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2012 BI and Information Management Trends

Our **542** respondents say mobile, cloud computing and, above all, analytics are making their mark within nearly every IT category. That's the case despite the fact that **63%** worry about data security in using SaaS/cloud-based BI/analytics and **47%** foresee integration issues.

By Doug Henschen

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Doug Henschen
InformationWeek Reports

Doug Henschen is executive editor of *InformationWeek*, where he covers the intersection of enterprise applications with information management, business intelligence and analytics. He previously served as editor in chief of *Intelligent Enterprise* and he has covered IT for the last 13 years of his 29-year career in publishing.

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SUMMARY

EXECUTIVE

Our *InformationWeek* 2012 Business Intelligence, Analytics and Information Management Survey shows the old practice of following the money—using lagging financial indicators to guide a company's decisions—giving way to the forward-looking approach of following the data. Organizations are gathering, managing and analyzing not only more information but more types of information, all with the idea of using advanced predictive and statistical analytics to improve internal operations, get closer to customers, sell and market products more effectively across physical and digital commerce channels, and outperform the competition.

Other top-line trends: Slightly fewer respondents have standardized on one or a few BI/analytics products deployed throughout the company vs. our previous survey. Just 8% give all employees access to BI/analytics data. And the number of respondents citing data-quality problems as a barrier to adopting BI/analytics products enterprisewide fell nine points, to 46%.

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SYNOPSIS RESEARCH

Survey Name   *InformationWeek* 2012 Business Intelligence, Analytics and Information Management Survey

Survey Date   October 2011

Region   North America

Number of Respondents   542

Purpose   To examine adoption trends and strategies around business intelligence, analytics and information management.

Methodology   *InformationWeek* surveyed business technology decision-makers at North American companies. The survey was conducted online, and respondents were recruited via an email invitation containing an embedded link to the survey. The email invitation was sent to qualified *InformationWeek* subscribers.

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The 2012 Outlook for BI and Information Management

Name a technology category—applications, middleware, hardware, services—and you're likely to spot new mobile, cloud-based and analytic offerings. Our *InformationWeek Reports* 2012 Business Intelligence, Analytics and Information Management Survey shows mo-bility and cloud trends are also making their mark in these important, data-centric categories. As we learned from the 542 business technology professionals who responded to our October 2011 survey, mobile interfaces aimed at easing and spreading access to BI and analytic insights are very much in demand, with 44% of BI and analytics professionals now planning to add such smartphone- and tablet-based options.

Cloud computing is, of course, one of the hottest topics in the IT industry in general. But as the de facto data stewards of the enterprise, BI and information management professionals have had reservations about mixing internal data and this relatively new computing paradigm. Concerns are still there, mainly about data security and data-integration between on-premises systems and cloud-based infrastructure, but this year's survey shows that resistance is ebbing and IT professionals are giving cloud-based BI, analysis and information management serious consideration.

Figure 1

Interest in BI Technologies

Please rate the level of interest within your organization in the following leading-edge BI technologies. Please use a scale of 1 to 5, where 1 is "not interested" and 5 is "extremely interested."

■ 2012   ■ 2011

Technology	2012	2011
Advanced analytics (predictive/statistical analysis, etc.)	3.7	3.8
Exception management	3.6	3.7
Advanced data visualization capabilities	3.6	3.6
Embedded BI	3.6	3.6
Collaborative BI	3.4	3.6
Analysis of big data, particularly unstructured/nonrelational data	3.4	N/A
Internet-style querying	3.3	3.4
In-memory BI/analytics	3.3	3.4
Mobile BI	3.1	3.1
Software-as-a-service/cloud computing-based BI/analytics	2.8	2.7
Social media/social network analysis	2.6	2.6

Note: Mean average ratings
Base: 414 respondents in October 2011 and 410 respondents in September 2010 using or planning to deploy BI, data analytics or statistical analysis software
Data: *InformationWeek* Business Intelligence, Analytics and Information Management Survey of business technology professionals

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But if there's one uber trend dominating the BI and information management domain, it's the continuing rise in importance of analytics, particularly advanced statistical and predictive analytics. For the third year in a row, survey respondents rated advanced analytics as the most compelling among a dozen leading-edge technologies. Once an elite niche within the larger BI market, analytics has become the proverbial tail wagging the dog, with vendors and practitioners alike making analytic capabilities and initiatives their top priority. The trend goes hand in hand with rising information management interest in using large data sets (also known as "big data") to foresee risk, anticipate customer demand, and formulate more successful product and service offerings.

Advanced Analytics Defined

There's good reason for all the interest in analytics; it's a technology that can help you predict customer needs and wants, optimize factory output to be in tune with changing market conditions, circumvent imminent system outages or equipment failures, mitigate financial risks, or formulate winning pricing strategies. Name a business scenario, and advanced analytic techniques can likely be applied to make better, preemptive decisions rather than reacting to unanticipated problems or failures later.

FAST FACT

55%

of our survey respondents say lower overall cost drives interest in cloud-based BI/analytics.

Figure 2

Factors Driving Interest in Cloud-Based BI/Analytics

What factors are driving, or would drive, your organization's interest in software-as-a-service/cloud computing-based BI/analytics?

Legend: ■ 2012 ■ 2011

Factor	2012	2011
Low overall cost	55%	31%
Minimal need for IT staff/support	46%	36%
Low initial cost	39%	24%
Rapid deployment	38%	33%
Easy way to support multiple locations and/or mobile/remote users	36%	21%
Provides better capabilities than conventional software	27%	12%
Provides data management infrastructure we lack	19%	10%
We use SaaS/cloud options wherever possible	7%	5%
Other	3%	2%
SaaS/cloud-based BI/analytics are not currently of interest to my organization	16%	36%

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Note: Multiple responses allowed
Base: 414 respondents in October 2011 and 410 respondents in September 2010 using or planning to deploy BI, data analytics or statistical analysis software
Data: *InformationWeek* Business Intelligence, Analytics and Information Management Survey of business technology professionals

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That's the key contrast with what is now sometimes disparagingly dubbed "rear-view-mirror BI." Whereas business intelligence has long been associated ad hoc query, analysis and reporting—activities that explore and, perhaps, extrapolate based on historical data—advanced analytics apply statistical and predictive algorithms to come up with calculated, predictive measures, scores or models.

Your level of sophistication on the spectrum between BI and advanced analytics is usually the difference between reactive and proactive decision-making. Summary statistics, queries, reports, and even threshold-triggered alerts and low-latency dashboards based on historical information are rear-view mirror. It's a picture of where you've been. There is a middle ground of simple analytics whereby trending or algebraic predictions might give you some idea of what to expect in terms of production or sales.

Advanced analytics are far more sophisticated, supporting techniques such as statistical analysis, forecasting, correlation and prediction. Where trend analysis will simply extrapolate last quarter's sales velocity into the next quarter, a sophisticated predictive model might take into account seasonality, historical sales patterns and correlations between strong and weak quarters, even the effects of weather or macroeconomic conditions.

Figure 3

Factors Driving Interest in Advanced Analytics

What factors are driving, or would drive, your organization's interest in using advanced analytics?
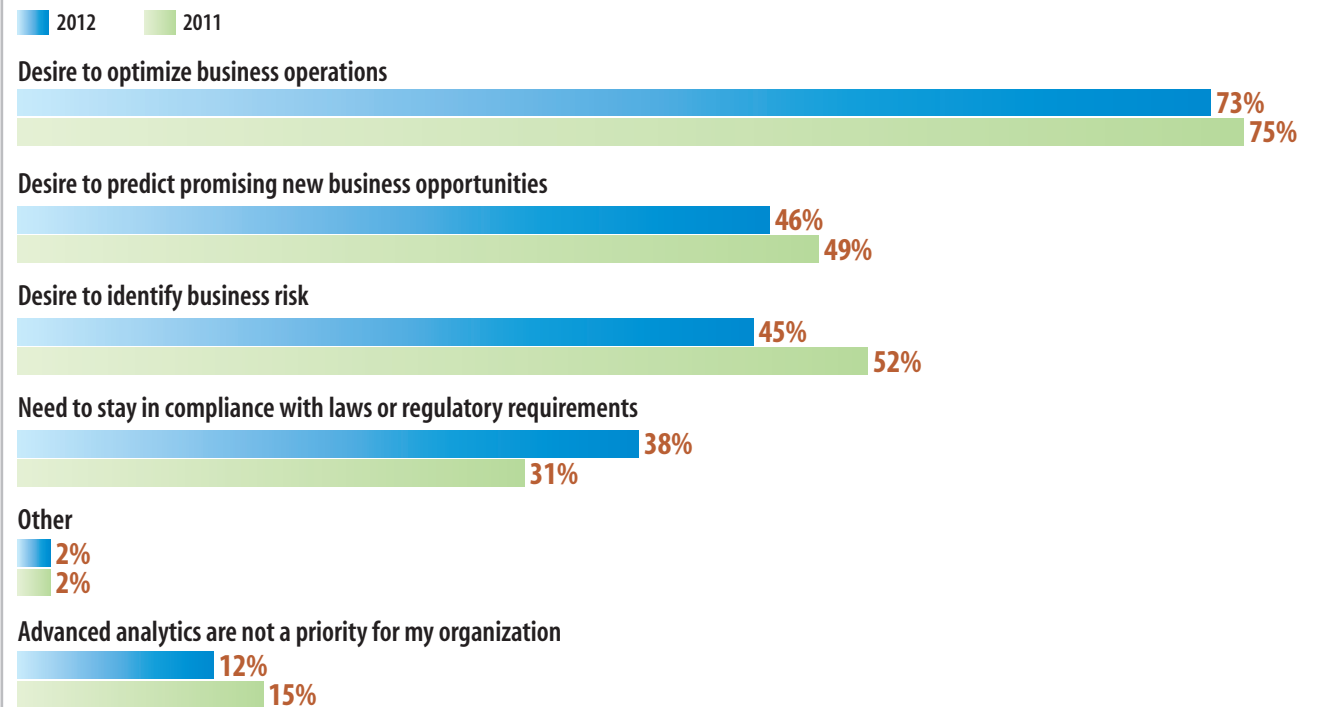
- 2012
- 2011

Desire to optimize business operations
73%
75%

Desire to predict promising new business opportunities
46%
49%

Desire to identify business risk
45%
52%

Need to stay in compliance with laws or regulatory requirements
38%
31%

Other
2%
2%

Advanced analytics are not a priority for my organization
12%
15%

Note: Multiple responses allowed

Base: 414 respondents in October 2011 and 410 respondents in September 2010 using or planning to deploy BI, data analytics or statistical analysis software

Data: *InformationWeek* Business Intelligence, Analytics and Information Management Survey of business technology professionals

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tions. Yes, some pretty sophisticated prebuilt algorithms can be built into applications and analysis tools, but advanced analytics is mostly a matter of domain- and company-specific work that is taken on by data modelers and statisticians, many with PhD-level training.

With so many vendors now painting themselves as analytics specialists, the distinction between the conventional BI and advanced analytic markets is getting increasingly blurry. IDC sales figures for 2010 cast SAP Business Objects, IBM (mostly Cognos), Oracle, Microsoft and SAS, in that order, as the leaders in BI query, analysis and reporting tools. The leading commercial providers of advanced analytic tools, meanwhile, are SAS, IBM (mostly SPSS), Microsoft, FICO and Tibco (Spotfire), in that order, though it should be noted that the open source R community, which has several commercial promoters and support providers, has a large and growing presence in advanced analytics.

Your deepest data pros know the difference between simple and advanced analytic tech-

Figure 4

Extent of Technology Use for Sharing BI/Analytic Insights

To what extent are the following technologies used to share BI/analytic insights within your organization?
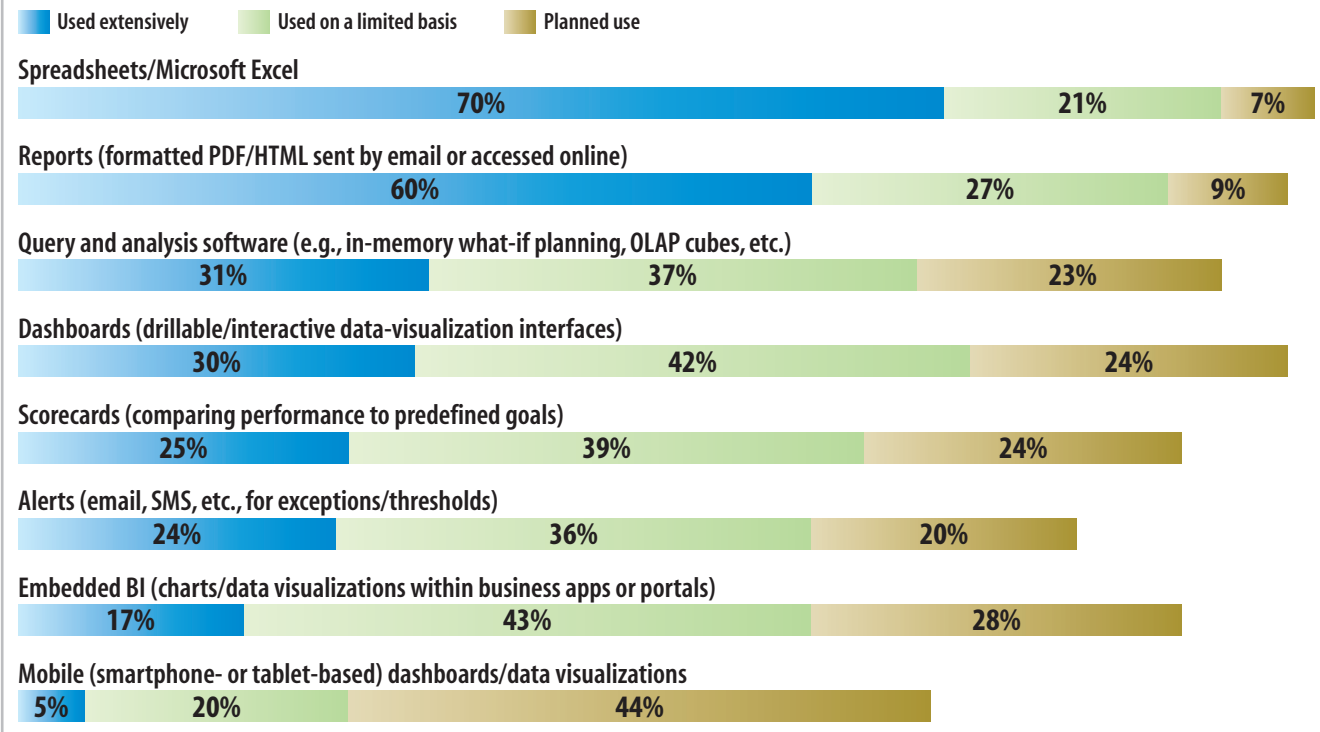
Legend: Used extensively | Used on a limited basis | Planned use

Spreadsheets/Microsoft Excel
70% | 21% | 7%

Reports (formatted PDF/HTML sent by email or accessed online)
60% | 27% | 9%

Query and analysis software (e.g., in-memory what-if planning, OLAP cubes, etc.)
31% | 37% | 23%

Dashboards (drillable/interactive data-visualization interfaces)
30% | 42% | 24%

Scorecards (comparing performance to predefined goals)
25% | 39% | 24%

Alerts (email, SMS, etc., for exceptions/thresholds)
24% | 36% | 20%

Embedded BI (charts/data visualizations within business apps or portals)
17% | 43% | 28%

Mobile (smartphone- or tablet-based) dashboards/data visualizations
5% | 20% | 44%

Base: 414 respondents using or planning to deploy BI, data analytics or statistical analysis software

Data: *InformationWeek* 2012 Business Intelligence, Analytics and Information Management Survey of 542 business technology professionals, October 2011

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niques because the hardest and most prized insights—the ones that drive true competitive advantage—usually require a lot of blood, sweat and tears. Getting predictive and proactive is hard work, at least for the initial technology setup and change in cultural ap-

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proach, but it generally produces break-through results.

P&G Gets Predictive

Proctor & Gamble has bought into the predictive imperative in a big way. The goal of a nearly two-year-old Business Sufficiency program at P&G has been to enable executives to predict market share and other performance indicators six to 12 months out. Using SAS tools for statistical analysis, the company developed dozens of analytic models to assess production, shipments, sales and market share; sales trends by country, territory, product line, chain and store; media and advertising activities; and regional and country-specific economic conditions.

These analytic models are predictive and exception-oriented, so they help executives see into the future and address looming problems with production, sales, distribution, marketing or merchandising performance before they lead to actual financial shortfalls. As our survey shows, BI and analytics professionals are looking beyond financial analysis (already

being done by 74% of respondents), and they're adding or planning to add process optimization (40%), customer-relationship

(36%), risk analysis (34%) and forecasting (32%) measures to the mix.

A key point here is that financial analysis is

Figure 5

Extent of Information Management Technology Use

To what extent are the following systems/technologies used within your organization?

Legend: Used extensively | Used on a limited basis | Planned use

Technology	Used extensively	Used on a limited basis	Planned use
On-premises data mart(s)/data warehouse(s)	36%	22%	14%
On-premises document/record repository	35%	26%	11%
Data integration software (ETL)	31%	21%	16%
Document imaging/capture (scanning and optical character recognition)	30%	33%	12%
Data-cleansing/data-quality tools	16%	30%	18%
High-scale data mart/data warehouse systems supporting massively parallel processing	15%	12%	17%
Master data management systems/software	14%	18%	21%
Complex event-processing technology	10%	16%	15%
Trickle feed/change data capture technologies	6%	13%	13%
Data federation software	6%	17%	19%
Cloud-based document/record repository	6%	15%	18%
Cloud-based data mart(s)/warehouses	5%	12%	19%
Hadoop or other nonrelational ("NoSQL") processing platforms	3%	11%	12%

Base: 431 respondents involved with information management technologies

Data: *InformationWeek* 2012 Business Intelligence, Analytics and Information Management Survey of 542 business technology professionals, October 2011

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an after-the-fact measure of performance, whereas improving operational processes (such as manufacturing and distribution), focusing on customer satisfaction, reducing risk and doing a better job of forecasting gives you an opportunity to do something about future performance.

P&G analytic models are delivering such measures, and the key performance indicators they serve up are shared with executives and managers through dashboards, charts and easy-to-read data visualizations rendered through Tibco Spotfire software. Predictions are revised and refined as each next month and quarter approaches and actual performance data rolls in; the range of possible outcomes naturally narrows as the projected period gets closer.

P&G analysts don't just offer one prediction for each model; they scope out the range-of-performance possibilities so managers can devise backup plans in case expectations don't hold up. And as the current quarter and next quarter approach, executives turn to yet another set of analytic models that help them

FAST FACT

40%

of respondents are adding or plan to add process optimization to their BI/analytics mix.

Figure 6

Utilizing BI and Analytics

How do you utilize or plan to utilize business intelligence/analytics?
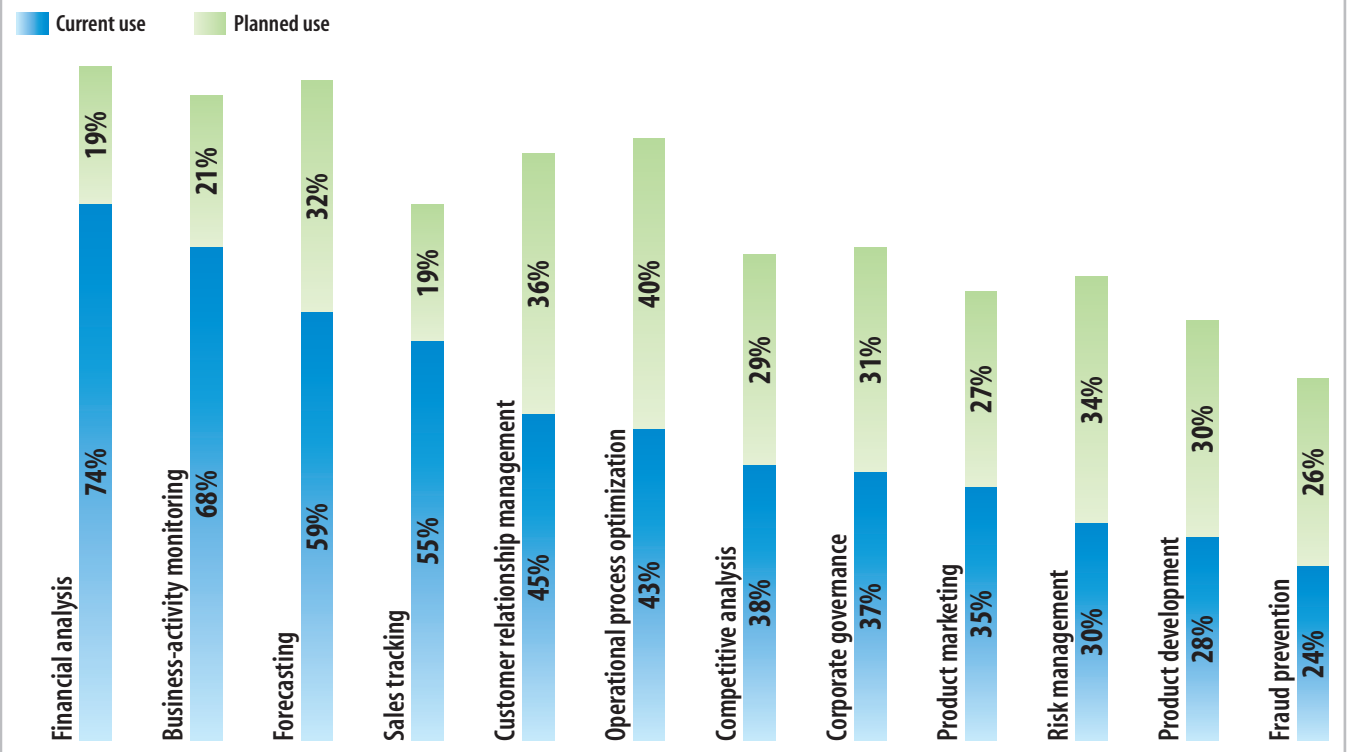
Current use   Planned use

Category	Current use	Planned use
Financial analysis	74%	19%
Business-activity monitoring	68%	21%
Forecasting	59%	32%
Sales tracking	55%	19%
Customer relationship management	45%	36%
Operational process optimization	43%	40%
Competitive analysis	38%	29%
Corporate governance	37%	31%
Product marketing	35%	27%
Risk management	30%	34%
Product development	28%	30%
Fraud prevention	24%	26%

Base: 414 respondents using or planning to deploy BI, data analytics or statistical analysis software

Data: *InformationWeek* 2012 Business Intelligence, Analytics and Information Management Survey of 542 business technology professionals, October 2011

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decide on actions, such as changing pricing, doing more advertising, revamping merchandising or rebalancing plans to promote the products that are selling well while deemphasizing those that aren't.

Once again, what-if scenario planning is

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baked into the analytic process, so managers can see all impacts. In its most recent quarter, for example, P&G increased prices to make up for manufacturing commodity cost increases. Profits held up as a result of those actions, but the company reported (and clearly knew to expect) market share slippage in certain areas. In a tough economy, there's only so much you can do, even with early proactive action, to maintain all aspects of performance.
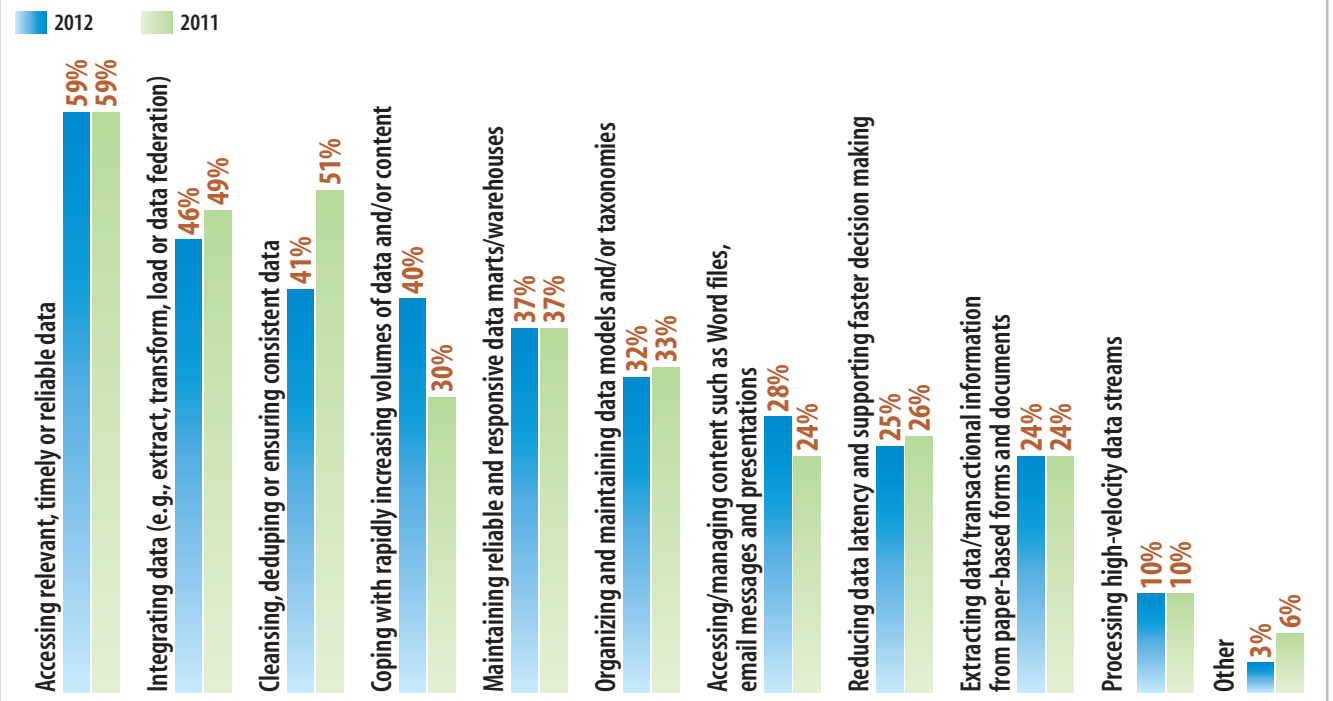
Before the Business Sufficiency program, P&G managed by trying to pull together reports and correlate information out of a series of reporting silos. Individual country and product-line managers could see their own performance, but developing cross-enterprise comparisons and goals required labor- and time-intensive data manipulation and analysis.

Supporting infrastructure for data gathering and data mining has helped synthesize data analysis, and the resulting advanced analytics have helped P&G get to a holistic, forward-looking view. "The key business benefit is the speed of decision-making," says Guy Peri,

Figure 7

Impediments to Information Management Success

With your organization's experience in mind, what are your organization's biggest impediments to success related to information management?

Legend: 2012 / 2011

- Accessing relevant, timely or reliable data: 59% / 59%
- Integrating data (e.g., extract, transform, load or data federation): 46% / 49%
- Cleansing, deduping or ensuring consistent data: 41% / 51%
- Coping with rapidly increasing volumes of data and/or content: 40% / 30%
- Maintaining reliable and responsive data marts/warehouses: 37% / 37%
- Organizing and maintaining data models and/or taxonomies: 32% / 33%
- Accessing/managing content such as Word files, email messages and presentations: 28% / 24%
- Reducing data latency and supporting faster decision making: 25% / 26%
- Extracting data/transactional information from paper-based forms and documents: 24% / 24%
- Processing high-velocity data streams: 10% / 10%
- Other: 3% / 6%

Note: Multiple responses allowed

Base: 431 respondents in October 2011 and 302 respondents in September 2010 involved with information management technologies

Data: *InformationWeek* Business Intelligence, Analytics and Information Management Survey of business technology professionals

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head of P&G's business analytics unit. Decisions that used to require as long as a month of data-gathering and research can now be made within a day, Peri says. It's a textbook, best-practice case of using predictive insight to move toward proactive action.

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Analytics is also making its mark in information management, an arena in which so-called big data is radically changing database platforms and infrastructure for data processing and analysis.
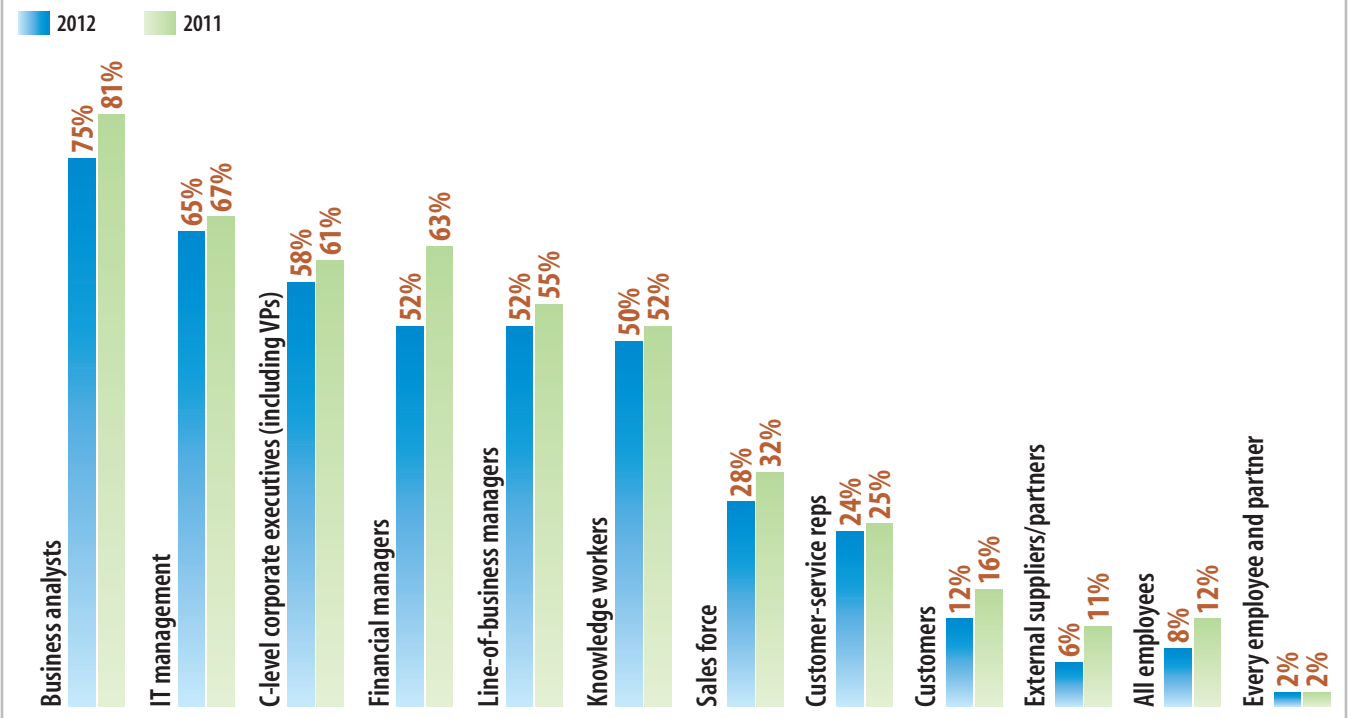
BI on an iPad?

Whether it's a "rear-view-mirror" report, a real-time dashboard or a forward-looking analytic projection, BI and analytics professionals tell us they're eager to consume that information through mobile BI interfaces. For now, mobile BI is the least-used means of sharing BI and analytic insights, used extensively by only 5% and on limited basis by only 20% of our respondents. However, a whopping 44% of respondents say they're planning to add mobile BI interfaces—the highest planned-use percentage by far among eight BI technologies discussed.

Are these respondents simply going along with the mobile mania of the times? Indeed, it seems there's no category of technology that hasn't been swept up in the smartphone and tablet craze. BI, analytics and information management are no different. BI-specific mobile options, like Cognos Go Mobile, started showing up as early as 2006, and it seems like every year vendors are introducing new versions promising better usability and compatibility with the latest devices.

Figure 8

User BI/Analytics Access

Which of the following users have access to or utilize BI/analytics today?

2012   2011

User	2012	2011
Business analysts	75%	81%
IT management	65%	67%
C-level corporate executives (including VPs)	58%	61%
Financial managers	52%	63%
Line-of-business managers	52%	55%
Knowledge workers	50%	52%
Sales force	28%	32%
Customer-service reps	24%	25%
Customers	12%	16%
External suppliers/partners	6%	11%
All employees	8%	12%
Every employee and partner	2%	2%

Note: Multiple responses allowed

Base: 414 respondents in October 2011 and 410 respondents in September 2010 using or planning to deploy BI, data analytics or statistical analysis software

Data: *InformationWeek* Business Intelligence, Analytics and Information Management Survey of business technology professionals

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When Apple singlehandedly established the tablet as a new must-have mobile-device form factor with the launch of the iPad in 2010, early BI adopters included vendors MicroStrategy, Pentaho, QlikTech and third-party independent MeLLmo, maker of the Roambi platform. In 2011, it seems every other BI vendor jumped on the iPad bandwagon, with Actuate, IBM Cognos, InformationBuilders, Jaspersoft, LogiXML, Oracle, SAP BusinessObjects, SAS, Tableau and Tibco Spotfire introducing new or improved iPad (and, in some cases, Android tablet) apps or browser-based interfaces.

The wave of new would-be iPad competitors, the continuing evolution of smartphones and the emergence of HTML5, in particular, in 2011, have given rise to a bit of soul-searching on the part of BI and other vendors. The question became, "Should we continue to develop device- and mobile-operating-system-native mobile apps at great expense, or should we look to standards to ease the development burden?"

The promise of HTML5 is to be able to write Web-based applications once and deliver

Figure 9

BI/Analytics Vendors

Are you using, planning to use or evaluating BI/analytics products from the following vendors?

	Currently using	Planning to use	Evaluated, but not selected for use	Currently evaluating
Microsoft	46%	7%	8%	15%
SAP BusinessObjects	32%	6%	10%	6%
Oracle (including Hyperion and Siebel)	29%	5%	11%	10%
IBM Cognos (including TM1)	25%	6%	8%	15%
SAS	21%	2%	12%	7%
SAP BusinessObjects On-Demand (Crystalreports.com)	18%	6%	8%	7%
IBM SPSS	16%	4%	8%	6%
MicroStrategy	10%	5%	7%	6%
Tableau	8%	3%	8%	9%
Actuate	6%	3%	7%	3%
Information Builders	5%	1%	8%	8%
QlikTech	5%	2%	7%	7%
Tibco Spotfire	3%	2%	6%	4%
Adaptive Planning	3%	2%	5%	2%
Cloud9 Analytics	3%	2%	5%	5%
Host Analytics	2%	1%	5%	4%
Indicee	2%	0%	4%	2%
Arcplan	2%	3%	4%	0%
Deloitte/Oco	2%	3%	5%	3%
Birst	2%	2%	6%	4%
myDials	2%	2%	3%	2%
Pentaho	2%	2%	3%	4%
Jaspersoft	1%	1%	6%	4%
PivotLink	1%	1%	5%	1%
Panorama	0%	2%	5%	3%

Base: 414 respondents using or planning to deploy BI, data analytics or statistical analysis software

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Data: *InformationWeek* 2012 Business Intelligence, Analytics and Information Management Survey of 542 business technology professionals, October 2011

them across a variety of mobile platforms and devices without native development work. HTML5 is now supported by most late-model smartphones and tablets. When Web apps written in HTML5 recognize that they're being delivered on a mobile device rather than a desktop or laptop, the idea is that they'll lose the mouse-oriented scroll bars and switch to device-native pinch, flip, swipe and other forms of gesture-based navigation.

There are still limits to the device-native capabilities supported by HTML5. For example, access to the camera function on various mobile devices is usually lacking. But HTML5 does support software containers that enable developers to fill the few remaining gaps in functionality required on popular devices. Over time, the gaps will close, and in the meantime, HTML5 gives developers a big head start on developing for an array of platforms and devices.

Sensing the future (and likely facing a new round of native app development), early iPad adopter QlikTech switched gears in early 2011 and embraced a device-neutral, Web-based approach relying on HTML5. But don't expect BI and analytics vendors to drop native iPad apps that were only recently introduced. Rather, over the next few years, we expect continued maturation of HTML5 and a wider embrace of the standard for smartphone and

Figure 10

Information Management Technologies in Use

Which of the following systems/technologies are used within your organization?
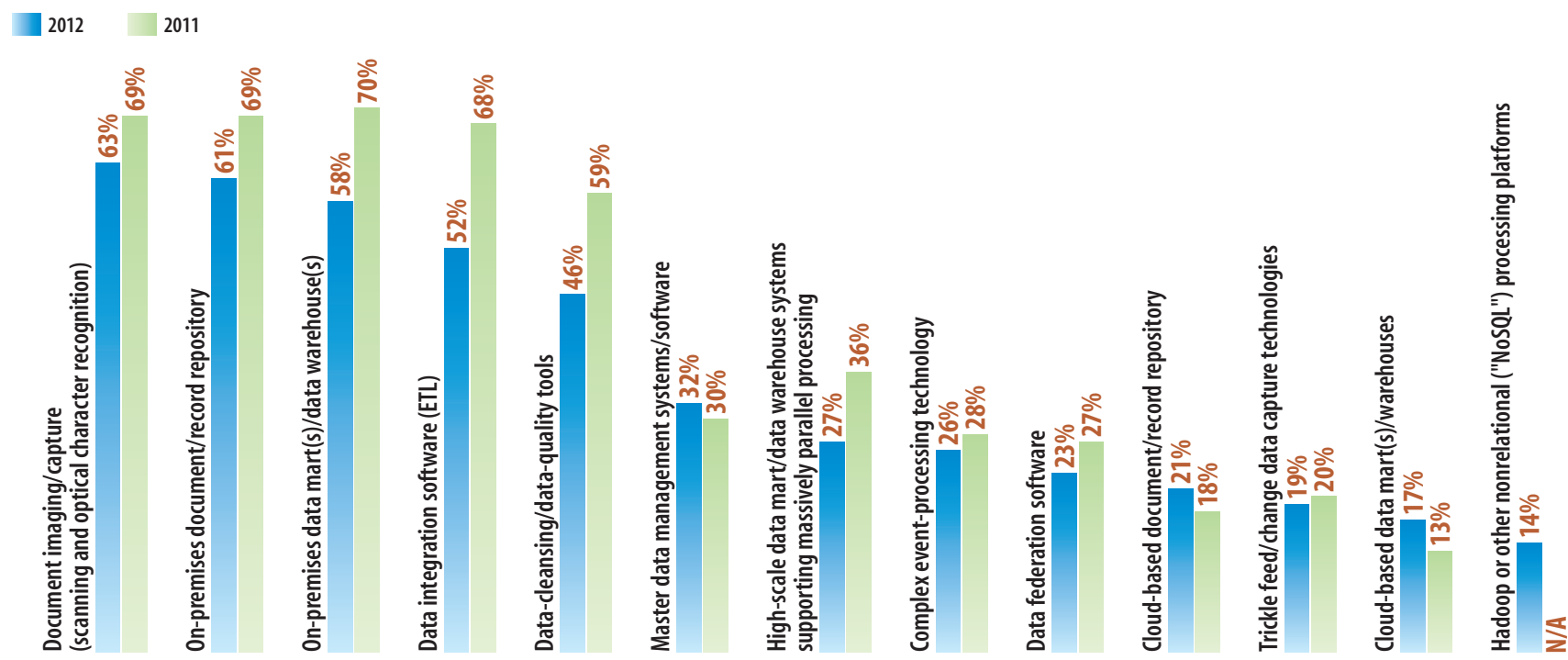
Note: Percentages reflect a response of "used extensively" or "used on a limited basis"
Base: 431 respondents in October 2011 and 302 respondents in September 2010 involved with information management technologies
Data: *InformationWeek* Business Intelligence, Analytics and Information Management Survey of business technology professionals

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tablet-based access to BI and analytics.

Why are so many organizations planning to deploy mobile BI? For one thing, it's a development that promises to help crack the long-standing gap in BI access and usability. For many years, BI advocates have championed the idea of democratizing BI, taking it out of the ivory tower (meaning out of the hands of the few analysts and top executives) and sharing insights with knowledge workers at every level of an organization. Yet, BI deployments generally don't reach much beyond 25% of potential users, on average.
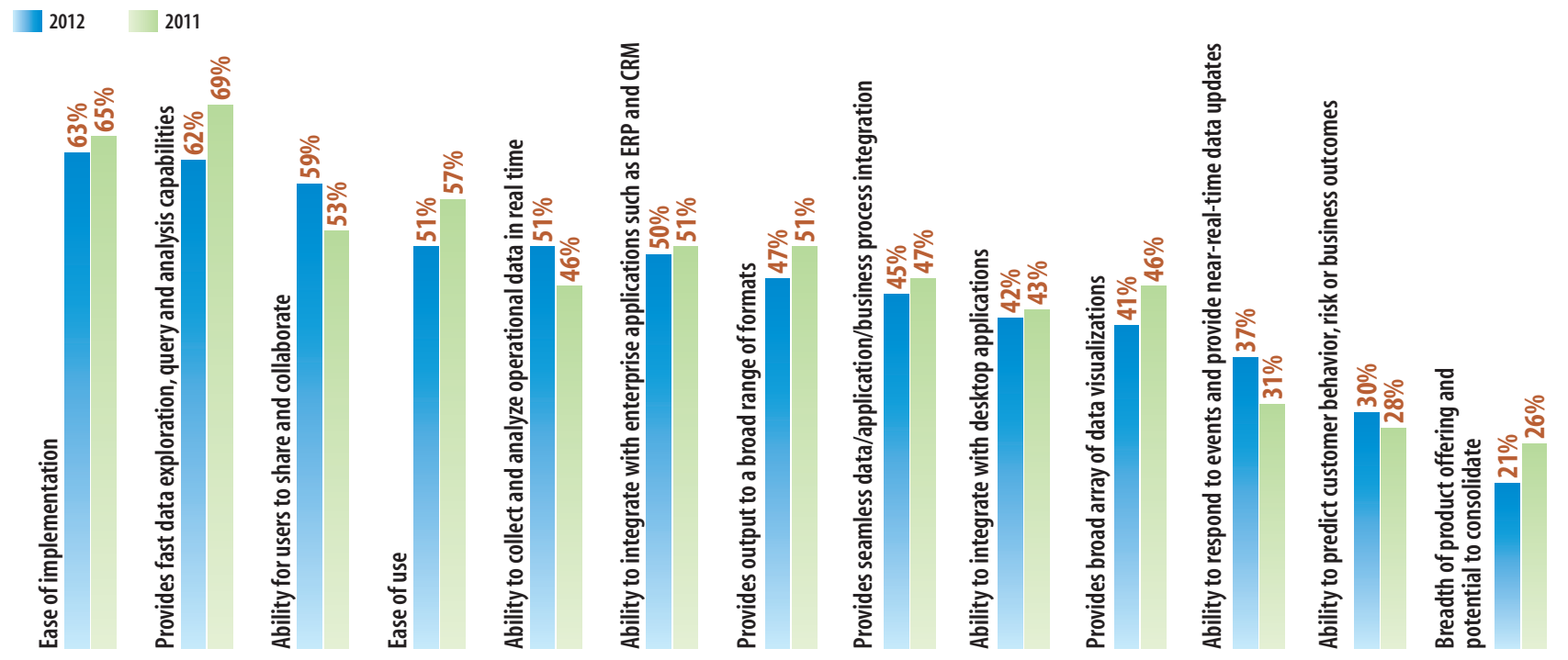
InformationWeek has been tracking the barriers to BI adoption for years, and significant obstacles remain. Data quality problems, reported by 46% of respondents, is the top impediment, but encouragingly, there was a nine-point drop in citations of this problem. Those mentioning ease-of-use challenges, meanwhile, actually increased by five points (the only statistically significant increase among the list of options provided to respondents), making it the second most-cited obstacle to broad use of BI.

Given the small-screen real estate of smartphones and even tablets, mobile BI apps have generally forced a fresh and much-simplified approach to sharing BI and analytics. The point is not that enterprises should count on

Figure 11

Most Important BI/Analytics Features

Which of the following features are most important when purchasing BI/analytics software or selecting a BI/analytics vendor?

Legend: 2012 / 2011

- Ease of implementation: 63% / 65%
- Provides fast data exploration, query and analysis capabilities: 62% / 69%
- Ability for users to share and collaborate: 59% / 53%
- Ease of use: 51% / 57%
- Ability to collect and analyze operational data in real time: 51% / 46%
- Ability to integrate with enterprise applications such as ERP and CRM: 50% / 51%
- Provides output to a broad range of formats: 47% / 51%
- Provides seamless data/application/business process integration: 45% / 47%
- Ability to integrate with desktop applications: 42% / 43%
- Provides broad array of data visualizations: 41% / 46%
- Ability to respond to events and provide near-real-time data updates: 37% / 31%
- Ability to predict customer behavior, risk or business outcomes: 30% / 28%
- Breadth of product offering and potential to consolidate: 21% / 26%

Note: Multiple responses allowed
Base: 414 respondents in October 2011 and 410 respondents in September 2010 using or planning to deploy BI, data analytics or statistical analysis software
Data: *InformationWeek* Business Intelligence, Analytics and Information Management Survey of business technology professionals

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clean-sheet mobile-BI interfaces to deliver dashboards, reports and query capabilities to desk-bound employees.

But assuming they're truly simplified and easier to use, these mobile BI interfaces will promote wider and more frequent use by executives, managers, salespeople and field service personnel on the go.

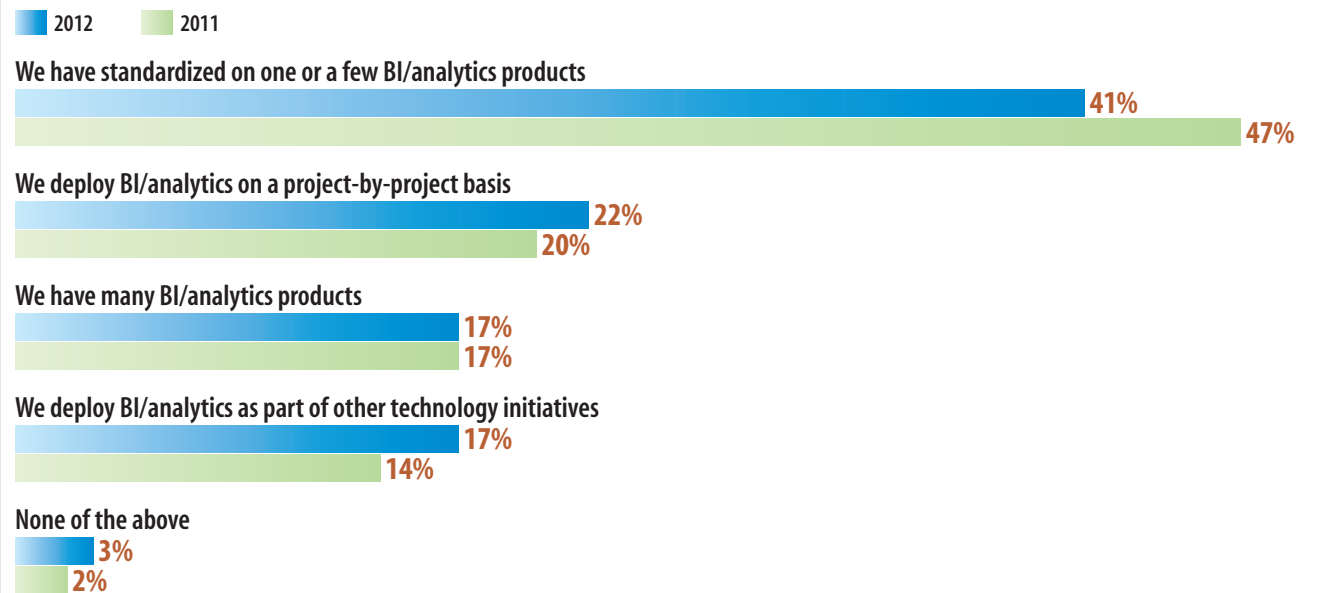**Cincinnati Zoo Goes Mobile**

Managers and decision-makers at the Cincinnati Zoo and Botanical Gardens might turn up anywhere on the institution's 75-acre campus. That's one reason the zoo is using IBM's Cognos Mobile software for the iPad. Released in October, the native iPad and iPhone app lets managers, whether they're in meetings or on the grounds, bring together sales and attendance data and make decisions to improve the visitor experience.

In 2010, the zoo implemented Cognos BI software as part of a sweeping point-of-sale (POS) overhaul and systems integration project. Membership, admissions and retail sales were previously handled on separate POS

Figure 12

BI/Analytics Deployment

Which of the following best describes the way your company deploys, or plans to deploy, BI and analytics technologies?

■ 2012   ■ 2011

We have standardized on one or a few BI/analytics products
41%
47%

We deploy BI/analytics on a project-by-project basis
22%
20%

We have many BI/analytics products
17%
17%

We deploy BI/analytics as part of other technology initiatives
17%
14%

None of the above
3%
2%

Base: 414 respondents in October 2011 and 410 respondents in September 2010 using or planning to deploy BI, data analytics or statistical analysis software

Data: *InformationWeek* Business Intelligence, Analytics and Information Management Survey of business technology professionals

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systems that didn't talk to one another, and 16 food service locations were running on unconnected cash registers. These disconnects made tracking and correlating revenue-generating activities a laborious, weekly spreadsheet process. A unified system deployed in 2010 linking all 51 POS locations across the campus provides unified, real-time information.

The new system yielded a treasure trove of

InformationWeek
:: reports

data, and the zoo put IBM Cognos software to work to correlate attendance and purchasing patterns. A big focus of that effort is on customer segmentation and marketing projects.

That's insight managers can use for email and direct mail campaigns in which they send coupons and offers to zoo members, loyalty card holders and other known customers

based on past purchase patterns.

Predictive capabilities supported in Cognos now help managers plan staffing, retail merchandise buying, and food and beverage stocks to have on hand based on historical attendance patterns and weekly weather forecasts. A beautiful three-day Fourth of July weekend with temperatures in the mid 80s, for instance, would call for far different staffing and ordering decisions than a cold fall weekend.

With iPads in hand, zoo managers can now make more decisions on the fly. Seeing empty shelves, retail managers might check on inventory and reorder sold-out goods. Seeing long lines at food stands near a special attraction, food and beverage managers might check staffing plans and reassign employees accordingly. Seeing spikes or shortfalls in attendance, managers might also review and adjust staffing plans before the next shift shows up for work. Labor is the biggest cost variable for the zoo, so the savings can be significant if staffing levels are better in tune with actual need.

Figure 13

Barriers to Enterprisewide BI/Analytics Adoption

What are the barriers to adopting BI/analytics products enterprisewide?
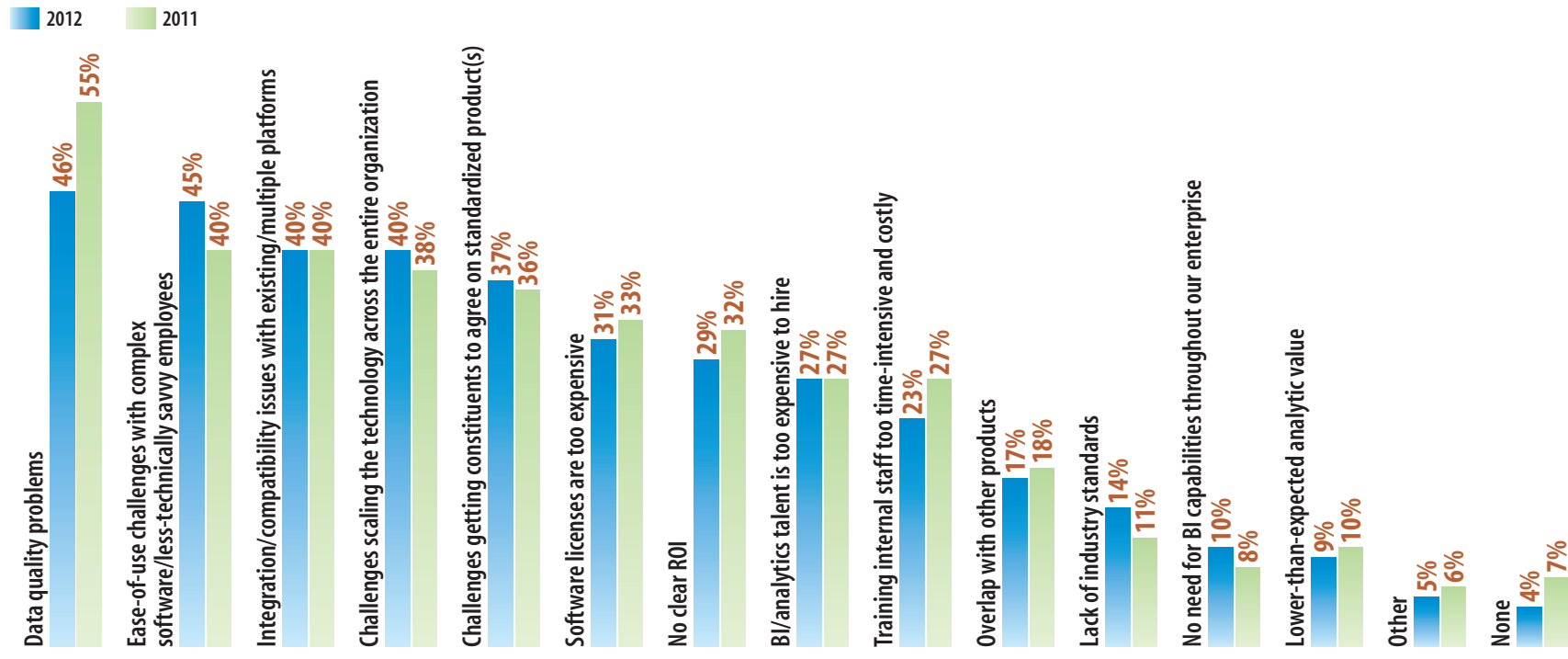
Note: Multiple responses allowed
Base: 414 respondents in October 2011 and 410 respondents in September 2010 using or planning to deploy BI, data analytics or statistical analysis software
Data: *InformationWeek* Business Intelligence, Analytics and Information Management Survey of business technology professionals

R3551111/7

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Warming Up to the Cloud

As was the case in last year's BI and Information Management Survey, software-as-a-service-based BI came in next to last among the leading-edge technologies we asked participants to rate on a one-to-five scale, with one meaning "not interested" and five meaning "extremely interested." That said, the percent of respondents rating their interest in SaaS-based BI a 4 or 5 increased four points over last year—from 28% to 32%.

More significantly, when we asked survey respondents specifically about factors that would drive adoption of cloud-based BI and analytics, they showed much higher interest across all factors, including low overall cost (55% vs. 31% last year), minimal need for IT support (46% vs. 36% last year) and low initial cost (39% vs. 24% last year).
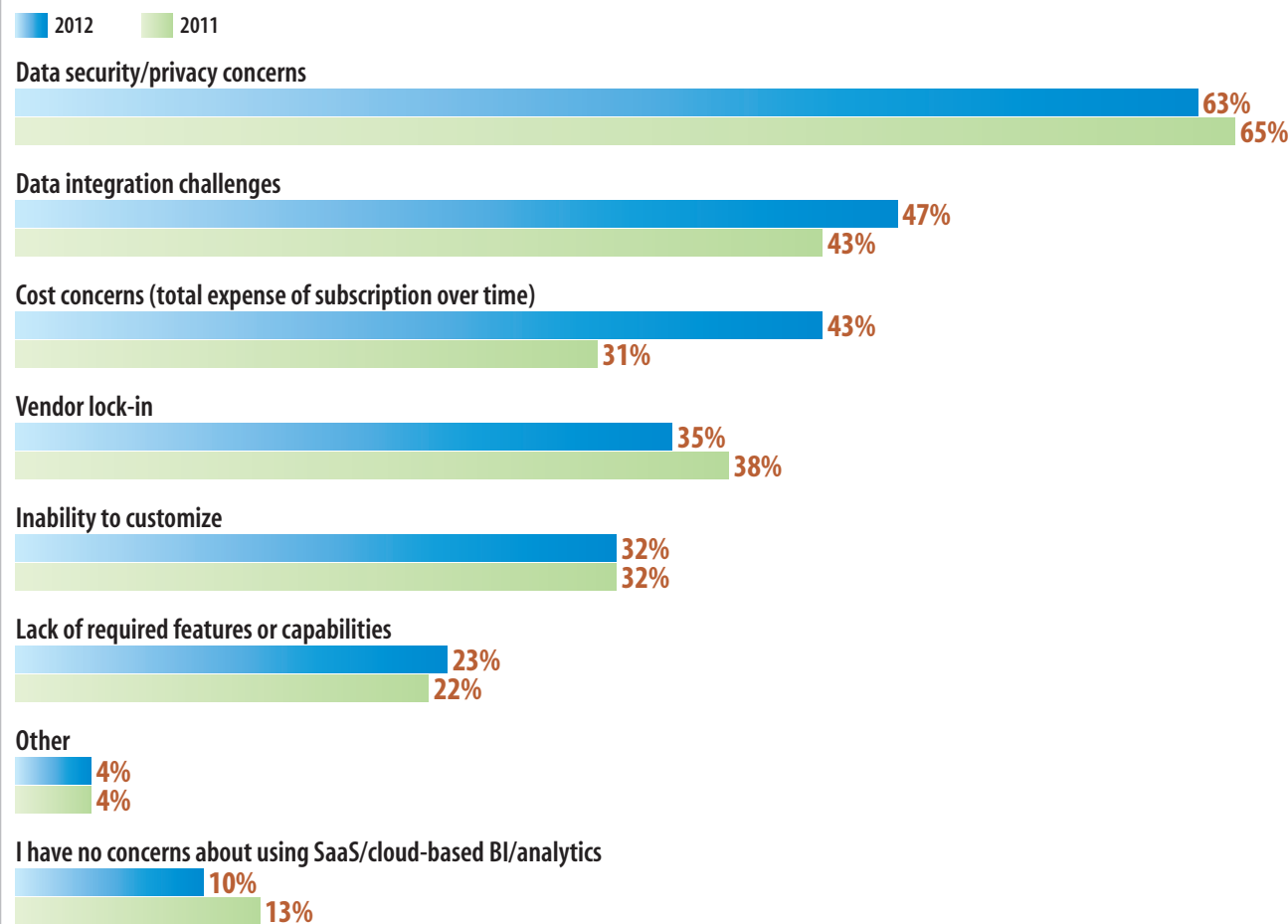
And in the biggest sign that IT pros are warming to the possibility of using cloud-based BI and analytics, just 16% reported that this category is not currently of interest to their organizations, whereas that figure was 36% in last year's survey.

Still, cloud advocates shouldn't rejoice just

FAST FACT

32%

of respondents say they have a significant interest in SaaS-based BI.

Figure 14

Concerns With Cloud-Based BI/Analytics

What are your primary concerns about or barriers to using SaaS/cloud-based BI/analytics?

■ 2012 ■ 2011

Data security/privacy concerns
63%
65%

Data integration challenges
47%
43%

Cost concerns (total expense of subscription over time)
43%
31%

Vendor lock-in
35%
38%

Inability to customize
32%
32%

Lack of required features or capabilities
23%
22%

Other
4%
4%

I have no concerns about using SaaS/cloud-based BI/analytics
10%
13%

R3551111/14

Note: Multiple responses allowed
Base: 414 respondents in October 2011 and 410 respondents in September 2010 using or planning to deploy BI, data analytics or statistical analysis software
Data: *InformationWeek* Business Intelligence, Analytics and Information Management Survey of business technology professionals

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:: reports

yet, as significant barriers to adoption remain. Data security and privacy (63%), for example, remained the top concern, while data-integration challenges (47%) and ongoing subscription-cost concerns (43%) loomed larger this year than in last year's survey. It's tough to read respondents' minds, but the silver lining in this black cloud might be that security and privacy may well be more of a knee-jerk complaint, whereas integration and cost objections might be based on more actual investigation of available options and deployment challenges.

The options for cloud-based BI and analytics showed signs of change in 2011, and this may bode well for future adoption. Until recently, most top BI software vendors have not offered cloud-based BI or analytics. And the few that have offered such services have tended to focus on subsets of their on-premises functionality (as in the case of SAP BusinessObjects BI OnDemand) or select industry- or problem-specific applications (as in the case of SAS hosting of conventionally licensed software). Meanwhile, none of the dedicated

FAST FACT

63%

of respondents ay they have concerns with data security/privacy for cloud-based BI/analytics.

Figure 15

Factors Driving Interest in Social Network Analysis Technologies

What factors drive/would drive, your interest in social media/social network analysis technologies?
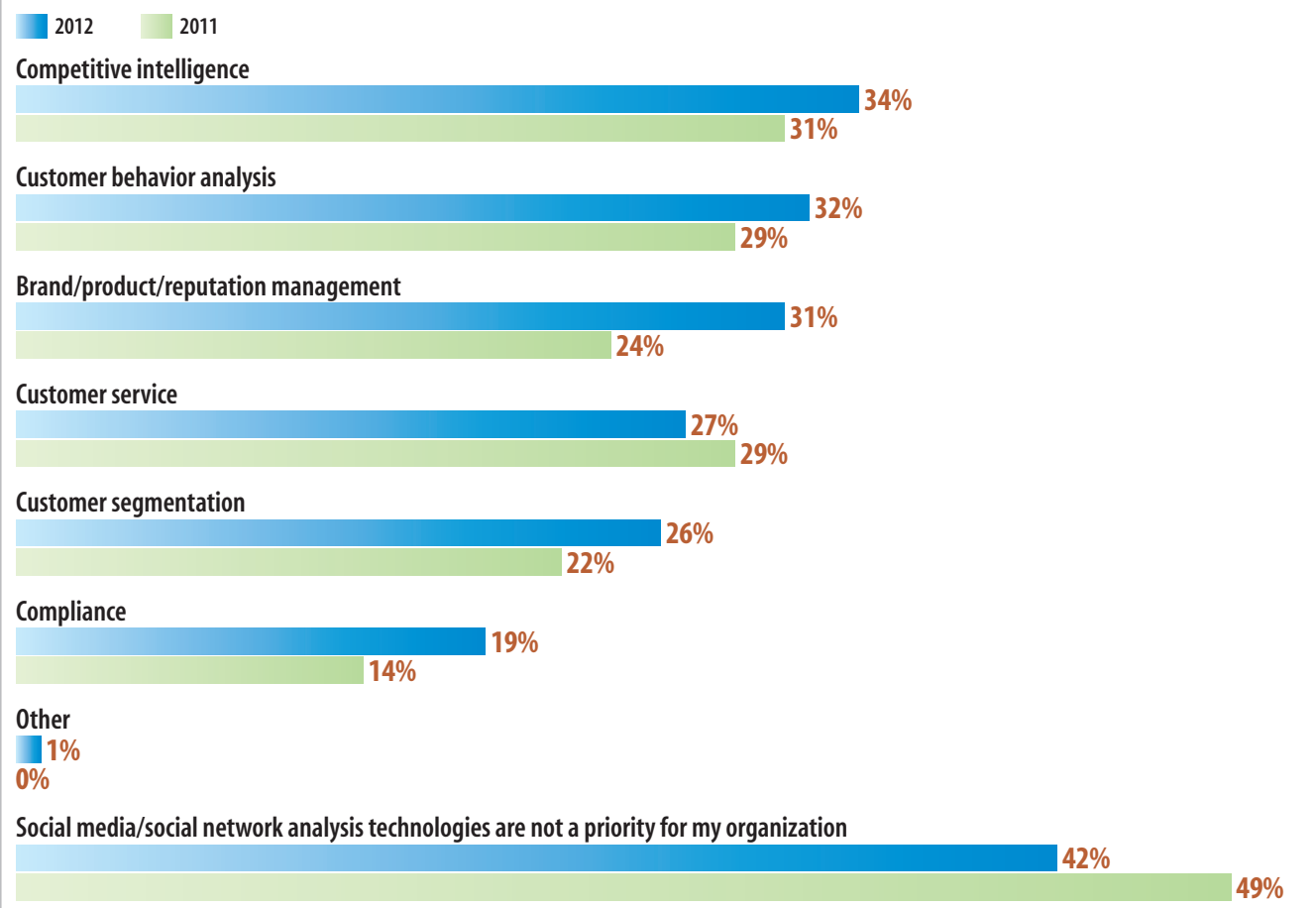
■ 2012 ■ 2011

Competitive intelligence
34%
31%

Customer behavior analysis
32%
29%

Brand/product/reputation management
31%
24%

Customer service
27%
29%

Customer segmentation
26%
22%

Compliance
19%
14%

Other
1%
0%

Social media/social network analysis technologies are not a priority for my organization
42%
49%

Note: Multiple responses allowed
Base: 414 respondents in October 2011 and 410 respondents in September 2010 using or planning to deploy BI, data analytics or statistical analysis software
Data: *InformationWeek* Business Intelligence, Analytics and Information Management Survey of business technology professionals

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software as a service (SaaS) providers—a field including (in order of use by survey respondents) Cloud9 Analytics, Indicee, Deloitte/Oco, Birst, MyDials and PivotLink among SaaS-BI vendors, and adaptive planning and host analytics among SaaS-performance management—have really broken out of the pack in terms of customer deployments.
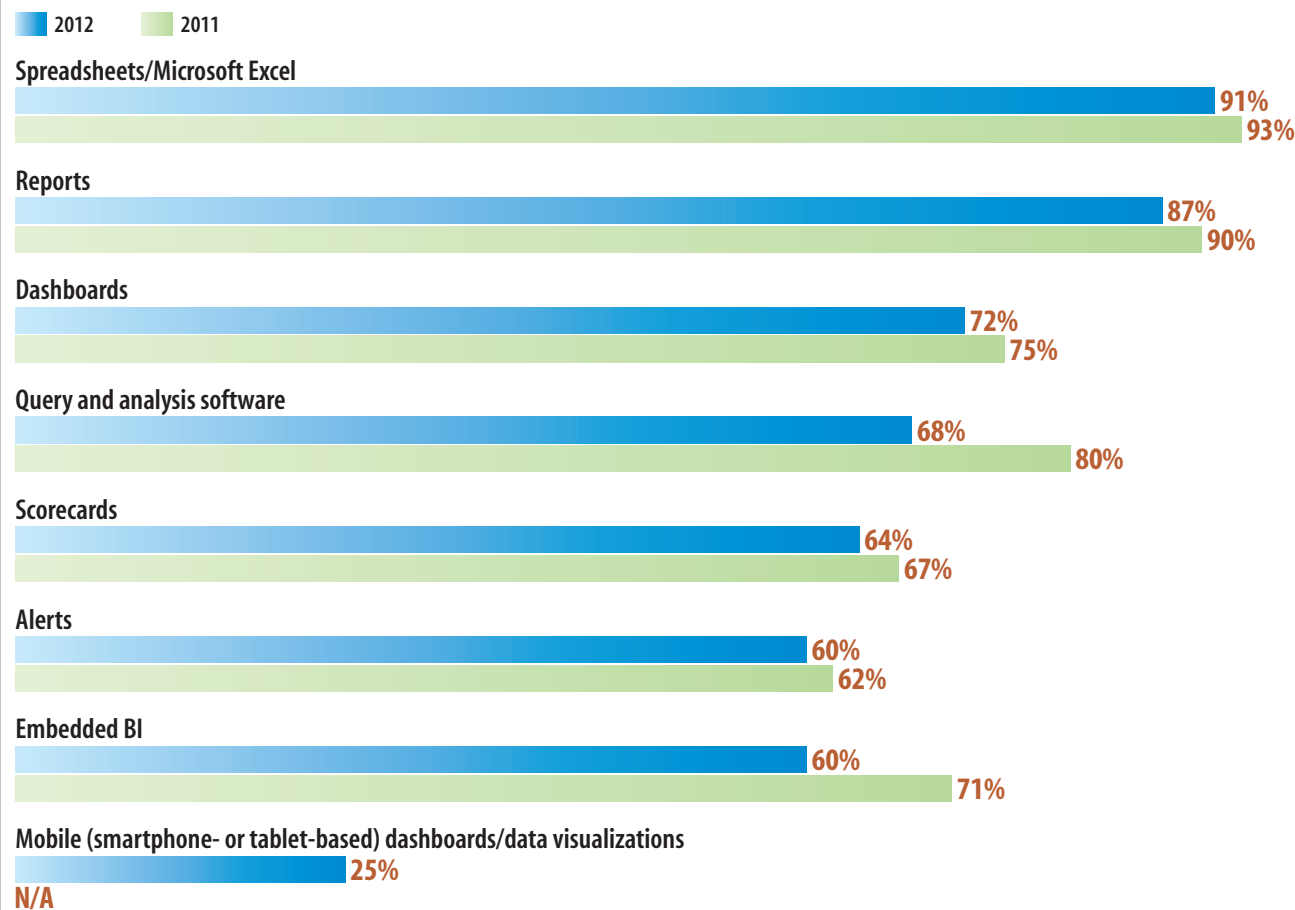
What changed in 2011? The direction of some BI powerhouses, with IBM, SAP and MicroStrategy all delivering their on-premises software through new public (and in some cases private) clouds. In April, IBM launched its SmartCloud Enterprise, where the company now makes IBM Cognos software available with cloud-style elastic scalability, meaning you can add or drop storage, network access and Internet data-transfer capacity.

In May, SAP announced at its Sapphire user conference that BusinessObjects would be deployable in the cloud by way of Amazon's Elastic Compute Cloud (EC2), though licensing, subscription, support services and dates of availability had yet to be worked out. SAP has had a SaaS-based BI OnDemand offering for several years.

Figure 16

Technologies Used to Share BI/Analytic Insights

Which of the following technologies are used to share BI/analytic insights within your organization?

■ 2012   ■ 2011

Spreadsheets/Microsoft Excel
91%
93%

Reports
87%
90%

Dashboards
72%
75%

Query and analysis software
68%
80%

Scorecards
64%
67%

Alerts
60%
62%

Embedded BI
60%
71%

Mobile (smartphone- or tablet-based) dashboards/data visualizations
25%
N/A

Note: Percentages reflect a response of "used extensively" or "used on a limited basis"
Base: 414 respondents in October 2011 and 410 respondents in September 2010 using or planning to deploy BI, data analytics or statistical analysis software
Data: *InformationWeek* Business Intelligence, Analytics and Information Management Survey of business technology professionals

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In July, MicroStrategy followed IBM's and SAP's news with MicroStrategy Cloud, an infrastructure service that will enable customers to spin up test-and-development, departmental or business-unit deployments, or large-scale BI systems on infrastructure running in the company's data centers. Licensing and costs were not detailed, but Sanju Bansal, MicroStrategy's executive VP and chief operating officer, said customers will be able to rent capacity as needed with about 48-hours' notice.
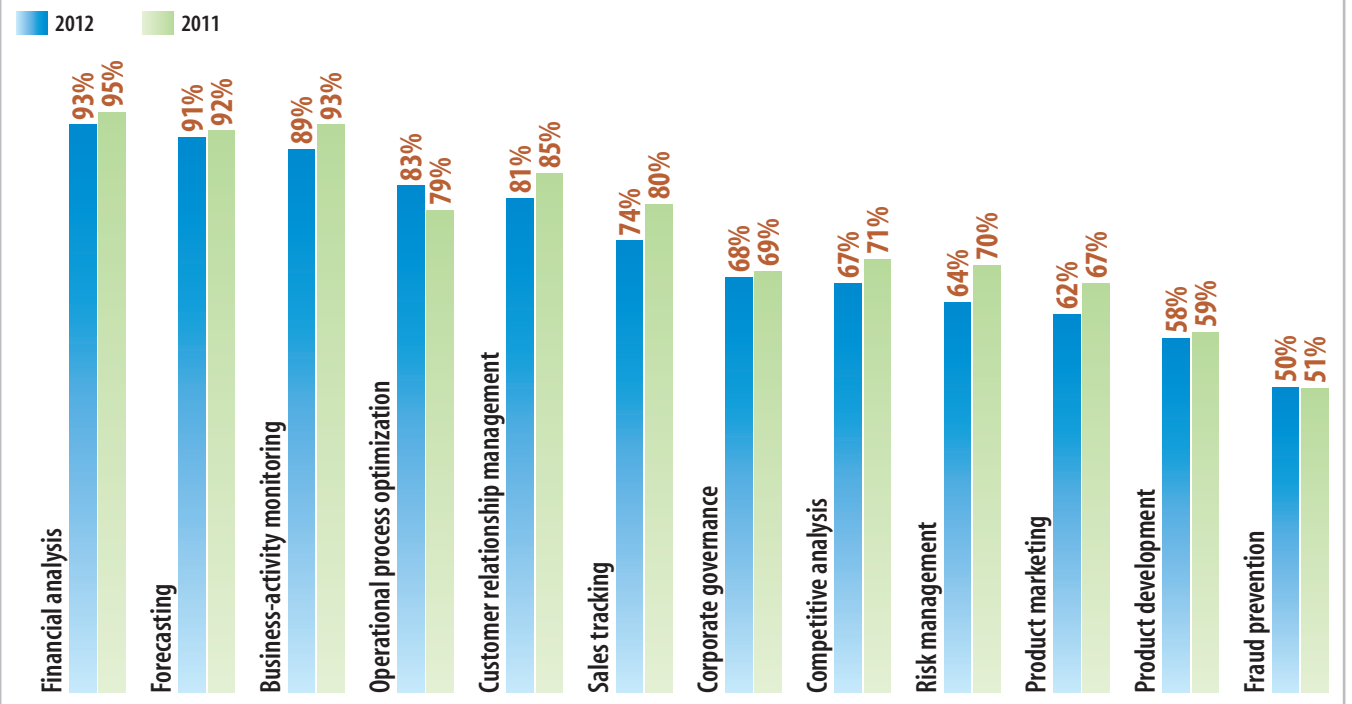
MicroStrategy, which built out its own data centers at its Virginia headquarters and in London, does not sell databases—something you always need to manage the data you plan to explore—so the company partnered with IBM Netezza and independent database vendor ParAccel to run high-scale data marts within the MicroStrategy Cloud. Data integration vendor Informatica is another partner, contributing on-premises-to-cloud data integration capabilities.

Microsoft also deserves mention here in that the SQL Azure platform offers SQL Server

Figure 17

Utilizing BI and Analytics: 2012 vs. 2011

How do you utilize or plan to utilize business intelligence/analytics?

Legend: ■ 2012 ■ 2011

Category	2012	2011
Financial analysis	93%	95%
Forecasting	91%	92%
Business-activity monitoring	89%	93%
Operational process optimization	83%	79%
Customer relationship management	81%	85%
Sales tracking	74%	80%
Corporate governance	68%	69%
Competitive analysis	67%	71%
Risk management	64%	70%
Product marketing	62%	67%
Product development	58%	59%
Fraud prevention	50%	51%

Note: Percentages reflect a response of "current use" or "planned use"
Base: 414 respondents in October 2011 and 410 respondents in September 2010 using or planning to deploy BI, data analytics or statistical analysis software
Data: *InformationWeek* Business Intelligence, Analytics and Information Management Survey of business technology professionals

R3551111/6

analysis, integration and reporting service in the cloud. The other elements of Microsoft BI are SharePoint and Office, which are available

through the cloud-based Office 365 service. And it's a safe bet that Oracle will follow its competitors by bringing its on-premises BI

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Enterprise Edition suite into the Oracle Cloud, announced at October's Oracle Open World.

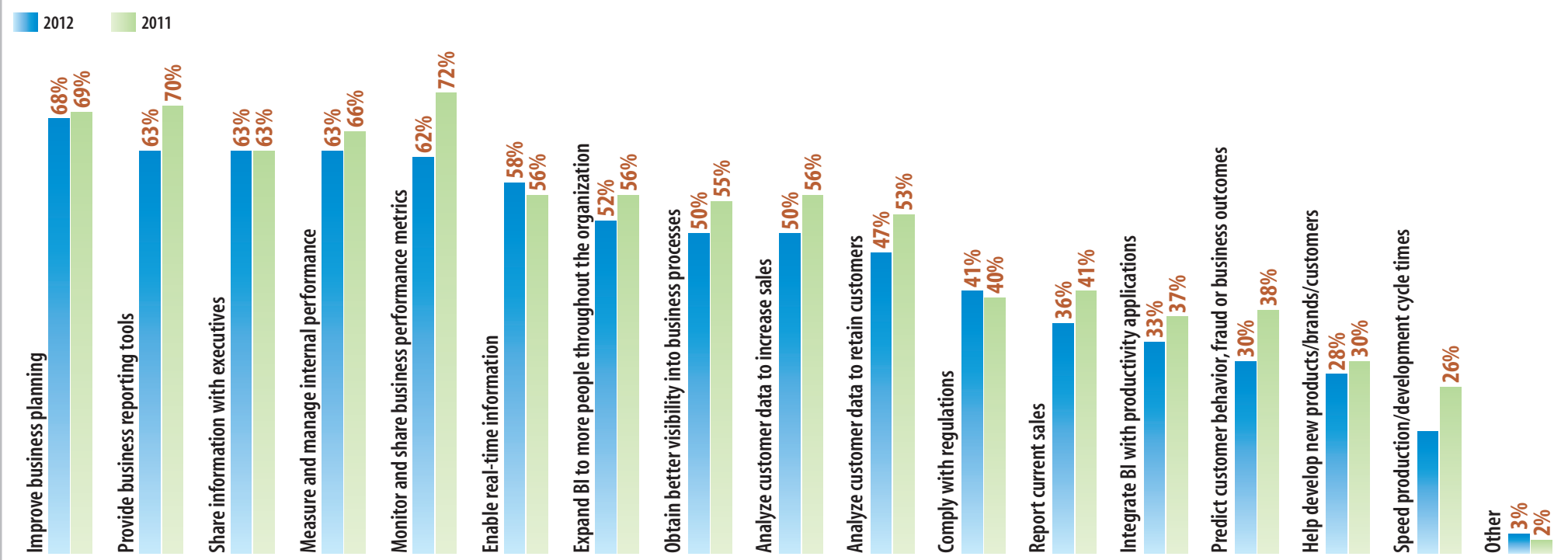The advantage BI mega vendors have in bringing BI into the cloud is that they have huge numbers of customers familiar with their software. Indeed, we've long followed our readers' inclination to standardize on one or a few BI suites and tools, and that remains the dominant strategy for 2012, with 41% of respondents saying they've done just that. It's notable, though, that standardization is slipping a bit, down six points from last year's survey.

Figure 18

Implementation Goals

What are your company's goals for implementing BI/analytics solutions?

■ 2012   ■ 2011

Goal	2012	2011
Improve business planning	68%	69%
Provide business reporting tools	63%	70%
Share information with executives	63%	63%
Measure and manage internal performance	63%	66%
Monitor and share business performance metrics	62%	72%
Enable real-time information	58%	56%
Expand BI to more people throughout the organization	52%	56%
Obtain better visibility into business processes	50%	55%
Analyze customer data to increase sales	50%	56%
Analyze customer data to retain customers	47%	53%
Comply with regulations	41%	40%
Report current sales	36%	41%
Integrate BI with productivity applications	33%	37%
Predict customer behavior, fraud or business outcomes	30%	38%
Help develop new products/brands/customers	28%	30%
Speed production/development cycle times		26%
Other	3%	2%

Note: Multiple responses allowed

Base: 414 respondents in October 2011 and 410 respondents in September 2010 using or planning to deploy BI, data analytics or statistical analysis software

Data: *InformationWeek* Business Intelligence, Analytics and Information Management Survey of business technology professionals

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If they can use their existing software; offer customers license portability from on-premises deployments; and add cloud advantages, including elastic scalability, perhaps the mega vendors can finally turn cloud-based BI and analytics into a breakthrough success.

Parallels in Data Management

BI and analytics are often thought of as the business user- and business analyst-facing "front ends" whereas information management—work with databases, information integration, data quality and so on—is often described as the "back end" of the operation. A key point, though, is that they are interconnected. You can't report on it, spot trends within it, or develop predictive or statistical insights based on it unless it is information that you are managing or somehow integrating.
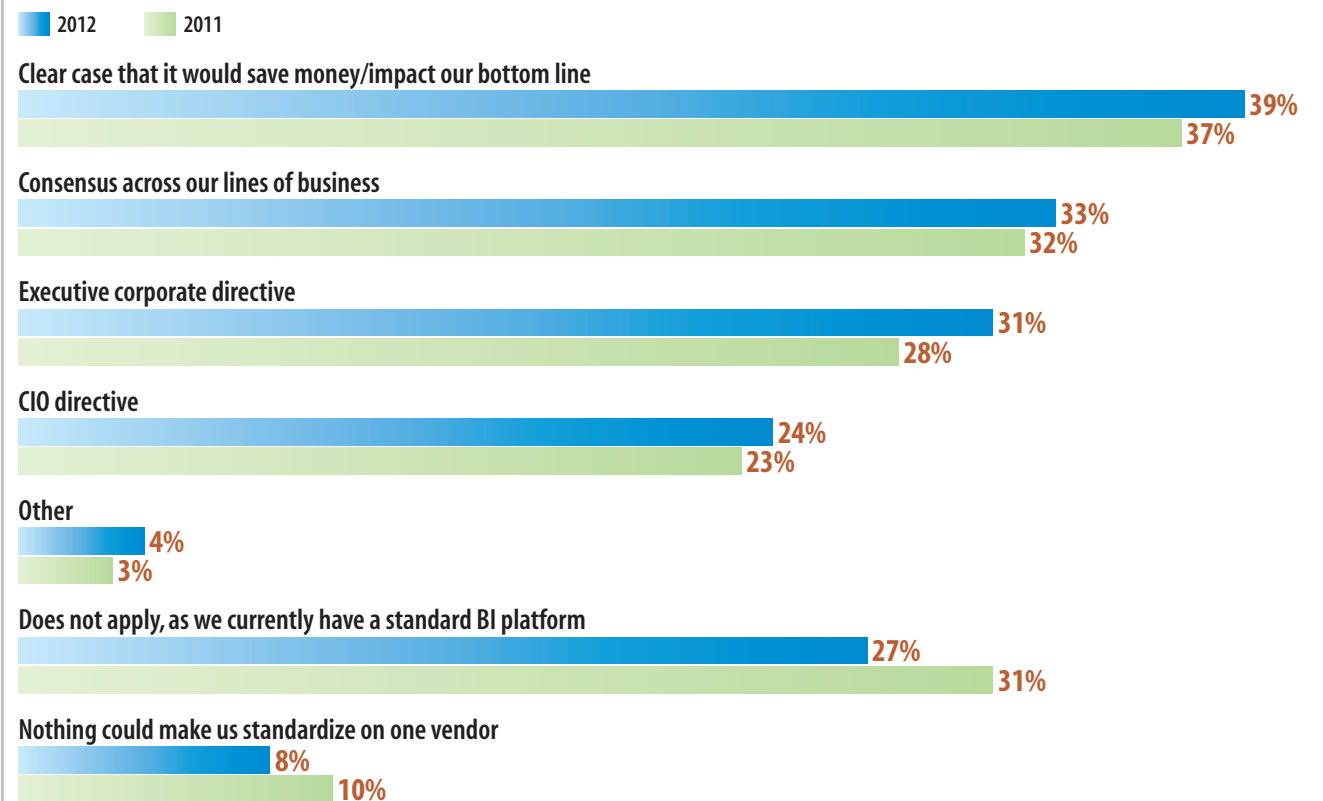
It's no surprise, then, that there are parallels between what's happening in the BI and analytics world and what's happening in information management.

You have to start with the fact that information management professionals are as driven

Figure 19

Consolidation Motivation

If you haven't standardized on a BI platform or consolidated analytics/reporting infrastructure across your entire organization, what would it take for your company to move from best-of-breed to a consolidated (one vendor) offering?

■ 2012   ■ 2011

Clear case that it would save money/impact our bottom line
2012: **39%**
2011: **37%**

Consensus across our lines of business
2012: **33%**
2011: **32%**

Executive corporate directive
2012: **31%**
2011: **28%**

CIO directive
2012: **24%**
2011: **23%**

Other
2012: **4%**
2011: **3%**

Does not apply, as we currently have a standard BI platform
2012: **27%**
2011: **31%**

Nothing could make us standardize on one vendor
2012: **8%**
2011: **10%**

Note: Multiple responses allowed

R3551111/9

Base: 414 respondents in October 2011 and 410 respondents in September 2010 using or planning to deploy BI, data analytics or statistical analysis software

Data: *InformationWeek* Business Intelligence, Analytics and Information Management Survey of business technology professionals

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by the push for advanced, predictive and proactive analytics as are analytics professionals themselves. Without well-managed data, and a lot of it, analytics pros simply can't do their jobs. P&G was able to develop predictive models because it had spent years collecting data from its core SAP ERP system and other applications, methodically integrating and loading it all into SAP BW and Oracle data warehouses. And in the wake of its integrated point-of-sale system deployment, the Cincinnati Zoo built a data warehouse to help predict attendance and staffing needs based on attendance histories and related weather conditions.

On-premises data marts and data warehouses have consistently been the most widely deployed information management technology we cover in our survey, used extensively by 36% and on a limited basis by an additional 22% of our 431 information management respondents.

Consistent with last year's survey, respondents still have big plans to add master data management software and data clean -
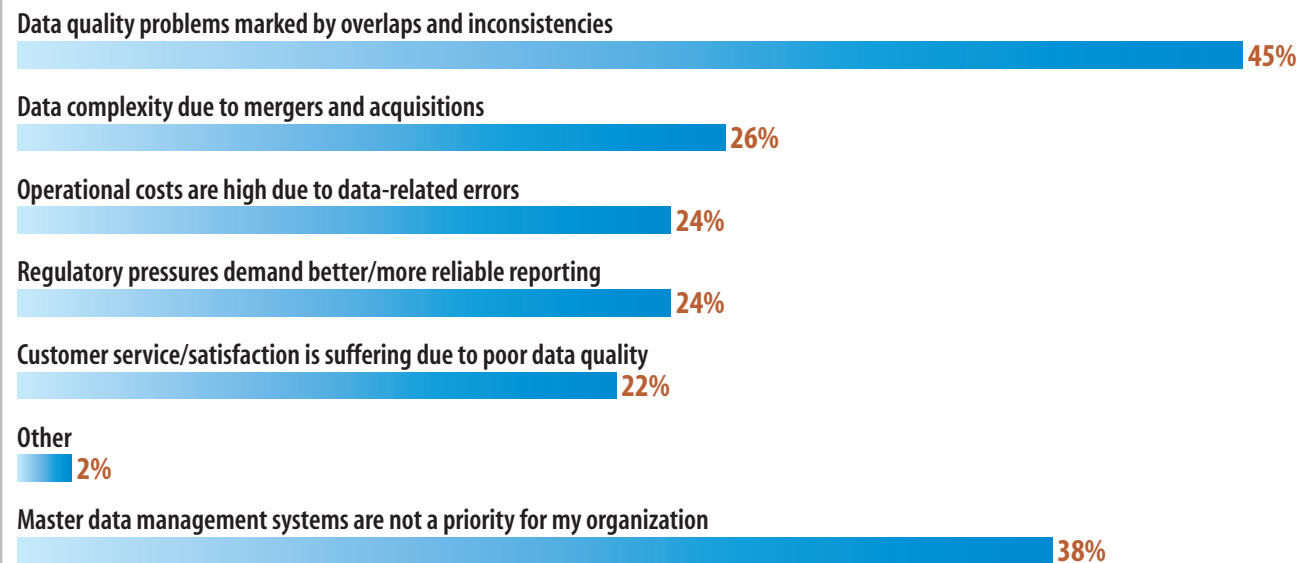
sing/data quality tools, making these technologies top priorities in terms of planned use. This reflects the finding, noted earlier, that data quality problems remain the top obstacle to using BI and analytics products enterprisewide.

Just as cloud computing is a small but promising category in BI and analytics, it's much the same story in information management. Cloud-based data marts and warehouses are used extensively by 5%, on a limited basis by 12% and are planned for use by

Figure 20

Factors Driving Interest in Master Data Management Systems

What factors are driving, or would drive, your organization's interest in implementing master data management systems?

Data quality problems marked by overlaps and inconsistencies
45%

Data complexity due to mergers and acquisitions
26%

Operational costs are high due to data-related errors
24%

Regulatory pressures demand better/more reliable reporting
24%

Customer service/satisfaction is suffering due to poor data quality
22%

Other
2%

Master data management systems are not a priority for my organization
38%

Note: Multiple responses allowed

Base: 431 respondents involved with information management technologies

Data: *InformationWeek* 2012 Business Intelligence, Analytics and Information Management Survey of 542 business technology professionals, October 2011

R3551111/22

Enterprise Management: Strengthening IT's Core

Enterprise management is evolving from a break-fix mentality to a discipline that enables IT to be a proactive business partner with an emphasis on service.

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19% of this year's respondents; last year those figures were 5%, 8% and 15%, respectively, so things are perking up, if slowly.

Much of the buzz in cloud-based data mart and data warehousing is about sandbox environments for development and testing, elas-

tic scaling to handle peak workloads, and private-cloud virtualization. Thus, "on a limited basis" may be the preferred use case for this category. When extensive use is the rule, practitioners are more likely opt for conventional on-premises deployment for low total cost of ownership over the long haul.
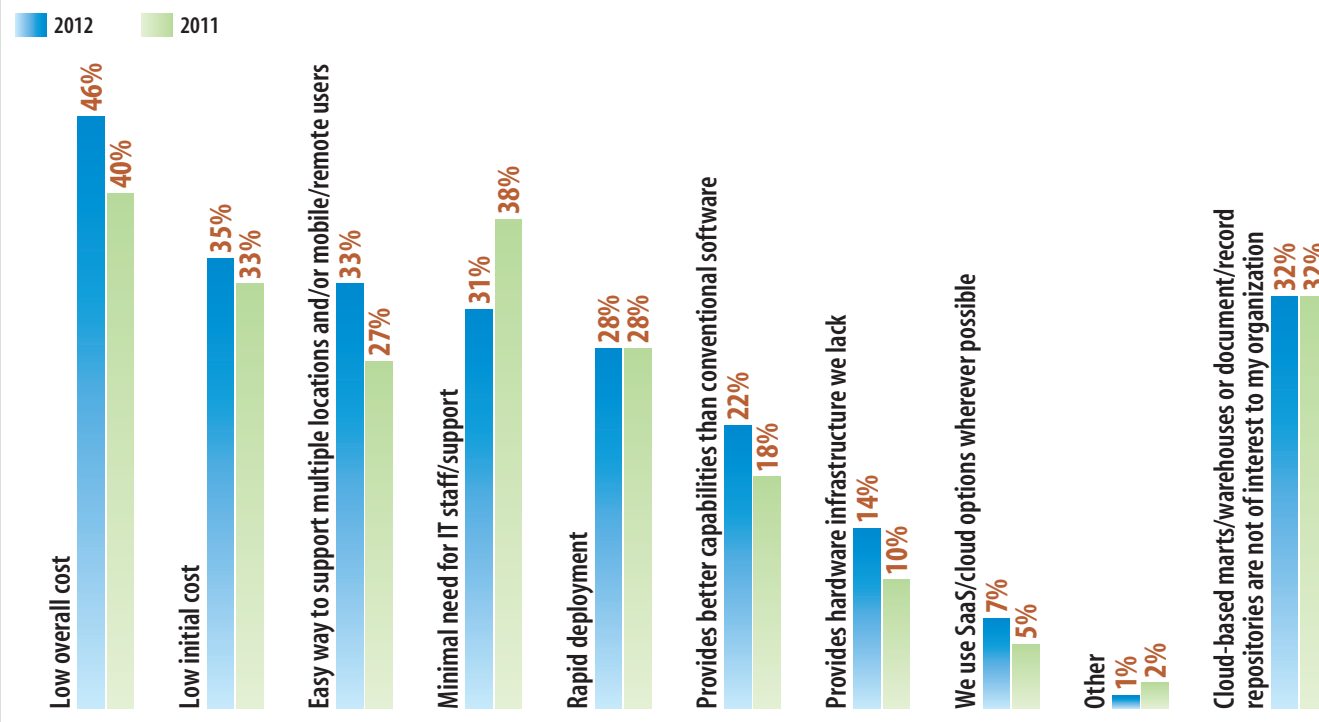
There are skeptics who think big data is all hype, but our respondents put it right there in the middle of current and planned use, with a respectable 27% already handling high-scale data marts and data warehouses on an extensive or limited basis and another 17% planning to add them. These are the types of marts and warehouses used for in-database analytics and big data analyses of things like clickstreams, machine-generated sensor data and server log files. Predictive analyses come into play here, helping to serve up the right ads and offers to the right customers at the right time.

Mobile phones are both a contributor to and subject of big-data analyses. Call-data records, instant messaging traffic and smartphone-based Web and app interactions are

Figure 21

Factors Driving Interest in Cloud-Based Data Marts or Warehouses

What factors are driving, or would drive, your organization's interest in cloud-based marts/warehouses or document/record repositories?

Legend: 2012, 2011

- Low overall cost: 46%, 40%
- Low initial cost: 35%, 33%
- Easy way to support multiple locations and/or mobile/remote users: 33%, 27%
- Minimal need for IT staff/support: 31%, 38%
- Rapid deployment: 28%, 28%
- Provides better capabilities than conventional software: 22%, 18%
- Provides hardware infrastructure we lack: 14%, 10%
- We use SaaS/cloud options wherever possible: 7%, 5%
- Other: 1%, 2%
- Cloud-based marts/warehouses or document/record repositories are not of interest to my organization: 32%, 32%

Note: Multiple responses allowed
Base: 431 respondents in October 2011 and 302 respondents in September 2010 involved with information management technologies
Data: *InformationWeek* Business Intelligence, Analytics and Information Management Survey of business technology professionals

R3551111/23

feeding the growing stockpiles of data, and this information is being used by e-commerce companies to segment mobile customers and deliver mobile ads and offers. The phone companies themselves are monitoring and optimizing their networks, and they're on the lookout for mobile service customers who are likely to churn—studying whether they're worth retaining or not.
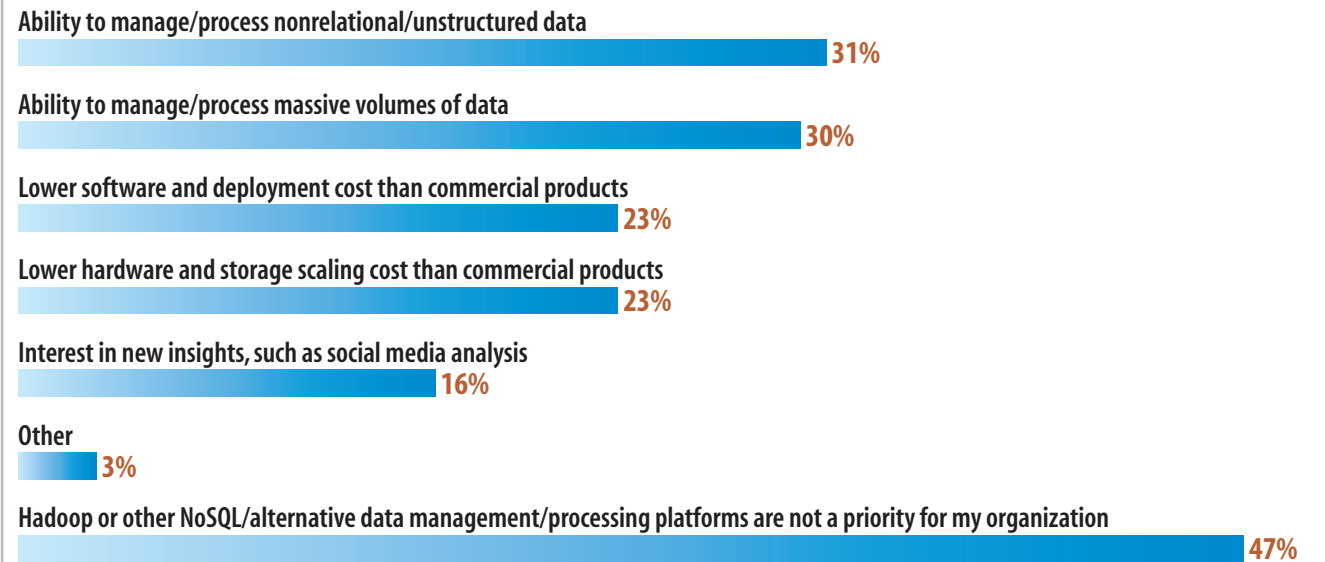
At the very cutting edge is the open source Hadoop parallel data-processing platform and NoSQL databases. There's a small community of practitioners today, as these systems are used extensively by only 3% of our respondents and on a limited basis by 11%. But this is promising stuff, likely to grow with the rise in large-scale Internet commerce and social networking.

The big attraction of NoSQL products is their scalability and flexibility. Because there's no fixed schema, you can add and exploit new data attributes as needed. In contrast, the predefined data model behind a conventional relational database, such as Oracle, IBM DB2, Microsoft SQL Server or MySQL, must be revised

Figure 22

Factors Driving Interest in NoSQL/Alternative Data Management

What factors are driving, or would drive, your organization's interest in using Hadoop or other NoSQL/alternative data management/processing platforms?

Ability to manage/process nonrelational/unstructured data
31%

Ability to manage/process massive volumes of data
30%

Lower software and deployment cost than commercial products
23%

Lower hardware and storage scaling cost than commercial products
23%

Interest in new insights, such as social media analysis
16%

Other
3%

Hadoop or other NoSQL/alternative data management/processing platforms are not a priority for my organization
47%

Note: Multiple responses allowed

R3551111/21

Base: 431 respondents involved with information management technologies

Data: *InformationWeek* 2012 Business Intelligence, Analytics and Information Management Survey of 542 business technology professionals, October 2011

with each change in data. The larger the database table, the more difficult, time consuming and costly the change.

Large-scale e-commerce companies and social networks have been big users of NoSQL

platforms because they provide scalability and flexibility at a low comparative cost. It's not every company that operates at the scale of NoSQL users such as Facebook, Yahoo, eBay and Groupon, but about half of our respon-

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dents (the 53% who didn't respond "not a priority for my organization") rate the ability to handle unstructured data, ability to process massive quantities of data and low cost as the top three appeals of Hadoop and other NoSQL platforms.

Here, too, is another driver of future analytics efforts, as super-large data sets come online. They'll be generated by social networks, retail and supply chain sensors, traffic and transit system sensors, smart meters and power grids, medical monitoring devices, communications networks, financial trading and transaction systems, security and risk monitors, and national intelligence agencies. In short, big data is going to be a pervasive problem—and a big driver of BI, analytics and information management challenges for years to come.

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APPENDIX

Figure 23

Current or Planned Use of BI/Analytics Vendors

Are you using or planning to use BI/analytics products from the following vendors?

	2012	2011
Microsoft	53%	55%
SAP BusinessObjects	39%	40%
Oracle (including Hyperion and Siebel)	34%	42%
IBM Cognos (including TM1)	31%	38%
SAP BusinessObjects On-Demand (Crystalreports.com)	24%	23%
SAS	23%	37%
IBM SPSS	20%	20%
MicroStrategy	15%	14%
Tableau	11%	9%
Actuate	9%	7%
QlikTech	7%	8%
Information Builders	6%	6%
Adaptive Planning	5%	0%
Arcplan	5%	2%
Cloud9 Analytics	5%	2%
Deloitte/Oco	5%	N/A
Tibco Spotfire	5%	5%
Birst	4%	2%
myDials	4%	0%
Pentaho	4%	4%
Host Analytics	3%	2%
Indicee	2%	N/A
Jaspersoft	2%	3%
Panorama	2%	2%
PivotLink	2%	3%

Note: Percentages reflect a response of "currently using" or "planning to use"
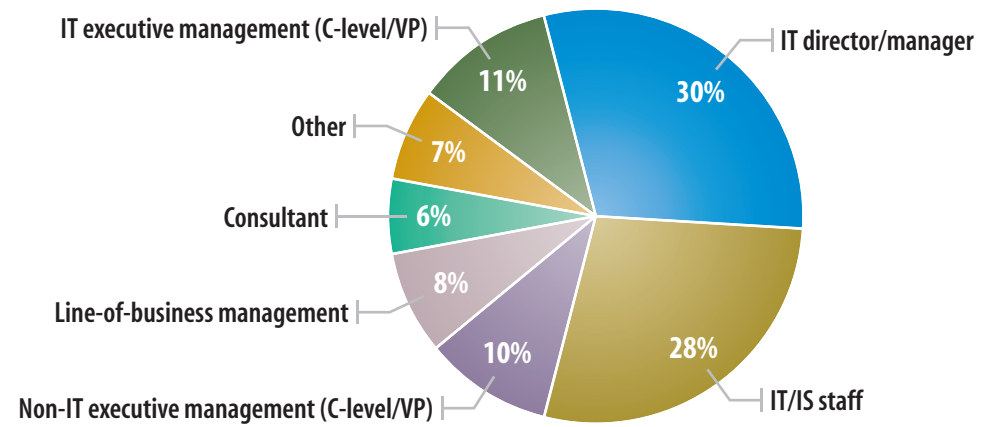
R3551111/17

Base: 414 respondents in October 2011 and 410 respondents in September 2010 using or planning to deploy BI, data analytics or statistical analysis software

Data: *InformationWeek* Business Intelligence, Analytics and Information Management Survey of business technology professionals

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Figure 24

Job Title

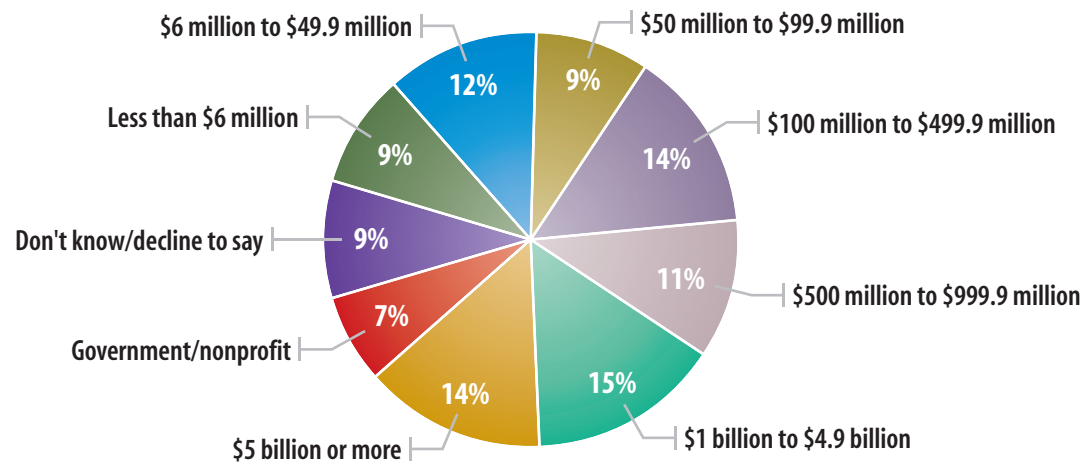Which of the following best describes your job title?

Data: *InformationWeek* 2012 Business Intelligence, Analytics and Information Management Survey of 542 business technology   R3551111/24
professionals, October 2011

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Figure 25

Company Revenue

Which of the following dollar ranges includes the annual revenue of your entire organization?

$6 million to $49.9 million — 12%
$50 million to $99.9 million — 9%
$100 million to $499.9 million — 14%
$500 million to $999.9 million — 11%
$1 billion to $4.9 billion — 15%
$5 billion or more — 14%
Government/nonprofit — 7%
Don't know/decline to say — 9%
Less than $6 million — 9%

Data: *InformationWeek* 2012 Business Intelligence, Analytics and Information Management Survey of 542 business technology professionals, October 2011   R3551111/25
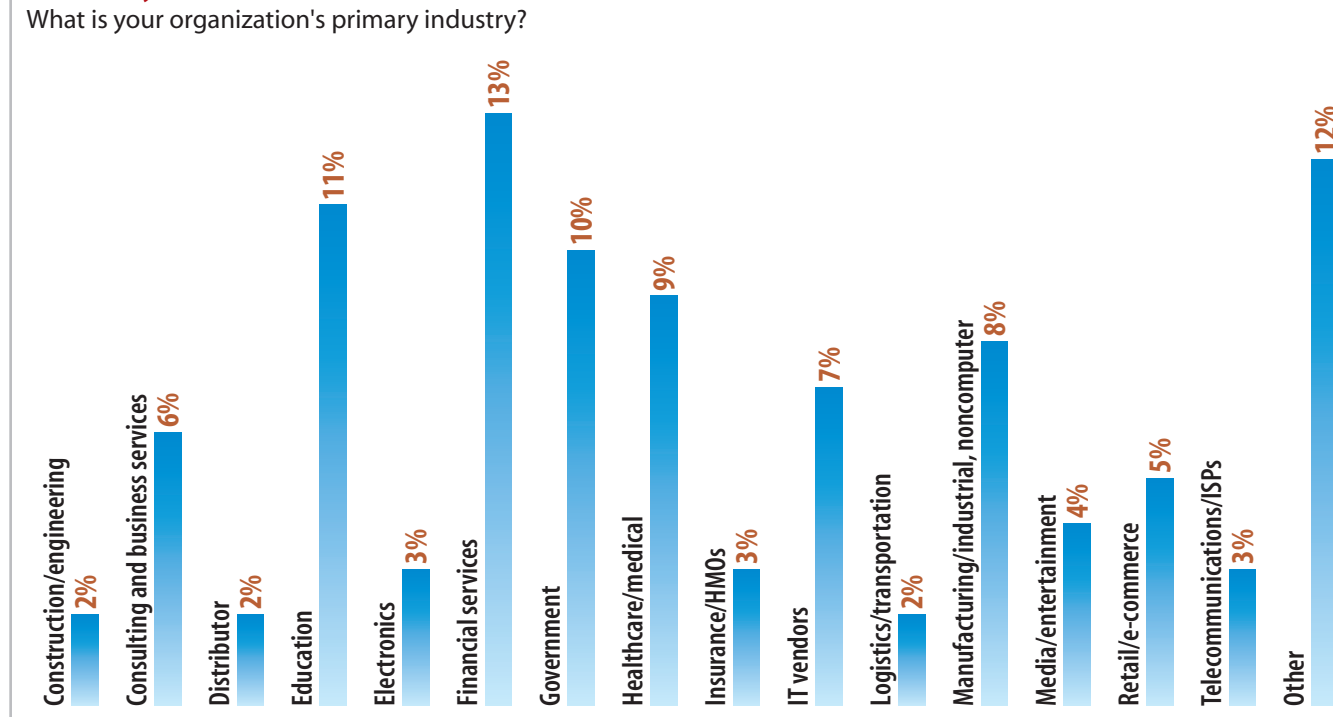
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Figure 26

Industry

What is your organization's primary industry?

Industry	%
Construction/engineering	2%
Consulting and business services	6%
Distributor	2%
Education	11%
Electronics	3%
Financial services	13%
Government	10%
Healthcare/medical	9%
Insurance/HMOs	3%
IT vendors	7%
Logistics/transportation	2%
Manufacturing/industrial, noncomputer	8%
Media/entertainment	4%
Retail/e-commerce	5%
Telecommunications/ISPs	3%
Other	12%

Data: *InformationWeek* 2012 Business Intelligence, Analytics and Information Management Survey of 542 business technology professionals, October 2011
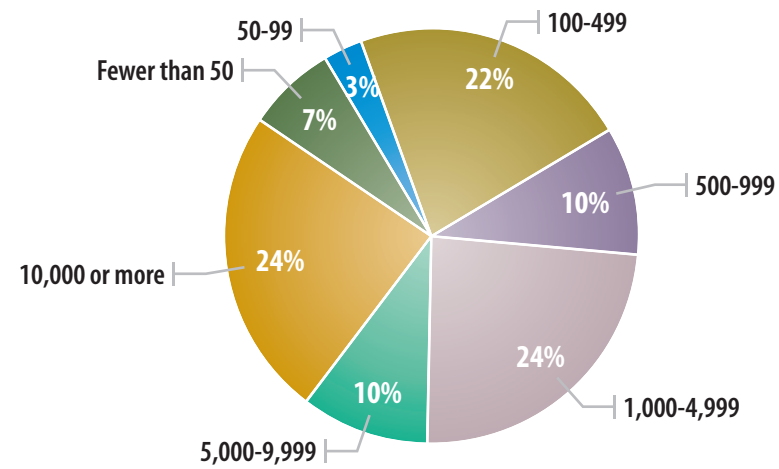
R3551111/26

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Figure 27

Company Size

Approximately how many employees are in your organization?

Data: *InformationWeek* 2012 Business Intelligence, Analytics and Information Management Survey of 542 business technology professionals, October 2011   R3551111/27

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