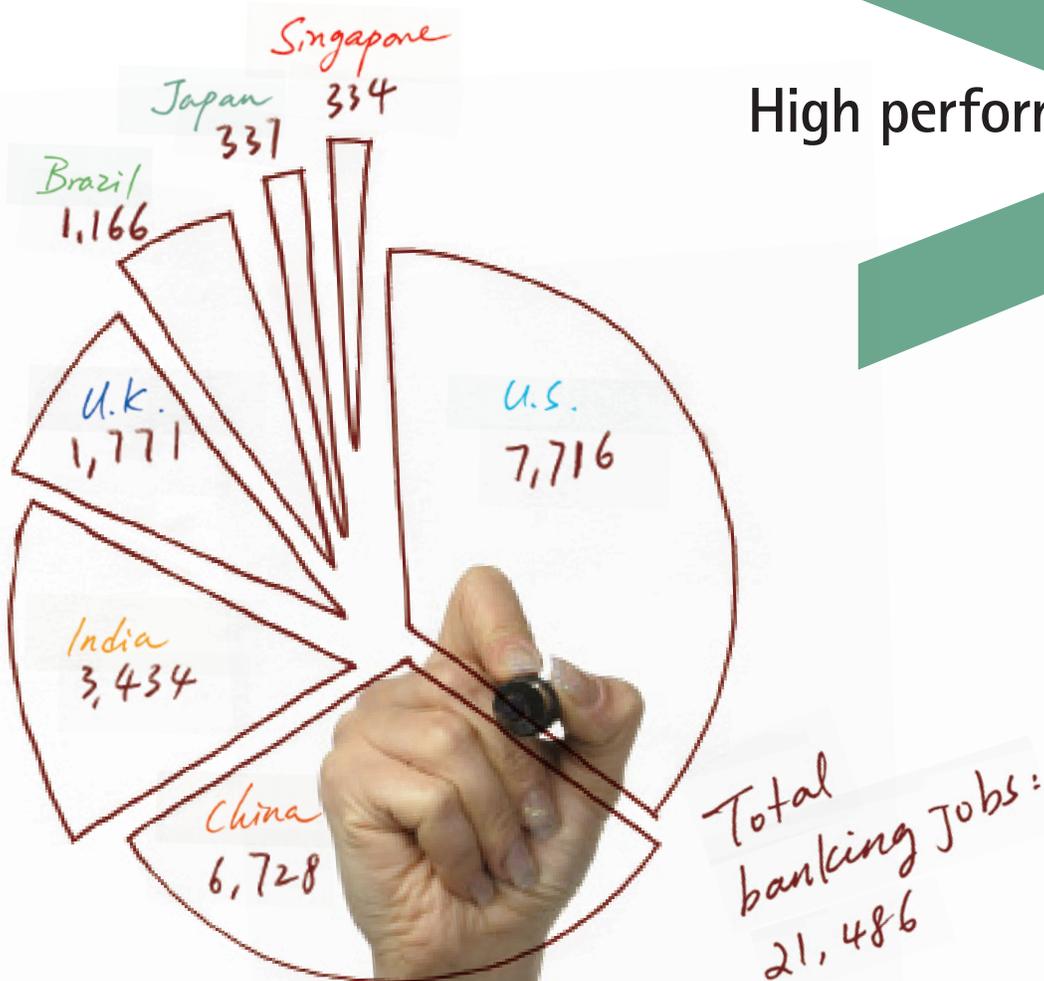# The looming global analytics talent mismatch in banking

By Elizabeth Craig, Charlene Hou and Brian F. McCarthy

January 2013

High performance. Delivered.

Singapore 334

Japan 337

Brazil 1,166

U.K. 1,771

U.S. 7,716

India 3,434

China 6,728

Total banking jobs: 21,486

While the banking industry powerhouses in mature markets face increasing pressure on numerous fronts, emerging markets offer great potential. Success in this new global landscape will require deep insight into customer behaviors, astute management of risk and reinvention of the banking business model.

All of this will be possible only through advanced analytics. But as new research from the Accenture Institute for High Performance demonstrates, when it comes to analytics talent—people with the ability to use statistics, quantitative analysis and information-modeling techniques to make business decisions—a critical mismatch between supply and demand is looming.

A transformed competitive landscape

The banking industry faces a whole new competitive landscape in the aftermath of the financial crisis of 2008. Tighter economic conditions, globalization, and technological advances are just some of the factors forcing change and presenting new opportunities for companies. Meanwhile, customers—empowered by ready access to a world of information, goods and services —want quick, affordable, convenient and personal service. Shareholders are demanding that banks address their costs with real structural improvements. And tougher regulations are imposing more stringent requirements on banks' financial reporting and compliance procedures.[1]

But even in the face of such challenges, big opportunities lie ahead for banks that manage to harness them.[2] Aging of the world's population will spur demand for financial products and services that cater to the needs of a long lifespan, such as tailored equity release products. Technological innovations in information and communication will give these companies new ways to differentiate themselves in online banking, mobility, cloud computing, ATM technology, digitization of money and analytics. Rapid economic growth in emerging markets will fuel demand from newly empowered consumers for wealth management, retail banking, and mortgage and investment services.

Banks can navigate challenges and opportunities alike by applying advanced analytics across their entire business model. Through predictive analytics, banks can generate the insight necessary to help build more profitable customer relationships, manage and mitigate risks more effectively, and transform business strategies.[3] In this research, we focus on analytics in banks' deposit and lending areas. These activities have long relied on data analysis, and the use of real-time, predictive analytics is now changing the game.

To build a sophisticated analytics capability, banks will need to invest along several important dimensions: technology infrastructure, processes, governance, people and culture. They must integrate large volumes of data across organization silos to develop an enterprise-wide analytics capability. They must weave analytics tightly into key business processes throughout the organization. Perhaps most importantly, they must have people who can translate untapped data potential into business results.

Banking institutions are in the hunt for people with the scarce quantitative and technical skills—as well as the business savvy—required to model and generate insights from their data. They need people with the skills and curiosity to slog through volumes of messy, unstructured data—from social media, for example—to find new opportunities to engage customers and mitigate risks. They need people with the imagination and ability to leverage customer information gathered through mobile devices, such as mobile transactions and geo-localization. They need people who can use customer intelligence, micro-segmentation and predictive modeling to determine the most effective basket of products that would maximize profit while minimizing risk.

Banking institutions are in the hunt for people with the scarce quantitative and technical skills—as well as the business savvy—required to model and generate insights from their data.

In this report, we discuss how advanced analytics can provide banks with powerful new tools for insight-driven decision making in their main customer businesses However, the news is not all good. We also describe how a looming shortfall of analytics talent presents a major hurdle for banks to overcome.

Three critical imperatives

It's hardly new wisdom that advantage in the new competitive landscape will come from gaining more profitable customers, retaining them, selling more products to them and keeping risks and costs low. What's new is the immense potential and necessity of advanced analytics to achieve these objectives. But that's not all. High performing banks won't simply evolve their customer and risk management strategies. They will also use analytic insights to design radical new business models.

Winning loyal, profitable customers

A bank's business hinges on having loyal, profitable customers. However, a recent Accenture survey of US banking customers suggests that as much as 30 percent of a typical bank's customer base today is "in play," meaning customers may reduce the number of services they use or switch banks altogether.[4] Customers are shopping around more and have grown increasingly price sensitive, behaviors suggesting erosion of brand loyalty and trust. This fundamental shift in power from the bank to the customer has already eaten into banking profits. The situation will only be exacerbated as stricter consumer-protection regulations come into play, new technologies offer more diverse banking channels and new entrants provide a richer choice of products and services.[5]

For all these reasons, banks need to become more customer-centric. This will constitute a significant departure from the product-centric approach they have taken in the past. It will require a comprehensive view of the customer—including an understanding of each customer segment's behaviors and preferences and all the products and services a bank offers that customer, plus the profitability of that customer to the bank, today and throughout the customer's lifetime. Through analytics, banks can strengthen their ability to segment customers; create more relevant products and services; optimize features, interaction and pricing; mobilize solutions through the right mix of channels; and establish better metrics to truly gauge impact on loyalty, satisfaction, lifetime value and growth.

Infusing rigor into risk management

The 2008 near-collapse of the banking sector in some countries and loss of billions of dollars are all too real reminders of the difficulty of anticipating compounded risks. How did this happen, if sophisticated risk modeling have always constituted the heart of risk management? Financial services companies have generally managed risk in siloed parts of the enterprise as a compliance issue rather than as a core capability. Instead, banks should measure and manage their total enterprise risk exposure *across* functions, credit, liquidity, market and other risk factors, and embed risk management into performance evaluation and compensation.

What banks need is the ability to keep a constant pulse on their business, because conditions change so rapidly. Sophisticated analytics can also help banks master liquidity positions and risk exposures—to make rapid and effective adjustments as well as minimize losses while maximizing opportunities.[6] Comprehensive risk methodologies can enable banks to process and analyze information across *all* parts of the enterprise and integrate complex risk factors in innovative ways. Then banks can better manage their performance, not to mention respond to the massive increase in data and reporting requirements that regulators are imposing on banks, particularly in the US and Europe.

Revolutionizing business models

The potential of analytics doesn't stop with enhancing existing strategies. Leaders in analytics capability will use data insights to design innovative new business models that could change how financial services are provided and how customers use them. New business models built around the extensive use of analytics can help retail banks address changing customer behaviors and compete for the critical payments business against new entrants such as retailers, technology companies, mobile operators and pure-play start-ups.[7] Pervasive analytics could allow banks to more effectively understand and meet customers' needs and engage with them through multiple channels, taking personal channel preferences into consideration.

Analytics talent's pivotal role in banking

In the banking industry, there is a broad and diverse group of employees who work with data on a regular basis. But not everyone who analyzes data is analytics talent. Many credit analysts, for example, evaluate borrower creditworthiness through financial statement analysis. And there are plenty of financial risk analysts in banks whose job is to research, analyze and manage the impact of market disruptions or new legislation and other sources of risk.

Analytics talent is different. Their job is to create and use sophisticated analytical applications to extract data-driven insights that can be used to make better strategic, operational and tactical decisions and improve business outcomes. Banks need three types of analytics talent: **analytics scientists**, who construct the complex models to extract insights from data; **analytics experts**, who apply these statistical models to business problems; and **analytics specialists** who take the output of analytics models and algorithms, combine that with their specialized business knowledge to generate insights that can be acted on by the rest of the organization. (For examples of each type of analytics talent, see Help wanted: Analytics talent.)

Finding this talent in the market is a growing challenge as more and more companies in virtually every industry join the hunt for these scarce skills. Given this context, it is becoming increasingly important that banks have a good understanding of analytics talent demand and supply to inform their skills and sourcing strategies. Two questions are important: Where will they have analytics jobs to fill? And will there be enough analytics talent available?

The chief analytics officer

Banks seeking to become more analytical need leaders who recognize the importance of developing cross-functional analytics capabilities and can guide the organization toward a more analytical mindset.

Banks have long employed a sizeable number of analysts in such domains as risk, finance, customer valuation and compliance. But owing to infrastructure limitations, siloed organizations and lax modeling practices, these functions cannot deliver the analytics insights that banks now require to remain competitive.

An emerging trend is the appointment of a chief data scientist or chief analytics officer to build cross-functional analytics capabilities that integrate finance, risk, marketing and customer analytics. These leaders help foster an analytics culture within the organization. They also enable different teams to share collected data and analytics insights with one another and throughout the entire company. They know how analytics can inform business decisions across risk, operations, finance, marketing and sales. In addition, they can work horizontally across the organization, assembling teams that comprise functional, analytic and data skills to solve interesting problems in a more integrated fashion.

Help wanted: Analytics talent

Analytics scientist

Advanced Analytics VP

Job description:
- Lead decision management team to deliver robust and contemporary analytical solutions to propel customer-centric, profitable growth.
- Use advanced quantitative methods to model consumer experience in the digital world, customer mindset, loyalty, choice and brand equity.

Requirements:
- PhD/Post Doc from a renowned institution in machine learning, statistics, marketing science, operations research, econometrics, stochastic finance, distributed and parallel computing, or digital media analytics, etc., and publications in reputed journals or conferences.
- 6-9 years of post-PhD experience in the field of advanced quantitative and data mining techniques and tools (SAS and/or other modeling packages like R, Matlab, Mathematica, ILOG etc).
- Passion and deep technical competency in advanced statistical methods (multivariate, discrete choice, conjoint based analysis, Stochastic models, etc), model building, machine learning (Bayesian methods, reinforcement learning) and operations research (queuing, integer programming, dynamic programming), etc.
- Ability to translate and articulate technical thoughts and ideas to peers and senior management.

Analytics expert

Decision Management Business Analysis Manager

Job description:
- Deliver data-driven analytics solutions to improve and enhance new customer solicitation and existing customer lifecycle management on personal loan products.
- Develop, maintain and enhance response model, profit models and marketing segmentation schemes and tools.
- Explore new data sources and continually look for new concepts/ideas to increase the effectiveness of personal loan marketing campaigns.

Requirements:
- MA/MS
- Ability to multitask in a fast-paced environment and lead projects with minimal guidance.
- Ability to build solid cross-functional partnerships and relationships to execute business initiatives.
- Proficiency in SAS/SQL programming, robust understanding of statistical concepts and advanced spreadsheet skills.
- Excellent presentation and communication skills.

Analytics specialist

Risk MIS and Scoring Analyst

Job description:
- Support the risk MIS & analytics team, which designs and generates appropriate management information systems for tracking portfolio performance vs. benchmarks utilizing data warehouse and advanced statistical tools such as SAS and Macro SQL.
- Extract data, investigate data integrity, perform data and portfolio analyses, and present insights to senior management.

Requirements:
- BA/BS
- A highly analytical person, with excellence in MIS skills (SAS knowledge, programming/coding experience would be a plus).
- Familiar with database environment and excellent problem solving.

Analytics jobs in the global banking industry

The Accenture Institute for High Performance undertook a yearlong study to gather and distill data on job creation and skills availability in the market for analytics talent to determine whether companies will be able to find the talent they need, where they need it.[8] As part of our research, we assessed the size of banks' dedicated analytics groups in key analytics areas. We talked to retail banks, commercial banks, investment banks and central banks—focusing only on their deposit and lending activities. Areas where analytics is used include risk, fraud, credit risk and credit scoring, RFM analytics, reserve analytics, spend analytics, CRM, transactions, operations, marketing, channel management, compliance, prospecting and collections. Big banks employ thousands of people we would classify as analytics talent—the largest have more than 3,000 each. After gathering this information, we then forecasted the number of analytics jobs banks will add in the areas we examined between 2010 and 2015, in seven countries: the US, UK, Singapore, Japan, India, China and Brazil.
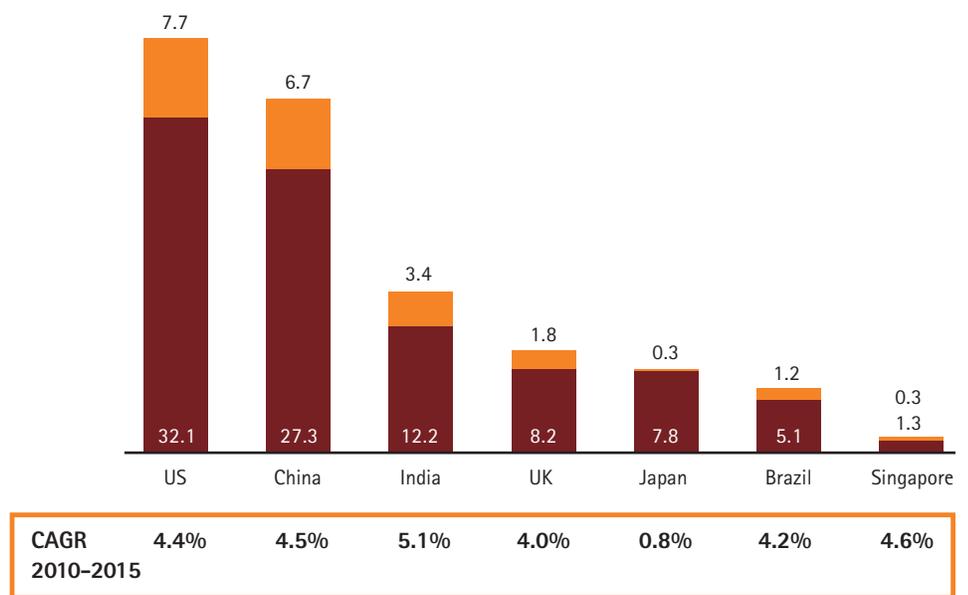
The global footprint

In 2010, the banking industry had 94,000 analytics scientists, experts and specialists working across the seven countries in deposits and lending. (If we had included the analytics talent working in other functions common to many banks, such as payments and wealth management, we expect the total headcount would exceed 120,000 analysts.)

Given the value of total assets in the US banking industry, perhaps it's not surprising that banks in the US employ more analysts than in any other country. (See Figure 1.)

However, banks in China are not far behind. In fact, there is more analytics talent working in banks within China than in the UK and Japan, even though the banking industries in the latter countries hold more in total assets. The same is true for India. This situation stems from the fact that there are more banks, both domestic and foreign, in India and China. Furthermore, many mature-market multinationals conduct their data analyses from units in those countries.

Figure 1: Analytics jobs in banking (thousands), 2010–2015

Most new jobs will be created in the US and China, where the bulk of analytics jobs are already located.

	US	China	India	UK	Japan	Brazil	Singapore
Additional analytics jobs by 2015	7.7	6.7	3.4	1.8	0.3	1.2	0.3
Analytics jobs in 2010	32.1	27.3	12.2	8.2	7.8	5.1	1.3
CAGR 2010–2015	4.4%	4.5%	5.1%	4.0%	0.8%	4.2%	4.6%

■ Analytics jobs in 2010
■ Additional analytics jobs by 2015

Source: Accenture Institute for High Performance analysis.

The banking industry will add about
21,500 new analytics jobs across the seven
countries we studied, reflecting an overall
expansion of 23 percent from 2010 to
2015. Growth in analytics jobs will contrast
sharply with overall job growth in the
US, the UK and Japan. In those countries,
overall employment growth will be less
than 1 percent annually, with growth in
Japan as low as 0.2 percent. Banks will add
analytics jobs more than four times faster.
(See Figure 2.)

Figure 2: Growth in analytics jobs in banking and overall national
employment, 2010–2015

In the US, UK and Japan, growth in analytics jobs will far outpace
overall employment growth.

Bubble size corresponds to employment in the banking industry (2010)
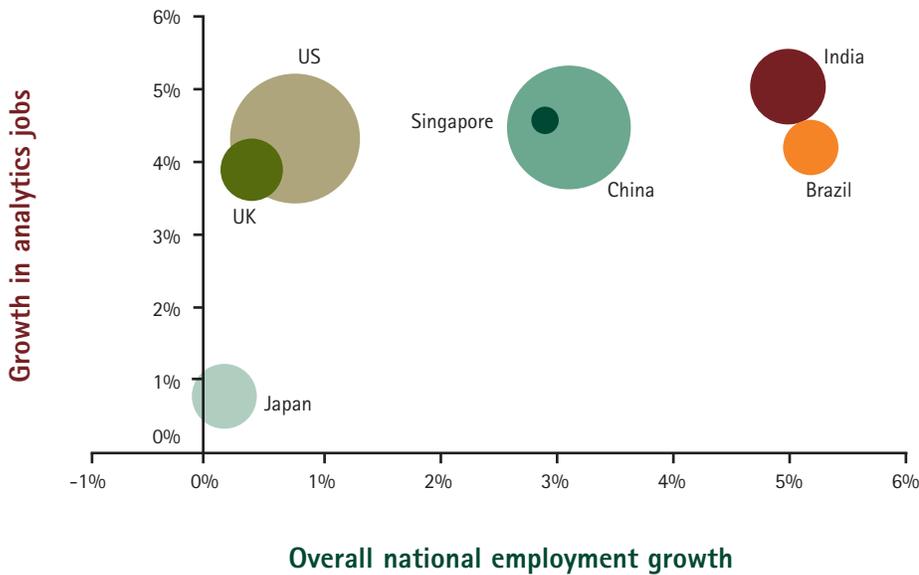
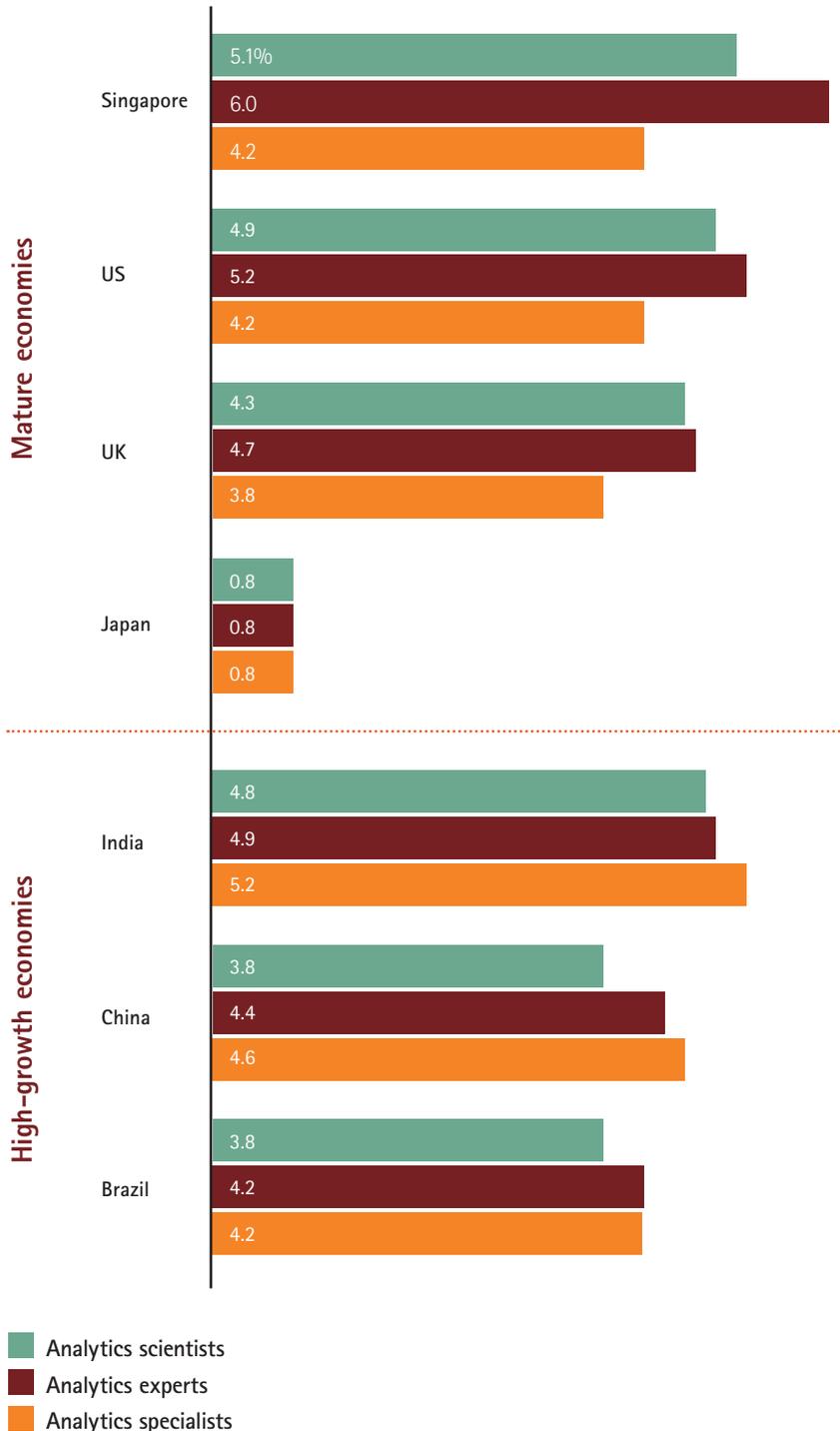Source: Accenture Institute for High Performance analysis.

New jobs by type of analytics talent

Comparing the mature economies (US, UK, Japan and Singapore) and the high-growth economies (India, China and Brazil) in our study, we see a contrast in job growth by type of analytics talent. (See Figure 3.) Banks in Singapore, the US and the UK will add analytics expert jobs faster than scientist and specialist jobs. This reflects the pressing need for people who can show where analytics can be used to improve business performance, targeting the kinds of decisions companies need to make differently to drive results. The increased demand for analytics experts in those countries also stems from the fact that experts often are tasked with managing an offshore analytics workforce.

Of course, analytics scientists are also vital to these companies. However, jobs will be added at a somewhat slower pace everywhere. Improved technology increasingly enables analytics experts to do more and more of the complex modeling and analysis that in the past had required analytics scientists' advanced technical skills.

Figure 3: Growth by analytics job type in banking, 2010–2015

Developed countries will see the fastest growth in the number of analytics experts. In China and India, analytics specialist jobs will grow fastest.

Mature economies

Singapore
- 5.1%
- 6.0
- 4.2

US
- 4.9
- 5.2
- 4.2

UK
- 4.3
- 4.7
- 3.8

Japan
- 0.8
- 0.8
- 0.8

High-growth economies

India
- 4.8
- 4.9
- 5.2

China
- 3.8
- 4.4
- 4.6

Brazil
- 3.8
- 4.2
- 4.2

■ Analytics scientists
■ Analytics experts
■ Analytics specialists

Source: Accenture Institute for High Performance analysis.

Banks in India, China and Brazil are adding analytics specialist jobs fastest. The perceived abundance of qualified graduates attracts multinational banks to invest in basic analytics talent in these countries. In addition, domestic companies are capitalizing on the ample supply of specialists to expand their analytics workforces and build their analytics capabilities. Banks are expanding their expert and scientist ranks in those countries as well, because mature- and emerging-market banks alike will be refining their analytics capabilities to exploit new business opportunities arising in emerging markets.

Banks in Singapore will see faster growth than any other country in the more advanced analytics scientist and expert roles because the country is becoming an innovation hub for analytics and a regional hub for financial services.

Across the countries studied, banks will create over 1,100 new analytics scientist jobs between 2010 and 2015, to reach 6,200. Nearly half of the new scientist jobs will be in the US as banks continue to seek to hire more and more advanced analytics talent there than in most other countries. (See Figure 4.) Banks will also create the most of their 3,600 new analytics expert jobs in the US. (See Figure 5.)

When it comes to job creation for analytics specialists, banks in the US still lead the way, but not as much. Only a third of the 16,700 new analytics specialist jobs will be located there. Banks in China and India will add half of the analytics specialist jobs created in the seven countries studied. (See Figure 6.)

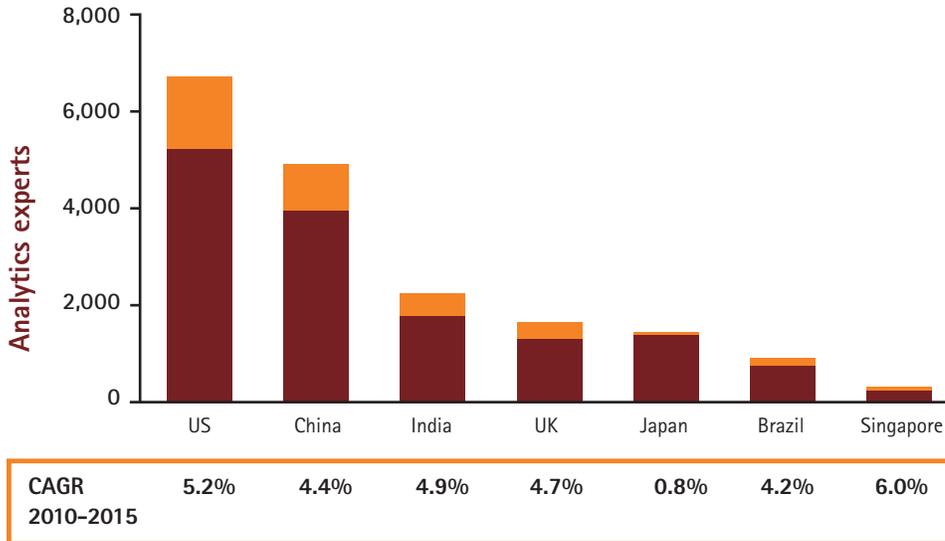## Figure 4: Analytics scientist jobs in banking, 2010–2015

More than 500 of the new analytics scientist jobs will be in the US. Of the remaining new jobs, two-thirds will be in China and India.

| CAGR 2010–2015 | 4.9% | 3.8% | 4.8% | 4.3% | 0.8% | 3.8% | 5.1% |

■ Analytics jobs in 2010
■ Additional analytics jobs by 2015
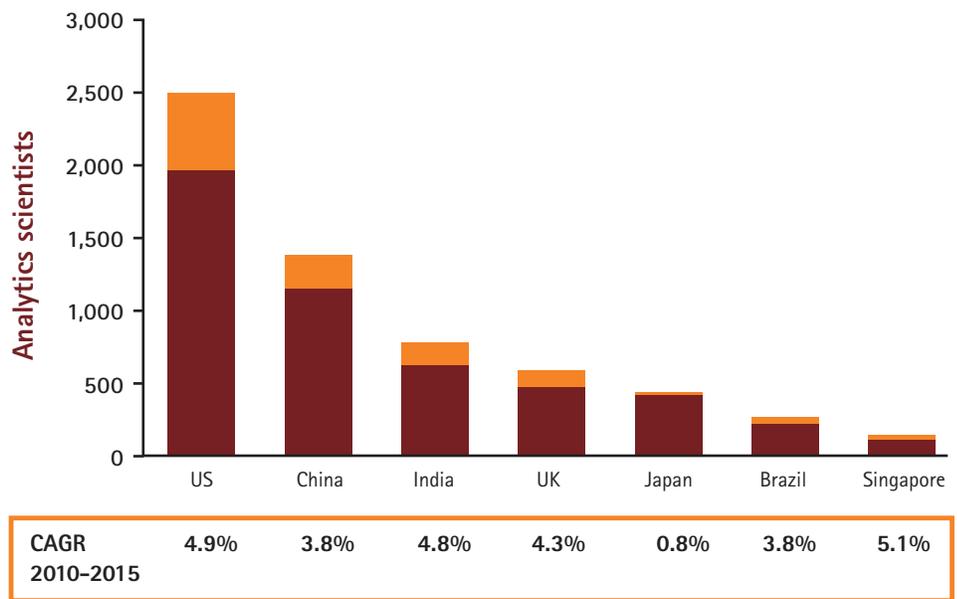
Source: Accenture Institute for High Performance analysis.

Figure 5: Analytics expert jobs in banking, 2010–2015

The US will see analytics expert jobs grow at a rate of 5.2 percent a year, resulting in 1,500 new jobs.
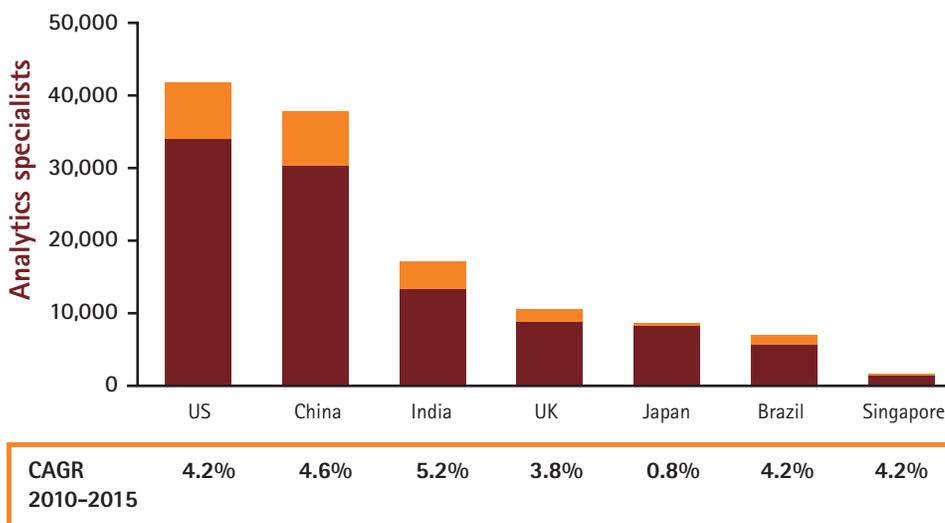

CAGR 2010–2015	5.2%	4.4%	4.9%	4.7%	0.8%	4.2%	6.0%

■ Analytics jobs in 2010
■ Additional analytics jobs by 2015

Source: Accenture Institute for High Performance analysis.

Figure 6: Analytics specialist jobs in banking, 2010–2015

Analytics specialists will see almost as many new jobs in China as in the US.

CAGR 2010–2015	4.2%	4.6%	5.2%	3.8%	0.8%	4.2%	4.2%

■ Analytics jobs in 2010
■ Additional analytics jobs by 2015

Source: Accenture Institute for High Performance analysis.

The looming mismatch

As more organizations everywhere step up their analytical prowess, analytics talent is in high demand in industries from natural resources to electronic media – not just banking. Businesses are already aggressively poaching top analysts from highly analytical organizations, which means that banks are vulnerable.

In our larger research study, we analyzed analytics job growth across all industries in each of the seven countries and found that a critical mismatch between supply and demand is looming.[9] In many countries, analytics talent supplies will not keep pace with new job growth and there simply won't be enough talent to go around. For example, the US could face a shortage of more than 260,000 analysts by 2015. (See Figure 7.)

Figure 7: Total shortages and surpluses of analytics talent by country, 2010–2015

The shortfall of analysts in the US will exceed the surpluses expected in India and China combined.

Data is for all types of analytics talent across all industries within each country

■ Shortages of analytics talent
■ Surpluses of analytics talent
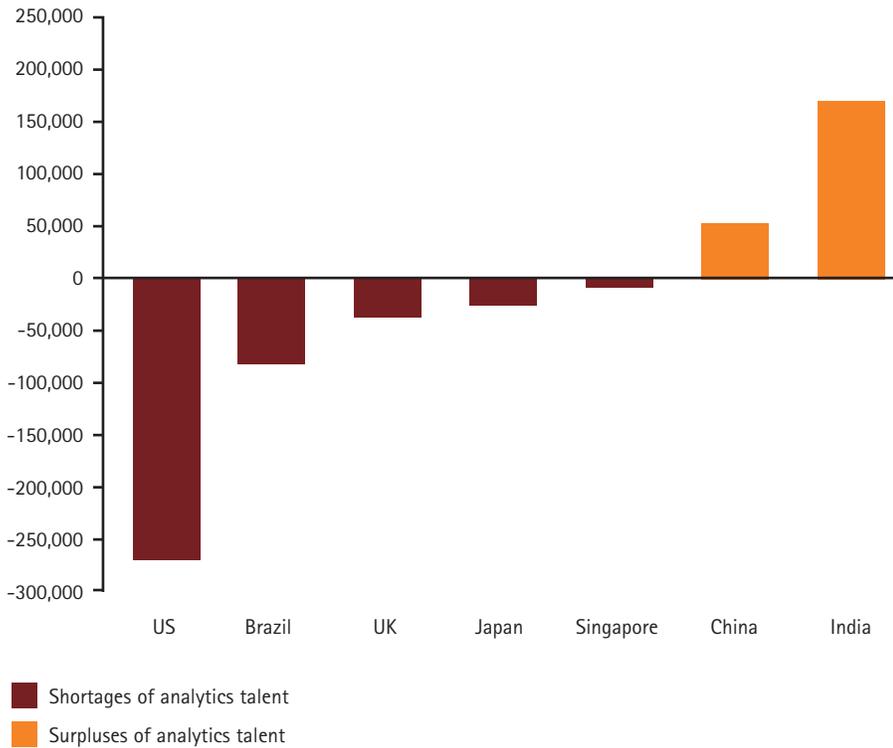
Source: Accenture Institute for High Performance analysis.

Banks historically excel at attracting talent, but will they have what it takes to attract the scarce analytics talent to succeed globally?

Even where sufficient supplies of analytics talent are likely—in India and China, for example—employers may still find it difficult to locate talent with the specific skills they need. Banks historically excel at attracting talent, but will they have what it takes to attract the scarce analytics talent to succeed globally? Global businesses need people who understand customers and risks relevant to a specific geographical market. They must also have a "global mindset" and a talent for cross-border collaboration.

However, in emerging markets, those skills are often scarce, and much of the talent that is available lacks relevant experience in the business practices of multinational companies. For these reasons, many Chinese companies employ Western-trained talent to bring international business experience into their ranks.[10]

At the same time, the best talent is increasingly mobile, making it harder than ever for companies to forecast talent availability. For example, many skilled individuals in mature markets see a brighter future working in booming economies and have headed overseas, leaving operations back home struggling to fill their talent pipelines.[11] While multinationals used to be able to count on Asian talent seeking job experience in Europe and North America, those numbers are dwindling.[12] Additionally, in the wake of layoffs, pay cuts and headlines revealing unethical business practices, fewer graduates are heading to Wall Street.[13]

Each company, and every industry, faces unique talent challenges in different markets. But one thing is clear: sourcing analytics talent will be tough everywhere. Demand is rising and supply is not keeping up—nor will it be able to keep up in the foreseeable future.

Closing the gap

Employers, educators and policymakers everywhere are confronting hard choices about how best to head off shortages of critical talent. These stakeholders can work together to increase the analytics talent supply pool in a few different ways:

Influence universities to add business analytics coursework to a wide variety of programs

Specialized business analytics degree and certificate programs are already popping up across the globe. However, by incorporating more statistics training within non-quantitative programs or business training within "traditional" science and engineering programs, either as common core requirements or full-fledged minors, universities will be able to generate many more graduates with the skills to do analytics work.

Seek reforms in educational curricula

Companies can increase the number of qualified graduates by lobbying governments to improve the quality of national education and training systems. Organizations can also work with educators to build stronger bridges from community colleges and vocational-technical programs to analytics career paths. For example, US colleges award 50,000 associate degrees each year in fields relevant to analytics.

Work to influence national policy on retaining non-nationals

More and more foreign nationals in highly quantitative fields are now returning home after completing their degrees, especially at the master's and doctorate levels. Companies can lobby governments to create more work visas and other mechanisms to retain foreign-born math and science graduates.

While large institutional changes like these may remedy the mismatch in the long run, there are no quick fixes when it comes to closing the analytics talent gap. However, employers can do a great deal in the short term to increase their share of the supply pool or reduce how much analytics talent they will need to recruit. Based on our research, here are some practical steps organizations can take now:

Get the most out of the talent you already have

This starts with defining roles and allocating tasks in ways that better utilize analytics scientists' highly advanced and specialized skills. Then, create development opportunities and stretch assignments for analytics experts. New visual software tools and advances in analytics technology allow tasks previously done by analytics scientists to be done by experts. Finally, find hidden talent across the organization: employees with strong quantitative skills who are not working in analytics roles. Provide them with training to prepare them to take on analytics specialist roles.

Raise awareness among students and university recruiters

Today, a small percentage of qualified graduates take analytics jobs; the rest take up other types of occupations, becoming, for example, investment bankers, consultants, software developers, professors or scientists. Too often, the choice is shaped by a lack of awareness of the opportunities in analytics. Employers can and should work with universities to make students aware of the bright career prospects in analytics.

Make sure analytics jobs are appealing to prospective recruits

First and foremost, analytics jobs must allow analysts to use their highly specialized skills.[14] Employers need to define roles and allocate tasks in ways that ensure analysts can do challenging work that contributes directly to the organization's goals—not just generate simple reports.

Customized roles and career paths for analytics talent provide clearly defined objectives, reward structures and growth opportunities. By developing distinct analytics career paths, rather than shoehorning analysts into the organization's standard career models, companies can better attract and retain analytics talent.

Work with labor market intermediaries

Employers who must compete for talent in countries where there are shortages can work with labor market intermediaries to find and access the analytics talent they need. Intermediaries facilitate the match between "sellers" and "buyers" in the labor market. Some intermediaries will attempt to consolidate analytics talent (either through platforms such as Kaggle or networks such as yourEncore, Inc) to create a single source for project-based access to skills. Still others (for example, StatsCareers.com, oDesk Corporation and Y-Axis Overseas Careers) will help connect employers with talent for long-term or project-based employment—a global spin on a traditional role for intermediaries.

There are no quick fixes when it comes to closing the analytics talent gap. Yet, the ability to find the analytics talent that they need is a critical imperative for banks. Finding, acquiring and retaining top analytics talent will require innovative skills and sourcing strategies to address mismatches. But companies that make that investment will achieve a competitive advantage over rivals who find their growth strategies frustrated by a dearth of analytics talent. Banks should begin now to plot out their strategy for finding the talent they need to compete and win.

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der Ouderaa** and **Anton L. Pichler** for their
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About the research

The Accenture Institute for High Performance
undertook a yearlong project to gather
and distill data on job creation and skills
availability in the market for analytics talent.
The research focused on six industries—
banking, insurance, communications
technology, oil and gas, pharmaceuticals
and analytics services—and seven countries:
the United States, the United Kingdom,
Japan, Singapore, China, India and Brazil.

For the demand side, we focused solely
on job openings created by economic and
industrial growth and excluded replacement
hiring. On the supply side, we focused on
fresh talent coming out of universities
with bachelor's, master's and Ph.D. degrees
in math, statistics, operations research and
other quantitative fields.

For more information, see our cross-industry
report "Crunch time: How to overcome the
looming global analytics talent mismatch."

Notes
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About Accenture

Accenture is a global management consulting, technology services and outsourcing company, with 257,000 people serving clients in more than 120 countries. Combining unparalleled experience, comprehensive capabilities across all industries and business functions, and extensive research on the world's most successful companies, Accenture collaborates with clients to help them become high-performance businesses and governments. The company generated net revenues of US$27.9 billion for the fiscal year ended Aug. 31, 2012. Its home page is www.accenture.com.

About the Accenture Institute for High Performance

The Accenture Institute for High Performance creates strategic insights into key management issues and macroeconomic and political trends through original research and analysis. Its management researchers combine world-class reputations with Accenture's extensive consulting, technology and outsourcing experience to conduct innovative research and analysis into how organizations become and remain high-performance businesses.