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# Use of Workforce Analytics for Competitive Advantage

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# Use of Workforce Analytics for Competitive Advantage



May 2016

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## About this report

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## Foreword

The use of workforce analytics is transforming human resource strategy. A 2015 Economist Intelligence Unit survey found that 82% of organizations plan to either begin or increase their use of “big data” in HR over the next three years. CEOs are recognizing the importance of talent-related data in managing recruitment, retention, turnover and more. Increasingly, workforce analytics is seen as a critical tool to shape future business strategy. The SHRM Foundation has identified the increased use of workforce analytics as a key future trend for all types of businesses.

In 2013, the SHRM Foundation launched a strategic thought leadership initiative. Working with the Economist Intelligence Unit (EIU), we began a multiphase program to identify and analyze critical trends likely to affect the workplace in the next 5-10 years. We conducted a rigorous process of surveys, expert panel discussions and analysis to identify key themes. A detailed explanation of this process is available online at [shrmfoundation.org/ShapingtheFuture](http://shrmfoundation.org/ShapingtheFuture) under “Global Trends Identification Process.”

The following three critical themes emerged from our work:

- 1. Evolution of Work and the Worker.** The globalization of business, changing demographics and changing patterns of mobility will continue to change the nature of work and the worker.
- 2. Engaging and Integrating a Global Workforce.** Cultural integration and clashes/unrest will continue to grow globally at both a societal and a corporate level.
- 3. Use of Workforce Analytics for Competitive Advantage.** Talent shortages will continue to grow globally, requiring HR to become the provider of human capital analytics for input to strategic business decision-making.

The current report, published by the SHRM Foundation, sponsored by IBM Kenexa and written by the Economist Intelligence Unit, presents the data, examples and evidence to support and explain Theme 3, *Use of Workforce Analytics for Competitive Advantage*. Two similar reports have been released for the first two themes. We believe these reports provide important insights to help forward-thinking HR and business leaders plan more effectively for the future. In addition, the information in this report presents excellent background information for students and researchers who wish to study the many questions raised.

We encourage you to get involved. Share this information with your colleagues, use it in the classroom or design a research study to extend our knowledge of these issues. You can also support the initiative with a tax-deductible contribution to the SHRM Foundation. I encourage you to visit [shrmfoundation.org/ShapingtheFuture](http://shrmfoundation.org/ShapingtheFuture) to learn more.

Now, please join us as we explore the *Use of Workforce Analytics for Competitive Advantage*.



Mark J. Schmit, Ph.D., SHRM-SCP  
Executive Director, SHRM Foundation  
May 2016

## Executive Summary

### **The key findings from The Economist Intelligence Unit's research into workforce analytics are as follows:**

#### **Investment in workforce analytics is on the increase**

Research and supporting evidence detailed in this report strongly suggest that the overwhelming majority of organizations will either begin or increase their use of Big Data<sup>1</sup> in HR over the coming years. There are several reasons for this reported increase. The use of data has become more evident in all functions, and the focus on workforce analytics simply reflects that overall trend. With the acknowledgment that human talent leads to competitive advantage in a knowledge economy, any data analysis that can help organizations to attract, motivate and retain the right people is bound to interest executives. Most significantly, stories of companies achieving measurable business outcomes through data analysis have started to emerge, prompting others to increase investment to avoid missing out on potential gains.

#### **The HR function is adapting to a data-driven world, leading to the establishment of specialist teams and the recruitment of data-oriented personnel**

A 2015 Deloitte survey of business leaders found that many executives had some doubts about the HR function's ability to perform analytical projects, such as "conducting multi-year workforce planning" or "using HR data to predict workforce performance and improvement". A shortfall in the necessary skills to carry out these exercises has been identified. Executives and academics interviewed for this report consistently argue that a new-style HR professional should possess a combination of two skills—a head for analytics together with the ability to present findings in the manner and language convincing to senior executives. Organizations are responding to this need, setting up small specialist teams of data analysts, training existing staff and recruiting suitable graduates.

#### **Retention and recruitment are particular areas of interest; predictive analytics is gaining ground**

According to 2013 research by Tata Consultancy Services, organizations see the improvement of employee retention as the greatest potential benefit of Big Data. Analytics can highlight which employees are most likely to resign in the short term, enabling the organization to intervene to prevent costly turnover. The same survey, as well as much anecdotal evidence, suggests that analytics is also being used to identify the suitability of recruits and gauge their potential loyalty to the organization. These are examples of predictive analytics, using data to identify the likelihood of future outcomes based on historical information. This area looks set to attract increasing interest over the coming years.

#### **Despite major progress, cultural and practical obstacles still loom; ethical and legal questions remain subject to uncertainty**

The skills gap is one potential roadblock to progress. According to a 2011 McKinsey report, by 2018 the United States alone could face a shortage of 140,000-190,000 people with "deep analytical skills". The move to data-based decision-making may also face cultural obstacles: some executives could view the increased use of evidence as a threat, with the conclusions from data potentially contradicting their personal judgment.

To ensure the success of workforce analytics, organizations should be wary of divorcing data analysis from commercial needs. A 2014 Visier survey of 300 US-based companies found that the greatest business barrier to the successful implementation of workforce analytics was an "unclear connection between workforce analytics and results".

Issues of ethics and privacy could also impede the march of workforce analytics. Legal rulings on the monitoring of employee behavior vary from region to region and are still in a state of flux. Some view such monitoring to be beyond the boundaries of acceptable ethical practice.

<sup>1</sup> Big Data is normally defined as an accumulation of data that is too large and complex for processing by traditional database management tools. Most references to "Big Data" in this report will be from surveys conducted by various other companies, and their own definitions may differ slightly. References to "Big Data" are meant to illustrate its growing impact on workforce analytics and other human capital analysis, which we have defined in section 1 of this report.

## Introduction

In a 2014 survey by The Economist Intelligence Unit (EIU), twice as many executives based their last major decision on either their "own intuition or experience" or on the "advice and experience of others internally", rather than on "data and analysis".<sup>2</sup> This finding applies to the decisions in all functions of an organization, whether in finance, marketing, sales or human resources (HR). Despite having access to more data and analytical power than ever before, many organizations are still not relying on either to make significant decisions.

Nevertheless, the corporate world is starting to undergo fundamental changes in the way workforce decisions are made. Further evidence detailed in this report suggests that CEOs are now recognizing the importance of talent-related data and that the field of human resources is beginning to fully embrace the data revolution.

More and more organizations are becoming interested in workforce analytics as a means of better manag-

ing their workforce as well as shaping future business strategy. These developments may not just have very positive implications for the organization; they also promise to elevate the standing of HR as a function. Survey evidence shows how HR's credibility increases drastically once it starts using data to inform its decisions.

This paper will provide an overview of developments in workforce analytics today. Section I discusses the reasons for this growing focus on analytics. Section II examines the theoretical underpinnings of workforce analytics. In Section III we examine how the use of analytics is reshaping the HR function itself and how this affects the people who work in it. Section IV is focused on practical implementation and outlines examples of workforce analytics providing genuine competitive advantage. Lastly, in Section V, we outline some common pitfalls to avoid as we move toward a world where evidence will play a central role in people-management decisions.

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<sup>2</sup> Economist Intelligence Unit report for PwC (2014), *Gut and Gigabytes* ([http://www.economistinsights.com/sites/default/files/Gut\\_%26\\_gigabytes\\_Capitalising\\_on\\_the\\_art\\_%26\\_science\\_in\\_decision\\_making.pdf](http://www.economistinsights.com/sites/default/files/Gut_%26_gigabytes_Capitalising_on_the_art_%26_science_in_decision_making.pdf))

## Section I: Driving forces behind the evolution of workforce analytics

Writing at the end of 2010, Alec Levenson of the Center for Effective Organizations at the University of Southern California commented that “at the beginning of the decade, human resources analytics was not part of the language of business”. But the subsequent years, he then continued, witnessed the sprouting of a major new trend that promised to change HR methods and solutions in a fundamental way. “Today, at the end of the decade,” he noted, “a Google search for the same term produces more than 1.5m results.”<sup>3</sup>

### WHAT IS WORKFORCE ANALYTICS?

Workforce analytics uses statistical models and other techniques to analyze worker-related data, allowing leaders to improve the effectiveness of people-related decision-making and human resources strategy.

The trend has, if anything, accelerated since Dr Levenson wrote these words. A 2015 survey by The EIU found that 82% of organizations would either begin or increase their use of Big Data in HR over the next three years.<sup>4</sup> To what, then, can we attribute the rapid expansion of this field?

For the purposes of this study and report, The EIU has defined workforce analytics as the process of integrating data into human resource management to optimize organizational efficiency and drive strategy.

### Joining the club

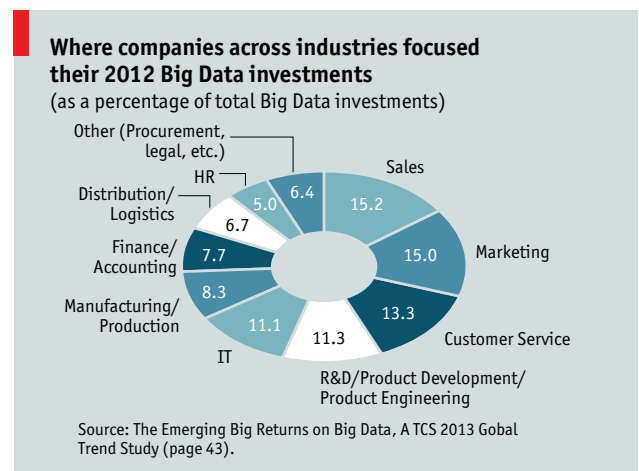
Data analysis is becoming a ubiquitous phenomenon in the business world. The finance, customer service and sales functions all use data extensively, and companies are now seeking more analysis in the realm of human resources as well.

The economic turbulence that many companies experienced between 2008 and 2009 certainly played a

role in the expansion of workforce analytics. “The financial crisis convinced businesses of the importance of analytics,” says Jonathan Ferrar, vice president of Smarter Workforce at IBM. “Businesses could become competitive again through internal changes that increased productivity and efficiency, despite a challenging environment.” Workforce analytics was a logical component of a drive for efficiency among organizations aiming to emerge from the market turmoil in a stronger competitive position.

However, despite substantial advances from academic researchers (see Section II) and a band of forward-thinking companies, many organizations have been slow to realize the potential value of workforce analytics. Research from 2012 and published in 2013 by Tata Consultancy Services, an Indian global IT services, consulting and business solutions firm, shows that at that time HR was not a principal focus of Big Data investment.<sup>5</sup> (Figure 1).

Figure 1



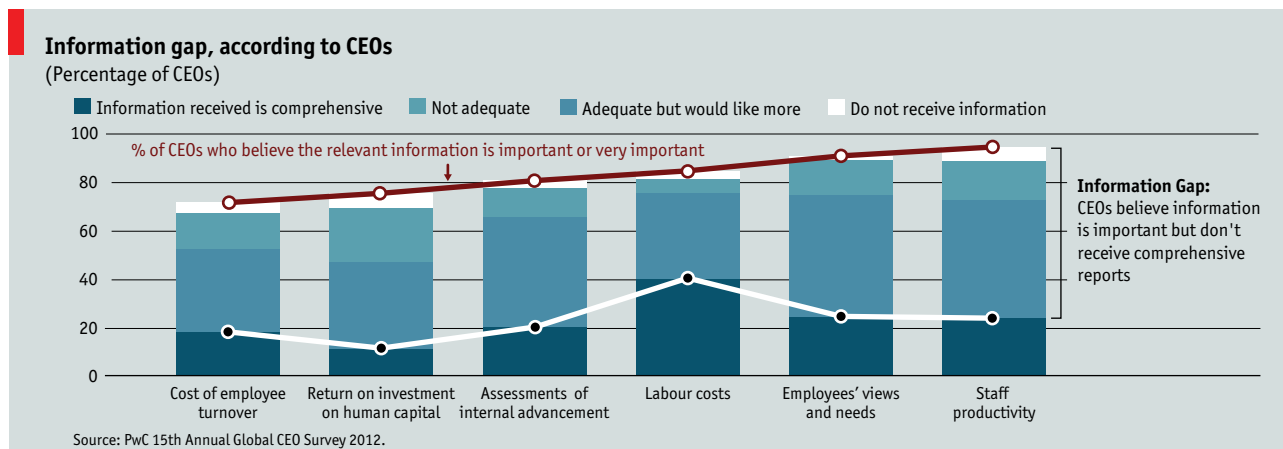
Indeed, senior executives interviewed for this report consistently remarked that workforce analytics remains an emerging field. Only recently have a large number of organizations begun to understand the true benefits of

3 Alec Levenson (2011), *Using Targeted Analytics to Improve Talent Decisions*, Center for Effective Organizations publication (<http://ceo.usc.edu/pdf/G11-03.pdf>)

4 Economist Intelligence Unit report for KPMG (2015), *Evidence-based HR* (<https://www.kpmg.com/Global/en/IssuesAndInsights/ArticlesPublications/Documents/evidence-based-hr.pdf>), also referenced in the Executive summary.

5 Tata Consultancy Services (2013), *The Emerging Big Returns of Big Data* ([http://www.tcs.com/SiteCollectionDocuments/Trends\\_Study/TCS-Big-Data-Global-Trend-Study-2013.pdf](http://www.tcs.com/SiteCollectionDocuments/Trends_Study/TCS-Big-Data-Global-Trend-Study-2013.pdf))

Figure 2



workforce analytics. As a result, they have started to invest in and implement workforce analytics solutions with a regular and meaningful impact. "I attended a workshop in 2010, and there were only about a dozen firms in attendance talking about HR analytics," says Mr Ferrar. "It took another two years before the momentum shift occurred. Now lots of people are talking, some are active, many are still considering how to change the culture of HR to become analytical."<sup>6</sup>

Josh Bersin, founder of Bersin by Deloitte, a research and advisory firm, makes a similar point. "Turning HR metrics into meaningful business data is relatively new. While nearly every organization I talk with wants to build a talent analytics capability, many companies have still not built the business case."<sup>7</sup>

It can be no surprise, therefore, that a 2015 Human Capital Institute survey revealed that nearly 80% of leaders were still using gut feeling and personal opinions to make decisions that affected talent-management practices.<sup>8</sup>

### Intelligible data

The first step to introducing more data analysis into the HR decision-making process is having the will to do it. That in itself is not enough, however. The data must also be presented in a clear and accessible way for workforce analytics to yield genuine commercial impact. Clear conclusions can only derive from well-organized data.

Several companies have understood the need to be more active on the workforce analytics front, and they have been busy organizing available data in an easily digestible format amenable to detailed scrutiny. Until re-

cently, this information tended to be inconsistent and difficult to collect, often because of different systems in many countries and departments in a multinational organization. Therefore, few companies had the capacity to extract worthwhile conclusions from their HR data.

In the PwC *Annual Global CEO Survey* from 2012, for example, more than 80% of CEOs stressed how important talent-related data were to their organization, but only a relatively small minority professed satisfaction with the information they were getting (Figure 2).<sup>9</sup>

Mr Ferrar agrees. "I meet many clients who still have this problem. Data governance is an important element in providing a solid foundation for analytics. But it's not the only step, and executives should not let 'perfect data' get in the way of more important business issues. I find some clients use 'poor data' as an excuse for not wanting to change HR to be more analytical."<sup>10</sup>

### The war for talent

Interest in workforce analytics is accelerating rapidly as more companies acknowledge the importance of human talent. IBM's *Fifth Biennial Global CEO Study* from 2012 discovered that CEOs believed human capital to be the main source of sustainable economic value (Figure 3). Leaders are now realizing that the abilities, enterprise and enthusiasm of people are key to organizational performance in the modern-day knowledge economy. Given that reality, it follows that any data helping companies to recruit the right talent, deploy them correctly and retain their high performers will be highly valued.

6 EIU interview with Jonathan Ferrar, July 31st 2015.

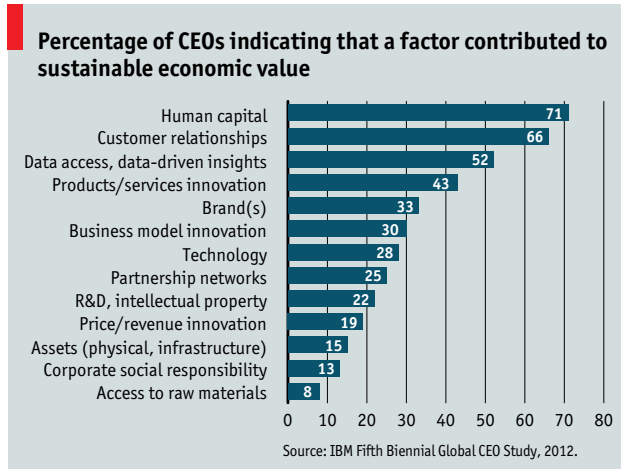
7 Harvard Business Review Analytic Services, *HR Joins the Analytics Revolution* ([https://hbr.org/resources/pdfs/comm/visier/18765\\_HBR\\_Visier\\_Report\\_July2014.pdf](https://hbr.org/resources/pdfs/comm/visier/18765_HBR_Visier_Report_July2014.pdf))

8 Human Capital Institute in partnership with Oracle (2015), *Insightful HR: Integrating Quality Data for Better Talent Decisions* ([http://pcdn4.hci.org/files/field\\_content\\_file/2015%20Oracle.pdf](http://pcdn4.hci.org/files/field_content_file/2015%20Oracle.pdf))

9 PwC (2012), *15th Annual Global CEO Survey* (<https://www.pwc.com/gx/en/ceo-survey/pdf/15th-global-pwc-ceo-survey.pdf>)

10 EIU interview with Jonathan Ferrar, July 31st 2015.

Figure 3



CEOs don't want data only to understand their current situation. They are turning to evidence-based analysis to reach conclusions that can help alter approaches to a broad range of common HR challenges, shape their overall business strategy and confer competitive advantage (Figure 4).

According to research by Tata Consultancy Services, organizations see the improvement of employee retention as the greatest potential benefit of Big Data.<sup>11</sup> De-

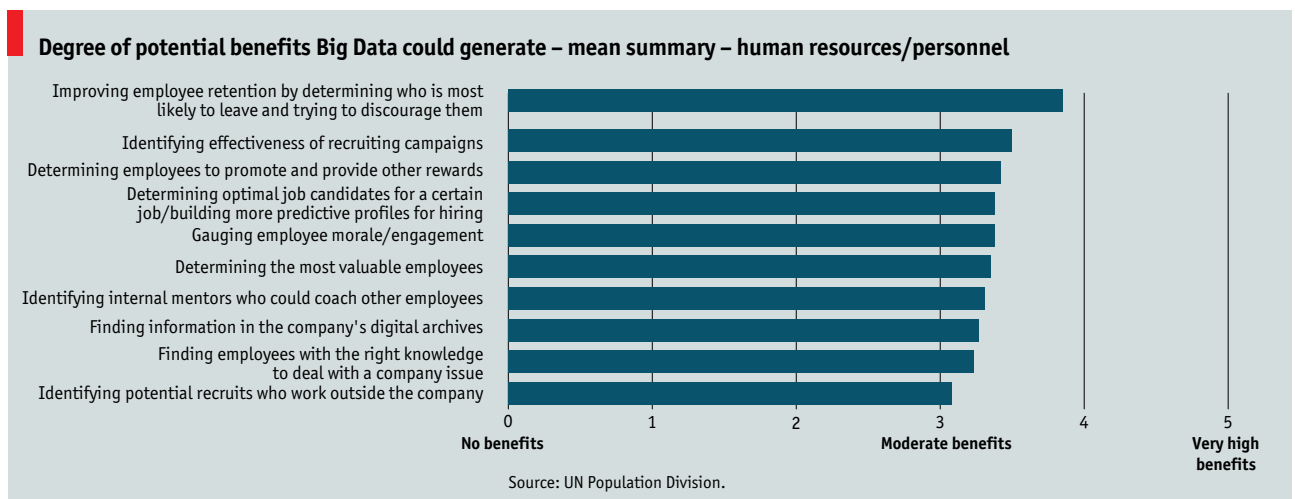
tailed analysis can indicate which employees are most likely to resign in the short term and which factors make this disruptive exodus of invaluable employees more likely. After all, it can be very expensive to recruit and train adequate replacements.

**A virtuous cycle**

It could be that some executives view increased use of evidence as a threat, with the conclusions from data potentially contradicting their personal judgment. The one factor most likely to overcome such cultural barriers and boost efforts to improve HR analytics is when competitors register clear business gains from using it.

Research for a 2013 Bersin by Deloitte report divided 480 organizations into four categories based on the maturity of their workforce analytics practice (Figure 5). The results showed that few companies had as yet reached an advanced level, with the majority still struggling to organize their data in a coherent form.<sup>12</sup> "Our study," the report concludes, "found that a staggering 86% of the organizations we surveyed are focused primarily on reporting... Just 10% of organizations in our study have taken the next step toward advanced analytics—helping business leaders solve their talent challenges through statistical analyses. A mere 4% are using predictive analytics to forecast future talent outcomes."

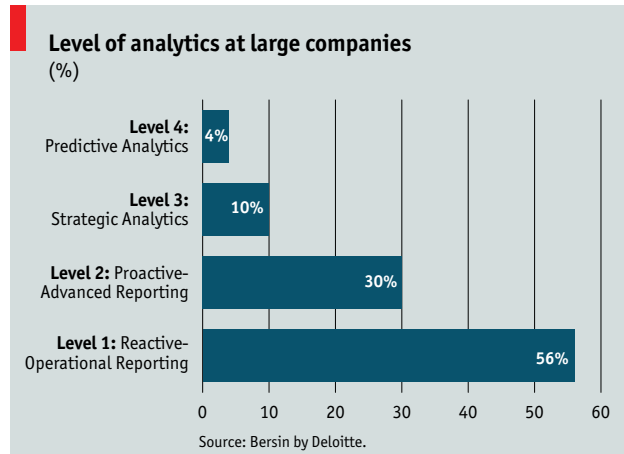
Figure 4



11 Tata Consultancy Services (2013), *The Emerging Big Returns of Big Data*.

12 Bersin by Deloitte (2013), *High-Impact Talent Analytics: Building a World-Class HR Measurement and Analytics Function* (<http://www.bersin.com/Practice/Detail.aspx?id=16909>)

Figure 5



The results claimed for Level 3 and 4 companies—those boasting the most mature analytics functions—were notable. In financial terms, the stock prices of these organizations had on average outpaced the S&P 500 by 30% over the previous three years. They were also twice as likely as the rest to report that they had improved their recruitment efforts and leadership pipelines, and three times more likely to have realized cost savings and efficiency gains.

Clear success stories are starting to emerge alongside these general statistics, reinforcing the impression that data analytics offers huge potential for increasing competitive advantage.

For example, a large financial services company saw dramatic variations in sales performance and retention among its hundreds of sales representatives (Figure 6).

Figure 6

**Characteristics of high-performing sales candidates**

What didn't matter	What did matter
<ul style="list-style-type: none"> <li>College degree or reputation of college</li> <li>Grade point average</li> </ul>	<ul style="list-style-type: none"> <li>Lack of typos or misspellings in résumés</li> <li>Successful experience selling related products (autos and real estate)</li> </ul>
<ul style="list-style-type: none"> <li>Quality of references</li> </ul>	<ul style="list-style-type: none"> <li>Successful experience completing some academic degree (which one did not matter)</li> </ul>

Source: Deloitte University Press, *The Datafication of HR*.

After significant statistical analysis the team found that the company's prevailing assumptions about its human capital assets were wrong. The high performers were not those from the top universities or those with the highest grades. Rather, what predicted top performance were lack of misspellings in résumés, successful experience selling related products, and any academic degree (but which one, and which grade, did not matter). By adopting these new priorities when reviewing candidates, the company generated more than US\$4m of new revenue in the first six months.<sup>13</sup>

The rest of this paper will explore additional examples and case studies of organizations embracing workforce analytics. It will demonstrate the need for senior decision-makers to embrace workforce analytics as an essential aspect of strategic HR.

13 John Bersin, "The Datafication of HR", Deloitte University Press, *Deloitte Review*, Issue 14, January 17th 2014 (<http://dupress.com/articles/dr14-datafication-of-hr/>)



## Section II: Putting workforce analytics into practice

### The right mindset: Buying into workforce analytics

Leaders of organizations can only derive the full benefits of workforce analytics if they believe in its potential. To establish and maintain the necessary commitment, they first have to believe that their company's HR assets (i.e., the value of its workforce) are a vital contributor to organizational performance. Second, they must believe that such assets have definable, quantitative value, and

that HR assets can be measured and managed in the same way that the finance function tracks return on investment (ROI).

A vast array of academic literature, asserting the potential impact of workforce strategy on organizational performance and suggesting practical ways in which HR assets can be measured and managed, can help to influence this mindset (see box).

### History of HR metrics and workforce analytics

Although the influence of workforce analytics has started to be seen more widely, specialist HR academics have been active in this field for several decades. Below is an outline of some of the main milestones in the evolution of workforce analytics.<sup>14</sup>

**Early 20th century:** Systematic work on measures to represent the effectiveness of an organization's employees dates back almost a century. For example, the work carried out by the German-American researcher Hugo Münsterberg for companies was eventually published in a 1913 book entitled *Psychology and Industrial Efficiency*. Münsterberg argued that in order to increase productivity and employee satisfaction, it was vital to hire workers for positions that fit their abilities and personality. Consequently, he composed mental tests and job simulations to test the applicant's knowledge, skills and abilities relevant for the particular job.<sup>15</sup>

**1940s:** Quantitative analysis methods were used to build up the armed forces and necessary materiel during the second world war. In these early applications, scientists utilized simple mathematical models to make efficient use of limited technologies and resources.<sup>16</sup>

**1980s:** Many of the HR metrics used in organizations derive from the work of Jac Fitz-enz and the early benchmarking research he conducted at the Saratoga Institute. In 1984 Dr Fitz-enz published *How to Measure Human Resources Management*, which gives an overview of many HR metrics and the formulae used to calculate them. These metrics were developed through the joint efforts of the Saratoga Institute and the American Society for Personnel Administration (ASPA), the predecessor of the current Society for Human Resource Management (SHRM).

**1990s to present day:** The balanced scorecard, devised by Robert Kaplan and David Norton in their 1996 book of the same name, recognizes the limitations of organizations' heavy reliance on financial indicators of performance. Such measures focus on what has already happened rather than providing managers with information about what will happen. Balanced scorecards instead use a variety of measures, including customer satisfaction, process effectiveness and employee development, as well as financial performance.<sup>17</sup>

<sup>14</sup> Kevin D. Carlson and Michael J. Kavanagh, *HR Metrics and Workforce Analytics* ([http://www.sagepub.com/sites/default/files/upm-binaries/41672\\_6.pdf](http://www.sagepub.com/sites/default/files/upm-binaries/41672_6.pdf))

<sup>15</sup> See web biography of Hugo Münsterberg by Donald F Knessi (<http://faculty.frostburg.edu/mbradley/psyography/hugomunsterberg.html>)

<sup>16</sup> Lee J. Krajewski and Howard E. Thompson (1981), *Management Science: Quantitative Methods in Context*. New York: John Wiley & Sons.

<sup>17</sup> Robert Kaplan and David Norton (1996), *The Balanced Scorecard: Translating Strategy into Action*. Boston, MA: Harvard Business School Press.

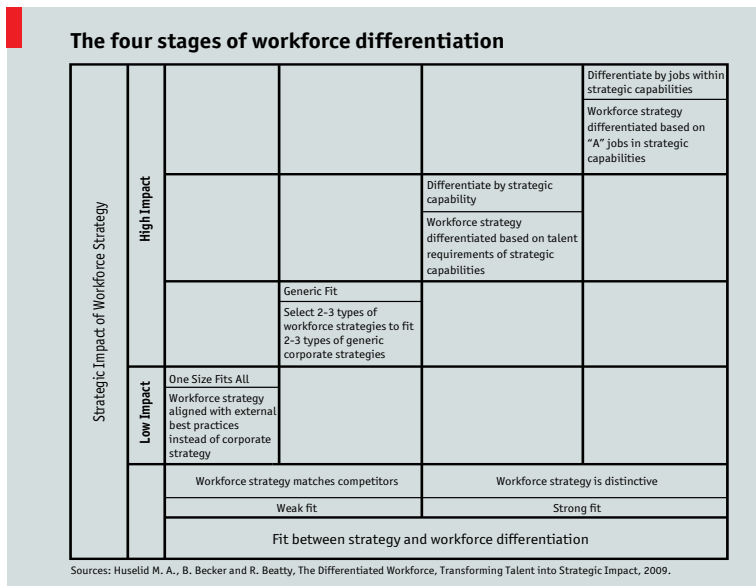


Mark Huselid's work on high-performance HR systems offered evidence that human resource management could indeed improve operational effectiveness and play a major role in the fulfillment of organizational strategy.<sup>18</sup> Brian Becker, Huselid and David Ulrich (2001) helped bring these ideas together in the HR scorecard, which highlights how the alignment of HR activities with both corporate strategy and activity improves organizational outcomes.<sup>19</sup>

Mark Huselid, professor of workforce analytics at Northeastern University in Boston, Massachusetts and author of several leading books on the topic, argues that an organization's competitive advantage derives just as much from what he calls a differentiated workforce—where jobs that create the most value receive the most investment—as it does from its products and services.

Professor Huselid developed a four-stage framework, elements of which have been adopted by several leading companies, for thinking about the relationship between workforce differentiation and strategic success.<sup>20</sup> These range from Stage 1, where an organization simply identifies and copies existing best practices in its industry, through to Stage 4, which involves first pinpointing the roles that contribute most to the success of the organization and then ensuring that they are carried out to maximum effect (Figure 7). Other academics may differ on the details, but many now subscribe to the idea that competitive advantage can be realized through HR strategy.

Figure 7



18 Mark Huselid (1995), *The impact of human resource management practices on turnover, productivity and corporate financial performance* ([http://www.markhuselid.com/pdfs/articles/1995\\_AMJ\\_HPWS\\_Paper.pdf](http://www.markhuselid.com/pdfs/articles/1995_AMJ_HPWS_Paper.pdf))  
 19 Brian Becker, Mark Huselid and David Ulrich (2001), *The HR Scorecard*. Boston, MA: Harvard Business School Press.  
 20 Huselid M. A., B. Becker and R. Beatty (2009), *The Differentiated Workforce, Transforming Talent into Strategic Impact*. Boston, MA: Harvard Business School Press.

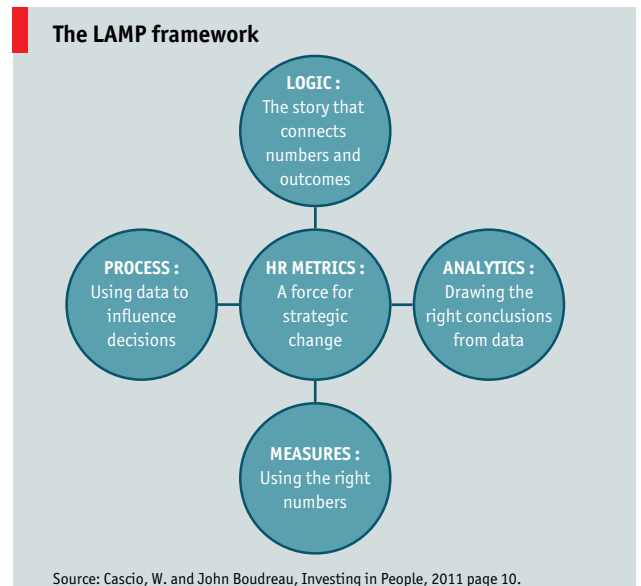
**Getting the measurement right**

Academics have also devoted much attention to the question of how to measure the benefits and costs of HR assets. The reliability of such measurement underpins workforce analytics. Organizations are less likely to invest heavily in workforce analytics without genuine faith in the concept of HR measurement.

However, despite academic research dating back several decades, the quest for standardized HR measurement is still a work in progress. Few organizations to date have been able to demonstrate clearly what their human capital assets are actually worth in financial terms, quantify their future value, or assess their precise impact on organizational performance.

Wayne Cascio, professor of management and Robert H Reynolds chair in global leadership at the University of Colorado-Denver, believes that to be credible and therefore attract executive interest and investment, an HR measurement system should have four elements: logic, analytics, measures and process—the LAMP framework.<sup>21</sup> (Figure 8). This framework, which was formulated by Peter Ramstad, senior vice president of human resources and chief human resources officer at Capella Education Company, and John Boudreau, professor of management and organization, University of Southern California Marshall School of Business, helps us to understand exactly where workforce analytics fits into this overall picture.

Figure 8



21 John W. Boudreau and Peter M. Ramstad (2007), *Beyond HR*. Boston, MA: Harvard Business Publishing.

First, according to the framework, there must be a clear chain of logic between what is being measured and the expected outcome. The logic element presents the business case for the research, pinpointing possible important connections between numbers and effects and thus capturing the interest of executive decision-makers. For example, there could be a particular connection between employee attitudes and customer satisfaction that is well worth investigating.

Analytics is concerned with drawing the right conclusions from data. Sound analytics, based on solid research principles, takes care to avoid attributing causation where only correlation can be proven. For example, if both positive employee attitudes and high customer satisfaction are evident at the same location, it might be that the latter is influencing the former, not the other way around. "Mistaking causation for correlation is a huge issue in HR, and it's a very easy mistake to make," says Professor Cascio.<sup>22</sup>

Measures must be of high quality—timely, consistent, complete and reliable. They must also be carefully tailored to the strategic question that needs answering. Process is the last component of the framework and involves using the unearthed data to influence decision-makers. Showing clear connections between organizational performance and simple measures, such as employee turnover, can constitute the first step to persuading executives of the value of this field and ensure their future commitment. "A significant factor in the effectiveness of a solution depends on the willingness of the necessary constituencies to embrace the analysis," notes Professor Boudreau.<sup>23</sup>

### From theory to practice

Academics may provide the theoretical framework, but how have organizations fared in putting this into practice and measuring their HR assets?

Mr Ferrar leads the analytics practice for IBM Smarter Workforce, helping clients improve business performance through the application of people-related analytics solutions, and is thus in a prime position to see what the corporate world has achieved in this regard. Supporting the thesis put forward in Section I that the field of workforce analytics has only recently started to attract the necessary attention, Mr Ferrar believes that many companies are still struggling at the first couple of stages. Even if they have, in theory, bought into the potential of workforce analytics, they are failing to establish the logic that Cascio and Boudreau deem to be the basis of any measurement system.

"HR professionals struggle with making linkages to business outcomes," says Mr Ferrar. "They spend a lot of

time focusing on the detail of HR processes and programs, and the data and reporting associated with them. Instead, they should ask: what business problem do I want to solve, how will data help me, and what data should I use? For example, they should be asking questions such as: which roles are responsible for the most revenue, or which workforce drivers will improve customer loyalty?"

Despite some challenges in this fast-developing field, a buzz of excitement surrounds the achievements of a minority of companies, encouraging others to follow in their footsteps.

Companies have used workforce analytics to drive competitive advantage in a variety of ways, making important connections between different groups of available data. For example, the global aerospace and defense company Lockheed Martin correlated information on individual performance with knowledge-management information, such as identifying those employees who had undergone formal training in specific areas. This enabled the company not only to spot top performers, but also to discover which training programs might have led to improved performance.

Sysco, a major global food services company, established a link between certain management actions on the one hand, and employee engagement and retention on the other. By doing so, it was able to improve the retention rate for delivery associates—employees who provide customer service and build customer relationships—from 65% to 85%, thus saving the company an estimated US\$50m in hiring and training costs.<sup>24</sup>

Many companies, especially in the retail and services sectors, need to have credible and comprehensive data to allocate their talent needs in real time as a way of optimizing work schedules and workflow. Retailers such as Best Buy, Apple, Nordstrom and Amazon can use analytics to predict incoming call-center volume as well as adjust hourly employees' schedules to maximize efficiency and resource planning.

Meanwhile, 3M, a company that prides itself on innovation, uses data modeling to show managers compensation, recruiting, benefits and other metrics so they can better understand their workforce and maximize productivity. 3M modeling showed that business laboratories with higher engagement scores were also more successful commercially two years later.

They also found that data were useful in problem-solving. In India, for example, 3M was experiencing a slightly elevated personnel turnover. The company initially thought the problem was retention, but analytics revealed that part of its recruitment process was the root cause of the difficulties, rather than the work environ-

<sup>22</sup> EIU interview with Wayne Cascio, July 23rd 2015.

<sup>23</sup> EIU interview with John Boudreau, July 30th 2015.

<sup>24</sup> T. Davenport, J. Harris & J. Shapiro, "Competing on talent analytics", *Harvard Business Review*, October 2010 (<https://hbr.org/2010/10/competing-on-talent-analytics>)

ment. Some candidates given job offers were simply not showing up on the first day owing to multiple offers, and by changing part of the recruitment process, with more follow-up, the turnover increase was rectified.<sup>25</sup>

The case study below goes into more detail about

one particular company's journey into the analytics space. A growing number of real-world experiences such as these are making believers out of executive leaders and creating buy-in that fuels investment in workforce analytics.

## CASE STUDY: Connecting HR data and business outcomes at Lowe's

Lowe's is an American company which operates a chain of retail home improvement and appliance stores. Since 2007 the company has been using a data-driven HR business model to highlight the connections between HR decisions and business outcomes.

As always, the first hurdle was to build the necessary business logic to establish management belief in the project across various departments. Lowe's analytics team sought to link various HR data (such as engagement, turnover and sick time) to marketing data (such as customer satisfaction and loyalty), operations data (such as shrinkage, which measures inventory loss resulting from factors such as employee theft and fraud) and financial metrics (such as sales per square foot and net income before tax).<sup>26</sup>

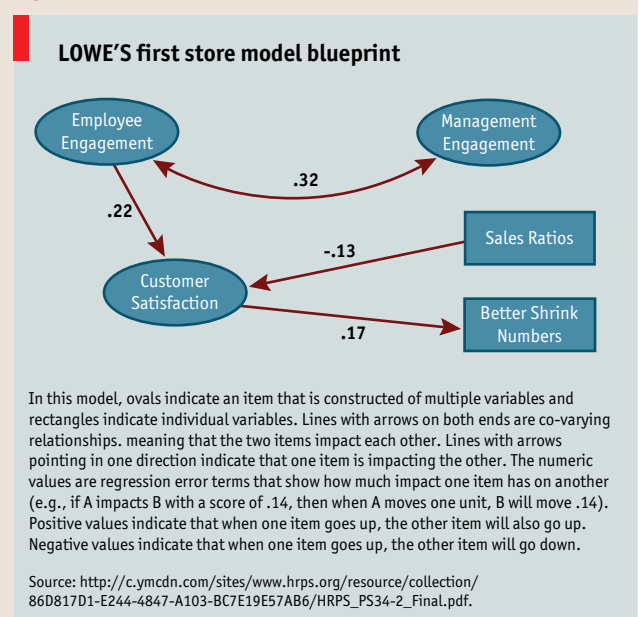
Once leaders arrived at a consensus on the business logic behind HR policies, a cross-functional team comprising finance, marketing and operations, facilitated and supported by the human resources division, was established. The result was a set of statistical models that were built with inputs from across the company and were therefore accepted by all major stakeholders across the organization.

### Results and impact

One of the major findings from the analysis was the relationship between employee engagement, customer satisfaction and the impact on revenue. Lowe's intuitively sensed that there was a connection between engagement and customer satisfaction, and through this analytics exercise the company was able to attribute a monetary value to this linkage. One example of a quantitative conclusion was the relationship between engagement and average ticket—the amount of money a customer spends per transaction. By encouraging greater dialogue (including asking customers a specific set of questions) between employees and customers, customers felt they were having a better store experience and spent 4% more. Lowe's reached a conservative estimate that the gap between the highest and lowest engaged stores constituted more than US\$1m in sales per year.

After what Wayne Cascio, professor of management at the University of Colorado-Denver, calls measures and analytics, comes the process—using the results to make real decisions which impact the business. Management shared the results with the grass roots of the company, improving the chances that systemic change would be deeply rooted. As a result, focus on employee engagement has spread throughout the entire organization. Management teams appreciate the value of employee engagement and are keen to learn how engaged their own teams are and what they can do to boost engagement. In this way, workforce analytics has achieved genuine, sustainable change with measurable business outcomes that have resulted in competitive advantage for the firm.

Figure 9



26 [http://c.ymcdn.com/sites/www.hrps.org/resource/collection/86D817D1-E244-4847-A103-BC7E19E57AB6/HRPS\\_PS34-2\\_Final.pdf](http://c.ymcdn.com/sites/www.hrps.org/resource/collection/86D817D1-E244-4847-A103-BC7E19E57AB6/HRPS_PS34-2_Final.pdf)

25 Interview with Karen B. Paul, Leader, Global Measurement Center of Expertise, 3M.

## Section III: Implications for HR management function and practice

### Strategic HR—a new emphasis

Over the years HR has moved beyond personnel management—routine activities such as the administration of payroll and benefits—and has worked to assume a more pivotal role in developing people strategy and supporting the organization's business goals.

This shift is occurring for two main reasons. First, as Professor Huselid points out in *The Workforce Scorecard*, HR has already reached a high level of efficiency in administrative tasks through the use of outsourcing or electronic processing. "Simply put, the low-hanging fruit in the domain of HR functional efficiency has largely been collected," he writes.<sup>27</sup> Moreover, he says, spending on the HR function accounts for a very small proportion of total operating expenditure, and is thus not a commercial priority.

On the other hand, expenditure on the workforce in general, in terms of salaries and associated costs, accounts for a major proportion of operating expenditure, averaging approximately 70%.<sup>28</sup> The perceived impact of workforce capabilities on organizational performance has grown with the development of the knowledge economy. Therefore, the HR function, with its people knowledge, can add significant value by learning to harness the potential of the workforce in supporting the organization's goals.

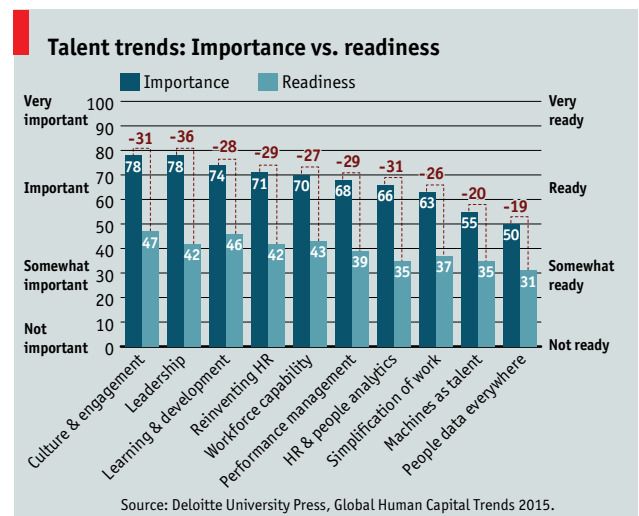
As HR learns to demonstrate the clear connection between people-related strategy and business outcomes, workforce analytics will help HR continue to grow into a more strategic role. But how far has HR progressed on this journey? Is the function prepared for an increased focus on workforce analytics? If not, what steps will need to be taken, and where will the necessary skills and talent be found?

### The HR skills shortfall

Evidence suggests that this transition is still evolving. A 2015 Deloitte report, based on a survey of several thousand executives from within the HR function and outside, shows there is room for improvement.<sup>29</sup> While a majority of executives said that many aspects of HR were very important to their business, a significantly lower number expressed confidence in their organization's readiness to handle these issues.

For example, as shown in Figure 10, the average score awarded to the importance of "reinventing HR" or "HR and people analytics" is substantially greater than the corresponding score for the organization's readiness to respond to these particular challenges. In addition, perception among business leaders outside HR differed from that within the function. For "reinventing HR", they rated HR's readiness 20% lower than HR leaders.

Figure 10



This gap places a question-mark over HR's ability to meet executive expectations in support of business initiatives. Furthermore, only a small proportion of survey respondents gave high marks to HR capabilities such as "preparing HR staff to deliver programs aligned with

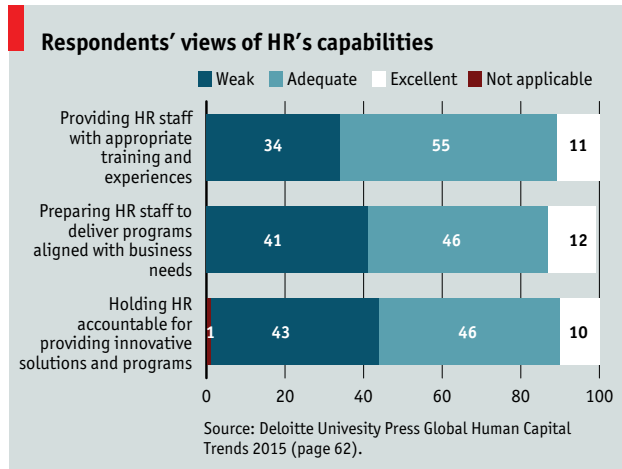
27 Mark A. Huselid, Brian E. Becker and Richard W. Beatty (2005), *The Workforce Scorecard: Managing Human Capital To Execute Strategy*. Boston, MA: Harvard Business School Press.

28 Human Capital Management Institute, *Managing an Organization's Biggest Cost: The Workforce* ([http://www.hcminst.com/files/OrgPlus\\_Total\\_Cost\\_Workforce\\_.pdf](http://www.hcminst.com/files/OrgPlus_Total_Cost_Workforce_.pdf))

29 Deloitte University Press (2015), *Global Human Capital Trends 2015* ([http://d2mtr37y39tpbu.cloudfront.net/wp-content/uploads/2015/08/DUP\\_GlobalHumanCapitalTrends2015.pdf](http://d2mtr37y39tpbu.cloudfront.net/wp-content/uploads/2015/08/DUP_GlobalHumanCapitalTrends2015.pdf))

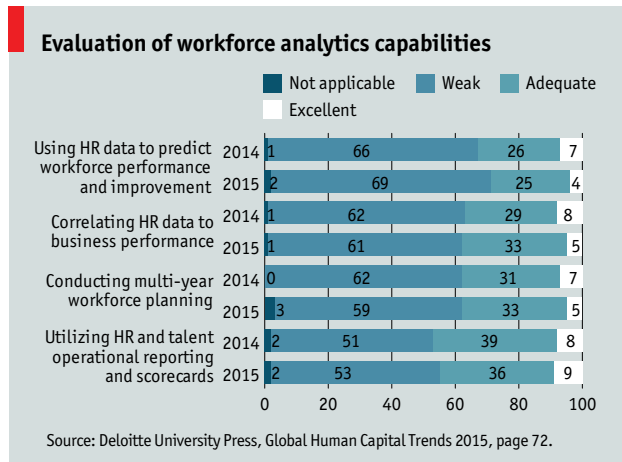
business needs”, and a significant proportion (between one-third and one-half) regarded them as “poor” (Figure 11). Clearly there is work to be done, as well as room for improvement.

Figure 11



Respondents' evaluations of their organizations' workforce analytics capabilities were similarly negative. The majority had a dim assessment of the HR function's ability to perform analytical projects, such as “conducting multi-year workforce planning” or “using HR data to predict workforce performance and improvement”. (Figure 12).

Figure 12



Ram Charan, the author and consultant, wrote in a 2014 *Harvard Business Review* article that the expertise of the HR function may not always have adapted fully to the data revolution: “Most [HR practitioners] are process-oriented generalists who have expertise in personnel benefits, compensation, and labor relations.”<sup>30</sup>

30 Ram Charan, “It’s time to split HR”, *Harvard Business Review*, July 2014 (<https://hbr.org/2014/07/its-time-to-split-hr>)

Putting an emphasis on benchmarking, rather than what Professor Huselid refers to as “strategic performance metrics”, may be part of this mindset. “HR professionals have routinely relied on benchmarked comparisons of cost and other efficiency-based performance outcomes associated with activities of the HR function,” write Huselid and Becker. “But a reliance on this type of benchmarking measures not only fails to measure HR’s important contributions to firm success; it also can encourage an approach to human capital management that is counterproductive.” It will ultimately result, they argue, in HR being managed like a commodity, rather than as a strategic asset (Figure 13).<sup>31</sup>

Figure 13

Benchmarking	Strategic metrics
Emphasizes administrative efficiency as performance standard	Emphasizes strategic impact as performance standard
HR function is primarily a cost-center	HR professional is primarily a strategic partner
Measures based on dollar equivalents	Measures based on strategic relationships
Low risk, low return	Higher risk, higher return
Can rely on current HR competencies	Requires new HR competencies
Focus on HR activities	Focus on business outcomes relevant to line managers
Typically can collect data using off-the-shelf software	Often requires customized information technology
Reconfigures existing data	Requires new measures
HR owns only HR	HR shares responsibility for human capital performance with line managers
Requires no understanding of strategy	Irrelevant if not driven by strategy
Results in HR being managed like a commodity	Results in HR being managed like a unique strategic asset
HR increasingly marginalized and outsourced to low-cost vendor	HR not easily outsourced because contribution is firm-specific and based on more than cost control

Source: Measuring HR? Benchmarking is Not the Answer!, *HR Magazine*, December 2003, page 58.

31 Brian Becker and Mark Huselid, “Measuring HR? Benchmarking is Not the Answer!”, *HR Magazine*, December 2003 (<http://markhuselid.com/pdfs/articles/2003%20Becker-Huselid%20HR%20Magazine.pdf>)

### Preparing the HR function for the future

The debate about how HR must change its approach has been going on for some years now, but according to Deloitte and other surveys there is still room for improvement. Further development will come from gradually changing the skills profile within the function. It could be that many HR people who were recruited in the past, based on the need for a wholly different set of skills, are ill suited for HR's evolving role.

Many may also struggle to identify and recruit others with the skills and background necessary to perform well in the new and changing environment. A two-year study, led by Professor Boudreau and completed in 2015, indicates that HR leaders are themselves aware of these challenges. Referring to the report's conclusions based on interviews with 40 chief human resources officers (CHROs) and other organizational leaders, Professor Boudreau says: "The HR profession as we know it is at a tipping point, in danger of being irrelevant to unprecedented future demands and opportunities, which can be met only by accelerating its evolution dramatically."<sup>32</sup>

There have been various responses to this danger. Mr Charan believes that old HR and new HR are worlds apart in approach and therefore require very different, and possibly irreconcilable, skills. Controversially, his view is that separation would be beneficial: "One—we might call it HR-A (for administration)—would primarily manage compensation and benefits...The other, HR-LO (for leadership and organization), would focus on improving the people capabilities of the business and would report to the CEO."<sup>33</sup>

Some companies are looking to bring in people from outside the HR function to deal with the more business-focused, strategic segment of the work. It may be easier, so the reasoning goes, to ensure that commercially aware and experienced people are up to speed with HR practices. For example, according to the

Deloitte report, "research shows that nearly 40% of new CHROs now come from the wider business, not from HR".

A facility for handling data goes hand in hand with this desired strategic perspective. "Confidence in HR is low," says Cecile Alper-Leroux, vice president of innovation at Ultimate Software, a developer and provider of cloud-based human capital management (HCM) solutions for businesses. "However, at companies where HR uses data to make decisions consistently, HR's credibility in the organization increases considerably. For example, in a recent report by Constellation Research, INTRUST Bank reported that using data-driven 'predictors' from their HCM software solution, UltiPro, they were able to make much more accurate predictions on employee flight risks. They found that the data-based predictors were more accurate than the actual managers' predictions of retention risks and more realistic than actual manager assessment of high performers."

Executives and academics interviewed for this report consistently emphasize that the new-style HR professional should possess a powerful combination of two skills—a head for analytics together with the ability to present findings in the manner and language convincing to senior executives. "Storytelling is now a vital skill," says Professor Boudreau. Professor Cascio agrees: "It's critically important to use data and analysis to tell stories to executives that have meaning to them." However, the gap between current reality and ideal scenario will not be bridged overnight. A 2012 EIU survey of HR and non-HR executives conducted for KPMG, revealed that the HR function is considered to be particularly weak at "measurably proving the value of HR to the business" and contributing "insightful and predictive workforce analytics that provide understanding of the people agenda in businesses".<sup>34</sup> These findings are also reflected in several of our interviews (Figure 14).

**Figure 14**



<sup>32</sup> John W. Boudreau (2015), "Reimagining HR: The Paradox of a Profession at the Tipping Point", *People + Strategy*, Volume 38, issue #4, pp. 46-55.

<sup>33</sup> Ram Charan, "It's time to split HR", *Harvard Business Review*, July 2014 (<https://hbr.org/2014/07/its-time-to-split-hr>)

<sup>34</sup> Economist Intelligence Unit report for KPMG (2012), *Rethinking Human Resources in a Changing World*, <https://www.kpmg.com/Global/en/IssuesAndInsights/ArticlesPublications/hr-transformations-survey/Documents/hr-transformations-survey-full-report.pdf>

But if organizations do not manage to make this business case, the effect can be extremely powerful. Professor Cascio cites a case involving Wawa Inc., a chain of 578 food service and convenience stores in five US Mid-Atlantic states. “They previously believed that hourly wage rates were the best predictor of turnover among retail clerks,” he says. “However, data revealed that hours worked per week were more strongly correlated with turnover. By moving from 30% full-time and 70% part-time employees to a 50/50 split, Wawa cut voluntary turnover by 60% in four years.” The lesson, according to Professor Cascio, is that “nothing beats a within-firm story”.<sup>35</sup>

### **Institutionalizing data**

Several large companies have established small but committed teams within the HR function that focus on data analysis (see case study below, “How Google developed its renowned workforce analytics team”). The purpose of these teams is not just to develop useful insights, but to act as a seed of further development—spreading their expertise across the function as a whole and educating the executive tier about the potential commercial impact of HR data.

“At IBM we developed an online course and face-to-face workshops to teach analytical skills, such as basic statistics, storytelling and financial acumen, to HR professionals”, says Mr Ferrar of IBM Smarter Workforce. “Over a couple of years we have trained several hundreds of people.”<sup>36</sup>

This is not an attempt to turn the majority of HR people into advanced mathematical modelers, but merely to appraise them of the instruments now at their disposal and make them more comfortable with the specialist jargon of data science. “Your average HR professional is not going to become a data scientist,” says Professor Cascio. “The HR professional of the future will have to ask incisive questions, be proficient in the language and be an intelligent consumer of data.”<sup>37</sup>

But who are the new HR-focused data scientists who

can play such an important role in embedding workforce analytics and thus help the HR function in its bid to become a strategic partner to the business?

“There is a growing need for universities, professional associations and certification organizations to respond to the elevated demand for more sophisticated analytics skills among HR and other leaders,” says Professor Boudreau.<sup>38</sup> Some companies are turning to graduates of industrial and organizational psychology, with their combined ability to handle figures and think critically about human behavior.<sup>39</sup> In the absence of sufficient numbers of people trained specifically in HR analytics, another option might be to recruit data-oriented personnel from other functions. “Why not reach out to other departments and bring them into the HR function?” asks Professor Boudreau. “Why not invite people from R&D, engineering or marketing, to help analyze the data and then, just as importantly, sell the analysis to the organization’s decision-makers?” The scope to learn from other departments should not be underestimated. As Peter Louch, the founder and CEO of Vemo, a provider of workforce analytics software and consulting services, points out: “HR has been late to adopt tools that other sectors—finance, academia and marketing—have already embraced.”<sup>40</sup>

Another, perhaps temporary, option is to hire the necessary expertise from outside. “We have some customers with no data scientists on their HR team,” says Mr Louch. “Organizations need to assess if they want an in-house data science capability, but it won’t be absolutely imperative that they have one.” Even if the data analysis is outsourced, however, the internal HR team will still have to understand and ask the right questions at the outset, and then have the capability to understand the quantitative results and their ramifications for the business.

The HR function is at a crossroads. It will need imaginative solutions to grow into this new role and persuade other leaders that it is capable of generating the people-centered insights that will have a meaningful impact on organizational performance.

35 Interview with Wayne Cascio, July 23rd 2015.

36 EIU interview with Jonathan Ferrar, July 31st 2015.

37 EIU interview with Wayne Cascio, July 23rd 2015.

38 EIU interview with John Boudreau, August 20th 2015.

39 *gradPSYCH Magazine*, “Hot jobs: Big-data psychologists”, January 2013 (<http://www.apa.org/gradpsych/2013/01/big-data.aspx>)

40 EIU interview with Peter Louch, August 18th 2015.



## CASE STUDY: How Google developed its renowned workforce analytics team

By 2006 Google had 10,000 employees and was expanding at a frenetic pace, doubling in size every year. Despite its appeal as an innovative and exciting place to work, the company's interview process was laborious. Candidates could expect to devote many hours to the process, which sometimes lasted several weeks, before starting at the firm. Not only did the lengthy procedure frustrate candidates, but it also cost the Google employees conducting these interviews precious time, which they could otherwise have spent on their core jobs, focused on innovation and development.

The company set up an analytics team to see whether this process could be streamlined. Early research, for example, demonstrated that the optimum number of candidate interviews was four. After that juncture, the cost of taking employees away from their work outweighed the incremental benefits of further interviews.

But before the team could take full advantage of what analytics could offer, it had to make significant improvements to the collection, storage and cleanliness of the data, including information about job applicants, interviewers, interview scores, headcount per category of employee, attrition and other historical data.

The company immediately saw the potential for using all the data gathered during this successful exercise as a basis for expanding the scope of its workforce analytics team. Rebranded as "People Analytics" in 2007, the team began to investigate other areas, such as optimizing compensation practices, nudging employees to engage in healthier behaviors (from eating better to saving more for retirement), and advising business clients on the best ways to grow and develop their organizations.

Reflecting the rapid development of the company as a whole, the team's horizons expanded still further just a year later, when Laszlo Bock, senior vice president of people operations, commissioned Google's People and Innovation Lab (PiLab) to focus on rigorous social science research, which could serve as the foundation for future HR decisions and practices. "The team tackles questions that the business doesn't necessarily ask us to solve for the short term, but are problems that we want to understand better for the long run, and which require a lot more time or in-depth analysis," says Kathryn Dekas, a member of the People Analytics team. "[PiLab's] mission is to conduct innovative research that transforms our practice, both within Google and beyond."<sup>41</sup> Aided by their relationships with external academics, PiLab employees set aside 25-50% of their time to generating ideas and launching research projects to solve problems.

One of PiLab's early successes was the launch of Project Oxygen, an analytics-based assessment of management at Google (see Section IV for more details).

41 Presentation by Kathryn Dekas, "People Analytics: Using Data to Drive HR Strategy and Action", September 19th 2011 (<https://www.youtube.com/watch?v=l6lSTjupi5g>)



## Section IV: Solutions—the development and implementation of workforce analytics

The preceding sections of this report have dealt with the driving forces of the rise of workforce analytics; the theoretical foundation of the field; and how the HR function must change in light of its rapidly evolving role, now increasingly centered on strategy and analytics.

This section will focus on the actual implementation of workforce analytics, and on relevant developments within the organizational world in recent years.

It will ask which areas of HR are considered most likely to benefit from analytics in the future. It will examine both reactive analytics (investigating why something has happened in the past) and predictive analytics (highlighting important issues before they occur), exploring the areas of HR in which investment in predictive analytics has the highest rate of return. Lastly, it will look at which types of organizations have been the quickest or most effective at developing workforce analytics, as well as offering some further examples of successes to date.

### **Leveraging enhanced data and analytics: Specific HR benefits**

Section I detailed a Tata Consultancy Services survey, in which companies across industries were asked which areas of HR would derive the greatest benefits from Big Data. The majority of respondents pointed to improving retention as the area most amenable to progress. Several other areas, such as “identifying the effectiveness of recruitment campaigns”, “gauging employee morale” and “determining which employees to promote”, followed closely behind.

Many of the results were closely clustered, with few areas of HR thought to have very high benefits or, on the

other hand, have very limited benefits. This once again suggests that the field is still evolving and that companies are still very much at the experimentation stage. “Attrition and retention are major areas of interest in many companies,” says Mr Ferrar, who leads the analytics practice for IBM Smarter Workforce. “But analytics is expanding to new areas, such as conducting risk analysis of labor relations, compensation optimization, social media analysis, recruitment analytics and corporate employee engagement.”

Several companies have indeed registered successes on the retention front from analytics, thus explaining its early popularity. HR practitioners at McGraw Hill Financial, an American financial information and analytics company, for example, can now instantly summon up information revealing the profile of those most likely to leave the organization in the near future. The profile may involve gender, age, department, education history, specialization and other relevant details.

IBM is another company that has benefited from this particular use of analytics. “HR retention analytics is a common starting point, and we were no different at IBM,” says Mr Ferrar. “It is easy to convert into financial ROI, and most business executives see the value. I always start with quick wins such as this.”<sup>42</sup>

But it may nevertheless be too early to identify any definitive trends in HR investment. In a 2015 study by Harvard Business Review Analytics Services and Visier, more than two in three organizations had still not allocated an HR budget for analytics solutions and software.<sup>43</sup> It could well be that of the minority which have allocated resources, only a few are very advanced in their thinking or implementation (Figure 15).

<sup>42</sup> EIU interview with Jonathan Ferrar, July 31st 2015.

<sup>43</sup> All organizations had more than 500 employees. The most commonly cited functional role among respondents was HR (18%). The majority (60%) were senior business leaders. Three-fourths of respondents were drawn from companies that operate in more than one country and 40% from companies based in North America.

Figure 15

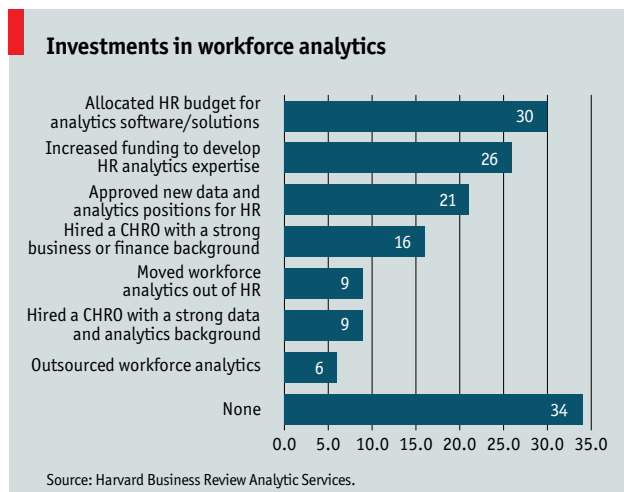
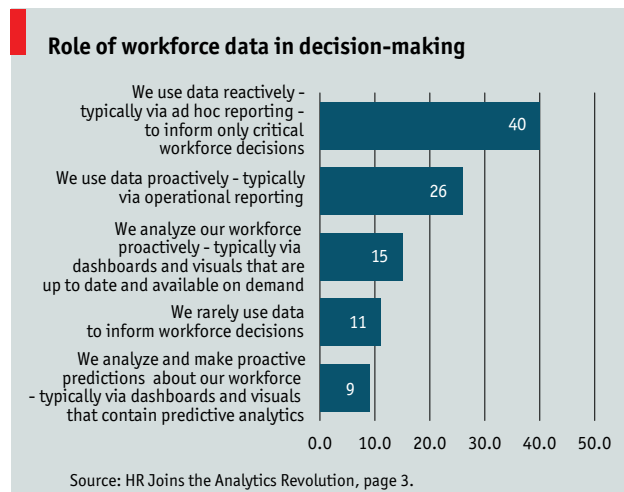


Figure 16



### Using predictive analytics as a competitive advantage

The McGraw Hill Financial case is an example of predictive analytics—using data to identify the likelihood of future outcomes based on historical data. This marks a departure from statistics and reporting, which merely describe what has happened in the past.

A 2014 survey by Harvard Business Review Analytic Services of HR and other executives indicates that the use of predictive analytics is still sporadic. Just 9% of the companies surveyed said they made predictions about their workforce based on analysis, considerably lower than the 40% who said they used data reactively to inform critical workforce decisions (Figure 16).<sup>44</sup>

However, the sphere of predictive analytics looks set to attract increasing attention over the coming years. In two EIU surveys of both HR and non-HR senior executives, one from 2012 and one from 2014, the percentage of those who said their organization's HR function "excelled" at providing insightful, predictive analytics increased from 15% in 2012 to 23% two years later.<sup>45</sup> As more successes emerge, further interest in predictive analytics will undoubtedly follow.

If one fertile area of predictive analytics revolves around boosting retention, another seeks to improve the quality of hires. For example, Ajinga, a recruitment solutions company in Greater China, helped Nielsen, a global information and measurement company, to refine its hiring process in the country. Résumés in China are of notoriously poor quality, and in the absence of detailed

information on applicants, employers have simply resorted to trawling the best universities for potential recruits. These graduates are thus in a highly marketable position, with those from universities with lesser standing often left without suitable employment.

Nielsen suspected that there were quality applicants from other universities in China and overseas who would fit in well with the firm's culture, but needed a way to identify and filter them. They brought in Ajinga to use analytics to reach a broader audience, while at the same time prioritizing "best fit" candidates. Ajinga's analytics solutions matched Nielsen's organizational culture and specific job requirements to the individual applicant's personality and particular abilities.

Beecher Ashley-Brown, Ajinga's co-founder and senior vice president, claims that Nielsen saw an immediate improvement from the approach. Applicant volume increased four times in comparison with previous years. Offer acceptance rates rose from under 70% to over 80%, while first-year retention, a key success metric for Nielsen, went up by over 20%.<sup>46</sup>

### Varying degrees of success

Which companies are at the forefront of the analytics revolution? Smaller or younger companies are clearly less able to make large-scale investments. "There is a difference in how large multinationals, compared to smaller organizations, tackle analytics, given their large budgets, scale and demand for globalization," says Professor Boudreau. "However, the fundamental goal remains the same for all organizations—focus on the important issues and generate actionable insights where they are most pivotal." Indeed, it could also be argued that smaller companies, despite their limited financial muscle, are unencumbered by unwieldy corporate bu-

<sup>44</sup> Harvard Business Review Analytic Services (HBR-AS), sponsored by Visier, *HR Joins the Analytics Revolution*, August 2014. One-third of respondents were HR professionals. Altogether, 80% of respondents identified themselves as managers/supervisors or higher, with 36% director level or higher. In addition, 38% came from companies with 10,000 or more employees and 50% came from enterprises with 5,000 or more employees. The geographical breakdown was roughly equal among the Americas, Asia, and Europe/Middle East/Africa.

<sup>45</sup> Economist Intelligence Unit (2012), "CFO perspectives: How HR can take on a bigger role in driving growth"; and Economist Intelligence Unit report for PwC (2014), *Gut and Gigabytes*.

<sup>46</sup> EIU interview with Beecher Ashley-Brown, July 20th 2015.

reaucracy and can thus act more quickly and decisively. It may also be that smaller, more entrepreneurial companies are more likely to boast younger senior executives who tend to be more technologically savvy and instinctively drawn to data analysis.

Although size may sometimes play a role in determining organizational commitment, Mr Louch of Vemo does not believe that companies from certain industries are more likely than others to use analytics. "It's not so much a specific sector," he says. "Rather, it's organizations with leaders who want to be data-driven and embrace analytics. It's more cultural than sectoral."<sup>47</sup>

Whatever the level of executive enthusiasm for the field, however, it could be that certain industries are more likely to possess employees with the requisite skills to derive the maximum benefit from analytics. A 2015 EIU survey for KPMG, Evidence-based HR, found that nearly two-thirds of respondents in the IT and technology sector (64%) expected the increasing use of data-driven insights in their HR function to boost profitability by more than 10% in the next three years, a substantially greater proportion than in any other sector (Figure 17).

"It was easier to integrate analytics in a firm like 3M because it is a science and engineering-based company," says Karen B Paul, who leads the company's global

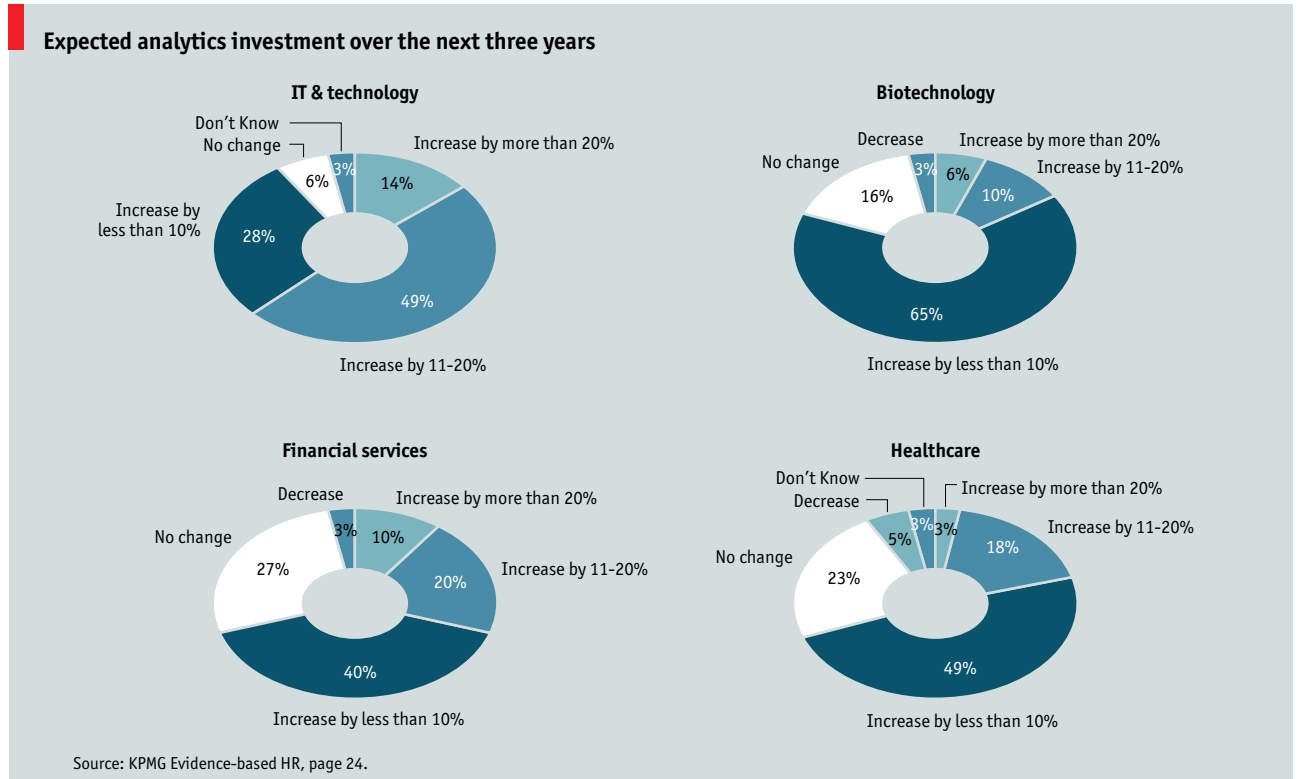
HR measurement. "Each firm will have different strengths, but 3M's strong science and engineering background certainly shines through in its analytics solutions."

Google is one technology company that has attached great importance to workforce analytics solutions. One example involves its research on leadership. From its inception, the company's culture had been highly skeptical of the power of management, thinking engineers should be spending their time on goal-oriented tasks rather than wasting time communicating with managers. Several years ago it decided to test its preconceptions by launching Project Oxygen, which asked two questions: Do managers really matter? And if so, which managers have the greatest positive impact?

The company first discovered that an individual's satisfaction with his or her manager correlated with a reduced likelihood of leaving the company, plus greater employee satisfaction in multiple areas, such as work-life balance and career development. At this point, Google set out to discover exactly what the best managers did.

The project analyzed thousands of qualitative comments from internal surveys, performance reviews and submissions for the company's Great Manager Award. Its conclusion identified eight behaviors shared by high-scoring managers (Figure 18).

Figure 17



47 EIU interview with Peter Louch, August 19th 2015.

Figure 18



In the wake of this research, teams were then asked to rate their managers on a core set of activities—such as giving actionable feedback regularly and communicating team goals clearly—all of which related directly to the management behaviors deemed to be most important. Managers with a low score in any particular category are then given suggestions, such as taking a relevant training course, on how to improve in that particular area.<sup>48</sup>

"Project Oxygen revolutionized the way Google thought of managers," says Brian Welle, director of people analytics at Google. "Not only did managers matter, but managerial ability wasn't static. The same manager's results could fluctuate from one survey to the next, and thus kept everyone focused on maintaining their performance."<sup>49</sup>

Google's successes have led to further investment in the field. Indeed, the companies that will inevitably be the most responsive to the idea of workforce analytics are those that have derived clear commercial benefits as a result of the practice.

Some of the most powerful results have arisen from the interaction between employee and customer data. "Evidence-based analysis is not just about determining how well people are performing," says Mr Ferrar at IBM. "It can also calculate how the performance of the people links to the consumer brand, establishing and measuring that link between employee, customer and revenue. This interplay really captures C-suite attention." (See the McDonald's case study below).

It is results such as these that lead to the virtuous cycle—measurable results spark executive attention, which leads to increased investment, which spurs more results and more investment.

<sup>48</sup> David A. Garvin, "How Google Sold Its Engineers on Management", *Harvard Business Review*, December 2013 (<https://hbr.org/2013/12/how-google-sold-its-engineers-on-management>)

<sup>49</sup> ELU interview with Brian Welle, August 14th 2015.

## Successful examples of workforce analytics implementation

### Example 1: Age and business performance

A 2009 study conducted by Lancaster University Management School, which looked at more than 400 McDonald's restaurants in the UK, found that employees aged over 60 had a major impact on the company's business performance. The research showed that levels of customer satisfaction were on average 20% higher in restaurants that employed at least one worker over 60. "The research clearly demonstrates the very real business value of recruiting an age-diverse workforce," says Professor Paul Sparrow, director of the Centre for Performance-Led HR at Lancaster University. "For McDonald's, we can show that the presence of older employees improves customer satisfaction, and in a service-led business such as theirs, this satisfaction drives the bottom line. Mature employees are a key part of the performance recipe. This is good news for the workforce given the changing demographics of our society."<sup>50</sup>

Incidentally, this case highlights one of several ethical and legal issues raised by workforce analytics (discussed further in Section V). If HR data reveal that better performers are of a certain age, live in a certain area or come from a certain ethnic group, how should companies use this information while still complying with the law?

### Example 2: Mirroring customer diversity through workforce planning

Kaiser Permanente is an integrated health insurer, hospital and medical service provider with more than 64,000 employees in Northern California alone. In 2007 the company's research discovered that the ethnic makeup of the company's workforce did not reflect the wider population. For example, in the Central Valley area in California 37% of the population was Hispanic, compared with only 27% of its workforce. Meanwhile, its membership in the area was 24% Hispanic.<sup>51</sup>

The company saw a commercial opportunity. Matching the ethnic makeup of its staff to the broader population could improve business performance. "Changing demographics dictate that diversity considerations play a significant role in how we deliver care," said George Halvorson, CEO of the company from 2002 to 2013. "Being culturally competent as caregivers helps us to both serve existing members and attract new ones."<sup>52</sup>

Kaiser Permanente believes that its subsequent systematic focus to attract, develop, retain and deploy diverse talents has given it a major competitive advantage over its rivals. Workforce analytics plays a critical role in this whole process, forecasting the ethnic composition of particular regions and any relevant shortfall in their existing workforce. By 2013 the company was reporting that more than 11,000 of its employees and physicians were able to dispense care and service in more than one language.<sup>53</sup>

### Example 3: Boosting government efficiency through analytics

The 2007-09 recession hit Houston, Texas as it did all cities in the United States. City leaders were forced to cut budgets and make many difficult decisions about layoffs. In going through this process, they realized that they did not have sufficient information about labor costs and work schedules necessary to make key budget decisions.

The city asked Kronos, a workforce management software and services company, to implement workforce analytics, employee scheduling and absence management software solutions for its 24,000 employees in all its various departments.

The initiative produced several benefits. First and foremost, the human capital portion of the city's budget is now much more transparent and can thus be controlled more easily. Managers and employees are more aware of how much time they have worked, allowing for better management of vacation days and overtime. For example, a telephone application was devised to enable parks and recreation crews to call in at the start and end of their day. There is also greater precision in several areas, such as payroll calculations and costing for projects and grants.

The resulting efficiencies have saved the city an estimated US\$7.2m annually, as well as enabling a more effective deployment of staff for the benefit of Houston's inhabitants.<sup>54</sup>

50 The Telegraph, "Workers over 60 are surprise key to McDonald's sales", August 13th 2009 (<http://www.telegraph.co.uk/finance/newsbysector/retailandconsumer/6017391/Workers-over-60-are-surprise-key-to-McDonalds-sales.html>)

51 "Increasing Diversity and Cultural Competency in the Central Valley", presentation by Laura Long, workforce consultant at Kaiser Permanente, February 4th 2011 ([www.calhospital.org/sites/main/files/file.../Kaiser\\_Permanente.ppt](http://www.calhospital.org/sites/main/files/file.../Kaiser_Permanente.ppt))

52 *Talent Management*, "CEOs who lead the way", September 11th 2008 (<http://www.talentmgt.com/articles/ceos-who-lead-the-way>)

53 Kaiser Permanente, *Annual Report 2013* ([http://share.kaiserpermanente.org/static/kp\\_annualreport\\_2013/#diverse-populations](http://share.kaiserpermanente.org/static/kp_annualreport_2013/#diverse-populations))

54 IDC Government Insights "City of Houston: Transparency, Efficiency, and Accuracy Through Workforce Management", 2011 (<http://www.kronos.com/download/thank-you.aspx?did=14770&rr=0&LangType=1033#>)

## Section V: Challenges, obstacles and pitfalls in the implementation of workforce analytics

Workforce analytics will certainly encounter some bumps in the road. Successful business results from the use of analytics will do much to garner the necessary support for surmounting these obstacles, while also leading to further investment.

This section looks at some of the obstacles that currently stand in the way of the development of workforce analytics, as well as common pitfalls that trip up organizations looking to expand the role of data in HR.

### Lingering skepticism

One potential obstacle to further investment in workforce analytics may be a residual mistrust about the HR function among a significant minority of senior executives. In a 2012 EIU survey, for example, one-third of CEOs and almost one-half of CFOs believed that HR does not have a good understanding of the people needs of their business. If this trust is absent, then executives are more likely to believe that workforce analytics, conducted by HR, will not meet its desired goals.<sup>55</sup>

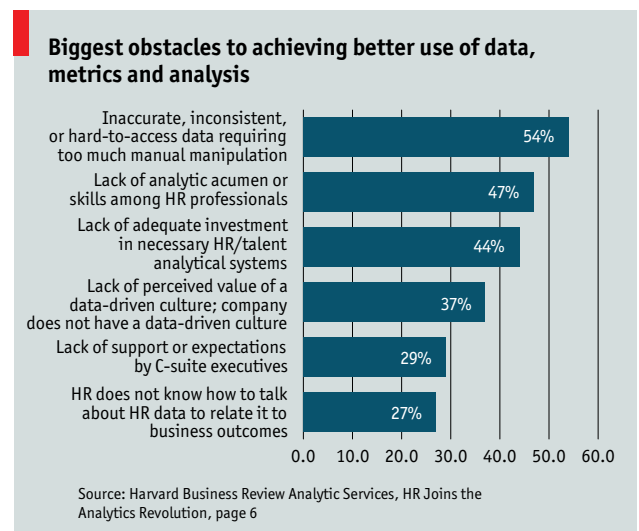
As HR increases its successful use of workforce analytics, this perception is likely to change. "It can be difficult for HR to establish credibility," says Ms Alper-Leroux of Ultimate Software. "The good news is that when HR uses data consistently to make decisions, their credibility in the organization is greatly enhanced." Indeed, the field of workforce analytics offers a genuine opportunity to register accomplishments which have a major positive impact on the business.

### Skills gap

As with all functions, HR will need to become better equipped to handle and analyze data than is currently the case (see Figure 19). That doesn't mean that HR practitioners need to become data scientists. But in a more data-centered world they will certainly need to understand general statistical analysis and be able to

transmit findings in a way that business leaders relate to. "More schools are now offering introductory courses as well as graduate programs in business analytics," notes Professor Cascio. "HR professionals and students who aspire to work in this field should avail themselves of opportunities to become familiar with the language and the methods of business analytics."<sup>56</sup>

Figure 19



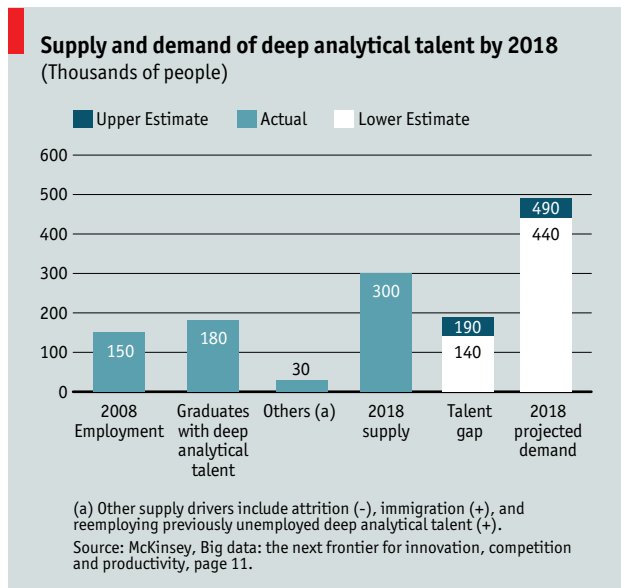
The analytics team will play a key part in this process, not just unearthing insights but also helping to educate the rest of the HR department. However, it is doubtful whether the supply of data scientists, be it in HR or in other functions, can meet demand. A 2011 McKinsey report estimated that by 2018 the United States alone could face a shortage of 140,000-190,000 people with "deep analytical skills", as well as a deficit of 1.5m managers and analysts with the know-how to use the analysis of Big Data to make effective decisions (Figure 20).<sup>57</sup>

55 Economist Intelligence Unit, "CFO perspectives: How HR can take on a bigger role in driving growth", 2012 (<http://www.oracle.com/us/c-central/cfo-solutions/eiu-ibm-oracle-cfo-report-1877303.pdf>)

56 EIU interview with Wayne Cascio, July 23rd 2015.

57 McKinsey (2011), "Big data: The next frontier for innovation, competition, and productivity" [http://www.mckinsey.com/insights/business\\_technology/big\\_data\\_the\\_next\\_frontier\\_for\\_innovation](http://www.mckinsey.com/insights/business_technology/big_data_the_next_frontier_for_innovation)



**Figure 20**

Because of these shortages, data scientists command high salaries. According to the O'Reilly Media Data Science Salary Survey, their median annual salary in the United States in 2014 was US\$144,000.<sup>58</sup> This payoff drives more people into the field as universities scramble to offer curriculums that equip students with potentially lucrative skills for the information economy. A 2015 *Bloomberg Businessweek* article noted: "30 new data science programs in North America, either up and running or in the works; the University of Virginia began offering a master's in 2014, as did Stanford."<sup>59</sup>

#### Avoiding common pitfalls when using analytics

To ensure a successful outcome, organizations should follow these suggestions to avoid common pitfalls when using analytics:

#### Connect analytics with business needs

Organizations must learn to feel comfortable with data, but what is even more important is having knowledge of the business itself. It is crucial to first identify the business needs and then tie the research directly to those issues that genuinely affect the organization's performance. Companies today are overwhelmed by data, so it is important to clarify first what will and what will not be measured. Experts continually warn against aimless analysis of data, emphasizing instead that each piece of research should be astutely directed, asking a specific question that the organization needs answering. Although the organization collects a variety of data, not

all of them will be relevant. The desired business outcomes should drive the analytics.

"A fundamental principle applies to all workforce analytics," says Professor Boudreau. "There must always be a decent chance that the information you are trying to collect and analyze will correct a costly business error. Always keeping this principle front of mind implies purpose, something organizations too often lose sight of." A 2014 Visier survey of 300 US-based companies found that the greatest business barrier to the successful implementation of workforce analytics was "an unclear connection between workforce analytics and results".<sup>60</sup>

#### Organize and clean the data<sup>61</sup>

While it need not be perfect, the information must at least be available and decipherable if the research is to be effective. Many large and well-established companies have only recently begun to compile their workforce data in an organized manner. "When I first started working at Google in 2006, one of our top priorities was to collect clean data and store it in a way that we could easily retrieve and analyze it," says Dr Welle, director of people analytics at the company. "We spent a year getting a handle on this, and that was our first major achievement."

If deemed necessary, an array of external companies, large and small, are now on hand to offer assistance with data storage solutions, as well as in tackling subsequent projects.

#### Avoid faulty logic and perfectionism

Organizations can easily run into trouble when they confuse correlation with causation in research results. For example, if data show that older sales representatives sell more than their younger colleagues, that doesn't necessarily mean that age is the cause. It could be that the older workers have received more training or get more referrals, and these are the true drivers of higher sales.

Another potential issue is failing to account for time when examining measurements. For example, if analysis focuses only on the present, then it might appear that providing training is a bad idea because it costs money and will lower profits today. However, when the time horizon is expanded, the increased capabilities and employee engagement generated may actually increase profits.

Another obstacle can be procrastination caused by the fear of imperfect data. Organizations don't need complete assurance that measurements are totally ac-

58 *Forbes*, "2014 Data Science Salary Survey", December 5th 2014 <http://www.forbes.com/sites/oreillymedia/2014/12/05/2014-data-science-salary-survey/>

59 *Bloomberg Businessweek*, "Help Wanted: Black Belts in Data", June 4th 2015 <http://www.bloomberg.com/news/articles/2015-06-04/help-wanted-black-belts-in-data>

60 Visier, 2014 Survey Report—*The State of Workforce Analytics and Planning* <http://www.visier.com/lp/2014-survey-report-the-state-of-workforce-analytics-and-planning/>

61 Data cleaning is defined here as the process of amending or removing data in a database that are incorrect, incomplete, improperly formatted or duplicated.

curate before embarking on a project. "HR's constituents often demand precision in the numbers before they will use them," explains Professor Boudreau. "On the face of it, this seems logical, but in practice it can lead to paralysis, because no numbers are ever perfectly precise. The disciplines of finance and marketing have systems to work with imperfect numbers, as should HR."<sup>62</sup>

### **Start small**

Once the first building block of gathering and cleaning the data has been put in place, organizations should first take on simple projects and execute them well to gain organizational buy-in. "Starting small is critical", says Mr Ashley-Brown of Ajinga. "Find opportunities where Big Data initiatives can provide the user and senior leadership with value, and then expand from there."<sup>63</sup>

Establish cross-functional co-operation

A lot of relevant information may reside in departments outside HR. For analytics to be effective, all functions (such as finance, marketing and sales) will need to co-operate in data gathering and analysis, and in integrating the systems where the data are stored. Establishing consistent IT systems across the organization, as well as cross-functional teams to collaborate on data gathering and analysis, will go a long way toward ensuring that this obstacle is overcome.

### **Cultural barriers**

Workforce analytics will be implemented by people. It is inevitable, therefore, that personal insecurities and politics, which appear in every organization, will be evident in this field too. Although these cultural factors may slow the pace of the data revolution, they will not stop it.

Many executives still make decisions based on gut instinct. But evidence can quickly expose fallacies in such judgment, thus potentially undermining the reputation of highly paid and respected executives. In other words, analytics can be viewed as a threat.

This fear is, however, based on an erroneous assumption. Evidence should be seen as an aid, not a replacement. Executives still have to make decisions. The only difference now is that they have more data at their disposal to boost their chances of deciding wisely. "Senior managers have to allow data to change their opinions," says Professor Cascio. "However, data alone cannot substitute for good judgment."<sup>64</sup>

The perceived threat exists on another level too. Many HR professionals may feel a sense of trepidation that reliance on data will render their skills irrelevant and endanger their livelihood. "There is a quiet resistance to analytics, which comes from a concern that their role is being usurped by data," says Mr Louch of Vemo. "They

are asking themselves: "If I'm supposed to spend a lot of my time working on analytics, does that mean I need to be a statistician?"<sup>65</sup> But according to Professor Cascio, this concern also emanates from a misguided apprehension. All functions within an organization need to feel comfortable with data, but that in no way means that other skills they have developed are now redundant.

### **Ethical questions**

The Big Data era brings with it issues of ethics and privacy, the ramifications of which organizations and society have not yet fully confronted. Employers now have the ability to pick up all sorts of personal information about employees and candidates, but do they have the right to do so?

How much information about an employee should an organization track without going beyond what seems acceptable? Should an organization, for example, try to establish a correlation between performance and physical activity by measuring the distance each employee walks each day? And will companies act unethically or shoddily in response to the conclusions of their analytics? Will they, for example, neglect those employees deemed by analytics to be more likely to jump ship to another organization?

Close tracking of consumer behavior has raised the hackles of many, but linking employees' livelihood to monitoring (and candidates' job prospects to research findings about their personal details), in a process that they might not even be aware of, seems to cross the boundary of acceptable ethical practice. In some instances and in some jurisdictions, the legality of such an exercise may even be called into question.

Laws on monitoring, while still not yet fully developed in this new field, favor the employer more in some places than in others. In the United States, for example, collecting personal information about employees is generally seen as legitimate, as long as the employer can cite non-discriminatory, legitimate business purposes. In the European Union, however, the onus is on employers to justify why they need to collect personal data from their employees.<sup>66</sup> In Canada, too, it is illegal for an employer to monitor employees' private emails unless the seriousness of an alleged offence overrides the right to privacy.<sup>67</sup> In Japan, meanwhile, personal information about applicants must be collected directly from applicants or from third parties with the applicant's consent. Collection of sensitive personal information without ex-

62 EIU interview with John Boudreau, August 20th 2015.

63 EIU interview with Beecher Ashley-Brown, July 20th 2015.

64 Interview with Wayne Cascio, July 23rd 2015.

65 EIU interview with Peter Louch, August 19th 2015.

66 Miriam Wugmeister, "Comparing the U.S. and EU Approach to Employee Privacy", Morrison Foerster, February 29th 2008 (<http://www.mofo.com/resources/publications/2008/02/comparing-the-us-and-eu-approach-to-employee-privacy>)

67 *The Globe and Mail*, "Supreme Court rules employees have right to privacy on work computers", October 19th 2012 (<http://www.theglobeandmail.com/news/national/supreme-court-rules-employees-have-right-to-privacy-on-work-computers/article4625660/>)



press consent is generally prohibited.

But even when legal boundaries are not clearly crossed, there is still an ethical principle at stake. "Certain ways of measuring employees can seem uncomfortable, even creepy, to many people," says Professor Boudreau, "Watching employees too closely, observing what they eat in the cafeteria, scrutinizing their lifestyle choices just to come up with an algorithm on how they can be most productive. But it's a fascinating social question: what are the trade-offs companies and society are prepared to accept in the pursuit of efficiency?"<sup>68</sup>

Mr Ferrar believes that openness is the antidote to accusations of ethical transgression and crude invasion of personal space. "Legislation is straightforward, but ethics are more complicated," he says. "Organizations will need to be transparent and explain the data they are collecting, the objective of data collection, and how the analysis will be used, especially what the benefits will be for the company and its workers."<sup>69</sup>

The social media landscape is particularly contentious. Increasingly, employers are checking whether their workers are making disparaging remarks about the organization on Facebook, Twitter and other sites. Close scrutiny of candidates' social media activities are even more common. A 2014 survey by CareerBuilder, the online recruitment resource, found that 43% of employers were using social networking sites to research job candidates.<sup>70</sup> Around half (51%) of those organizations that did research job candidates on social media said they had found content that prevented them from hiring candidates, such as evidence of drug use or making derogatory comments about a former employer.

Some argue that this research is justified, that employers can limit the potential reputational damage wrought

### Overcoming obstacles: A checklist

- Improve the analytical skills of the HR function
- Ensure data are clean, organized and ready for analysis
- Keep projects focused on solving a key business problem
- Maintain rigor: don't confuse correlation and causation
- Strike a balance: perfectionism is a drawback
- Seek small wins at first; they will lead to bigger ones
- Establish cross-functional co-operation for data gathering, storage and analysis
- Reassure staff that analytics is an aid to human decision-making, not a replacement
- Understand the legal and ethical complexities of employee monitoring

by employees criticizing the organization in a public forum. Others claim that it amounts to unnecessary snooping, and that excellent job candidates can be excluded for private behavior unrelated to their work or for political or religious beliefs.

It will take some time before organizations fully comprehend the fallout from the ethical questions surrounding employee privacy and formulate a coherent response. Several of the other challenges, too, will be no less exacting and will need to be addressed head-on as organizations enter the virtually uncharted but exciting territory of workforce analytics.

<sup>68</sup> <https://hbr.org/2014/09/predict-what-employees-will-do-without-freaking-them-out>

<sup>69</sup> EIU interview with Jonathan Ferrar, 31st July 2015.

<sup>70</sup> CareerBuilder, "Number of Employers Passing on Applicants Due to Social Media Posts Continues to Rise, According to New CareerBuilder Survey", June 26th 2014 (<http://www.careerbuilder.co.uk/share/aboutus/pressreleasesdetail.aspx?sd=6%2F26%2F2014&id=pr829&ed=12%2F31%2F2014>)



## Conclusion

Using analytics correctly is not as easy as it appears. Organizations must proceed carefully to reap the benefits of this new tool. While some organizations may be more advanced than others, the trend is clear: workforce analytics is here to stay, and its growth is inevitable.

Progress may be slowed by logistical or cultural obstacles, but in a world where data are plentiful, available and amenable to sophisticated analysis, it won't be stalled outright. Analyzing the impact of various people management practices on business outcomes and overall performance has too much potential to be ignored.

Although the future of the field seems assured, it is not certain that the HR function will be leading it. However, HR needs to be involved to bring the correct context and people knowledge to the analysis. At this point, HR still has work to do to develop the necessary skills, to

identify organizational needs, and to learn how to approach workforce analytics in an effective way.

Throughout this report we have stressed the importance of establishing a virtuous cycle. Small analytics projects that lead to positive outcomes will boost both future investments and the credibility of the HR function, thus making further success possible. And once major achievements are registered, strong management support for the increased use of people analytics will be more likely. If one organization derives genuine competitive advantage from workforce analytics, others will follow its lead.

Indeed, what we have witnessed to date—several progressive companies establishing small teams of HR-focused data scientists—may be just the first phase of a transformative analytics revolution.

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## How quickly can your HR organization answer these workforce questions?

- How many people have we hired in the last three months and from what source?
- Which agencies are producing our best candidates?
- What is the average tenure by critical role?
- What are the key drivers contributing to attrition?
- What roles ranked highest in job satisfaction?
- What are the average sales of my most engaged units?

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