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The Big Data Payoff: Turning Big Data into Business Value

A joint report by Informatica and Capgemini on the keys to operationalizing Big Data projects

The ultimate success of Big Data projects lies in realizing business value. Achieving that goal is rarely easy, but a comprehensive survey in 2016 of US and European executives involved in Big Data initiatives reveals that many are making progress in operationalizing their projects, and a significant number of them are generating business value.

This research report details the survey findings and in-depth interviews with key executives. It reveals the critical differences between companies that have achieved business value from their Big Data initiatives and those that have not.

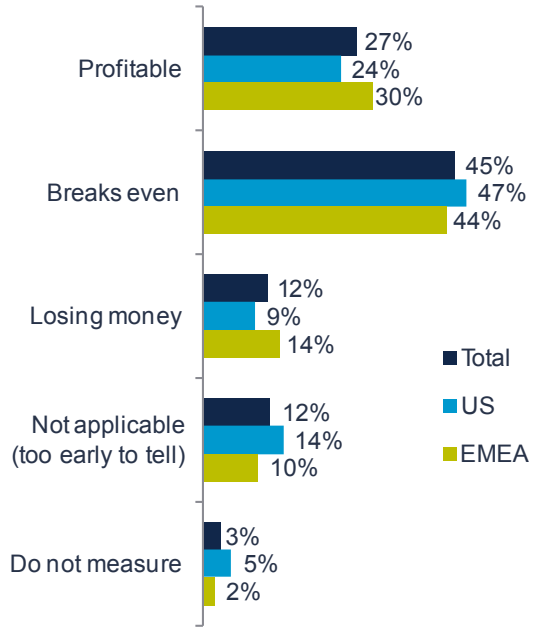
Executive Summary: The Keys to Operationalizing Big Data Projects

Survey of US and European firms underscores the importance of business leader involvement and data governance

Big Data initiatives are launched with the goal of obtaining actionable insights from data that can boost business performance. However, while enterprises are making progress, much work remains to be done in operationalizing the results of these projects, according to operationalize this survey[1]. Most of the participants indicate their top priorities involve the standardization, automation and governance of data.

From a business standpoint, IT projects are generally judged by strict return on investment criteria; and by that standard, enterprises report great progress. Overall, 27% of those surveyed indicate their Big Data projects are already profitable and 45% indicate they're at a break-even stage; see Figure 1.

Figure 1: How would you describe the profitability of your organization's Big Data initiatives to date?

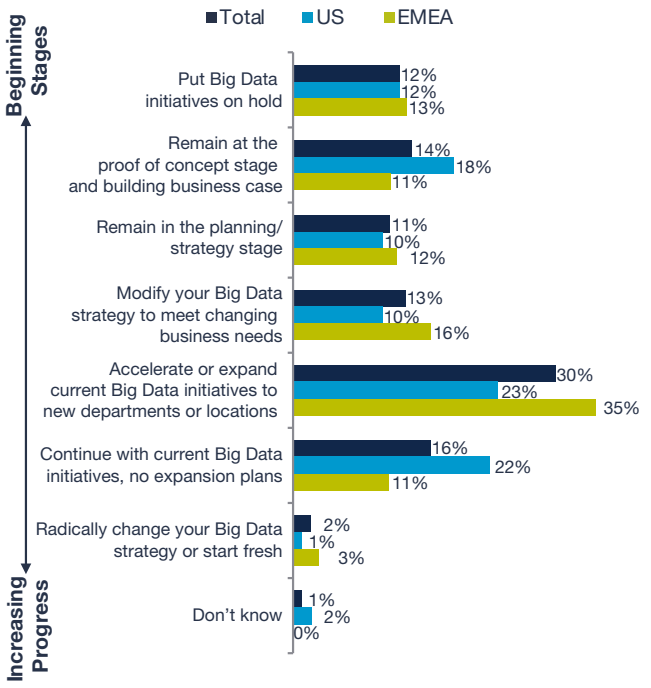


However, when asked to rate progress in their ability to operationalize Big Data – another key measurement – the results are somewhat mixed. Few have achieved all of their goals. Just 26% say they've met three-quarters of their goals, with the majority, 36%, rating themselves as having achieved half or fewer of their goals.

"Like any other technology, Big Data initiatives will fail unless there is a clear business strategy," said a German retail analytics executive, during an in-depth interview conducted for this report. "Once the business needs were identified, we were able to develop a solid roadmap. Our approach was a success as we were able to provide a clear business case for the challenges we needed to address."

As would be expected with any relatively new digital initiative, most of those surveyed suggest they're in a state of flux, either moving to expand or accelerate their projects, modifying them to meet changing business needs, or simply trying to move beyond a proof of concept, or the planning and strategy stage. Just 16% say they're moving ahead as intended to continue current projects with no expansion planned, illustrated in Figure 2. Relatively few have retrenched, though 12% have put their initiatives on hold and 2% are either radically restructuring them or starting anew.

Figure 2: What are your organization's plans with respect to Big Data over the next 12 months?



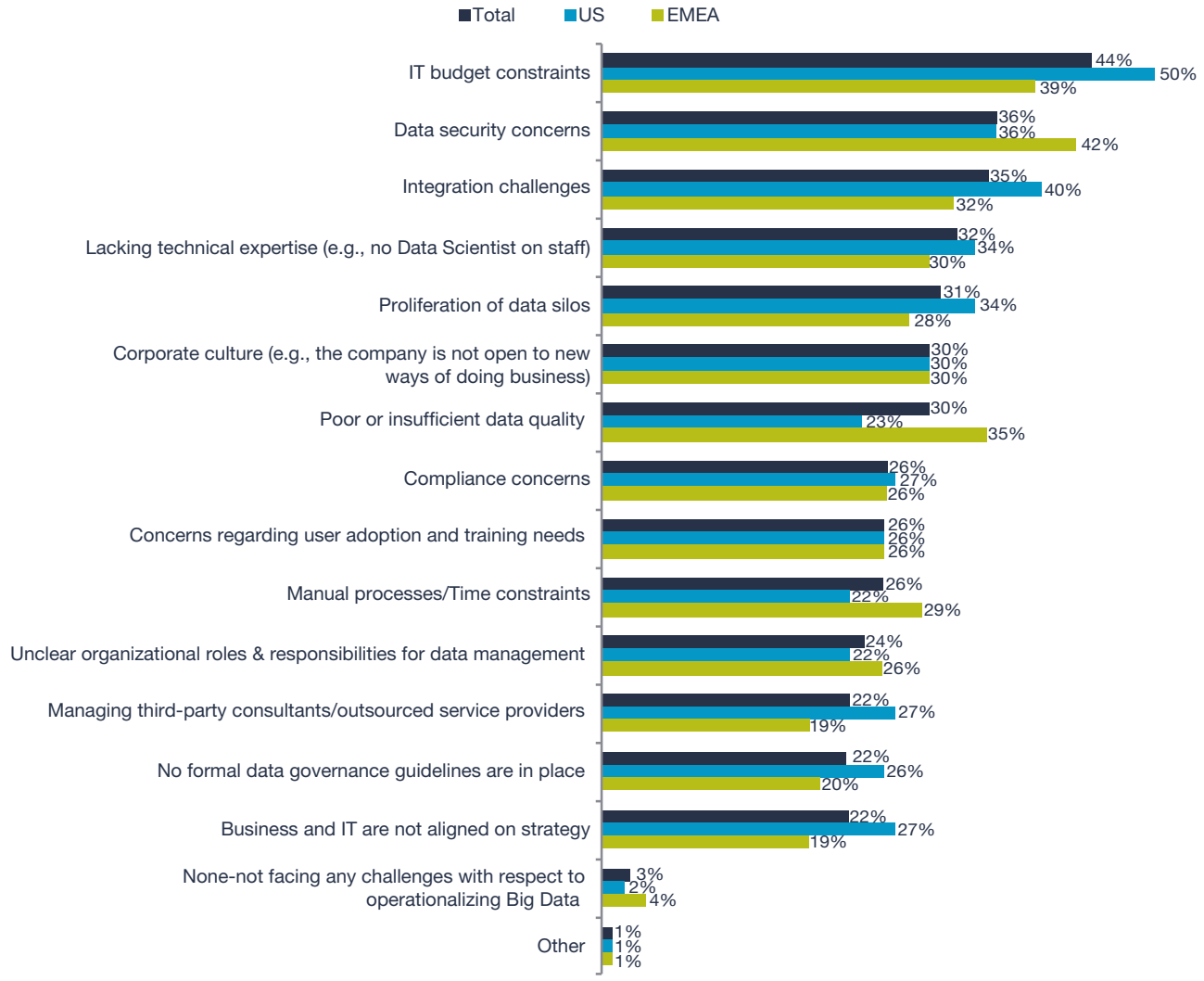
Base: Total 210; US 100; EMEA 110

1 This survey was jointly commissioned by Informatica and Capgemini, and carried out by IDG Research Services. Further information about methodology and scope is provided at the end of this report.

The comments of the head of analytics at a large US retailer illustrate how Big Data, for most, represents a goal, rather than an accomplishment. "We are focused on bringing in more efficiency to our processes, but are aware that we will face a lot of difficulties and may have to increase effort and money to achieve it. In order to successfully implement Big Data, we make sure that we thoughtfully plan out the parameters that we need to focus on, so that we do not deviate from our track of delivering satisfactory products."

Many continue to face barriers and challenges typical of any major enterprise technology initiative, such as budget constraints, data security concerns and integration issues, as is shown in Figure 3.

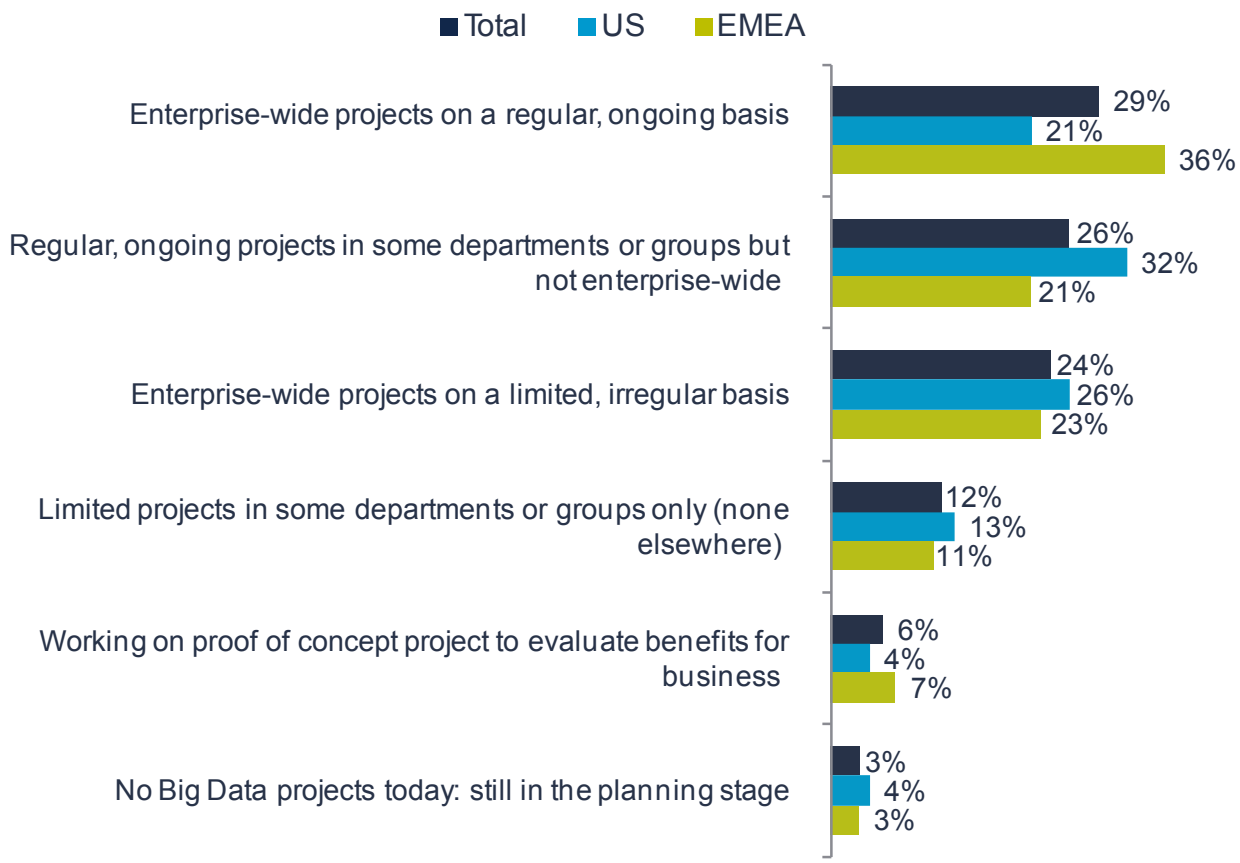
Figure 3: What are your organization's top challenges with respect to operationalizing Big Data and turning it into a trusted business asset? (Up to ten challenges selected)



Base: Total 210; US 100; EMEA 110

Still, more than half of those surveyed indicate that Big Data has reached a degree of pervasiveness throughout their organizations, with more than half engaged on a regular, ongoing basis with either enterprise-wide projects or with some departments or groups. Another third are engaged in limited or irregular projects, at either the enterprise level or with some departments or groups only; see Figure 4.

Figure 4: How pervasive is Big Data within your organization today?



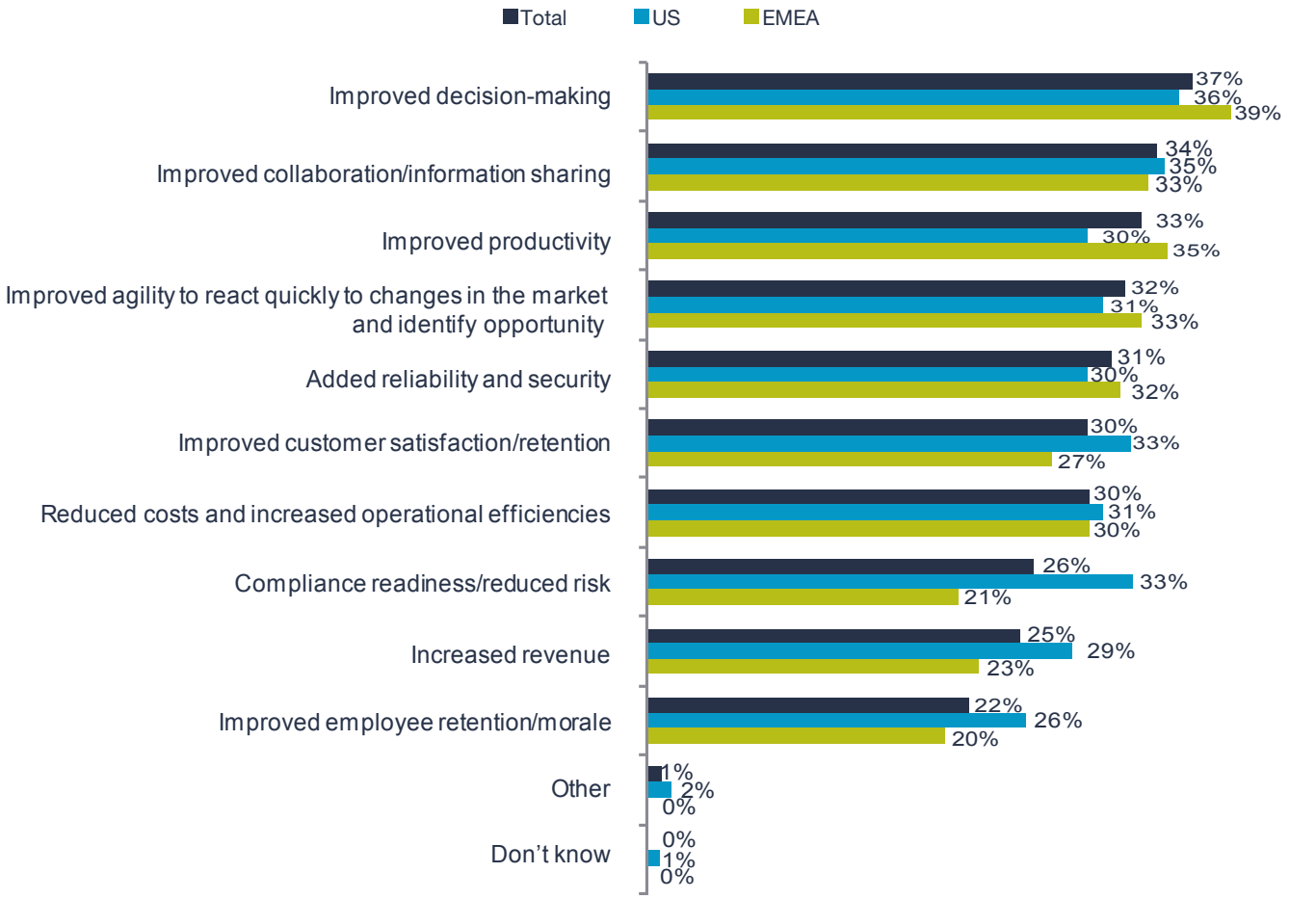
Big Data is only as good as the value it delivers

Executives from large companies - like those who participated in the survey - have typically already invested heavily in data management and analytics, but are striving to raise the bar from traditional reporting capabilities to ultimately transform business decision-making in real time.

An analytics executive with an Italian retail enterprise explains that his company collects data from physical stores, online websites, vendors, distributors and directly from customers. "To this end, you can just imagine the amount of data we are dealing with," he says. "It's very important that we process the raw information and use it to our advantage to stay ahead in the market and provide a better service to our customers. [Because of the variety of data], this can't be achieved without Big Data initiatives as we need to process the information [quickly] and make it available to the decision makers."

"There is no value in data analytics unless you can actually derive actionable insights from it," says the Big Data director at a European consumer goods company. "So the end result for me is not the analytics; rather it's the insight and action you get from the data you are analyzing."

Figure 5: Which of the following benefits has your organization achieved to date as a result of Big Data initiatives? (Respondents could select all that applied)



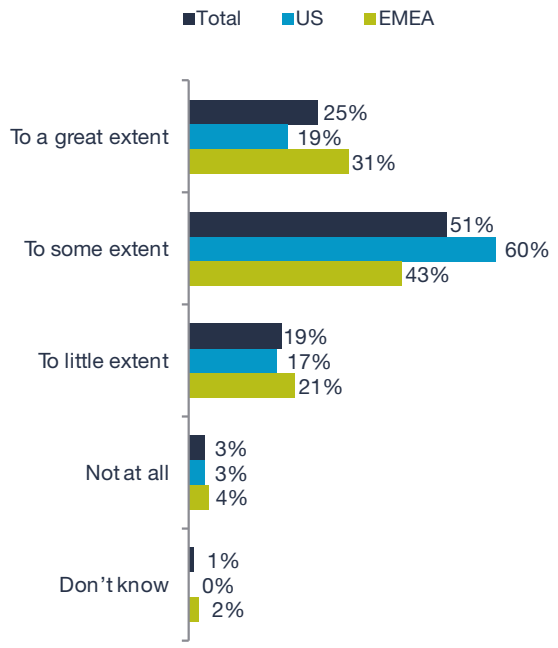
Regardless of where they are in their Big Data journey or the degree to which a project has been profitable, nine out of 10 respondents have already seen some benefits, (Figure 5). Topping the list is improved decision making, followed by collaboration and information sharing, then productivity. Improved agility to react quickly to changes in the market and to identify opportunities is another top benefit, followed by added reliability and security, improved customer satisfaction and/or retention, and reduced costs and operational efficiencies.

"Processing and deriving meaningful information for our customers is the biggest driver for our business," says an executive with a UK telecommunications company. "To best serve them, it's very important to analyze the data that flows in or out for each customer and work hard to give them the information that would benefit them."

Business sponsorship breeds success

The survey respondents provide compelling evidence that support from top business management is a critical factor in the success of Big Data initiatives, as in Figure 6. More than half say their CEO or executive management teams, to "some extent," view these projects as having the potential to drive business benefits such as creating new revenue streams, improving operational efficiency and cutting costs. One quarter (25%) say they are supported to a "great extent."

Figure 6: To what extent do you believe your CEO or Executive team views Big Data initiatives as having the potential to drive business benefits (e.g., creating new revenue streams, improving operational efficiency, cutting costs, etc.)?



Base: Total 210; US 100; EMEA 110

It's apparent that without high-level buy-in, Big Data projects start from a deep hole. Those with the highest level of buy-in from the CEO/executive team are more likely to report that Big Data initiatives are profitable (49%) vs. those whose executive teams perceive Big Data as having little potential to achieve benefits (6%).

"The most important success factor for any initiative undertaken within an organization is that the management team understands the underlying benefits of a Big Data initiative," says the head of analytics with a large UK online retailer. "For our own Big Data initiative, we have full buy-in from the senior management. Starting from the CEO down, we have full agreement on adoption of data analytics as our core focus for the next three years."

Overall, the CIO is primarily responsible for formulating Big Data strategies at more than half of the enterprises in the survey. But there's a significant geographic disparity, as just 39% of the US-based companies cite the CIO's role as being responsible, compared to 64% of Europeans. In the US, 21% cite the CFO as having a primary role compared to just 14% in European enterprises. Twenty percent of respondents indicate that their COOs have a role, with CTOs trailing somewhat at 16% overall.

With the growing emphasis on digital business, some companies are anointing the relatively new roles of Chief Data Officer (14%) and Chief Digital Officer (12%) with strategic responsibilities for Big Data initiatives. Similarly, with data increasingly driving sales and marketing efforts, the Chief Marketing Officer or top marketing executive, often plays a primary role, although again there is some regional disparity; 19% of US enterprises cite the marketing role compared to 13% in Europe. When it comes to executing the strategy, there is fragmentation in who's involved across a diverse array of technology roles, including data specialists (30%), IT management (28%), VPs of data services (22%) and database architects (21%).

Placing a premium on data quality, governance and security

More organizations that considered themselves successful in their Big Data initiatives still perceive gaps between the importance of these initiatives and their progress in achieving their goals in the areas of quality, governance and security of data. The gaps, however, are much narrower than those from organizations still focusing on achieving profitability; see Figure 7.

Figure 7: Combines 2 questions: How important are the following priorities as part of your organization's strategy to operationalize Big Data? + How would you rate your organization's progress with respect to each of the following Big Data priorities to date?

	Importance vs. Progress Gap Profitable Initiatives	Importance vs. Progress Gap Initiatives not Profitable
Improving system performance (reliability and speed)	-12 pp	-20 pp
Improving data quality and data governance	-13 pp	-33 pp
Improving data security	0 pp	-22 pp
Standardizing and improving consistency across the organization (processes, technology, metrics, etc.)	-4 pp	-29 pp
Reducing time-intensive data management tasks	-5 pp	-20 pp
Improving the level of collaboration between lines of business (including IT)	+1 pp	-19 pp
Improving technical maturity/ technical innovation and relevant analytics tools	+1 pp	-23 pp
Implementing a strategy to communicate the progress and results of Big Data initiatives	+5 pp	-18 pp
Enabling digital transformation	-2 pp	-21 pp
Defining and implementing performance	+9 pp	-22 pp
Reshaping the structure of the organization (people) to have better balance of skills	+4 pp	-18 pp

Base: Profitable: 57; Not profitable: 153

That said, most respondents report a significant distance to travel before fully operationalizing their Big Data efforts. Improving data quality and data governance is rated by 77% of respondents as the top-ranked priority for achieving operationalization, followed closely by improving data security (74%) and standardizing and improving consistency across the organization (69%).

"If businesses want to be sure to capture critical opportunities and leverage data to support operations, strategy, and customer experience, they need to govern data as they do other enterprise assets," says the head of analytics at a London-based, multinational consumer goods company. Data integration, data quality, master data management, meta-data management, data masking, data security, and data archiving - all play a role in good governance.

Those organizations that have already achieved profitability are more likely to have made progress in these areas as well. For example, 75% of profitable enterprises suggest they've made excellent or very good progress in improving data quality and data governance, compared to 50% overall. Similarly, 75% of the profitable companies rate their organizations as excellent or very good in the area of standardizing and improving consistency in processes, technology, metrics, and so on, compared to 47% across the entire survey base.

A clear way forward to substantive business value

Big Data holds the key to unlocking the insights-driven enterprise. But moving from a proof of concept to operationally embedded initiatives that deliver real business value requires an unwavering commitment to governing, integrating, relating, mastering and securing the data in data lakes.

The survey findings and in-depth interviews underscore best practices of those that excel in their efforts to leverage Big Data initiatives:

- **Define digital business objectives and design a strategy roadmap that harnesses new data assets to achieve these objectives.** "As a successful data science team, we have adopted a two-year plan and we are already working on the solutions to mitigate the issues that we feel can occur in the future," says the analytics chief at one UK company.
- **Appreciate and understand how value is derived from data.** A focus on business value needs to be embedded throughout the enterprise as the route to better-informed decisions, starting with top-level sponsorship. "It is crucial to have good leadership that not only foresees the potential problems we might come across, but also creates a congenial environment for Big Data research and innovation," says the head of Big Data at a German telecommunications company.
- **Blend the existing data landscape, seamlessly and stepwise, with parts of emerging Big Data platforms, providing built-in integration services.** "The true value in incorporating a Big Data initiative comes from integrating and, in some cases, aggregating with more conventional sources of data," says an information and analytics executive with an Italian utility company. "This often involves accounting for issues related to data governance, master data management, meta-data management, traceability, etc., that frequently require more than simply dumping data into a single repository - which could lead to a proverbial data swamp."
- **Create powerful, active data governance.** Make sure it does justice to a company culture that is gradually becoming more agile, yet pays special attention to the foundations of data security, privacy and quality.
- **Work towards a dynamic, data-driven culture.** As above, make sure that executives, department stakeholders and data management teams are involved at the earliest stages in developing, using and improving Big Data solutions. "If it comes from an IT committee, finance committee or analytics committee only, then it won't succeed," says the head of Big Data at a German consumer goods company.
- **Ultimately, establish a robust platform that delivers insights 'on demand' to business users who feel that they can rapidly access what they need, when they need it.** "There is a big load on the legacy systems, and they are dealing with large volumes of data, making the process quite slow," observes the director of IT operations at a US utility company. "We have heavily invested in getting the required infrastructure to support this process. One of the things that we have undertaken is to utilize automation to our advantage. We have made the process of data preparation automated to a large extent."

Forging a path to success and profitability

While still at a relatively early stage of adoption, the implementation of Big Data initiatives is beginning to pay off for early adopters. Organizations that profit from Big Data are significantly more likely to be agile and insights-driven. They modify their Big Data strategy quickly to meet changing business needs, as they build on early successes and evolve into insights-driven organizations.

Business engagement, data governance and standards - which are often some of the most difficult issues to manage as new technology paradigms take shape - appear to be key differentiators in success and profitability. For most enterprises, existing data governance will be a challenge in supporting emerging Big Data use cases. But operationalizing and ensuring compliance with data governance policies and standards can bridge yesterday's enterprise to the unique, emerging requirements of the insights-driven enterprise of tomorrow.

The survey results and best practices of those trendsetters who have achieved early results can help shorten the path to real business value in any Big Data initiative.

Common traits of profitable Big Data companies

Critical ingredients for achieving business value from Big Data

This study reveals some clear distinctions between those organizations that have already achieved profitability from their investments and those that haven't. It should come as no surprise that Big Data is more pervasive in organizations that have realized value from their early initiatives.

Don't let limitations hamper progress

Just under one half of organizations (49%) in the midst of ongoing, enterprise-wide Big Data projects are in the profitable category, compared to 18% that are not. For those running such projects on an ongoing basis at the departmental level or with particular groups, 25% have achieved profitability. Most notably, no companies achieved profitability while running limited projects in some groups or departments.

Those with profitable initiatives report that Big Data is 72% operationalized across their enterprise, compared to 49% that have yet to achieve profitability. The more advanced organizations are significantly more likely to emphasize collaboration, accelerated digital transformation, and improved employee retention as Big Data objectives.

Leverage legacy process and skills

Many organizations leverage and integrate legacy business intelligence (BI) and data management processes and expertise when launching enterprise-wide Big Data projects, to a great extent (11%) or to some extent (55%). Among those with profitable projects, the figures are substantially higher, with 91% able to leverage BI competencies, either to a great extent (28%) or to some extent (63%).

"We are on the right track as far as integration of existing IT legacy data with large-scale Big Data," says the CTO of a large, US-based technology company. "We strongly feel that the legacy data is as important as the new Big Data. We have placed a lot of attention in this area."

Only 4% of respondents are currently using Hadoop, the open source distributed computing environment that supports the low-cost storage and processing of Big Data. However, an additional 57% are in some stage of evaluating its use. "We don't have the necessary infrastructure for Hadoop, but we are working on it," says the director of IT governance for a French company. "We are really keen to use Hadoop for efficient functioning and governance."

Get management involved early

Top IT and data management executives are more likely to be spearheading Big Data strategy at organizations that have realized a profit from these initiatives, with COOs and CMOs also more engaged in the more successful enterprises. There's a strong correlation between COOs taking the lead on Big Data strategy and profitability; 33% in the profitable category are COO-led, compared to 14% unprofitable. This is the biggest differentiation among the more than 20 positions examined.

There's a size differential

Large-sized companies are more likely to have profitable Big Data initiatives, although those who are unprofitable are skewed heavily to those with fewer than 2,500 workers. However, smaller companies should note that respondents whose organizations have profited from Big Data are significantly more likely to place emphasis on collaboration, accelerated digital transformation, and improved employee retention as Big Data objectives.

Mind the gaps

In operationalizing Big Data, progressive organizations have closed many of the gaps between the importance rating of their priorities and the progress being achieved. Those that are not profitable are struggling to close large gaps. For example, companies that have achieved profitability with their projects have erased the difference between priority and progress in the area of security, while unprofitable projects have a looming 22% gap. Companies that have realized a profit, however, see data security as increasingly challenging, probably because they now feel they have more to lose from a security breach.

There appears to be a correlation between skills gap issues and the struggle to achieve profitability. Those with profitable projects say their in-house resources in seven key functions related to executing strategy do have the appropriate skills. They ranged from 74% to 88% as being extremely or very capable, compared to 42% to 51% among those with unprofitable projects.

Foster change through demonstrating value

Companies with the expertise and assertiveness to undertake more ambitious, enterprise-wide Big Data projects are seemingly able to make faster progress toward achieving value. It is incumbent on organizations striving for more tangible progress to be able to demonstrate to the business how leveraging data enables people, process, organization, and technology improvements for greater business value. Only in this way can they persuade executive leaders to make ongoing investments in data governance, Big Data and the data management technologies that enable it.

Regional distinctions on Big Data progress

Differences between the US and European approach to Big Data initiatives

While Big Data projects in the US are increasingly spearheaded by business leaders as opposed to IT, a greater percentage of European projects (30% compared to 24% of US) have already proven profitable. This may indicate that US firms have taken a more aggressive 'fail fast' approach, while European companies have been more conservative.

Some of the key regional differences include:

- Of those with regular ongoing Big Data projects, more European companies (36%) have focused on enterprise-wide impacts compared to US companies (21%). Conversely, more US companies (32% compared to 21%) have focused on some departments or groups.
- More European Big Data projects (30%) are profitable than those in the US (24%), but slightly more European initiatives (14%) are losing money than those in the US (9%).
- Improved decision-making is the number one expected outcome of Big Data initiatives in European enterprises, while improved collaboration and added reliability and security are top of mind for US respondents.
- IT budget restraints are viewed as the top challenge by 50% of US survey respondents, while data security concerns top the list for Europeans (42%).

Sector distinctions on Big Data progress

Differences by industry sector

There are many similarities in Big Data implementations across industry sectors, but there are also some notable distinctions.

Leadership

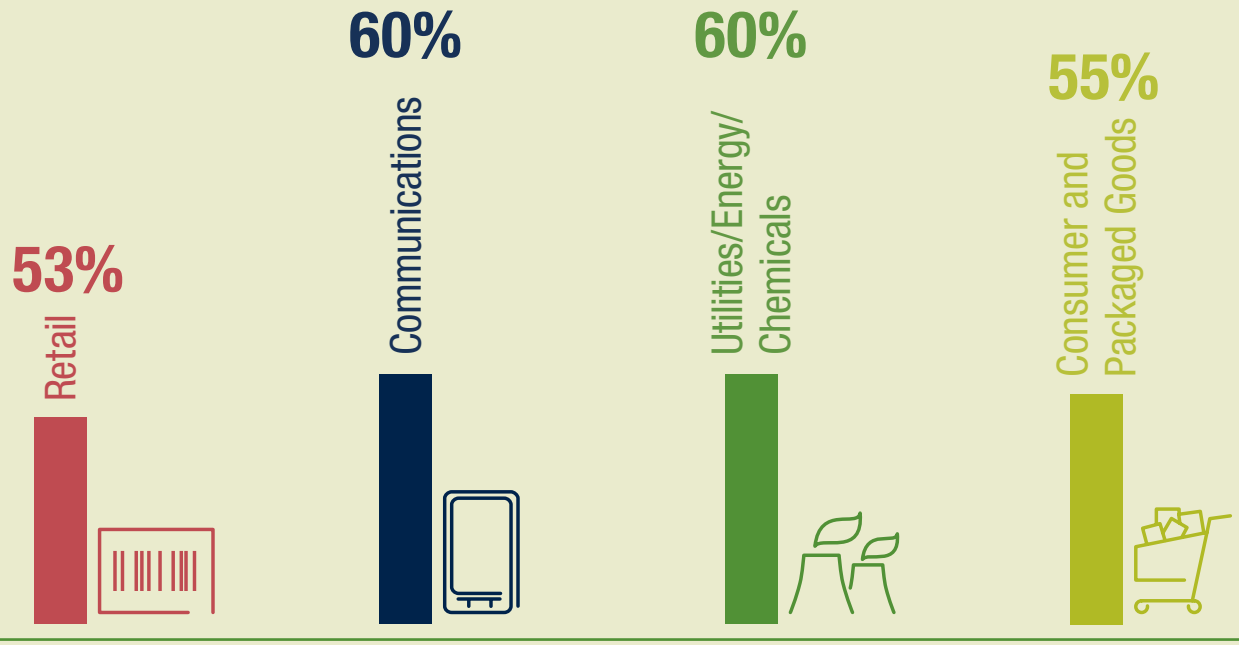
Across all industry sectors, the CIO is most often responsible for Big Data strategy. From there, it varies with different executives playing more prominent roles in different segments.

- Retail: The CFO followed by the CEO
- Communications: The CTO and Chief Data Officer
- Utilities/Energy/Chemicals: The COO
- Consumer and Packaged Goods: The VP of Data Services

Operationalization progress

When it comes to progress in operationalizing Big Data, there are only slight differences across industry sectors, suggesting there is a widespread recognition of the value of Big Data, see Figure 8 below.

Figure 8: Differences between industry sectors in operationalizing Big Data.



Top challenges:

Although all the sectors cite budget as a top challenge, each sector has its own burden to bare.

Retail

- IT budget constraints 43%
- Integration challenges 35%
- Lack of tech expertise 35%
- Corporate culture 35%

Communications

- IT budget constraints 50%
- Data security concerns 45%
- Integration challenges 39%
- Data silos 39%

Utilities/Energy/Chemicals

- Data security concerns 44%
- Data silos 44%
- IT budget constraints 40%
- Poor data quality 40%

Consumer and Packaged Goods

- IT budget constraints 61%
- Data security concerns 50%
- Integration challenges 44%

Top benefits achieved:

For benefits, the focus across the board is on business value. Though again, industry sectors have their own nuances.

Retail

- Increased revenue 35%
- Improved productivity 35%

Communications

- Improved decision making 50%
- Improved agility to react quickly to changes in the market and identify opportunity 42%

Utilities/Energy/Chemicals

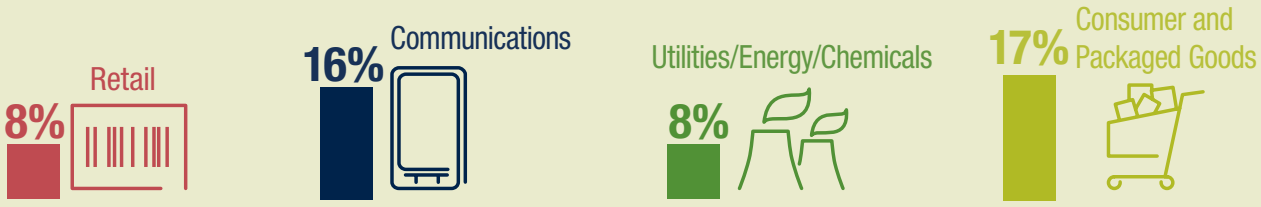
- Improved decision-making 36%
- Improved agility 32%
- Improved collaboration 32%
- Compliance readiness 32%

Consumer and Packaged Goods

- Improved collaboration 56%
- Improved decision-making 50%
- Improved customer satisfaction/retention 44%

Running or piloting Hadoop:

Interestingly, industry sectors place varying levels of importance on Hadoop as a tool for Big Data success.



About the Survey

IDG Research Services surveyed 210 executives - half from the US and half from the UK, Germany, France, Italy and the Netherlands - to assess the business value and benefits that enterprises are seeking and realizing from Big Data. Commissioned by Capgemini and Informatica, the survey sought insight into the top challenges these executives faced and the best practices for operationalizing their initiatives to realize that value. Data was gathered via an online survey. In addition, 20 in-depth qualitative interviews were also carried out.

All survey participants were with companies with greater than 1,000 employees, with an average employee base of 23,000. The industry sectors covered in the research spanned consumer goods, retail, communication, including media and information services, as well as utilities, energy and chemicals. IT management - from CIO to director level - made up 85% of the survey base, with data management positions representing the remaining 15%.

Find out more

Contact us today to learn more about how Informatica and Capgemini Big Data and Data Management solutions can help your enterprise generate true business value from your Big Data initiatives.

Axel Toonen
Informatica
Global Alliance Director
axel@informatica.com

Sri Kanthadai
Capgemini Insights & Data
Global Head of Data Management
Srikant.kanthadai@capgemini.com

Steve Jones
Capgemini Insights & Data
Global Head of Big Data
Steve.g.jones@capgemini.com

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