



Big data talent challenge

McKinsey Global Institute

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Big data: The next frontier for innovation, competition, and productivity

OCTOBER 2011
McKinsey Quarterly

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Are you ready for the era of 'big data'?

Brad Brown, Michael Chui, and James Manyika

Radical customization, constant experimentation, and novel business models will be new hallmarks of a technologically enabled business.

The top managers found themselves competitor who profitable was promotions w being ground

When the era competitor's they had imag its ability to n and every sale experiments, suppliers' data records has a sure to sure making inform from the i it helps to a customers will

"Too many managers are not opening their eyes to this opportunity and understanding what big data can do to change the way they compete."

The professor
Erik Brynjolfsson

Erik Brynjolfsson is the Schaefer Family Professor of Management Science at the Massachusetts Institute of Technology Sloan School of Management, director of the MIT Center for Digital Business, and one of the world's leading researchers on how IT affects productivity.

The data advantage
More great revelations in cases. We have had a few years, that has allowed b what their customers are their employees are doing most in creating new opp

NOVEMBER 2011
McKinsey Quarterly

Inside P&G's digital revolution

CEO Robert McDonald wants to make the consumer goods giant the world's most technologically enabled company. Here's how.

Robert McDonald is a CEO on a mission: to make Procter & Gamble the most technologically enabled business in the world. To get there, the 34-year company veteran and former US Army captain is embracing the large-scale application of digital technology and advanced analytics across every aspect of P&G's operations and activities—from the way the consumer goods giant creates molecules to its R&D lab to how it maintains relationships with retailers, manufactures products, builds brands, and interacts with consumers. The prize: faster innovation, higher productivity, lower costs, and the promise of faster growth.

McKinsey's Michael Chui and Thomas Fleming recently sat down with McDonald at P&G's Cincinnati headquarters to talk about the nature and progress of the company's digitalization initiative, as well as its implications for P&G's people and culture. An edited summary of the interview follows.

➔ In the accompanying article, "My leadership philosophy," McDonald reflects on how his experience as a US Army reformer changed his approach to leading P&G.

"If you can understand consumer behavior and get your hands around as much behavioral data as possible to better guide product decision making then every penny you can eke out is increasing your margins and allowing you to invest more."



The data entrepreneur
Jeff Hammerbacher

Before co-founding Silicon Valley software start-up Facebook in 2004, an age of 25, Jeff Hammerbacher was a quantitative analyst on Wall Street and at Facebook's first employees.

The open-sou...
I was...
position was to...
user behavior. We...
some analysis...
paradox? We real...

"Take the...
platform. A...
product to...

"I can have all the data I want to have—but I still have to communicate it to our players. It has to get into their minds. And they have to utilize it."



The coach
Brad Stevens

Brad Stevens is head coach of the Butler University men's basketball team.

Coach Stevens holds the National Collegiate Athletic Association (NCAA) record for most games won in the first four years as a Division I head basketball coach. Among those wins was a series of thrilling NCAA tournament games that brought the Butler University team to the championship final in 2001 and 2003.

Before joining Butler, which is located in Indianapolis, Indiana, and has just 4,000 students, he was a marketing associate at the global pharmaceutical group Eli Lilly. In the following interview, Stevens explains how focusing on the numbers has helped improve his team's game.

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BUSINESS TECHNOLOGY OFFICE

Seizing the potential of 'big data'

Jacques Burgin, John Livingston, and Sam Marwan

Companies are learning to use large-scale data gathering and analytics to shape strategy. Their experiences highlight the principles—and potential—of big data.

Large-scale data gathering and analysis are gaining momentum as a new frontier of competitive differentiation. While the names of companies such as Amazon.com, Google, and Netflix grab the headlines in the space, other companies are quietly making progress.

In fact, companies in industries ranging from pharmaceuticals to retailing to telecommunications to insurance have begun moving forward with big data strategies in recent months. Together, the activities of those companies herald a new strategic approach to big data and shed light on the challenges CEOs and other senior executives face as they work to master the organizational maritas that can prevent big data initiatives from taking root. From these experiences, we have distilled key principles that we hope will help CEOs and other corporate leaders as they try to seize the potential of big data.

Size the opportunities and threats

Many big data strategies arise when executives feel an urgent need to respond to a threat or see a chance to attack and disrupt an industry's value pools. At AstraZeneca, for example, researchers recognized the power that real-world data such as medical claims gave the pharmaceutical company's customers in evaluating the cost effectiveness of its products for more, said scientist AstraZeneca's "big data" partnership," see page 55.

In the case of a retailer we studied, big data was part of a difficult battle for market share. The company's strategy had long been predicated on studying the moves of an all-star big box Wal-Mart, yet now a different online player was draining the retailer's revenues and denting its margins. At the heart of the threat was the competitor's ability to gather



US health care

- \$300 billion value per year
- ~0.7 percent annual productivity growth



US retail

- 60+% increase in net margin possible
- 0.5–1.0 percent annual productivity growth



Europe public sector administration

- €250 billion value per year
- ~0.5 percent annual productivity growth



Manufacturing

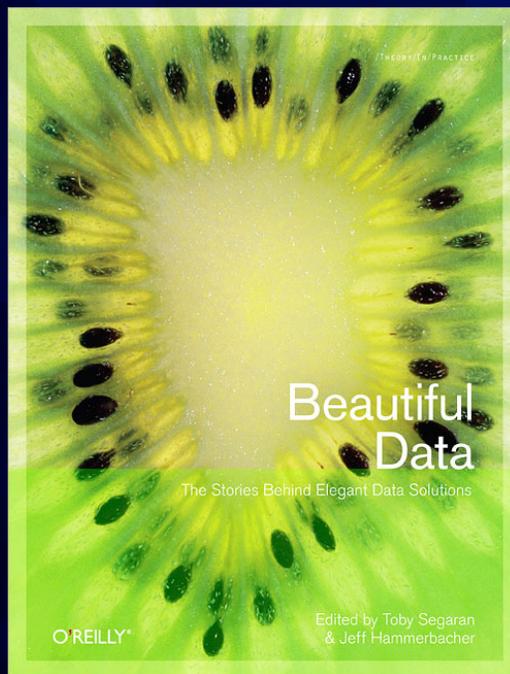
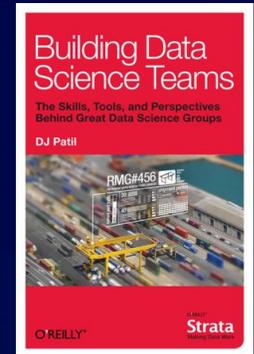
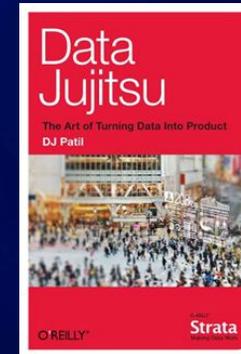
- Up to 50 percent decrease in product development, assembly costs
- Up to 7% reduction in working capital



Global personal location data

- \$100 billion+ revenue for service providers
- Up to \$700 billion value to end users

“I keep saying that the sexy job in the next 10 years will be statisticians,” said Hal Varian, chief economist at Google. “And I’m not kidding.”



Potential gap by 2018

Talent needed

Deep analytical

- Actuaries
- Statisticians
- Machine learning specialists

~150K

Big data savvy

- Business managers
- Financial analysts
- Engineers

~1.5M

Supporting technology

- Computer programmers
- Computer software engineers
- Computer system analysts

~300K

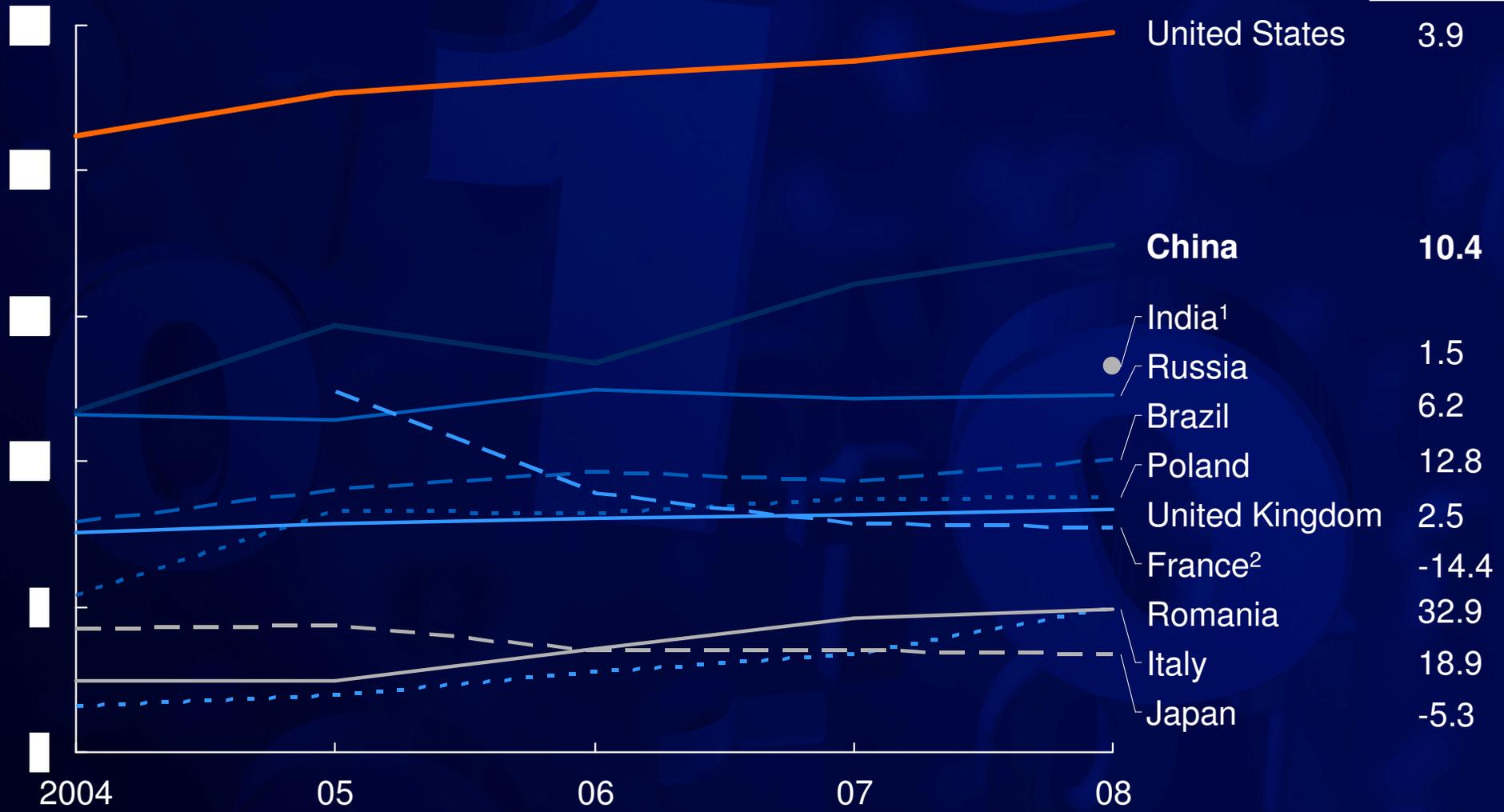


The United States graduates the largest number of people with deep analytical training

Top ten in the supply of deep analytical talent

Thousand people

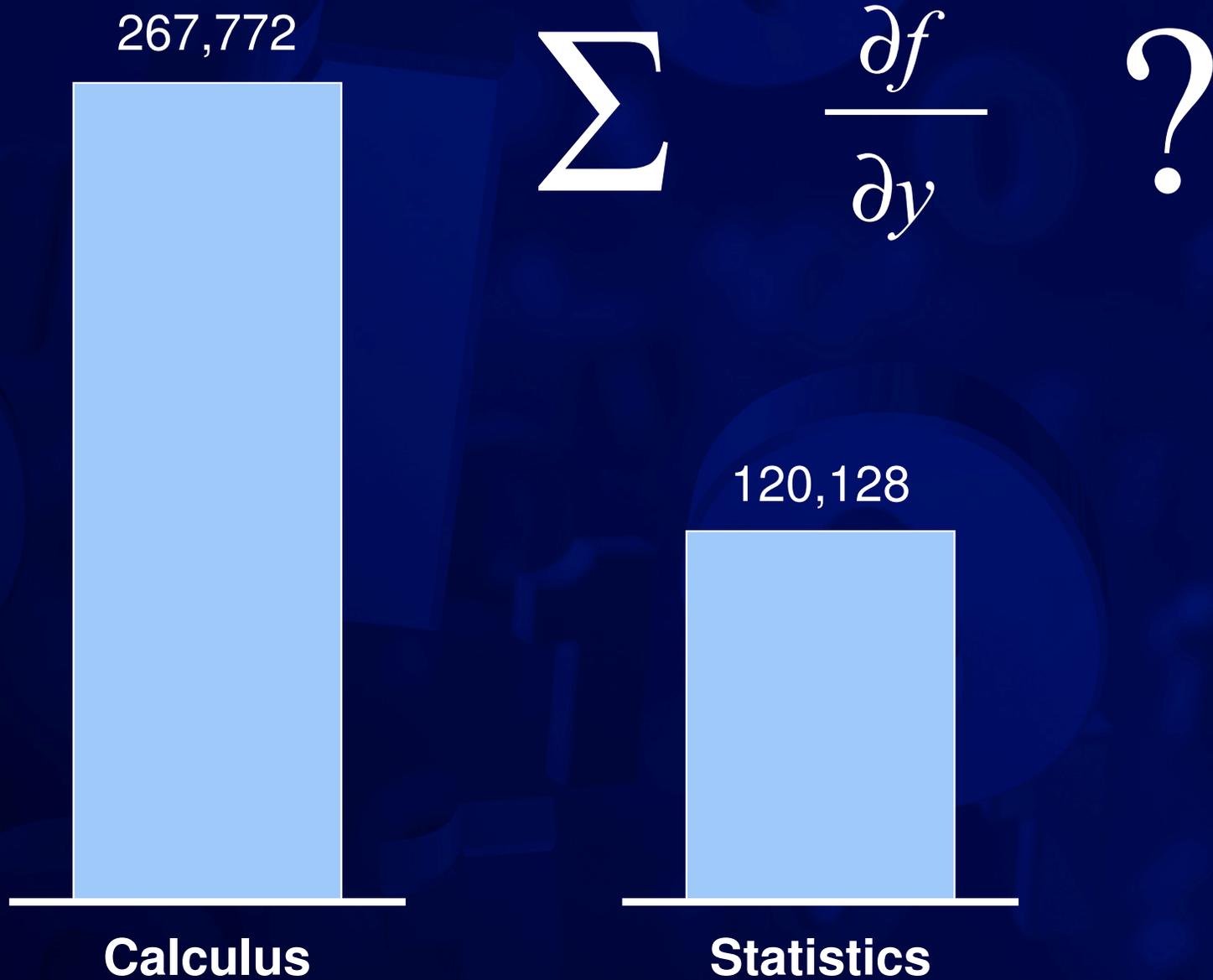
Compound annual growth rate, 2004–08, %



¹ India ranked third in 2008 with 13,270 people with deep analytical skills but India does not have a time series for these data.
² For France, the compound annual growth rate is for 2005 and 2008 because of data availability.

2011 Advanced Placement tests taken

US college placement test



Can statistics win and/or predict elections?

the Atlantic

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When the Nerds Go Marching In

By Alexis Madrigal

How a dream team of engineers from Facebook, Twitter, and Google built the software that drove Barack Obama's reelection



IHT Rendezvous

POLITICS | NOVEMBER 8, 2012, 12:00 AM | 4 Comments

The Rise of the Quants in Political Prognostication

By ERIC PFANNER

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As President Barack Obama celebrated re-election, number-crunching geeks everywhere could revel in redemption.

For months, political pundits and reporters said that the race between Mr. Obama and Mitt Romney was too close to call.

Not so, insisted a new breed of political analysts who rejected intuition and relied instead on data — vast amounts of it, run through computer algorithms — to arrive at their election predictions. Many of these models showed that Mr. Obama would win with relative ease. The forecasts drew rebukes from



Robert Gauldin

For more information . . .



Download a full copy of the MGI report, “Big data: The next frontier for innovation, competition and productivity:”

<http://www.mckinsey.com/insights/mgi>

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