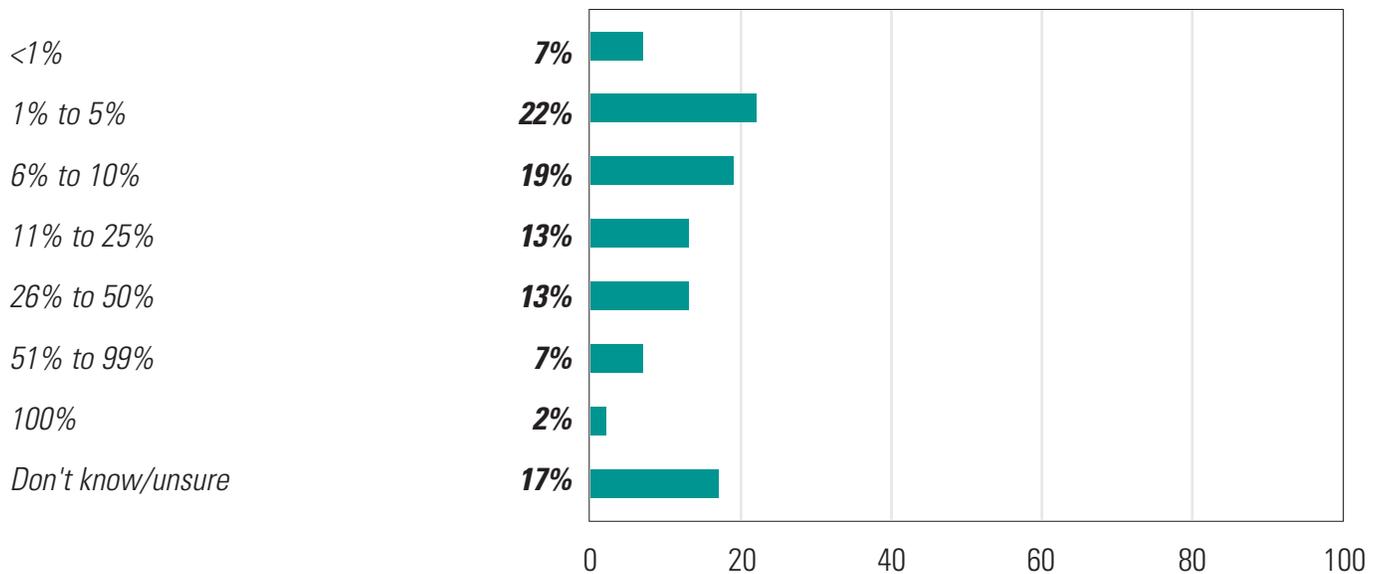
## Figure 2: Types of BI or Analytic Tools and Solutions Currently Employed



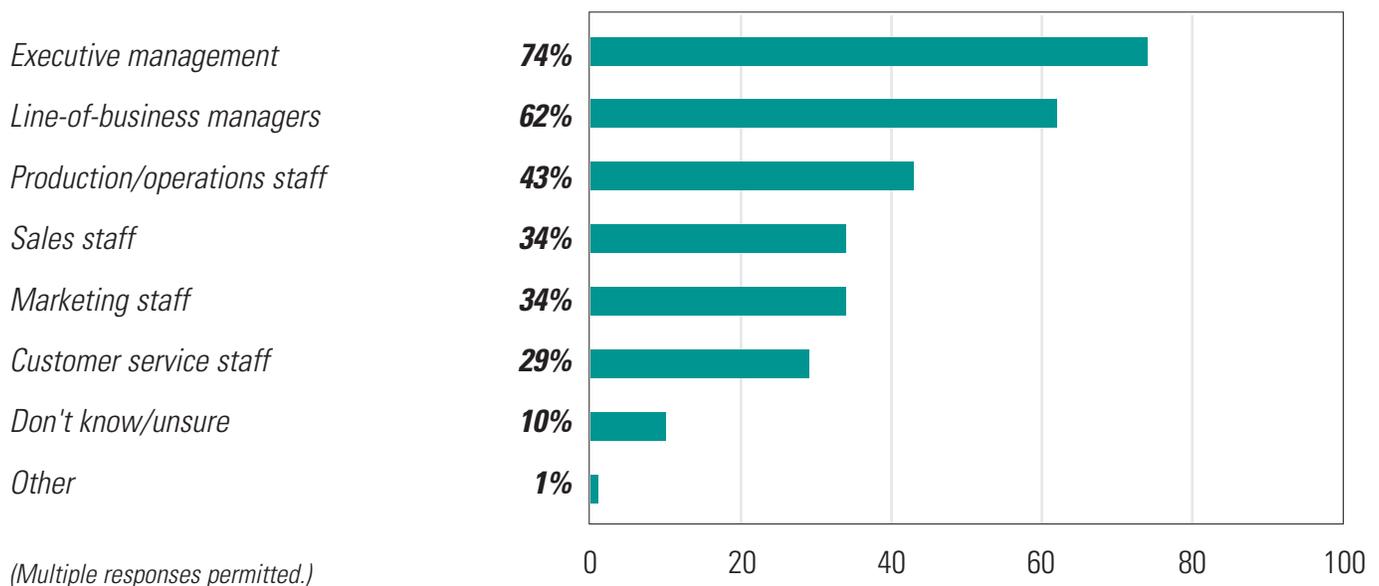
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### Figure 3: Percentage of Workforce Provided BI Analytics Reporting Data



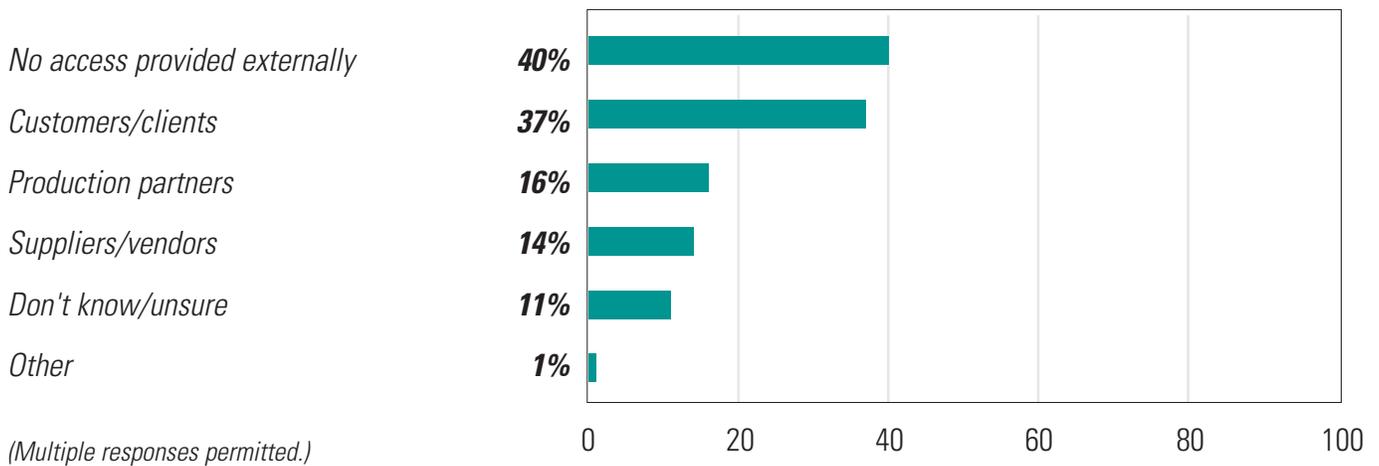
### Figure 4: Enterprise End Users of BI or Analytics Tools and Solutions



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## Figure 5: External End Users of BI or Analytics Tools and Solutions



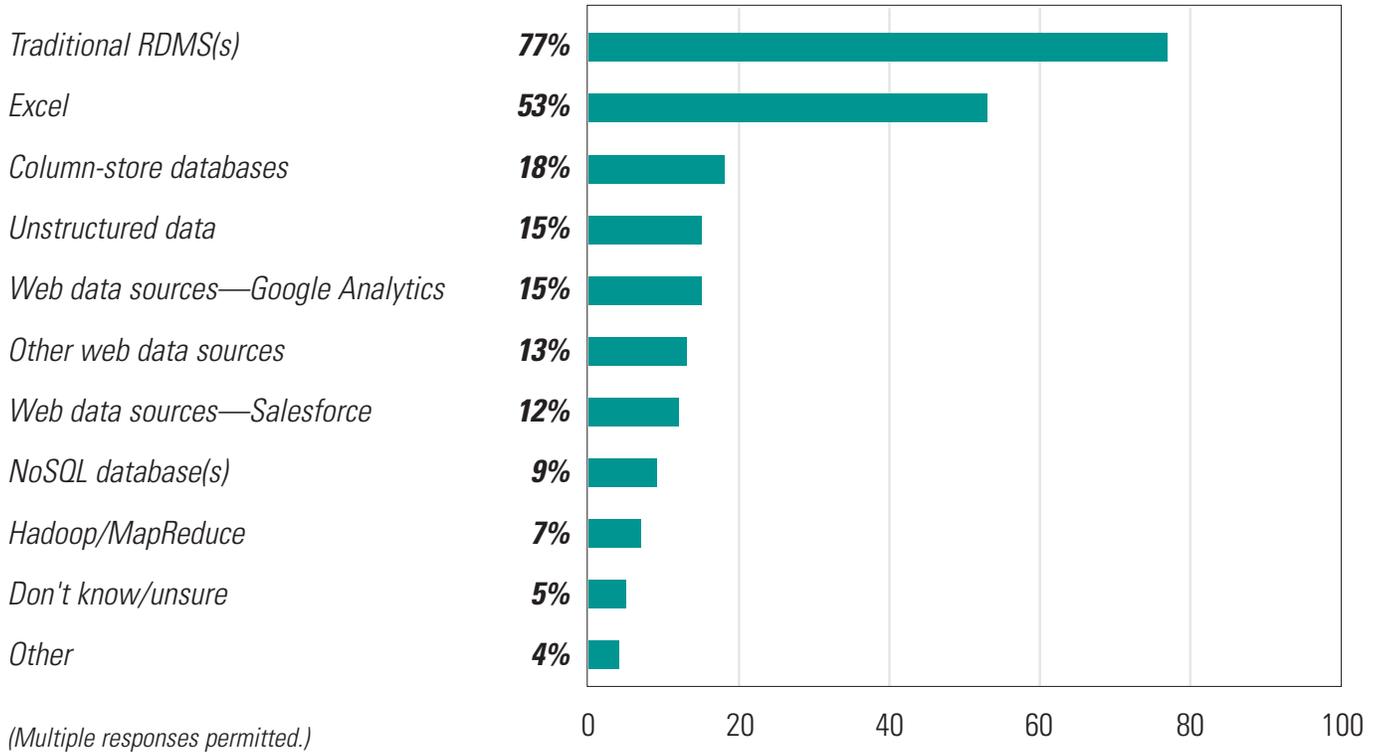
## Figure 6: Business Areas Where BI or Analytics are Applied



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## Figure 7: Primary Data Sources Employed for BI and Analytic Reporting Environments



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## JOURNEY TO SELF-SERVICE BI

**Self-service BI is now offered to some extent in half of the organizations surveyed. However, in most companies, fewer than one out of 10 employees have access to BI and analytic systems.**

Empowering employees with the ability to discover insights from the data flowing across their desks has long been elusive to organizations. That is the impetus for the drive toward self-service BI, which lets end users access and analyze data through interactive and personalized BI interfaces—without depending on IT or data management departments to build and deliver reports on their questions.

There is a high level of support toward enabling end users to build their own interfaces to BI and analytic data. Close to half of respondents, 49%, enable self-service BI, in which end users are able to access approved enterprise data sources and create their personalized reports and queries with no intervention from IT or other departments. However, only 10% report this capability is offered “extensively,” compared to 39% who say it is offered in limited situations. (See Figure 8.) Only a small handful report having tried it and discontinued it, mainly due (as cited by eight out of 10) to data quality issues encountered.

Self-service BI includes enabling users across organizations to can build their own reports, dashboards, scorecards, analysis, ad hoc queries, or planning models. The rise of application programming interfaces (APIs) to access key data services, as well as interfaces built on mashups, or standards such as AJAX and REST, also enables end users to quickly assemble their own front-end interfaces with less assistance from their IT departments.

Robust self-service BI implementations are more likely to be seen among larger organizations, the survey finds. About 16% of organizations with more than 10,000 employees report having pervasive self-service BI systems, versus 4% of organizations with 1,000 or fewer employees (See Figure 9.)

Retailers and distribution companies have taken the lead with self-service BI implementations, the survey also finds. Three-fourths of respondents in this segment have “extensive” or “limited” implementations. Government and services organizations follow with 56% each. (See Figure 10.)

Respondents are reporting a range of benefits as a result of their self-service BI implementations. A majority of respondents, 57%, say they have seen faster responses to queries/business questions. Another 38% say that end users are reporting higher levels of satisfaction since installation of the capability. About 36% report that they are seeing greater productivity for their IT or data management departments. (See Figure 11.)

However, speedy data delivery isn’t always a good thing, at least in the view of one respondent—having data available on demand at blazing speeds may actually even counterproductive

in self-service BI settings. “Time to do the integration and identification of which data sources would provide useful insight,” the respondent states. “This requires the end user to think about what reports would be valuable to them.”

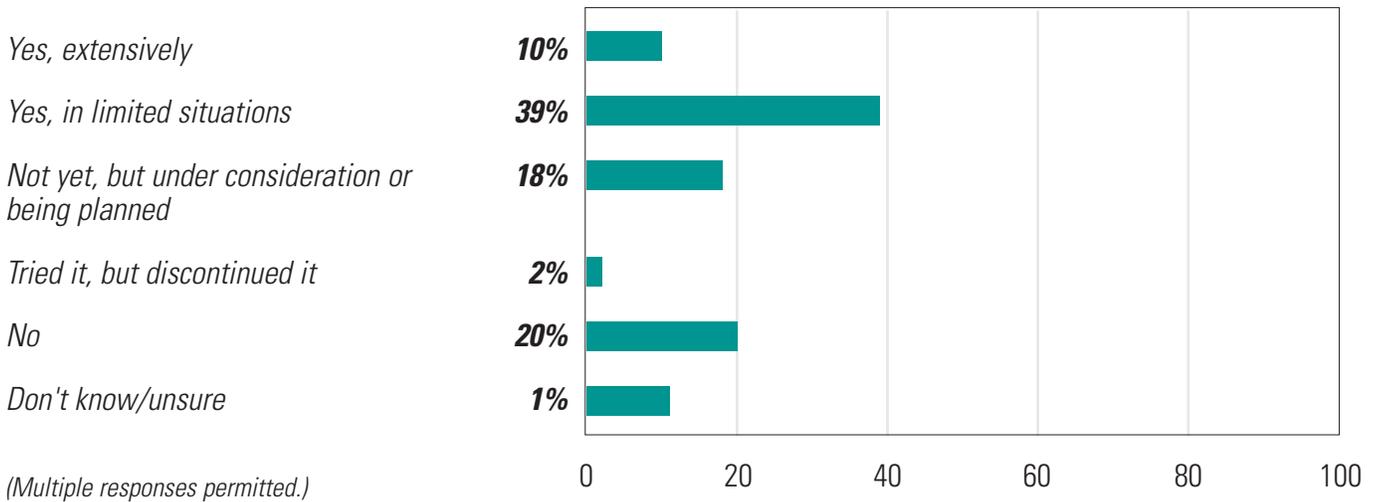
While there is a sizable base of organizations with self-service BI systems, these systems tend not to be widely available across respondents’ organizations. For the most part, as cited by 57% of respondents, fewer than one out of 10 employees have these abilities. Only 3% of respondents could say the majority of their workforces has access to self-service BI. By contrast, 9% say their IT or data management departments already offer data and reports to a majority of their employees (as shown in Figure 3 earlier in this report). This indicates that there is still a much greater reliance on the traditional delivery of information via IT departments than through self-service portals. Ideally, 14% would like to see the majority of their employees have unfettered access through their own portals. (See Figure 12.)

Such “data democracy” is not seen widely across most industries, however. Here, the government takes the lead, with 24% of government agencies providing self-service capabilities to a critical mass of their workforces (defined for purposes of this survey as 25% or greater). High-tech service firms follow at 20%, and financial services with 12%. While retailers are most likely to have self-service BI in place (see above), they only offer such capabilities to limited portions of their employees. (See Figure 13.)

What will it take to increase the accessibility of BI or analytics in respondents’ organizations? Getting a handle on data quality issues (41%) leads the list of challenges to achieving a self-service BI organization. Another 37% of respondents say they need more budget support to move such initiatives forward, while 35% say they need to build a solid business case. (See Figure 14.) As one respondent put it, the challenge is to undo years’ worth of applications and data built and dispersed across the enterprise, to “provide access to data in a usable format for our self-service clients.” This respondent notes that “too much data is locked into silos or formats that hinder easy access.”

Still, a third of respondents say that it is a matter of getting end users themselves to be accepting of a self-service BI approach, versus doing their own workarounds. A respondent described the challenge this way: “The main barrier to overcome in our self-service BI implementation is to get our users to accept the data and reports in the BI system as valid—instead of them depending on their own view of the data in their spreadsheets or own data stores.

## Figure 8: Enable “Self-Service BI”?



## Figure 9: Self-Service BI—By Company Size

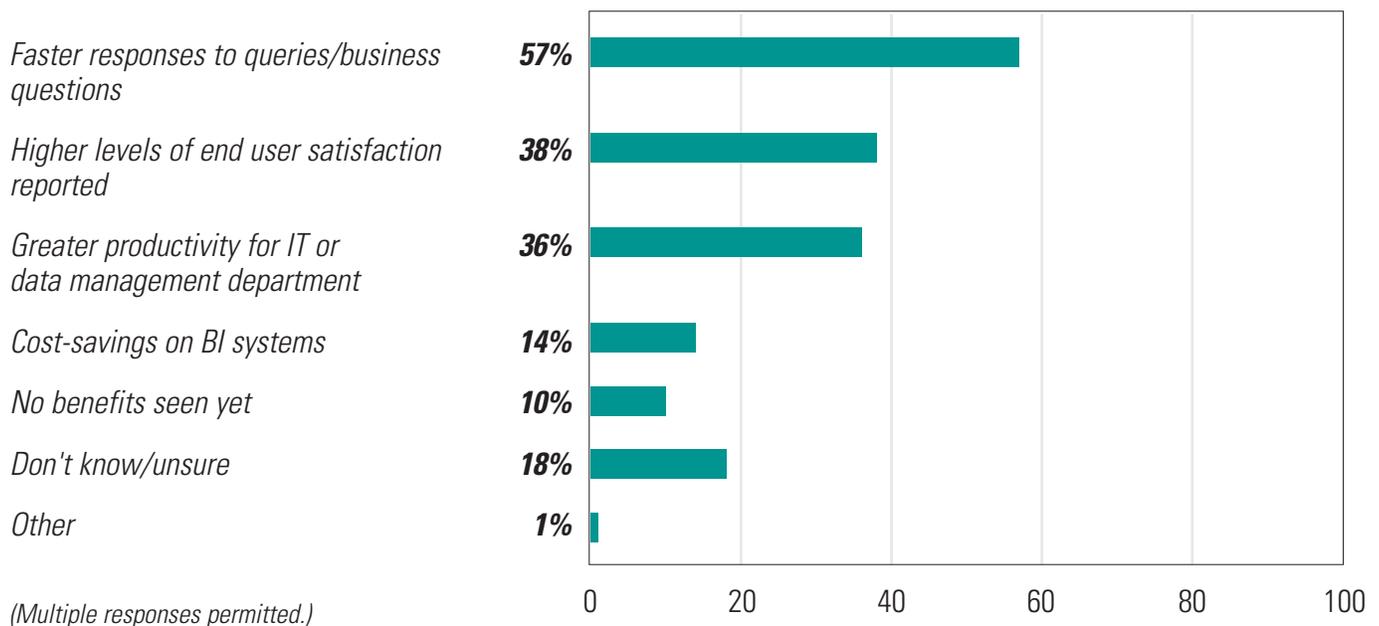
	<100 employees	101–1,000 employees	1,001–10,000 employees	>10,000 employees
Extensive	4%	4%	9%	16%
Limited	40%	41%	39%	36%
<b>Total</b>	<b>44%</b>	<b>45%</b>	<b>48%</b>	<b>52%</b>

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**Figure 10: Self-Service BI—By Industry Group**

	<i>Extensive</i>	<i>Limited</i>	<i>TOTAL</i>
<i>Technology services/software</i>	<b>8%</b>	<b>31%</b>	<b>39%</b>
<i>Business/consumer/information services</i>	<b>8%</b>	<b>48%</b>	<b>56%</b>
<i>Financial services/insurance</i>	<b>14%</b>	<b>32%</b>	<b>46%</b>
<i>Healthcare/medical</i>	<b>5%</b>	<b>32%</b>	<b>37%</b>
<i>Manufacturing, including high-tech manufacturing</i>	<b>5%</b>	<b>33%</b>	<b>38%</b>
<i>Government, all levels</i>	<b>6%</b>	<b>50%</b>	<b>56%</b>
<i>Education, all levels</i>	<b>6%</b>	<b>37%</b>	<b>43%</b>
<i>Retail/distribution</i>	<b>7%</b>	<b>67%</b>	<b>74%</b>

**Figure 11: Self-Service BI Benefits Seen?**

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## Figure 12: Percentage of Workforce With Self-Service BI Access

	<i>Current situation</i>	<i>Ideal situation</i>
<1%	<b>14%</b>	<b>6%</b>
1% to 5%	<b>22%</b>	<b>11%</b>
6% to 10%	<b>21%</b>	<b>15%</b>
11% to 25%	<b>14%</b>	<b>17%</b>
26% to 50%	<b>7%</b>	<b>21%</b>
51% to 99%	<b>2%</b>	<b>9%</b>
100%	<b>1%</b>	<b>5%</b>
Don't know/unsure	<b>19%</b>	<b>16%</b>

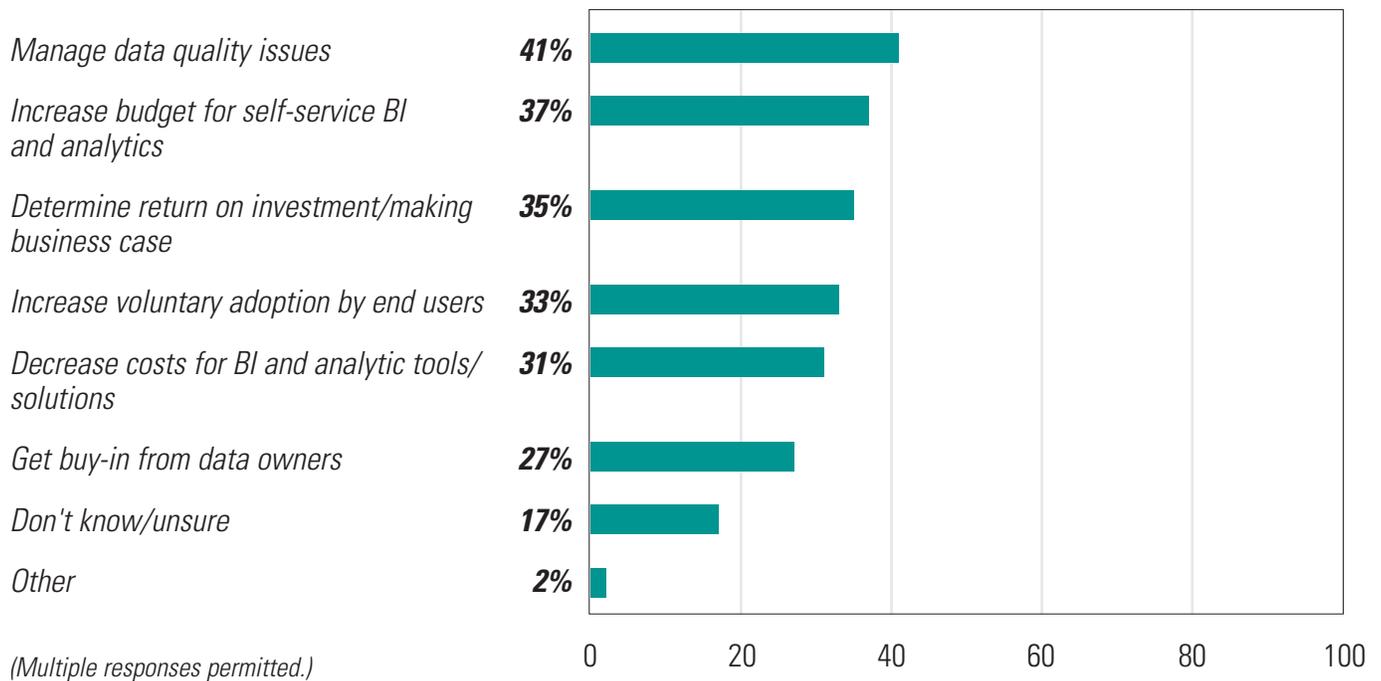
## Figure 13: Critical Mass of Self-Service—By Industry Group

	<i>HT</i>	<i>SVCS</i>	<i>FIN</i>	<i>HLTH</i>	<i>MFG</i>	<i>GOVT</i>	<i>EDU</i>	<i>RTL</i>
Currently offer direct access to >25% of workforce	<b>20%</b>	<b>5%</b>	<b>12%</b>	<b>0%</b>	<b>0%</b>	<b>24%</b>	<b>0%</b>	<b>0%</b>
<i>HT=Technology services/software</i> <i>SVCS=Business/consumer/information services</i> <i>FIN=Financial services/insurance</i>			<i>HLTH=Healthcare/medical</i> <i>MFG=Manufacturing, including high-tech mfg</i> <i>GOVT=Government, all levels</i>			<i>EDU=Education, all levels</i> <i>RTL=Retail/distribution</i>		

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## Figure 14: What's Needed to Increase BI and Analytics Accessibility



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## BAKING SELF-SERVICE BI INTO THE ORGANIZATION

**Financial analysis, forecasting, and business activity monitoring are the areas most likely to be enabled through self-service BI. In most cases, self-service BI is being extended to executives and managers, along with marketing departments. The main goal of the self-service approach is to make business intelligence and analytics applications easy to use.**

For the most part, the barriers to self-service BI are not technical. The solutions, tools, and platforms are already present within most organizations. However, organizations maintain barriers to getting at this information in a rapidly and timely manner. For example, a previous survey conducted by Unisphere Research for the Oracle Applications User Group (OAUG) found that while there were considerable demands from enterprises for reports, dashboards, scorecards, or planning models to help decision makers determine the health of their business, many respondents said they often end up waiting up to a month for reports. Organizations that make BI tools more readily accessible to a larger number of decision makers, however, reported faster delivery of reports and models.

When looking at the types of tools or solutions employed as part of respondents' self-service BI initiatives, informal, ad hoc tools give way to those with more enterprise strength. For example, while 50% of respondents say spreadsheets are still part of the self-service BI equation (see Figure 15), this is substantially lower than the 72% reporting spreadsheet use in conventional BI settings in which there is no self-service BI available. (See Figure 16 for comparison.) Instead, dashboards take priority, cited as the key tool by more than two-thirds of respondents. Data warehousing is more likely to be seen in self-service BI settings (45%, versus 40% of non-self-service sites), and there is greater adoption of predictive analytics (25%, versus 6% in conventional settings.) There is also a wider adoption of data mining, and a much greater propensity to support online analytical processing once BI is offered in a self-service mode.

There are a number of functions that are being opened to self-service BI, both in strategic analysis and day-to-day operations. Financial analysis and forecasting are top application areas, with each targeted by 47% of respondents. Another 42% intend to engage in forecasting, while close to 40% are directing self-service BI to customer relationship management functions. (See Figure 17.)

Which segments of organizations' workforces and external environments have—or will have—access to your self-service BI tools and solutions? A majority of respondents, 61%, say executive management will have access to self-service

environments. In addition, 57% say they are providing or intend to provide line-of-business managers with their own self-service BI capabilities. Marketing staffs have or soon will have self-service BI among 44% of respondents. While close to one out of four also intend to open up capabilities to customers and clients, few are looking at offering such services outside their walls to suppliers or partners. (See Figure 18.)

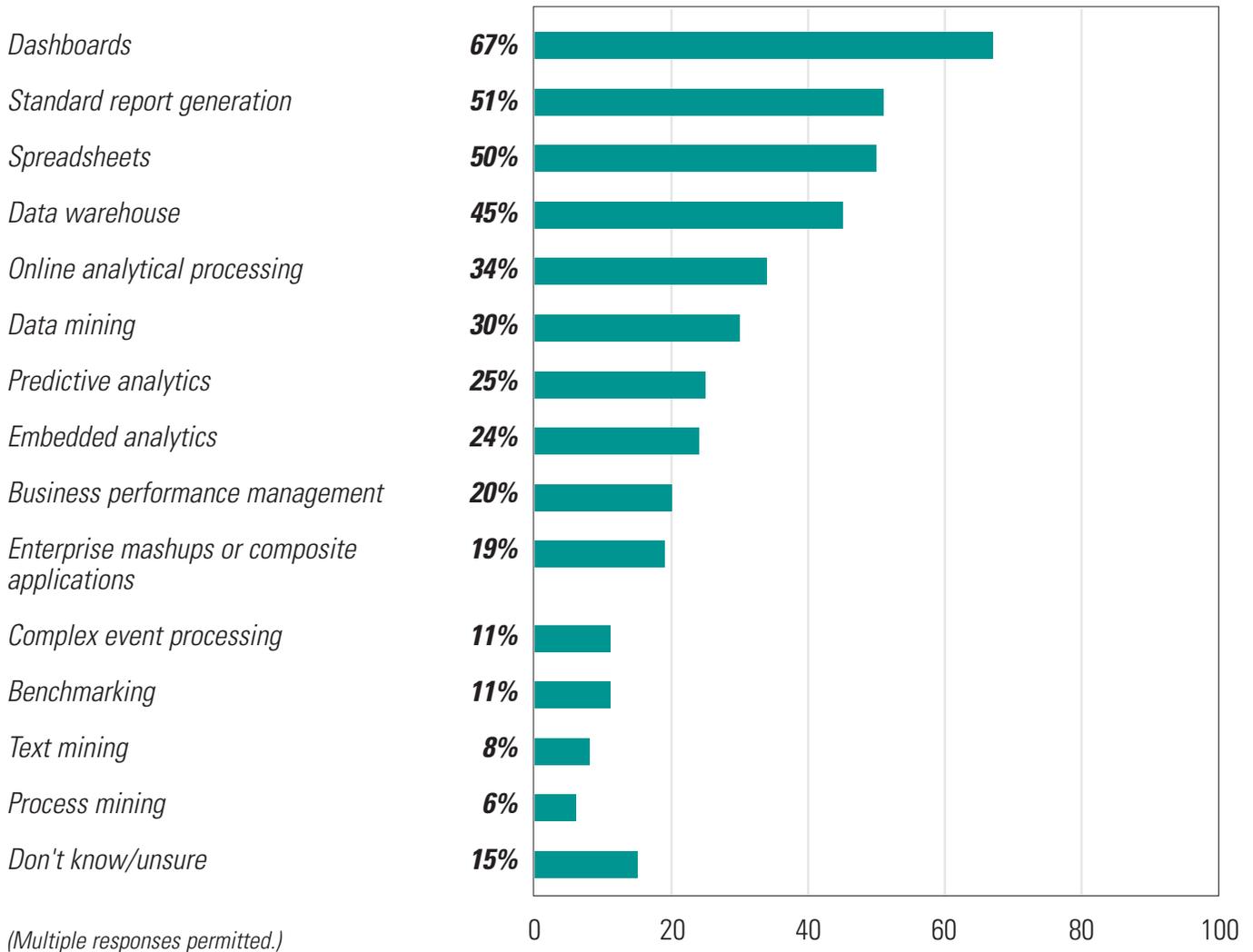
High-tech service companies are the most likely to open up their analytical interfaces to outsiders—particularly customers or clients. About 40% of respondents in this segment report customers have access to their BI capabilities. One-fourth of manufacturers also open up analytics to their customer base. (See Figure 19.)

What are the features that respondents require or will require in their organization's self-service BI tools or solutions? The vast majority, 70%, say the main goal is to provide interfaces that are highly intuitive and simple to use. Another important capability, cited by 64%, is the ability for end users to ask any type of question they need at the moment. Still, close to 60% also say they want to furnish pre-built reports through their self-service environments. (See Figure 20.)

Mobility is also a prominent part of the self-service BI movement, the survey finds. For the most part, these environments extend to traditional desktop PCs or laptops, as indicated by 84%. Close to half, however, now also support or intend to support mobile devices, such as smartphones or tablets. These capabilities are more likely to be delivered through a browser interface. Just over a third, 35%, say they are working on apps as well. (See Figure 21.)

As discussed earlier in this report, traditional structured data comprises the bulk of BI and analytics systems, and this extends to self-service BI systems as well. Traditional relational database management systems are the primary data source for BI and analytic systems, and will remain so as organizations move to self-service BI. Eight out of 10 organizations employing or planning to employ self-service capabilities say the information will be coming from their RDBMS systems. Another 18% of respondents say data will be pulled in from web sources, while 17% will provide access to unstructured data. (See Figure 22.)

## Figure 15: Self-Service BI Tools or Solutions



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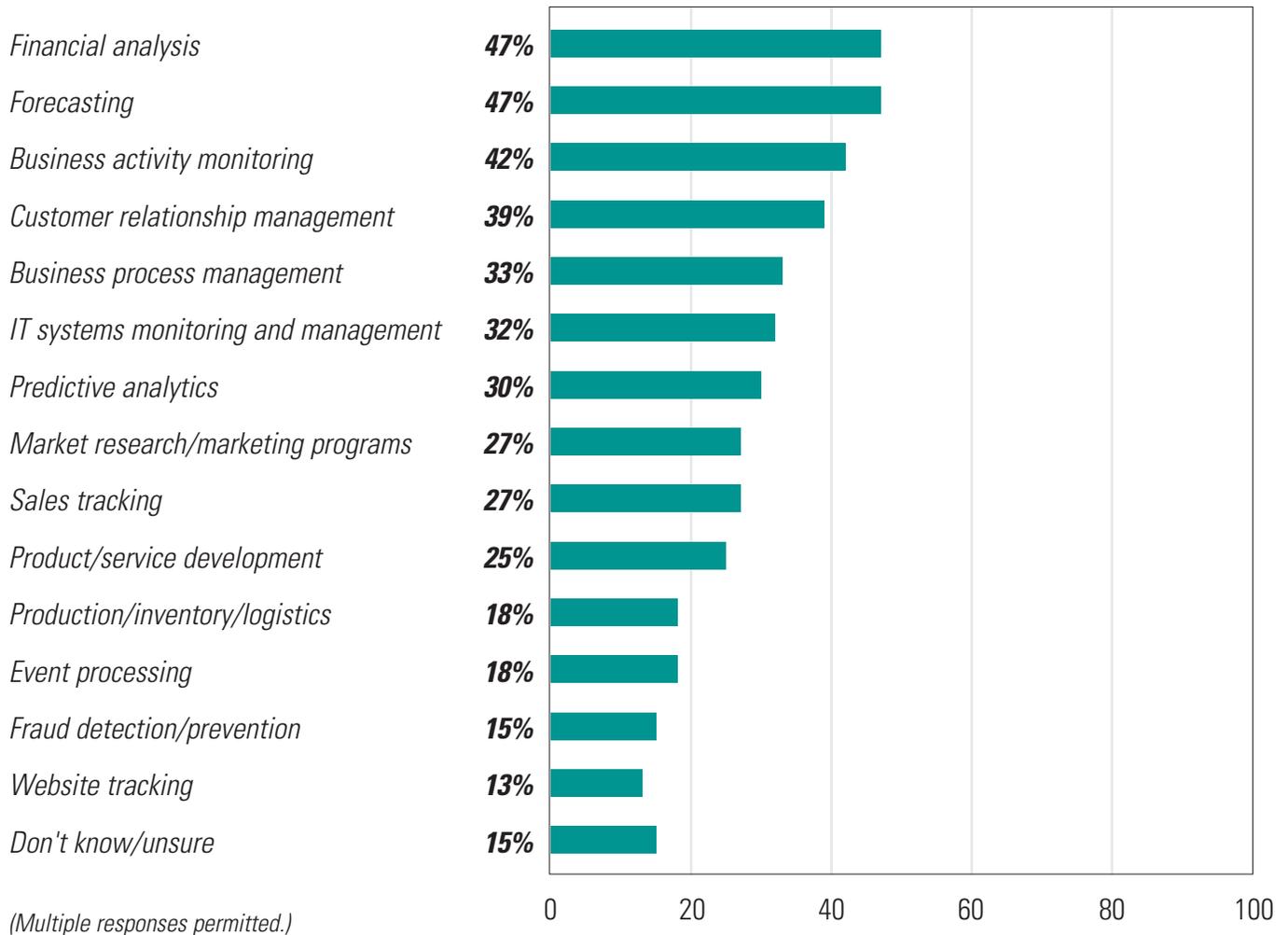
Data collection and analysis performed with SurveyMethods.

## Figure 16: Selected Tool Adoption—Self-Service Versus Conventional BI

	<i>Self-Service BI</i>	<i>No Self-Service Offered</i>
<i>Dashboards</i>	<b>67%</b>	<b>54%</b>
<i>Standard reports</i>	<b>51%</b>	<b>50%</b>
<i>Spreadsheets</i>	<b>50%</b>	<b>72%</b>
<i>Data warehouse</i>	<b>45%</b>	<b>40%</b>
<i>OLAP</i>	<b>34%</b>	<b>16%</b>
<i>Data mining</i>	<b>30%</b>	<b>27%</b>
<i>Predictive analytics</i>	<b>25%</b>	<b>6%</b>

*(Multiple responses permitted.)*

## Figure 17: Business Areas Where Self-Service BI or Analytics Are or Will Be Applied



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Data collection and analysis performed with SurveyMethods.

## Figure 18: Enterprise and External End Users of Self-Service BI or Analytics

### INTERNAL

Executive management

61%

Line-of-business managers

57%

Marketing staff

44%

Production/operations staff

41%

Sales staff

38%

Customer service staff

37%

### EXTERNAL

Customers/clients

24%

Suppliers/vendors

10%

External production partners

9%

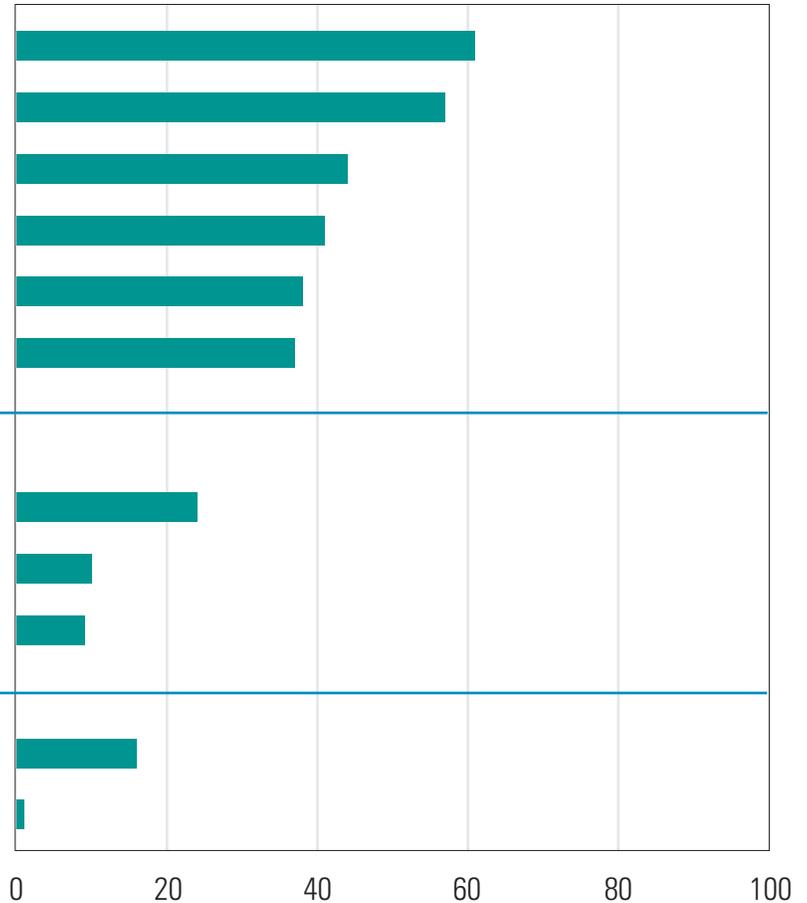
Don't know/unsure

16%

Other

1%

(Multiple responses permitted.)



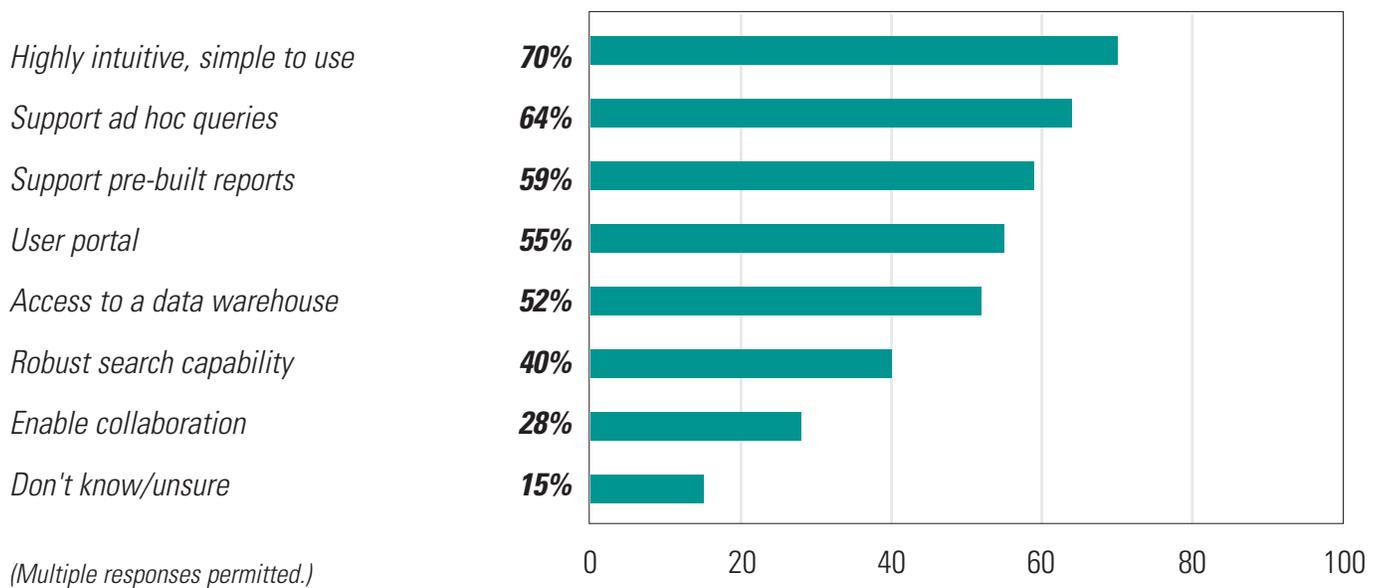
## Figure 19: Access to Self-Service BI—By Industry Group

	<i>HT</i>	<i>SVCS</i>	<i>FIN</i>	<i>HLTH</i>	<i>MFG</i>	<i>GOVT</i>	<i>EDU</i>	<i>RTL</i>
<b>INTERNAL</b>								
Executive management	66%	53%	35%	50%	50%	69%	60%	83%
Line-of-business managers	51%	37%	53%	69%	50%	69%	50%	75%
Marketing staff	43%	26%	59%	44%	37%	15%	30%	67%
Production/operations staff	46%	26%	18%	44%	44%	46%	60%	33%
Sales staff	46%	26%	35%	44%	31%	8%	40%	58%
Customer service staff	43%	26%	41%	31%	25%	46%	20%	33%
<b>EXTERNAL</b>								
Customers/clients	40%	21%	6%	19%	25%	15%	10%	17%
Suppliers/vendors	20%	5%	0%	12%	6%	0%	0%	8%
External production partners	20%	5%	0%	12%	6%	8%	0%	8%
<i>HT</i> =Technology services/software <i>SVCS</i> =Business/consumer/information services (Multiple responses permitted.)			<i>FIN</i> =Financial services/insurance <i>HLTH</i> =Healthcare/medical <i>MFG</i> =Manufacturing, including high-tech mfg			<i>GOVT</i> =Government, all levels <i>EDU</i> =Education, all levels <i>RTL</i> =Retail/distribution		

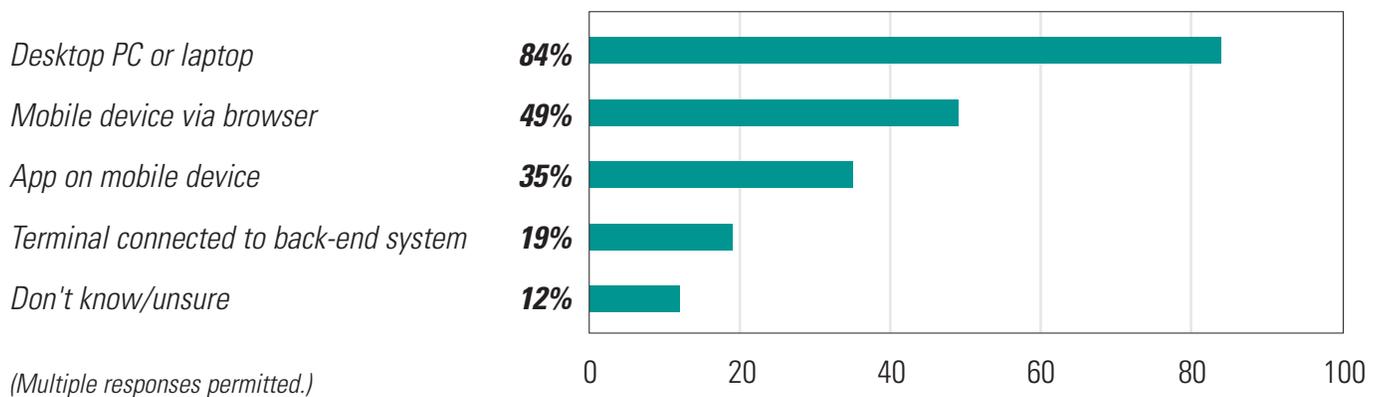
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Data collection and analysis performed with SurveyMethods.

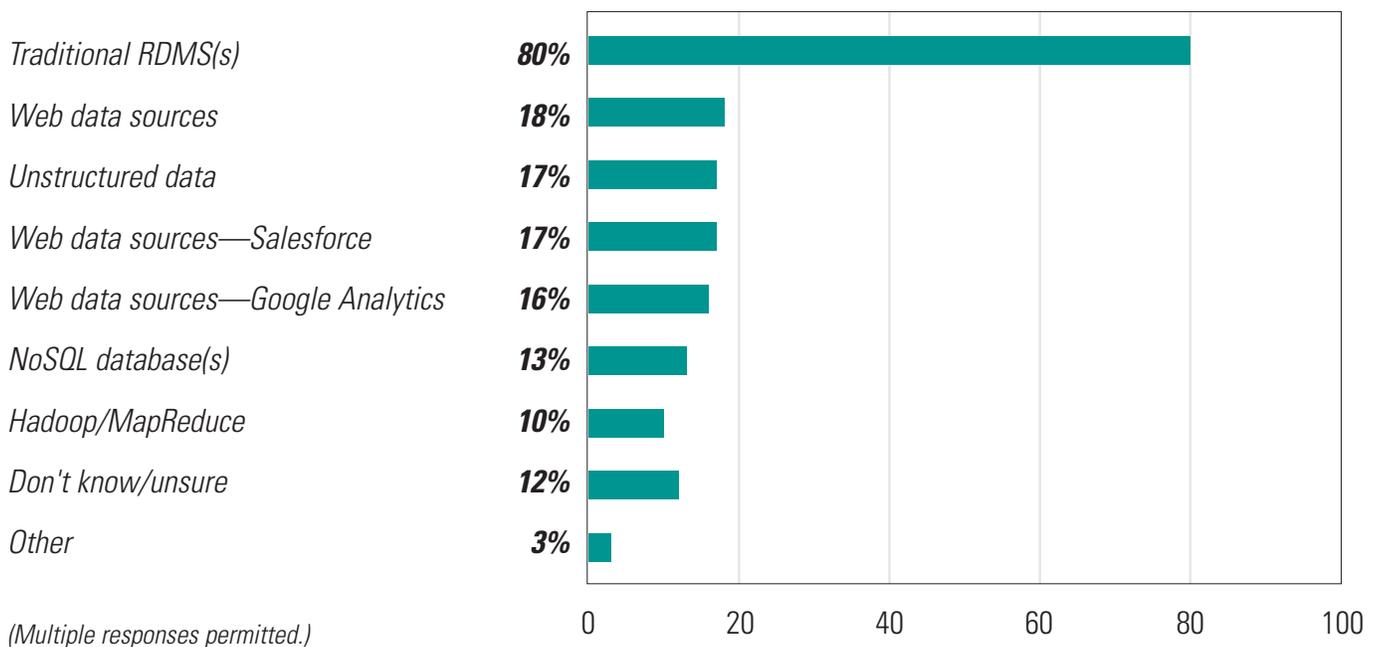
## Figure 20: Features Sought in Self-Service BI Tools or Solutions



## Figure 21: Hardware Used for Accessing Self-Service BI or Analytics



## Figure 22: Data Sources Accessed by Self-Service BI or Analytics



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## CONCLUSIONS

As found in this survey of 250 data managers and professionals, today's BI and analytic systems are not effectively delivering insights to decision makers when and where they are needed. Organizations tend to be hamstrung by latency in BI information, have problems with using tools, and difficulty in finding appropriate data. To remedy these issues and turn BI and analytics to competitive advantage, close to half of the organizations surveyed are turning to self-service BI. The challenge is enabling these systems to reach a wider audience of users than previous, and more constrained, BI systems. Self-service BI provides new insights in areas such as financial analysis, forecasting, and business activity monitoring.

### Steps organizations can take to achieve self-service BI and analytics include the following:

**Confirm where key data is located.** Give end users the tools to locate and discover data stores across the enterprise. Make the application and processes for manipulating that data visible, accessible, and easy to use. Make sure everyone across the enterprise is aware that this data is available.

**Offer end users information in a graphic, visually appealing format.** Information needs to “pop”—not get buried in rows of

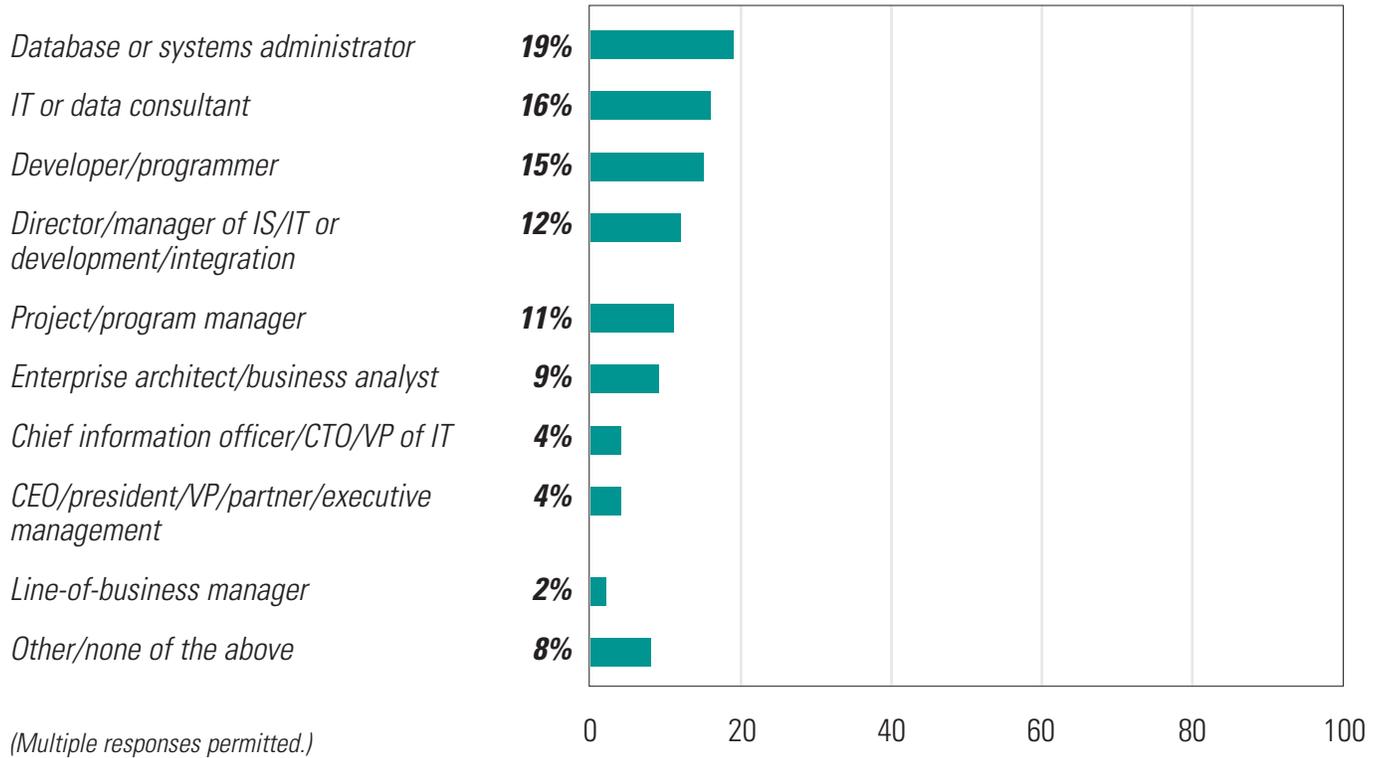
numbers or figures as they have traditionally been in bland reporting tools and formats. BI dashboards, portals and other interfaces need to include graphs, dials, and other representations of data covered.

**Educate and train end users.** Many BI tools offer solid user interfaces, but the key to successful access is educating the business user on how to make sense of large volumes of data, how to manipulate the data to answer business scenario questions, and how to create documents to communicate insights in a meaningful way.

**Work with business data owners to ensure the highest data quality.** Decision makers need to have the utmost confidence that the data they are working with is timely, and presents the most accurate picture available of their business. With every data source that comes online within the self-service environment, there needs to be assurance that the data is deduped and confirmed for accuracy.

**Put the business in charge.** The business must “own” the solution, and be able to make the decisions about deployment of self-service BI tools. Within many companies, BI and analytics is confined to the IT department, and, as a result, adoption of BI tools is low.

## DEMOGRAPHICS

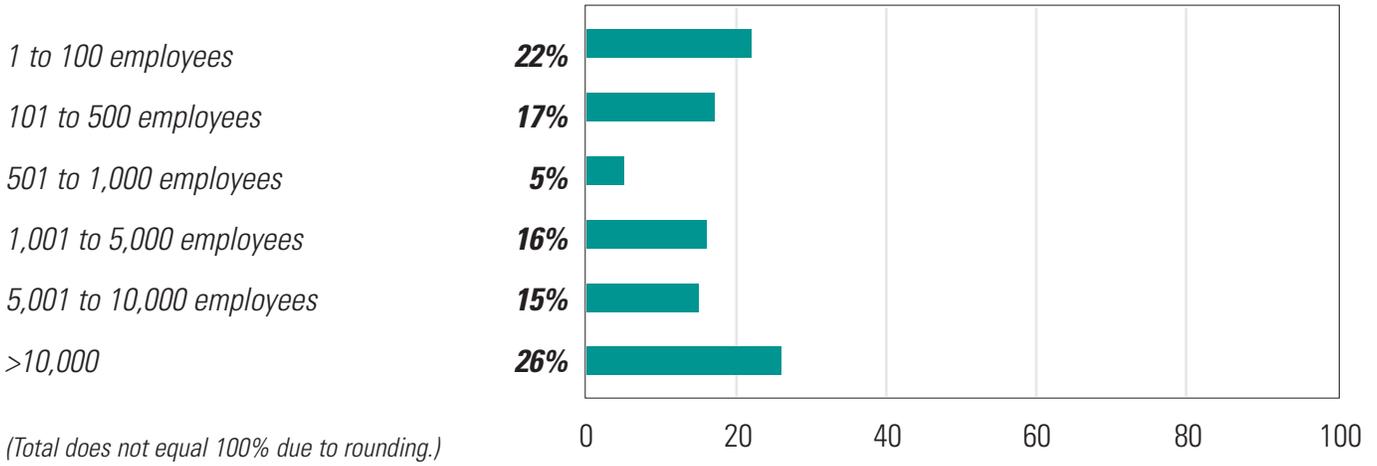
**Figure 23: Respondents' Primary Job Titles**

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## Figure 24: Respondents' Company Size—By Number of Employees

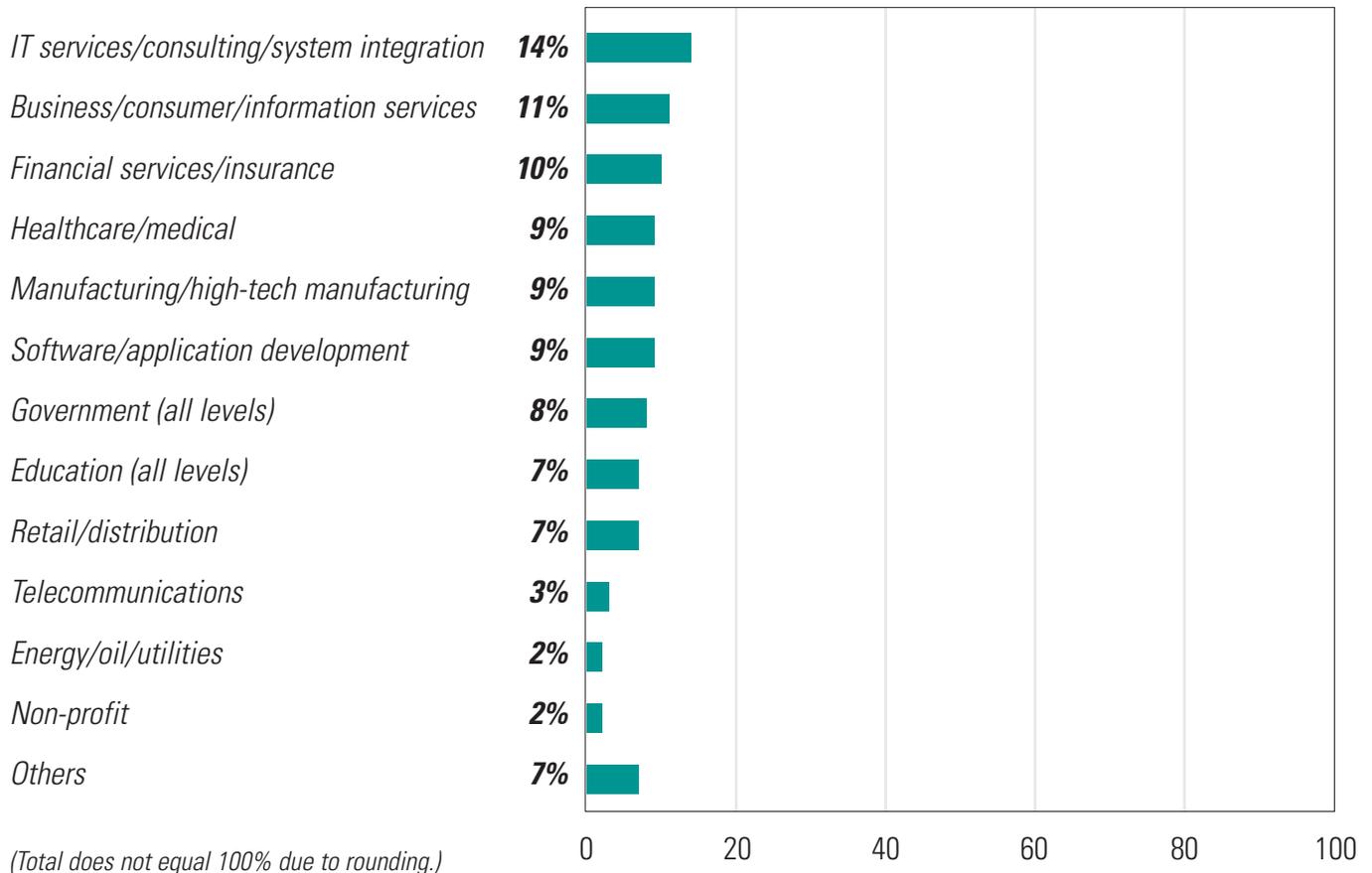
(Includes all locations, branches, and subsidiaries)



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## Figure 25: Respondents' Primary Industries



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