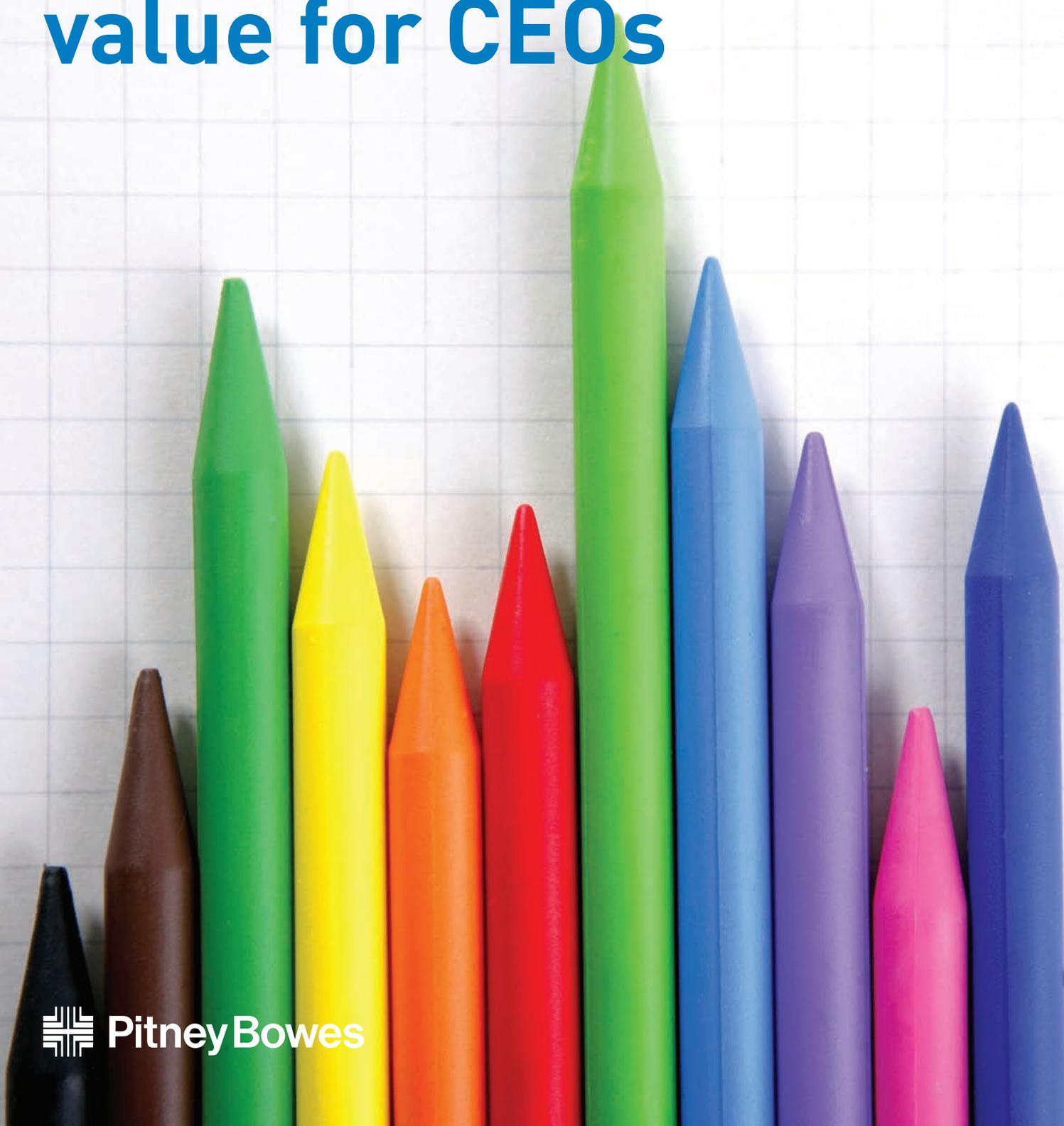# Position available: Data analytical talent unlocks business value for CEOs

Introduction

Businesses worldwide are eying Big Data as a way to drive efficiencies, improve customer relations, increase profitability and reduce risks. For those successful in tapping into Big Data, the potential upside is tremendous. However, across industries, the quest for accurate, actionable insights is fraught with challenges.

New powerful platforms, systems and software are emerging; but, organizational issues, including staffing and data-management shortfalls, are limiting the effectiveness of most Big Data efforts. In a recent Pitney Bowes Software survey, more than half of all respondents reported that people skills and resource shortages contribute to their Big Data challenges. Analysts agree: businesses must address these human resources challenges now—or watch them grow and further restrict value as the volume, velocity and variety of Big Data skyrockets.

This white paper draws on a Pitney Bowes survey to provide an understanding of the barriers businesses encounter in their quest for Big Data business value. It offers insight into the requirements for new and expanded analytical talent, the mandatory changes to organizational mindset, and some basic data best practices that will help businesses derive strong returns on their Big Data investments.

What is Big Data?

Big Data has been described as "the volume of data beyond which typical database software tools lack the ability to capture, store, manage, and analyze it". (McKinsey) Other factors as well add to the need for alternate tools, including the variety and velocity of the data, and increasing challenges in assessing its veracity. The bottom line: Big Data is defined by the challenges it poses, not by specific universal data types or metrics. In fact, Big Data analytics can encompass—and integrate—insights from all types of data, structured and unstructured; proprietary and non-; consumer, company, competitive, and more.

Big Data—what's the big deal?

However many "Vs" one uses to define Big Data challenges (volume, variety, velocity, veracity), the most important is Value. Big Data offers the opportunity to add new information to analyses. These can be analyses that draw from social media and web data to mobile data, to commercial and public data, to location data, to "enterprise dark data", (the vast supply of data that enterprises generate in the course of doing business but have yet to tap for insights). With the volume of data worldwide growing exponentially, the potential for new and valuable insights is massive.

McKinsey quantifies some of these opportunities:

> If US health care could use Big Data creatively and effectively to drive efficiency and quality, we estimate that the potential value from data in the sector could be more than $300 billion in value every year, two-thirds of which would be in the form of reducing national health care expenditures by about 8 percent. In the private sector, we estimate, for example, that a retailer using big data to the full has the potential to increase its operating margin by more than 60 percent. In the developed economies of Europe, we estimate that government administration could save more than Đ100 billion ($149 billion) in operational efficiency improvements alone by using big data. This estimate does not include Big Data levers that could reduce fraud, errors, and tax gaps (i.e., the gap between potential and actual tax revenue).
> - McKinsey Global Institute (MGI), June 2011[1]

The big deal is big dollars. However, these benefits hinge on the ability to use Big Data creatively and effectively. Of the senior executives, C-level, Vice Presidents and Presidents that participated in a Pitney Bowes Big Data survey, 80% report that getting value from their data is a challenge at their organization.
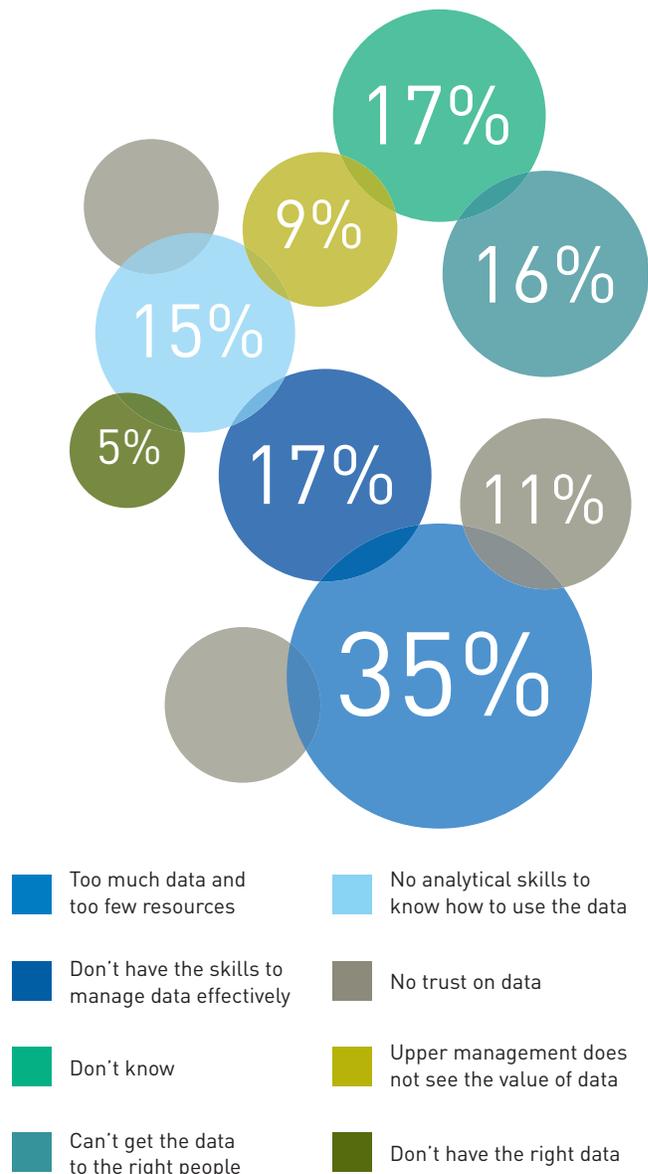
1 McKinsey Global Institute, Big data: The next frontier for innovation, competition, and productivity, June 2011

Help wanted: Big Data expertise

While businesses tend to think first about systems and software, a lack of analytics expertise has been identified as a key factor in garnering Big Data value. More than half of the respondents to the Pitney Bowes survey reported that people skills and resource shortages contribute to their Big Data challenges.
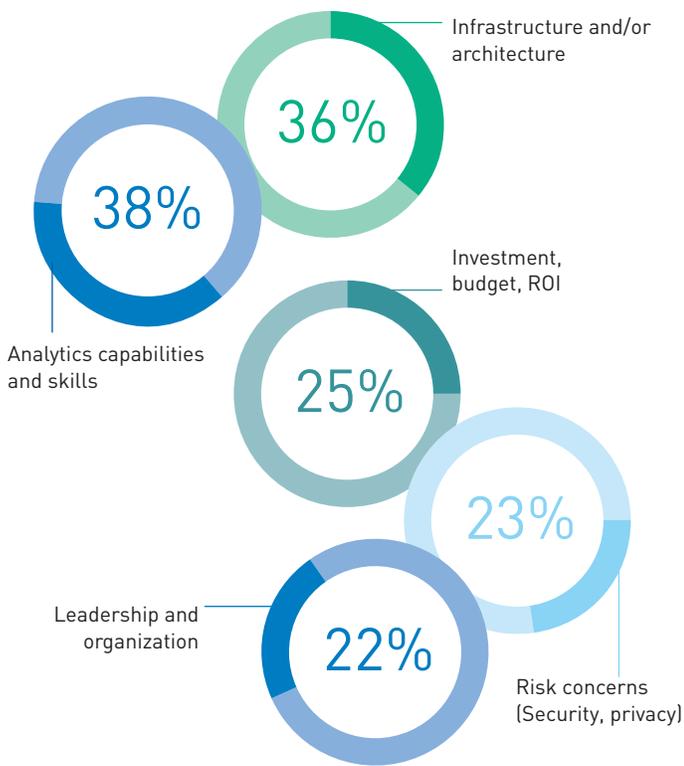
Biggest challenges to extracting value from data
Source: Pitney Bowes Big Data Study, Q4 2012

17%
9%
16%
15%
5%
17%
11%
35%

- ■ Too much data and too few resources
- ■ No analytical skills to know how to use the data
- ■ Don't have the skills to manage data effectively
- ■ No trust on data
- ■ Don't know
- ■ Upper management does not see the value of data
- ■ Can't get the data to the right people
- ■ Don't have the right data

Further, more than a third of respondents cited analytics capabilities and skills as a major inhibitor to benefiting from Big Data value.

Big data inhibitors

Infrastructure and/or architecture
36%

Analytics capabilities and skills
38%

Investment, budget, ROI
25%

Risk concerns (Security, privacy)
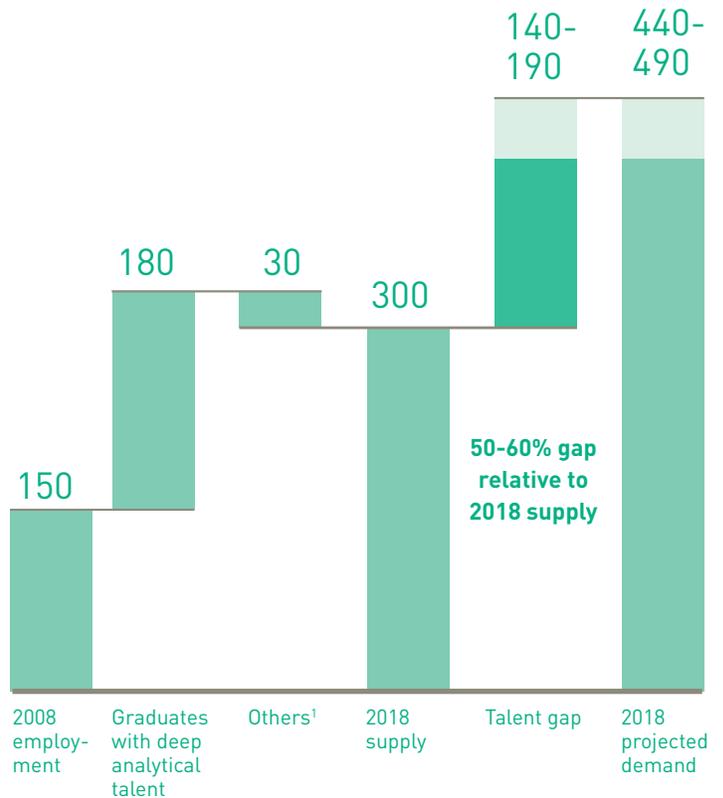23%

Leadership and organization
22%

This people challenge is not one that can be resolved simply. Businesses are already feeling the shortage, and that gap will continue to grow. McKinsey Global Institute predicts that demand for deep analytical talent in the United States could be 50 to 60 percent greater than its projected supply by 2018.

Businesses striving for Big Data value will benefit by ensuring that they have the right staffing. In light of the anticipated shortfall in talent, working quickly—and smartly—is essential. A shift in the types of talent businesses employ is required. This is not a matter of simply hiring more people.

Supply and demand of deep analytical talent by 2018
Thousand people

2008 employment	Graduates with deep analytical talent	Others[1]	2018 supply	Talent gap	2018 projected demand
150	180	30	300	140–190	440–490

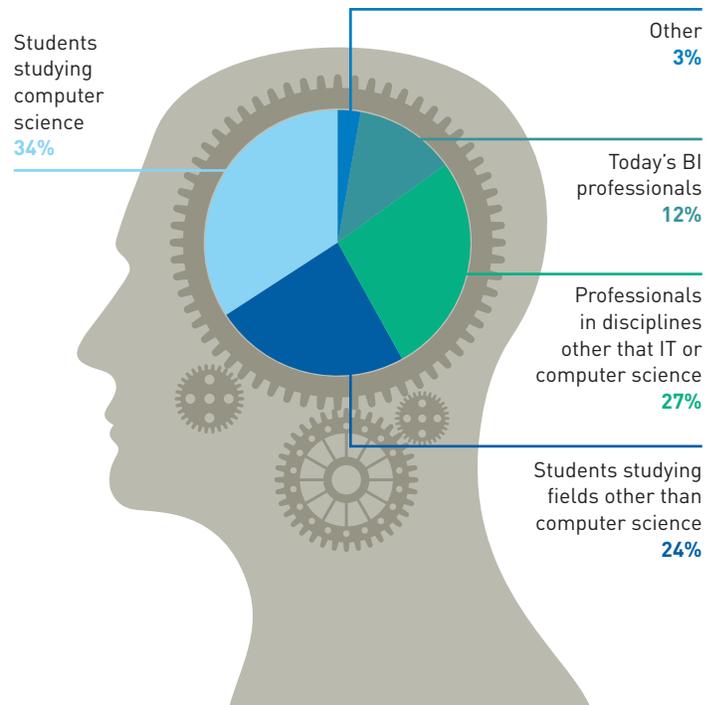50–60% gap relative to 2018 supply

Introducing the Data Scientists

A new job function, the Data Scientist, has sprung up to address Big Data needs. These are high-level analytical thinkers. They are adept at pulling together various and varied data sources structured and unstructured. They excel at finding patterns and stories within that data that offers insight to guide business decisions. Deemed "The sexiest job of the 21st century" in Harvard Business Review, the role of data scientist is complex. It requires the ability to define problems, devise analyses, build models and tools, and assess and communicate results. Data scientists must combine computation, creativity, facility with data, and the social and managerial insight to recognize the potential value and limitation of results.

Personnel with this powerful mix of left and right-brain skillsets are rare, and increasingly valuable. Businesses with Big Data aspirations will need to move swiftly to seek out staffing and/or outsource solutions that can fulfill this data scientist role. They must also consider how their organizations can make the most of their data scientist resources.

Where will these data scientists be found? A survey of the data scientist community[2] reveals that they will come from a range of sources, both professional and academic. (SEE CHART). Analysts concur: data science is not a field strictly for computer scientists, nor are many computer scientists suited for data science work. The demands are broader.

The best source of new data science talent

Students studying computer science **34%**

Other **3%**

Today's BI professionals **12%**

Professionals in disciplines other that IT or computer science **27%**

Students studying fields other than computer science **24%**

In the Financial Times this role is cast as one of "statistical soothsayer." The data scientist must balance the ability to access and work with masses of data (a computer skill), with the ability to honestly assess the value insights drawn from the data (both a business and statistical skill) and to convey those insights in a way that will persuade management to take valuable actions (a communications skill).

Just as their skillsets vary, so too will data scientists' backgrounds. Existing and potential data scientists are, most importantly scientists at heart, dedicated to devising ways to derive quantifiable, actionable insight. Businesses can look across disciplines in their quest to find this type of talent.

2 www.emc.com/collateral/about/news/emc-data-science-study-wp.pdf
3 www.ft.com/cms/s/0/af33c0d8-40dc-11e2-aafa-00144feabdc0.
   html#axzz2JNciGvyL

A new breed of management

Answers are often only as good as the questions that are asked; and, value is only derived from data when it is successfully applied. Engaging data scientists is just one of the personnel requirements for Big Data success. All across the C-Suite and in the upper ranks of management, personnel will need to hone new analytical skills to make Big Data efforts pay.

In one way, experts liken this shift to changing from analytical snapshots to ongoing conversations. The speed with which insights can be generated by Big Data can ultimately be near instantaneous, even real time; and, management across

business disciplines including marketing, customer service, risk management and more will need the analytical skills to be quick and agile in their response.

With the volume and immediacy of insights, analysts suggest that change-management skills will be particularly important for management in this new age. Managers, regardless of role, will need greater facility with the understanding, interpretation and application of analytics—and they will need to be able to quickly apply what they learn across their organizations to better serve consumers and clients.

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