

Talent Analytics Quarterly

Q1 2017

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You in 2016

Aligning Talent Analytics
to CHROs' Strategic
Priorities

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Drawing Bold Conclusions
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Talent Analytics Quarterly

Q1 2017

CEB Corporate Leadership Council™

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Letter from the Editor

It's an exciting time to be involved in talent analytics; in many ways, the field is exploding. The ranks of talent analytics professional groups are swelling: three-quarters of large organizations are increasing their investments in talent analytics this year, and CEOs and boards are giving increasing attention to analytics' potential to improve talent management's impact.

For the first two issues of *Talent Analytics Quarterly*, we've approached these changes from a variety of perspectives. In our [first issue](#), we focused on foundations—interviews with talent analytics leaders who were building their functions and creating their organizations' talent analytics strategies, advice on how to build foundational data management capabilities, and hiring guidance for building a successful talent analytics team. In our [second issue](#), we focused on the future, with specific features on how to set priorities for 2017, key trends and influences on talent analytics organizations, and how to manage the emerging trend of organizations working with both chief data officers and talent analytics groups.

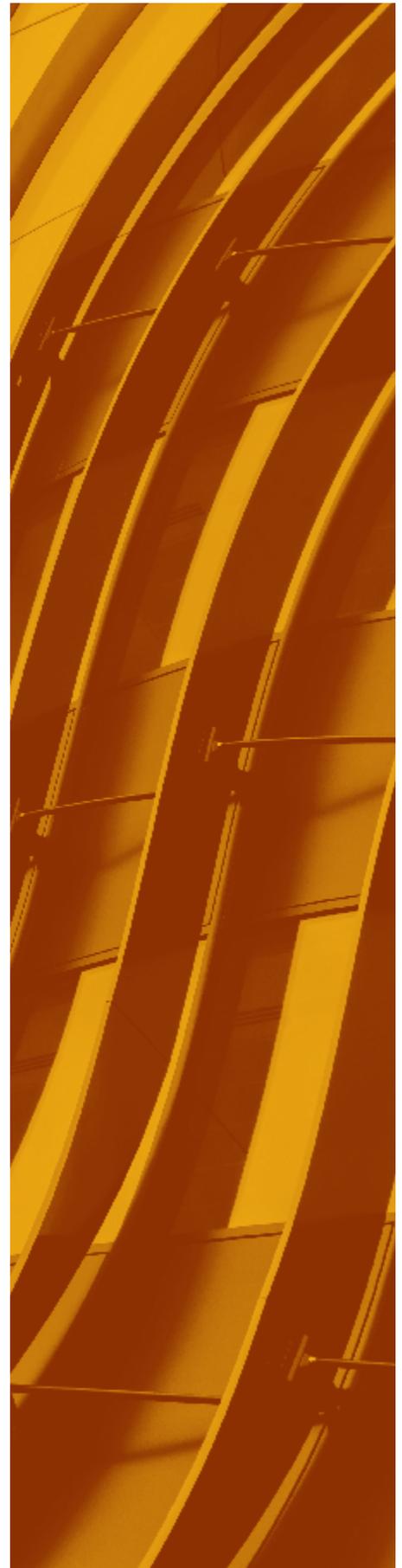
In our third issue of *Talent Analytics Quarterly*—and the first in 2017—we dive deep. In the pages that follow, readers will find an excellent primer from CEB's Talent Management Labs on using text analytics, an article on the use of machine learning in candidate selection, an early look at major trends in talent analytics technologies and innovations, and a look at how we can draw lessons from marketing analytics on how to communicate data-centric insight to clients—an important and perennial issue for talent analytics leaders as well.

And of course, we continue our well-received tradition of bringing you interviews from your peers, featuring conversations with Christian Cormack and Blair Hopkins, talent analytics leaders at AstraZeneca and EY, respectively.

As always, we welcome your feedback and suggestions for how we can improve this publication for you and your teams. Please direct any comments or questions to TalentAnalyticsHelp@cebglobal.com.

Sincerely,

Daniel Metz
Research Leader
CEB Corporate Leadership Council™

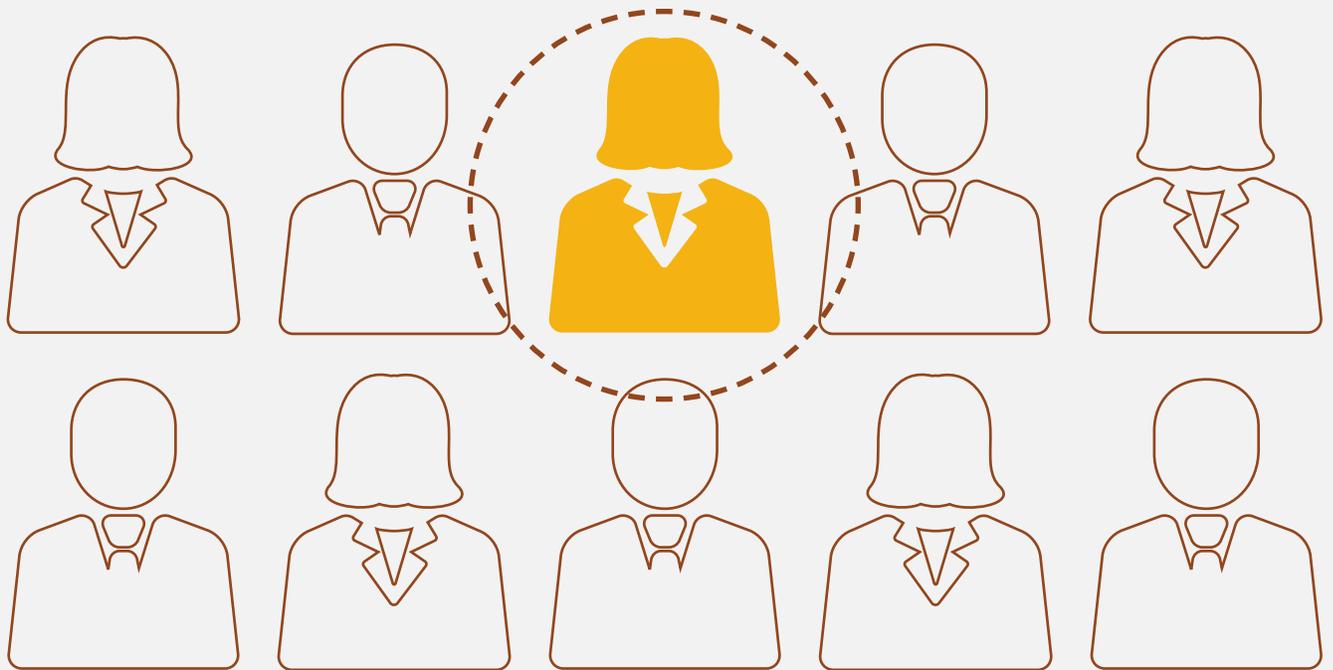


What Are Your 2017 Talent Analytics Priorities?

Just

1 in 10

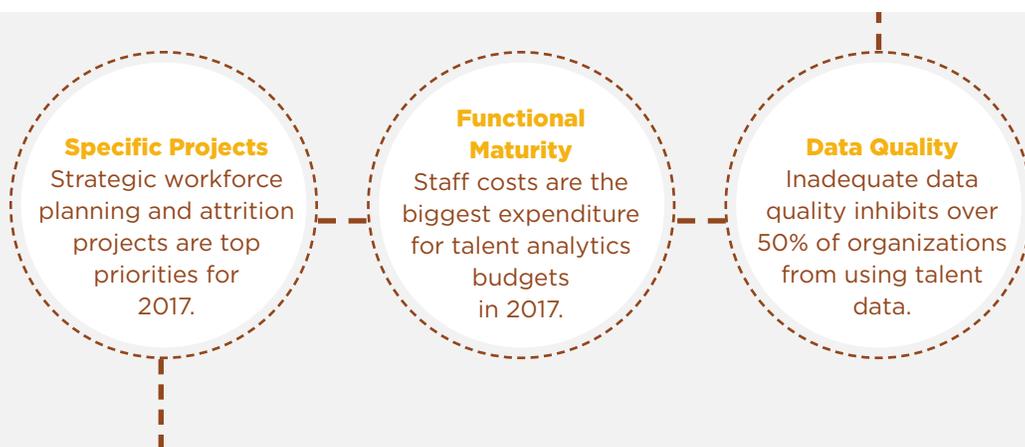
talent analytics leaders believes his or her organization effectively uses talent data to inform decisions.



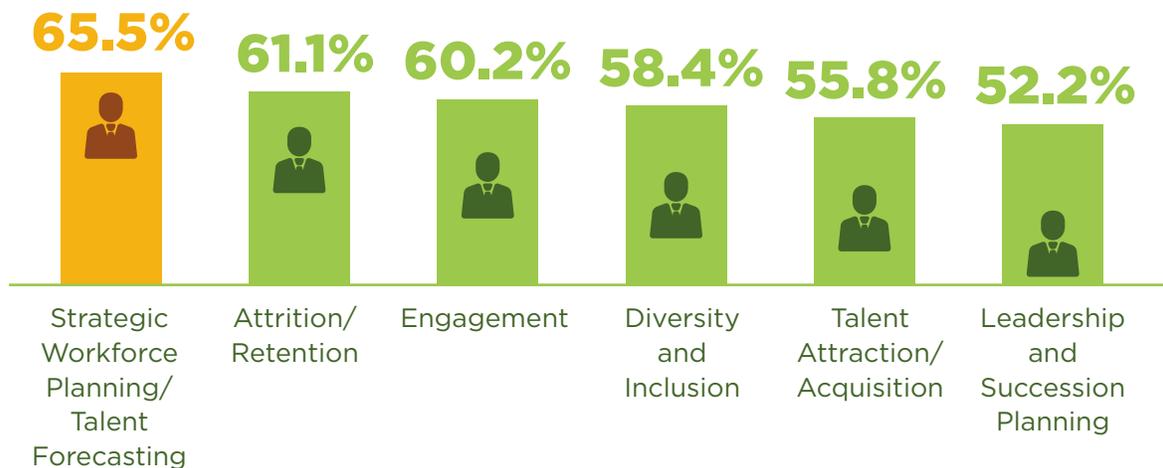
Most plan to increase investments in talent analytics for 3 reasons:



Where are they investing in 2017?



What projects are they working on in 2017?



Access our latest insights on our [Talent Analytics Portal](#) today to support your 2017 initiatives.

What We Heard from You in 2016

By Marianne Stengel

As we built our support for heads of talent analytics and their teams over the past six months, we spoke to many of you around the globe. We heard four primary challenges—and a few solutions—from you.

1. Engage users in improving data quality.

Data quality came up in nearly every conversation. For 54% of organizations participating in our recent survey, it is the top barrier to talent analytics effectiveness, and it often appears insurmountable. However, we heard a few encouraging stories of how far you can get with less-than-perfect data and how you can partner with talent analytics clients to improve it:

- One organization built a simple attrition model starting with publicly available data from consultants on the possible cost savings from reducing turnover. Combining this information with its own incomplete and unreliable data on turnover, the organization built a forecast model and let business leaders tinker with different assumptions.

While imperfect, this model showed leaders that even with turnover rates remaining the same, current diversity hiring strategies were not going to achieve the desired goal. And more importantly, it started a conversation about what needed to be done to improve data quality over time.

- The idea of sharing imperfect data to help leaders realize they need to hold data owners accountable for data quality came up a few times in our discussions. For example, one organization took this a step further by deciding to formally measure and report data quality. The organization established a data quality score, published it in a quarterly dashboard, and pushed accountability for it to data owners (HRBPs or business leaders).

Creating transparency on data quality weak spots across the organization pushed data owners to improve it. The talent analytics team further supported data owners by compiling a data and metrics dictionary.

Takeaway

Don't let poor data quality hold you back. Use the data you have anyway to get a reaction from data owners, and share a few simple steps with them to get them started on improving it. See a replay of our event, [Three Critical Obstacles to Creating Talent Analytics Capability](#), on the CEB Corporate Leadership Council™ website for more tips.



2. Take ownership of data privacy.

Talent analytics leaders are generally well aware of their responsibilities to protect employees' information from unauthorized access and to respect employees' wishes concerning how their data will be used. In the past, data privacy was seen as a predominantly European issue (due to work council involvement and now the EU GDPR requirements), but it is now firmly in the spotlight worldwide.

We have heard of a few strategies companies have taken to reassure employees and protect themselves from legal or reputational risk:

- Several talent analytics leaders have made data privacy the centerpiece of their strategy, above even technology or team skills development. For one company, this takes the shape of a formal commitment to only use employee data for purposes that employees would expect (e.g., analyzing diversity drivers but not predicting individual attrition likelihood). This builds employees' trust in talent analytics and increases the team's access to employee data.
- Building trust in talent analytics is particularly important. One talent analytics leader described to us how he tries to build the image of talent analytics as a neutral consultant; for example, he involves universities—which are only interested in knowledge—in projects, and he posts the results of each project for everyone to review.

- Ownership of employee data privacy is increasingly shifting from IT to HR, which is looked to as an advocate for employees' interests. This requires regular meetings with Legal and a good understanding of the organization's information needs. Some talent analytics teams designate one team member as data security and privacy lead to make decisions about how talent data may be used.

Takeaway

Keep data privacy top of mind. After viewing the replay of [Three Critical Obstacles to Creating Talent Analytics Capability](#), consider who on your team could take the lead on data security and privacy and how they should evaluate risks against potential data use benefits.

3. Focus on HR staff's analytics skills to drive talent analytics impact.

Most talent analytics leaders report frustration with their peers in the wider HR function when it comes to analytics understanding or skills. Too often, HRBPs struggle to make

sense of analytics insights and therefore don't use them with their line leaders to initiate change. We have heard many different strategies to improve HRBPs' or specialists' skills and comfort level with analytics:

- While many organizations push e-learnings or webinars, the most effective training focuses on in-person, practical exercises. Two organizations described to us how they organized traditional, classroom-based training sessions in which HRBPs work on real-life questions from the HR leadership team. This gives them hands-on experience of simple modeling and teaches them how to ask good questions. It also builds their confidence not only with using data but also with presenting and defending it to their line leaders.
- One talent analytics leader who hasn't been able to fund this type of training instead ensures that he and his team evolve from simply delivering answers to teaching their clients how to self-serve. Whenever a request comes in for which this is feasible, they consult with the requestor one-on-one to show them how to think through getting the answer and teach them simple analytics skills.
- This is echoed by another organization where the talent analytics team forces requestors to state what they are going to do with the data they are asking for. The team asks the requestor to consider the questions: What do you think the answer is going to be? If I tell you the answer, what will you do about or with it? Over time, this teaches requestors to ask better questions; and in the interim, it can drive requestors to realize when they can answer their own questions, or that the question might not be worth asking in the first place.

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4. Align talent analytics with business needs and capability to drive impact.

Many organizations mentioned the need to prove the impact of talent analytics. This is easier to do in cases such as attrition projects where there are direct links to cost savings. It is harder, however, to show how concepts such as engagement or leadership make the business more profitable—or at least a better place to work.

Talent analytics leaders have found different ways of tackling this challenge:

- Several talent analytics teams rely on close partnerships across the organization to identify where to focus their time. By getting the business to tell them its problems, they ensure they are aligned to business priorities and that analytics insights will be acted on. This in turn gets them invited back for other projects.
- One talent analytics leader didn't wait for the business to tell him what it needed. Observing a disruptive change in the industry, he decided to have his team develop a workforce planning tool. When the business realized what it needed, the tool was close to ready, and it is now being rolled out across the organization.
- Several organizations have stressed the harm in getting too sophisticated too early. One team aims to deliver the analytics quality and insight that is required plus a bit more; anything beyond that risks leaving the business behind and not getting used. It is more important to focus on application rather than on sophisticated analytics.
- Another organization names a business sponsor for every strategic analytics project. This ensures that the business is involved in the work instead of just receiving the results. Talent analytics teams have to recognize that the answers they provide require change, and this change is easier to execute when the business has been engaged in the search for the right answer.

Takeaway

Focus on building analytics skills in every interaction with HR data users. Start by sharing the [HRBP Guide: Deliver on Talent Analytics Initiatives](#) on the CEB Corporate Leadership Council™ website with interested HRBPs to help them identify when to apply talent analytics, how to select the right metrics, and how to communicate talent insights.

Takeaway

Don't overwhelm your clients, but engage them in defining the key questions to answer with talent analytics. See our case study of Gap Inc.'s method, [Analytics Prioritization Principles](#), on the CEB Corporate Leadership Council website.

Aligning Talent Analytics to CHROs' Strategic Priorities

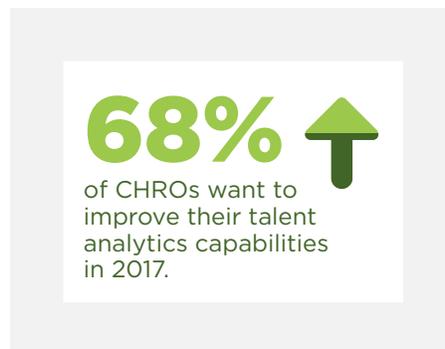
By Danielle Douglas

CHROs know that talent analytics can play a big role in achieving their goals. That's why 68% of CHROs want to improve their organizations' talent analytics capabilities in 2017. To help talent analytics leaders like you prepare for 2017, we have taken the top insights from our global survey of heads of HR and identified five opportunities to get ahead of potential CHRO needs.

1. Create a line of sight between culture and strategy via metrics.

Culture goes hand-in-hand with business transformation. So given the increasing number of organizational changes, it is not surprising that 76% of organizations anticipate undergoing a culture change in 2017.

CHROs are confident in HR's ability to define a new culture, but confidence decreases by 30% when it comes to embedding the new culture. In fact, only 37% of CHROs are currently confident in HR's ability to define metrics and collect data on culture-change progress—one of the more challenging aspects of embedding a new culture.



Using metrics to create the illusion of change is easy. But behavior change is what truly defines a culture shift, not the metrics organizations typically focus on (e.g., interim objectives, improvement in business results, employee attitudes). Talent analytics should define metrics up front to be able to identify whether employees are actually working in new ways.

2. Strengthen cross-functional analytics partnerships.

CHROs spend nearly 25% of their time on enterprise-wide initiatives, necessitating strong cross-functional partnerships. CHROs reported that the chief financial officer (CFO), chief information officer (CIO), and chief strategy officer (CSO) are the most important C-suite peers to partner with as they look to bring attention to talent issues in new ways in 2017. For example, CHROs can partner with these leaders to redesign processes that may cause managers to redirect resources away from large growth projects, build a robust digital workforce pipeline, and create a change-capable HR function.

Knowing that the head of HR will need to partner with Finance, IT, and strategy leaders, talent analytics teams can (and should) begin to form their own partnerships with their counterparts in these areas. These relationships will give the talent

analytics team an advantage if it is asked to support cross-functional projects because the team will know whom to reach out to for different data. In addition, these relationships will certainly prove beneficial to the talent analytics team for best practice sharing, data access, tools, technology ideas, and more.

3. Analyze employee needs to create consumer-like experiences.

External, macro trends such as the rise of big data, on-demand service expectations, and digital disruption are prompting CHROs to look internally for ways to transform the HR function. One-third of heads of HR are planning to innovate by creating a consumer-like employee experience. This transformation includes applying product management discipline to HR offerings (e.g., Agile methods), building HR apps, and gamifying talent management.

For HR to move away from the proficiency and performance measures it is often preoccupied with and become more consumer focused, it must draw inspiration from functions that concentrate on external customers (e.g., Marketing and Sales). The first step to an effective consumer-like strategy is to understand and segment your audience.

Talent analytics teams can help HR begin to understand unique employee needs by analyzing data, such as life stages and context, that influence employee behaviors, motivations, and actions. The goal is to build a demand landscape for employees as a means of better understanding the workforce, similar to what occurs in the consumer space.

Read [our interview](#) online to learn how Hershey identified nontraditional employee segments.

4. Prioritize business acumen and data visualization skills.

As CHROs and HR continue to cement their role as a strategic partner to the business, the CHRO's relationship with the board is more critical than ever. Yet nearly half of heads of HR don't think the board has a good enough understanding of key talent issues. To improve this, 67% of CHROs think they must better communicate talent management insights to the board.

With a new and even more influential audience to present talent insights to, data that was previously unnecessary may quickly become imperative. Knowing that the board's goal is to minimize risk and maximize opportunity for the business, talent analytics teams must go beyond merely providing data on the overall state of talent. Instead, they should focus on enhancing their data-sharing skills in two ways:

1. Improving business acumen to ensure the team understands the key priorities of the business
2. Improving the data presentation (i.e., translating complex analysis into a consumable format) to engage the board and push leaders to action.

5. Apply leader analytics to strengthen succession strategy.

Key business stakeholders are beginning to question current succession management approaches, and boards seem dissatisfied, asking about the succession process, current bench strength, and overall pipeline sustainability. It is therefore not surprising that executive succession is the top talent issue on which heads of HR feel pressure from the board to provide more insight. At the same time, heads of HR are questioning traditional succession practices, such as the nine-box grid and talent reviews.

The number and depth of these succession doubts indicate that CHROs may be looking for new-in-kind ways to supplement, or even replace, existing succession management practices. To get ahead of this, talent analytics leaders should focus on leader analytics—a systematic, data-driven approach for identifying the drivers and outcomes of effective leadership.

(See [Seven Lessons for Impactful Leader Analytics](#) on the CEB Corporate Leadership Council™ website for more information.)

Using past data on effective leadership to predict future performance, leader analytics can help organizations with succession planning by more effectively identifying essential leadership qualities and by identifying leaders earlier and from unexpected places.



Concluding Thoughts

CHROs' priorities in 2017 have important implications for talent analytics leaders and professionals. Taking advantage of the above opportunities gives talent analytics teams the chance to get ahead of likely demands from CHROs and other senior leaders and better align talent analytics' strategy to the organization's emerging priorities.

Starting Simple at EY

An Interview with Blair Hopkins

EY | Assurance | Tax | Transactions | Advisory

EY is a global leader in assurance, tax, transaction and advisory services. The insights and quality services it delivers help build trust and confidence in the capital markets and in economies the world over. EY develops outstanding leaders who team up to deliver on its promises to all of its stakeholders. In so doing, it plays a critical role in building a better working world for its people, for its clients, and for its communities.

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About Blair Hopkins

Blair Hopkins is the Director of Global People Data, Reporting and Analytics based in Glasgow, Scotland, and has been with EY for more than 10 years. The objective of the Global People Data, Reporting and Analytics team is to improve the control, quality, and efficiency of people data, reporting, and analytics to allow better decision making for leaders across the EY global Talent function and across the broader organization.



Blair oversees people data governance, helping confirm data standards and policies are met for talent data across EY member firms in more than 150 countries, and the Global People Reporting team, comprising a globally distributed center of excellence and an India-based shared services reporting team. He is also accountable for the establishment and management of an advanced Analytics team focused on strategic HR issues impacting EY globally.

Every quarter, we interview talent analytics leaders to gain their perspectives on issues facing them and their teams. This quarter we spoke with Blair Hopkins about his work at EY.

When you created the Global People Data, Reporting and Analytics organization at EY three years ago, what did you decide to invest in first?

BLAIR: Aside from hiring the right people—initially good storytellers—my focus was to rapidly demonstrate the business value of the new function to our leadership, then focus on data governance. Technology investments came later. Decisions made on our findings impact real people in real terms, hence the focus on data. With technology investment, too much analytical sophistication early on could have run the risk of overwhelming our internal clients, as advanced methods and technology can make analytics seem unapproachable.

We were able to communicate a high-impact, simple, and effective message through having a highly competent user of spreadsheets generate insight from Microsoft Excel. When you consider many HR generalists have a limited understanding of statistics, there was no need to immediately dive deeply, using more sophisticated tools like SPSS or R.

Why do you think data governance should be at the center of your analytics strategy?

BLAIR: I was primarily driven by concerns with respect to data privacy, which carries a much greater risk when dealing with people data compared to market, consumer, or financial data. The conventional starting point for any analytics project is “Give me all the data, and let’s see what we can do with it.” The challenge is that you are often limited in taking this approach, as regulations covering collection of personal data often require explicit permission—and that can be hard to obtain.

There are also considerations around how data is managed. For example, an analyst might send out analytics results, hiding an employee list in the spreadsheet but leaving the data potentially accessible. In a lot of countries, this might constitute a breach of employee data privacy regulation, leaving our executives exposed to regulatory risk.

How are you addressing these risks?

BLAIR: I currently chair our Global People Data Governance committee, which identifies what the boundaries are and confirms we have common definitions. We have membership drawn from our data privacy team, as well as IT and the business. We focus on all aspects

of data management, from data definitions and the processes that gather data through to guidance on how to best leverage our data for analytics while respecting the intent of the rules and regulations.

After we’ve set the rules, our Global People Reporting team acts as a gatekeeper and applies these rules to data requests. It’s an approach that works because we have data governance as a foundation for our way of working.

Let’s go back to how you generate insights from data. You mentioned competency with Excel—what other skills does an analytics team need?

BLAIR: In the early stages, we recruited storytellers rather than data scientists. In our case, our first projects wouldn’t have been sophisticated enough to keep data scientists busy, and that’s an important consideration. We concentrated on low-hanging fruit in order to build a business case for talent analytics and why it would pay off to invest more in our team. In order to do that, we needed people who were technically clever (e.g., modeling skills, Microsoft Excel) and could also tell a compelling story.

As general advice, I would recommend to start simply before pursuing more elegant analytics solutions that can be difficult to explain and tie into leaders’ objectives. Again, do not overcomplicate things at first. As we have matured, we have been able to add deep statistical knowledge, psychology, modeling, and a dedicated data scientist to manage data and technology environments. Of note, while some of the team has HR domain experience, we actually seek deep HR domain knowledge from our clients on a project-by-project basis. While desirable, this is not an essential hiring skill and can be developed on the job.

Can you give us an example of what one of those early projects looked like?

BLAIR: One of our first projects focused on retention. We spent only a week on our initial exploratory analysis, but we came up with a bottom-line impact figure in excess of US\$100 million that could be derived from just a small improvement in retention. That’s a compelling story to tell based on fairly simple, yet robust analysis.

Our global Talent vice chair took this to the global executive team, leading to the initiation of a project across our organization—mobilizing hundreds of HR business partners and organization development leaders—as well as the central development of more sophisticated tools to support regular analysis.

So storytelling skills combined with an aptitude for numbers and an eye for business context took us farther than if we had solely pursued data knowledge within our team. Given the success of the retention project and our ability to make the case that we could have tremendous

impact, I was given the resources to hire additional people into our team.

This is something a lot of talent analytics leaders struggle with, getting sufficient resources for their team. After your initial success, how were you able to secure the resources you needed?

BLAIR: We certainly often struggle with the number of requests we receive—in some ways, a victim of our success. Negotiating and setting expectations are the best ways to get what we need to handle the influx.

There are a few options to consider when someone comes to us with a request. First, if the request involves only one country or impacts a small number of people, we'll always try to give some advice but may not take on a full project. We'll also explore whether they might have funding, allowing us to contract resources for a given time. The bottom line is a question of business value; demonstrating the ROI in commercial terms is the best way to secure resources.

And how do you convince someone to give you their money and resources?

BLAIR: Always be prepared to ask and negotiate. For example, we have a significant workforce planning project underway, and one of our larger countries needed help. We said it would take six resources to support, with additional funding for shared services support. The requestor needed this completed in three months; we countered with six months. Our client secured funding, allowing us to engage and provide service.

The important thing was to offer a way forward, not to say “no” in the first instance due to lack of resources. Managing expectations on time is also a way to ensure progress but not necessarily add cost. Most clients are perfectly happy to wait a month or two if they know they will get the support they need.

Can you tell us more about the workforce planning project?

BLAIR: Like most sectors, ours is facing disruptive change driven by megatrends, such as digital, robotics, the gig economy, etc. We foresaw the need to address these trends as the business leadership started mobilizing, and my team started building workforce planning models in collaboration with one of our regions. This gave us a

year to identify how different parts of the business might apply such tools, what data we needed to drive it, how to transform HR data to match with financial data, etc.

We are now utilizing and deploying a number of models to understand the impact at both the strategic and operational levels, a truly collaborative effort across our business functions.

The important thing was to offer a way forward, not to say “no” in the first instance due to lack of resources. Managing expectations on time is also a way to ensure progress but not necessarily add cost. Most clients are perfectly happy to wait a month or two if they know they will get the support they need.

What is the role of the talent analytics team in workforce planning going forward?

BLAIR: We provide the support—methodologies, knowledge, code, and infrastructure. We work closely with the reporting team to automate the data feeds into the tool. We are trying to drive a consistent approach for how everyone approaches workforce planning and are building a toolkit and a network to get the business functions to talk to each other and share their ideas.

This all helps drive short- and medium-term operational decisions around recruiting efforts and learning requirements, even assisting with revenue planning as well as addressing more strategic questions. The necessary change management is delivered at a local level with our close support.

The views reflected in this article are the views of the author and do not necessarily reflect the views of the global EY organization or its member firms.

Talent Analytics Innovations: Separating Fact from Hype

By Blakeley Hartfelder

Organizations today face a rapidly expanding marketplace of emerging technologies and vendors in the talent analytics space—offering everything from data aggregation to attrition prediction and social network analysis. Although these vendors promise improvements, each requires substantial investment of your time and resources. So how do you choose?

To separate fact from hype, we conducted a survey to objectively map the trends and future importance of over 50 established and emerging talent analytics innovations and technologies. We've begun to analyze the results, and the figure to the right summarizes what we have learned so far.

HRIS predictive analytics capabilities are insufficient.



Nearly half of organizations do not use their HRIS for predictive analytics, and only **30%** of those that do report that the features provide high value. As a result, these organizations may be turning to other platforms to provide analytics support, unnecessarily increasing coordination and data compatibility costs.

The importance of data visualization drives software investments.



More than half of organizations use data visualization software for talent analytics, and another one-third are planning to use it soon. Of users, about **70%** report receiving high value from the software and will increase investment.

Workforce planning technology is becoming more popular.



All talent analytics teams that currently use advanced analytics services for workforce planning report they will maintain or increase their levels of investment. This is likely due to the technology's current impact—about **70%** find it delivers high value.

Wearable technology is failing to win over talent analytics leaders.



Only **25%** of organizations currently use or plan to use data from wearable technology for talent analytics. Interestingly, that number may soon decrease, as one-third of current or potential users will decrease their level of investment in the near future.

Organizations plan increased investment in analytics consulting.



Few organizations currently use consultants to conduct one-off analytics projects, but the number may increase. About **80%** of organizations think these services provide high value, and nearly half plan to increase investments in this area.

Source: CEB 2017 Talent Analytics Innovation Survey.

CEB HR Analytics Leadership Academy



Develop your team's skills to move from talent reporting to talent analytics.

Just **8%** of senior HR leaders believe they are getting significant returns on their analytics investments.

Learn how the CEB HR Analytics Leadership Academy can build your HR staff's ability to provide actionable insights based on data to improve business decisions.

Learn More

<http://ceburl.com/1qwc>

Beginner's Guide to Text Analytics for HR

By Andrea Kropp

Words underpin nearly every aspect of business—from e-mails between team members and phone-based customer service requests to live sales visits with prospects and résumés submitted by candidates. Add to that list the more-structured final reports and presentations stored on your company's network and the less-structured instant messages and breakroom chatter.

When you begin to think of words as data, new analytical possibilities emerge across all the major HR domains. For example, you may wonder if it's possible to:

- Monitor employees' engagement levels passively via their language,
- Predict how well a person will perform in a role from their interview responses,
- Identify future leaders from the content and style of their communications,
- Assess how well a team is working together from their exchanges during a meeting, or
- Create tailored coaching for individual sales representatives based on transcripts of their customer interactions?

These types of big ideas will help talent analytics leaders make the business case for seeding and nurturing text mining competencies within their teams. However, these

would prove a difficult starting point for teams delving into text analytics for the first time because they require multiple text processing and analytical techniques. A good rule of thumb is to scope your initial text mining projects so that each has no more than two required steps or methods your team has never encountered before. This is especially true if the team is learning the software and methods at the same time.

This article details three foundational capabilities and some related projects you can use as starting points in your text analytics journey. As your team masters these capabilities, you can build up to more complex analyses by chaining the basic methods together. In this way, you can take incremental steps toward big ideas.

A Note on Software Choices and Finding Help

This article will not list or contrast the many text-handling and text-analysis software choices available. The suite of open-source and proprietary tools to facilitate text mining is growing every month. For most common tasks, excellent written and video tutorials are available, and many include sample code created by a very active user community.

One consideration is that text mining cuts across nearly all academic fields, and it is not uncommon to jump between resources created by computer scientists, linguists, historians, political scientists, psychologists, and more when researching a new method. Don't expect or try to find many HR-specific examples.



Unless you have a compelling reason to begin elsewhere, we'd recommend starting your text analytics journey with Python (or R as a second choice). It may take longer to get results from your first project than it would using software that has a graphical user interface and point-and-click menus, but in the long run, Python will be more flexible and powerful. This will make it easy for your IT team to implement the findings of your work into production systems.

Capability 1: Counting Words and Phrase Frequencies

What and Why: The ability to count how often certain words or phrases are used is a prerequisite for nearly every other text mining activity. Combining word counting with some basic statistical techniques such as t-tests and regression equations will unlock many possible questions to answer, such as “How do the concerns of junior versus senior staff compare on engagement surveys?” or “What word and phrase combinations on résumés correlate with future success in sales roles?”

How: The methods you'll need to apply are tokenizing and n-gram counting. Tokenization is the process of breaking a passage of text into words, phrases, symbols, or other meaningful elements, called tokens. The tokens can then be counted and reported as single words (unigrams), two-word phrases (bigrams), three-word phrases (trigrams), and so on. The result will be dominated by functional words such as “and,” “in,” or “the,” which can be removed by specifying a list of stop words. Experiment with removing all punctuation before tokenizing; this will cause “e-mail” and “email” and “Ph.D.” and “PhD” to become the same token.

An Example of Tokenization

The Human Resources team is fantastic.

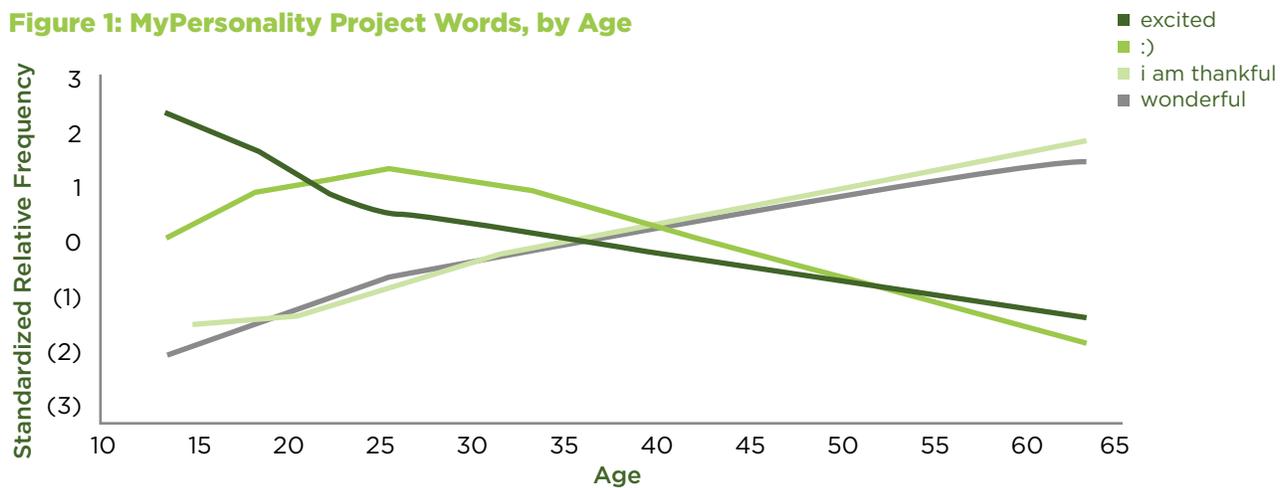
- Unigrams: fantastic (1), human (1), is (1), resources (1), team (1), the (1), . (1)
- Bigrams: human resources (1), is fantastic (1), the human (1), resources team (1), team is (1)

Source: CEB analysis.

Start by counting words in a single document, and move on to creating frequency counts across multiple documents. Relate your normalized counts to other data you have about the authors, such as their age, job role, or performance.

Examples: The MyPersonality Project, which relates over four million Facebook profiles to over six million psychometrics tests, has resulted in the publication of hundreds of papers and interactive applications that show how word and phrase use relate to demographics, personality, and mental and physical health (see figure 1). Explore the demos available on the World Well-Being Project website (wwbp.org/demos.html), and try the four ideas in the project suggestions table at the end of this article for some quick wins using only this first capability.

Figure 1: MyPersonality Project Words, by Age



Source: University of Pennsylvania Positive Psychology Center: The World Well-Being Project, "Words Across Age," 2017, http://wwbp.org/age_plot.html.

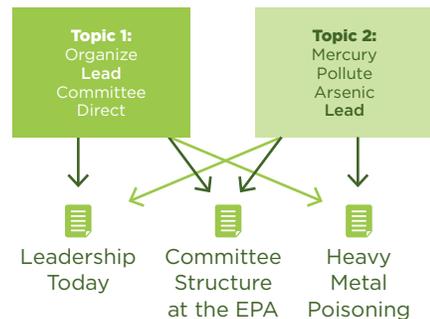
Capability 2: Identify the Main Topics and Themes

What and Why: Substantive text analytics requires moving beyond the words people choose to the ideas they wish to express. Effective text analytics methods must include an understanding of semantics—the meaning of the text. This includes negations, questions, sarcasm, analogies, metaphors, rhetorical statements, and other literary devices used in oral and written communications. The natural language semantics tools that exist now aren't very robust or complete, but progress is rapid, and the most essential component in the toolkit—the ability to find topics—is in widespread use.

How: A rudimentary way of moving from words to topics is stemming. Stemming is the process of reducing inflected words to their word stem or root form. For example, the individual tokens "manage," "manages," and "managing" are collapsed to the common root "manage." However, many English words have multiple meanings. The word "lead" (the heavy metal) shouldn't be counted with "lead" (the act of leading). Conversely, "wages" and "pay" are conceptually related but don't share a common word stem. Topic modeling is able to handle both these challenges.

Topic modeling is an exploratory method used to find the major recurring themes in a collection of text (see figure 2). A "topic" consists of a cluster of words that frequently occur together. The researcher must specify the number of topics to be extracted (e.g., 10 to 100), and it is a good idea to test multiple values. If the researcher believes the resulting topics have too much overlap, a principle component analysis or factor analysis can be used to reduce them further.

Figure 2: Topic Modeling Example



Source: Ted Underwood, "Topic Modeling Made Just Simple Enough," 7 April 2012, *The Stone and the Shell*, <https://tedunderwood.com/2012/04/07/topic-modeling-made-just-simple-enough/>.

Topic modeling is a precursor to any document classification problem. Take, for example, comment classification from an anonymous review website such as Glassdoor. First, the analytics team conducts an exploratory topic modeling exercise to identify the topics and elicit the words that define the topic. Then, each comment is compared to the defined topics for classification. The researcher can define whether the comment should be forced into a single topic or can belong to multiple topics. In this way, organizations can monitor comments over time to see which topics are rising in frequency and which are falling.

Examples: We've seen very simple topic models applied to employee survey comments generate extremely actionable insights for HR executives. Such insights might otherwise have been buried because they were only mentioned by about 1% of tens of thousands of employees.

One topic model we ran found a collection of comments pertaining to a shift from semiannual to quarterly performance reviews. Employees disliked the change, claiming there wasn't enough time between administrative cycles to make meaningful changes in performance. Another topic model revealed that a required health questionnaire for a new insurance provider contained very personal questions, which employees resented.

To put this in perspective, in an organization with 50,000 people, 1% equates to 500 people. If 500 people choose to write about the same policy change when given the opportunity to write about anything in an open comment field, that policy change deserves a closer look. Topic modeling is really the only way to bring these insights to the surface.

Capability 3: Derive Additional Contextual Features from Text

What and Why: The final capability is deriving additional features from your text by applying custom and off-the-shelf rules and transformations. Known as "feature generation" in machine learning circles, the goal is to view the text through many different lenses. There are three basic categories of derived features to consider, which we'll call standard transformations, word dictionaries, and outside context.

1. **Standard transformations** you might want to apply to your text include part-of-speech tagging, readability scoring, and spelling- or grammar-error detection. These procedures will generate features such as percentage pronoun usage, Fleish-Kincaid score, and spelling errors per 1,000 words. For example, perceptions of group identity within a team are subtly encoded in the pronouns team members use, where plural versions ("we", "us", "them") signal that the person feels like part of the group.¹
2. Another feature generation method is the application of **word dictionaries**. Other researchers have already compiled extensive word lists for "quantifiers," "tentativeness," or "positive emotions," which you can apply to your data to get word counts by category. Unlike topic modeling where the aim is identify the content of the text, word dictionaries such as these reveal how a person organizes and expresses their ideas and how they feel about the topic.

3. A final category of features comes from merging your data with **outside contextual data**. For example, from the name of the college a person attended, you can derive features such as school size, urban versus rural location, and average SAT score using a merge table from a source such as the National Center for Education Statistics.

The ability to derive such additional features is vital in all predictive analytics projects. Features generated in this way will be more reliable, more generalizable, and fairer than individual n-grams and will greatly improve your model performance.

How: Standard transformations, such as identifying parts of speech or calculating reading grade levels, can be readily accomplished with open-source tools. Look for Python or R packages purpose-built for each task.

Many free and paid word lists are available for the application of word dictionaries. The most-cited free list is probably

Substantive text analytics requires moving beyond the words people choose to the ideas they wish to express.

WordNet, developed by Princeton researchers, and the most-cited paid list is probably the Linguistic Inquiry and Word Count (LIWC) tool. You can also develop your own lists from scratch or modify an existing list to better suit your needs. Most organizations will need to develop custom lists for items such as "senior leadership team names," "products we sell," and "IT systems we use" so they can be grouped together as a frequency count.

Outside contextual data can come from many sources. You might want to merge in industry classifications based on company names, news events based on dates, or regional housing prices and unemployment figures based on city names. Always look for an open-source resource as a starting point, then modify the tool to suit your needs, and make it available to others in your organization. It's a good idea to start a central repository for reference tables and reusable code and to implement a version control system.

Example: Suppose you wish to identify which attributes of a résumé correlate to attrition prior to six months on the job. To find out, you would obtain the original applications of all your hires and separate them into two groups—those

¹ James Pennebaker, *The Secret Life of Pronouns*, (New York: Bloomsbury Press, 2011) 229–231.

who stayed past six months and those who didn't stay for six months. Then you'd use the application data to generate as many features as possible. Your feature set would include n-grams (capability 1), topics (capability 2), and derived features from all three categories (capability 3). It would not be uncommon to have 5,000 or more features to work with at this point.

The more rational transformations and features you create before you begin modeling, the better your results will be. Your next steps would be feature selection (reducing the 5,000 or more to a manageable amount of truly important predictors) and then model development.

Testimonial: The Joy of the First Word Cloud

Allow me to close with a personal story that exemplifies the profound impact text analytics can have on your analysts and organization. A few months ago, I participated in a corporate event where teams of four people had roughly three days to develop a working prototype of a big data product. The participants were mostly midcareer professional IT staff, data scientists, and computer scientists, but many had never worked with text as data. Around 10:00 p.m. on day two, I was roaming the halls to stretch my legs when I heard a woman from another team exclaim in an exhilarated voice, "It worked! I made a word cloud! Come look."

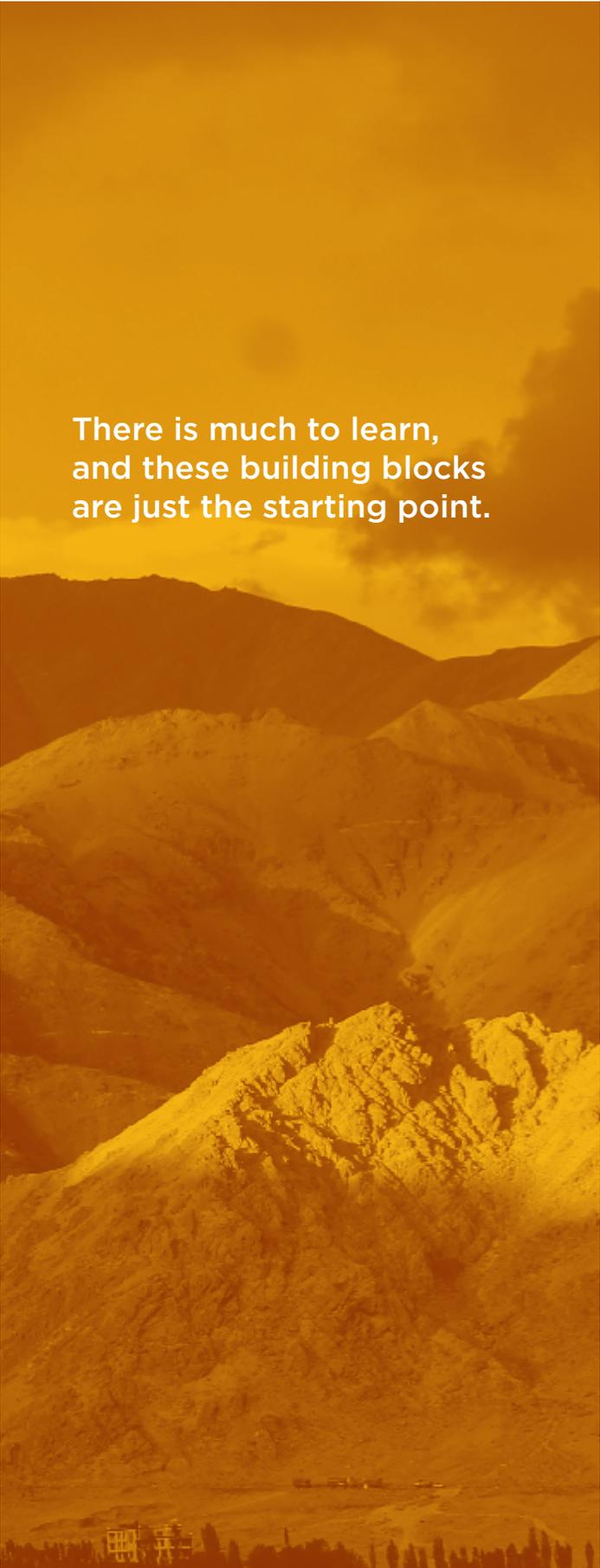
Producing a single word cloud at the end of day two meant this team was far behind, but the woman's excitement was undeniable. The sheer joy in her voice transported me back to the day I made my first word cloud and the pure excitement I felt. Although I've been analyzing numbers for most of my professional career, there was something special about analyzing words for the first time.

There is much to learn, and these building blocks are just the starting point. Keep an eye out for the person in your organization who shouts the loudest about making his or her first word cloud. Give this person a sequence of cumulative text mining projects, and you'll be well on your way to answering some of HR's most tantalizing questions.

About CEB Talent Management Labs

This article is contributed by our Talent Management Labs, a team dedicated to helping CEB and its customers lead the analytic transformation of talent management. The Labs' scientists conduct research to ensure our talent management products and services are built using the most advanced thinking from a broad range of established and emerging disciplines.

For more information on CEB or the Talent Management Labs, please contact TalentAnalyticsHelp@cebglobal.com.



There is much to learn,
and these building blocks
are just the starting point.

Project Suggestions

Building Block	Do This First to Learn	Do This Later to Build on the Work
Count Word and Phrase Frequencies	Count words and phrases in a single open-ended employee survey field with a variety of responses.	Examine how responses differ by employee segments such as level, location, or ethnicity.
	Count words and phrases in the course comments for an internal training course that is taught by multiple instructors.	Provide feedback to individual instructors.
	Count words and phrases in your organization's reviews on Glassdoor or a similar website.	Monitor changes over time.
	Count words and phrases in the hiring manager's notes on candidate interviews for a specific role.	Correlate success in the role with the manager's notes.
Identify the Main Topics and Themes	Apply stemming to your text before word counting to group words with the same root (e.g., nurse, nursing, nurses, nursed).	In future projects, try stemmed and un-stemmed text to see which yields the better result.
	Create a word cloud of all job postings from the past year after removing stop words.	Limit your data to a single job title or category, and compare your historical job postings with those of your main talent competitors.
	Create a topic model of your organization's reviews on Glassdoor or a similar website. (Tip: Keep the pros, cons, and advice to management separate.)	Examine topic frequency by job title and location as reported on Glassdoor.
	Apply an open-source sentiment dictionary to open-ended comments from internal surveys.	Manually read and tag the comments as positive, negative, or neutral, and assess how accurate your chosen sentiment tagger was. Learn how to make it more accurate for your own use cases.
Derive Additional Contextual Features from Text	Use a part-of-speech tagger to calculate what percentage of a speaker's or writer's words are verbs, adjectives, proper nouns, etc.	Correlate stylistic language features to outcomes of interest. For example, there is substantial literature on the relationship between personal pronoun use and leadership.
	Use the name of the college listed on a résumé to link to an external table of data about the institution (e.g., urban or rural location, public or private, average SAT score).	Look for patterns among successful and unsuccessful hires in what type of college they attended.
	Apply a word categorization dictionary such as WordNet (open source) or LIWC (fee applies) to a collection of documents, e-mails, or comments.	Use linguistic word categories to infer psychometric traits of the author, such as personality or cognitive ability.
	Apply named-entity recognition (NER) to employee survey comments to identify the people, places, departments, programs, etc. most often referred to by name.	Aggregate all the survey responses that pertain to a certain person or department. (NER is more powerful than a keyword search because it will find instances where pronouns refer back to the same entity.)

Source: CEB analysis.

Constructs and Outcomes Revealed from Language

Peer-reviewed research studies have linked individual language use to all the following categories.

- Personality
- Mood
- Cognitive ability
- Mental health
- Physical health
- Social dynamics and group cohesion

Source: CEB analysis.

The Advantages of Machine Learning in Candidate Selection (and Pitfalls to Avoid)

By Marianne Stengel and Omar Hoda

While many talent analytics teams are still struggling with cleaning data or getting buy-in to invest in data warehouses, some talent analytics leaders are turning their attention to machine learning. Here, we consider machine learning's application to candidate selection, outlining its possible benefits as well as its potential risks.

What Is Machine Learning?

Machine learning is the automated version of human learning. It mimics how our brains automatically recognize patterns based on previous experience.

Machine learning capabilities enable the creation and implementation of algorithmic assessments (using algorithms to score large amounts of application data to determine the most qualified candidates for the role). By applying machine learning principles during the algorithm development process, organizations can predict which features show up disproportionately in successful versus unsuccessful hires. The statistical engine powering the machine learning platform can compute large amounts of data quickly and accurately, considering every feature—and combination of features—available on the candidate's application or résumé.

This automated prediction replicates what the human mind attempts to accomplish when selecting from the applicant pool, but at a much higher level of sophistication.

The Benefits of Machine Learning for Candidate Selection

Several decades ago, organizations made the move away from relying entirely on human judgment to administering predictive tools such as psychometric assessments before hiring a candidate. Psychometric assessments allow companies to understand a candidate's competencies and potential success in the role and are more objective than relying on a hiring manager's reaction alone (e.g., through unstructured interviews).

Organizations now find themselves at a similar turning point as they consider including algorithm assessments as an integral component of the candidate selection process. Traditional assessment tools, such as psychometric assessments, tie candidate competencies, abilities, behavioral styles, and preferences to outcomes like performance and retention. Now psychometric assessments can be complemented by cutting-edge algorithmic assessments, where advanced machine learning and semantic tools are used to predict specific business outcomes, such as retention in role, using application data alone. This dual-pronged approach provides companies with superior efficacy and versatility in improving post-hire outcomes.

How to Apply Machine Learning

Machine learning capabilities can analyze every variable, word, and phrase in a candidate's application and evaluate them for potential predictive power. As a result, machine learning algorithms remove the biases inherent in human decision making and focus on verified data to increase the likelihood of hiring the best-fit candidates. You can achieve this outcome in two ways:

✔ **1. Maximize the use of predictive information, instead of using discrete filters.** Hiring managers and recruiters often filter out candidates based on specific key words and attributes (e.g., "customer service experience") without an empirical basis for favoring candidates who demonstrate those attributes. Furthermore, filters lead to simplistic "yes versus no" decisions based on a single trait, but the truth is often more complex than that. By contrast, algorithms that use machine learning are firmly grounded in hard data and can apply advanced statistical models to weigh positive and negative attributes.

✔ **2. Continuously update predictive features based on learning from outcomes.** A static screening tool never learns from actual outcomes—individual or organizational—and therefore does not grow in effectiveness. Machine learning algorithms, however, can be trained to pick up cues from outcome data and constantly update their predictive features (and therefore the underlying scoring model). This brings a level of intelligence and accuracy that is unmatched by any tool or human processes.

Pitfalls to Avoid

The risk of using algorithmic assessments incorrectly is high to those unfamiliar with the approach. Before considering any machine learning solution, carefully consider the following risks and ensure the solution has addressed these issues:

⚠ **1. Unknowingly perpetuating bias**—If you employ an automated selection approach that closely replicates human decision making, you are potentially just perpetuating existing human bias. For example, if an applicant's zip code correlates with candidates who fail to receive a job offer, your finding might seem objective. However, if the zip code is predictive because it primarily comprises low-income houses that are predominantly minorities, you are replicating either a preexisting intentional discrimination or a prior process that unintentionally discriminated against minorities.

Attempting to automate processes without deeper analysis can be dangerous. Examples of such analysis include using historical data to back-test for adverse impact and predicting who actually does the job well, not just who gets the job.

⚠ **2. Overfitting data (or poor statistical modeling)**—Applied to analytics, the phrase "garbage in, garbage out" is especially true. If your dataset is too small, there is

no statistically valid way to gain any insight—all outcomes are likely driven by chance. For example, if you have 200 data points, and all that data is used to build and test the model, then the model becomes very specific to that particular set. This is called "overfitting," and the result is a model that does not work very well on additional data.

The best companies hold out a subset of the data (e.g., 20% of the total sample). Once they've optimized their models, they test it on that held-out data subset. This methodology proves the model's validity on not only the tested dataset but also any future analysis on additional data.

⚠ **3. Ignoring adverse impact:** Compared to manual processes, the algorithmic assessment is more objective and insulated from potential conscious or subconscious biases. Any potential for adverse impact can be vetted and, if necessary, corrected prior to a deployment through back-testing. Through historical analysis, algorithmic assessment can demonstrate to statistically significant levels that recommended candidates do not have a lower proportion of any protected class, such as females, minorities, veterans, and disabled persons.

Conclusion

Machine learning holds a lot of promise for organizations that want to take the next step in using their talent data to improve human capital decision making, but it's not a risk-free endeavor. By proactively managing machine learning's potential pitfalls, talent analytics leaders can protect their organizations from legal or reputational risk and set the stage for next-level advanced analytics.

About CEB Precise Fit

CEB Precise Fit is a flexible candidate selection product that improves hiring outcomes and the candidate experience by attracting the best while delivering value to all applicants. Our robust, flexible architecture allows you to use the power of machine learning and application analytics to quickly identify top candidates based on key features associated with high performers within a specific company and role. This unique insight enables recruiters to make data-driven decisions and identify the best-quality hires. Read our white paper, [Candidate Selection Without Compromise](#), for more information.

How Do You Predict Top Performers?

All we need is their application.

Learn more at
cebglobal.com/sunstone-analytics.

Drawing Bold Conclusions at AstraZeneca

An Interview with Christian Cormack

AstraZeneca

AstraZeneca is a global, science-led biopharmaceutical company that focuses on the discovery, development, and commercialization of prescription medicines, primarily for the treatment of diseases in three main therapy areas: Oncology, Cardiovascular and Metabolic Diseases, and Respiratory. The company also is selectively active in the areas of autoimmunity, neuroscience, and infection. AstraZeneca operates in over 100 countries, and its innovative medicines are used by millions of patients worldwide. For more information, please visit www.astrazeneca.com and follow their organization on Twitter @AstraZeneca.



About Christian Cormack

Christian Cormack is the Head of Workforce Analytics at AstraZeneca. He partners with leaders around the business to develop insights that lead to better workforce decisions.



Christian began his career as a scientist before spending time in consulting with KPMG and subsequently joining AstraZeneca in 2005, initially with the reward team.

Christian also competed at the 2004 Olympics and is a winner of the Oxford Cambridge Boat Race.

Every quarter, we interview talent analytics leaders to gain their perspectives on issues facing them and their teams. This quarter we spoke with Christian Cormack about his work at AstraZeneca.

Tell us about your team at AstraZeneca and your main responsibilities.

CHRISTIAN: As a company focused on science, our HR function aims to be a true strategic partner to the business, using data, analytics, and planning to inform our people strategy.

The HR analytics team consists of four people—myself and three analysts. The primary job of our team is to ensure that leaders in the business and HR have the right information to make the right decisions around our workforce. Overall, our team does four things:

- Describes what is happening through quarterly summaries of key metrics
- Conducts more sophisticated deep-dive analytics projects to increase understanding of the workforce
- Uses predictive analytics to understand the long-term impact of current trends
- Uses our understanding of the current state and future trends to support workforce planning

What is your role on this team?

CHRISTIAN: My role is largely focused on stakeholder management and how to position and communicate analyses to have the highest impact. Fortunately, we have a separate team for reporting that covers basic data requests. Since we are a small team, we aren't able to provide every manager in every part of the business with insights, so we tend to focus on the requirements of our senior leaders.

What are the skills that are critical for talent analytics? Do you have any advice for where organizations should look for them?

CHRISTIAN: The skill sets needed to build a good analytics team are not commonly found in HR. The constructs of the workforce can be learned very quickly, but if an employee isn't analytical, it is difficult to turn them into someone who is. I have one teammate who is not only very technical but was also previously an artist, meaning he has a talent

for data visualization. Another teammate comes from a clinical development background, where attention to detail is critical. The third teammate came from a consulting background, so can manage stakeholders and keep the commercial perspective in mind.

We don't have a data scientist on our team, but we are able to collaborate with statisticians and data scientists in other parts of the business. My advice to other organizations about recruiting is that you don't always have to select the strongest person overall, or those with superior technical skills; instead, you should select the person who best fills the gaps in your team.

The final—and perhaps most important—capability is to be able to build a compelling story based on the data. If you want analytics to result in action, then this is critical. A table of numbers doesn't drive action. But a compelling story, which describes the trends and implications positioned in the context of the business, can. To do this, you need to spend time with leaders and really understand the business.

On the topic of skills, what are some good training or development experiences to develop talent analytics skills?

CHRISTIAN: Picking up on the last point, spending time with the business is a critical development experience. Workforce analytics is about providing the business with the information to make better decisions to drive performance. But if you don't know the business, you can't do this; you end up shooting in the dark, developing a solution in search of a problem!

For the broader HR function, we offer some formal training on how to make the best use of talent analytics. However, I think the most impactful experiences come from working in partnership with others. Whenever possible, I try to involve the customer in the analysis we do, which leads to a higher-quality output and ensures they understand the thought process and the limitations. By doing this, the next time we work together they tend to be clearer and more specific about what they want to achieve.

“Whenever possible, I try and involve the customer in the analysis we do, which leads to a higher-quality output and ensures they understand the thought process and the limitations.”

Can you tell us about some of the work you are doing?

CHRISTIAN: We recently looked at recruitment data in one part of the business and found that proportionally fewer internal candidates were invited to interviews compared to external applicants. However, if they were invited to an interview, the internal candidates were 2.5 times more likely to be offered the role. We also found that employees who went through the employee referral process did not perform any better than those who weren't referred. Our findings influenced our talent acquisition strategy and approach to recruiting.

We're also increasingly getting involved in workforce planning, which is heavily dependent on workforce analytics, as you need a clear picture of the current state in order to build robust plans. We help define the current state and then support the work on modeling and different scenario planning.

What do you think contributes to your success? And where do you still want to improve?

CHRISTIAN: I think a large part of our success comes from our leadership teams seeing the value of talent analytics. We are lucky that the head of HR in AstraZeneca really values analytics and uses it to influence the business and define strategy. Since we are a scientific, data-driven company, our business leaders inherently understand the insights from workforce analytics. We are pushing on an open door.

In terms of improvement, I think we could still do more to "operationalize" the data, ensuring it is integrated into day-to-day decision making by being bolder about telling the story to the business, expressing opinions about the trends we are seeing, and then linking it to business priorities. I think the more we do this, the more engagement we will see.

Any last thoughts or advice?

CHRISTIAN: Don't wait for the right time to "get going" because it's never the right time. Publish things, even if they are imperfect. Only by publishing them will you get feedback, drive accuracy, and be able to improve. Finally, be bold with your conclusions; don't just show a trend, but express an opinion based on that trend in a language the business will engage with.



“Be bold with your conclusions; don't just show a trend, but express an opinion based on that trend in a language the business will engage with.”

Lessons from Marketing: Communicating Data-Centric Insight

By Susannah Schools

Too many talent analytics professionals are faced with a frustrating challenge: they work extensively on a new report or analysis only to have their work glanced at and set aside with no follow-up. In fact, only 15% of business leaders report that talent analytics has recently led them to change a business decision.

HR can invest more in talent analytics, but HR must find a way to help stakeholders (business leaders, HR COE staff, HRBPs) to act on the analytics produced. And it's no easy task—many stakeholders have limited time, limited data experience, and preconceived notions about how things are done.

Knowing we have much to learn from those who came before HR on the analytics journey, we turned to our

Marketing research team at CEB, which recently looked at four critical success factors for getting stakeholders to act on insight:

1. **Communicating** data-centric insight
2. **Attracting** and developing analytics talent
3. **Creating** momentum for analytics
4. **Establishing** a data infrastructure

Communicating data-centric insight emerged as the most important factor, creating twice the impact of attracting and developing analytics talent and 2.8 times the impact of establishing a data infrastructure. These results make sense given that effective communication strategies help you avoid the risk of leaving your stakeholders bored, confused, frustrated, or in danger of misinterpreting or not seeing value in your findings.

Learning from these results, talent analytics teams can rely on four simple communication principles to create a more effective strategy for communicating data-centric insight. Apply these principles both when you present data in person to a stakeholder and when you design reports or databases for self-service.

1. **Real-Time:** Keep data up to date, minimizing lag time.
2. **End-User Focused:** Present data in a way that is tailored to the audience for easy use.
3. **Visual:** Present data using graphs, charts, and pictures rather than in more raw forms like database records and spreadsheets.
4. **Interactive:** Present data in a way that allows the end user to analyze and interpret it himself or herself.

1. Real-Time

In organizations where change is a constant, talent data can quickly become outdated and irrelevant. To convince stakeholders they should use the data you are presenting to inform current decisions, ensure you are presenting up-to-date data that is relevant to current strategy and circumstances.

Quick Tips for Applying This Principle:

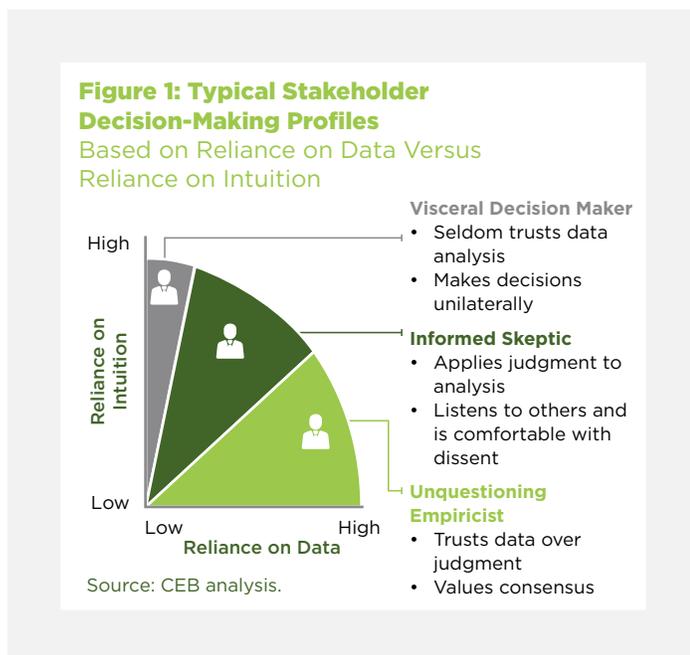
- Always check to ensure you are presenting the most recent data when delivering reports or presentations.
- Let users know when the data you are presenting was collected or how often databases and reports are updated.
- Add automation to self-service tools to provide real-time data with little maintenance.

2. End-User Focused

How data savvy are your internal clients? Are they able to detect trends on their own? Are they comfortable with details? Understanding your end user is essential to encouraging them to use your data and ensuring they can apply it to their decision making. Successful talent analytics professionals tailor their deliverables, taking into account decision-maker preferences and needs.

Quick Tips for Applying This Principle:

- Identify the decision-making and learning style needs of your stakeholders.
- Gauge your stakeholders' level of comfort with data (figure 1).
- Outline the decisions your stakeholders are trying to make.



Case in Point: AstraZeneca

A stakeholder's level in the organization plays a big role in the types of decisions he or she will be making and the data he or she will care about. With this in mind, AstraZeneca created business performance tools for employees at different levels of the organization. For instance, one performance tool gives high-level data to executives, but more junior employees, such as field sales representatives, receive granular, territory-specific data. This tailoring saves employees time and effort when finding the information they need.

3. Visual

Simply put, visually appealing presentations and dashboards excite users, making them more eager to use the data. Visual appeal also makes analytics more relatable and helps stakeholders understand more quickly how to use data.

Quick Tips for Applying This Principle:

- Create graphs that visually engage audiences but can be easily understood at a glance.
- Transform data into illustrations that tell a logical story tied to business and talent outcomes.
- Select a creative communication vehicle to engage your audience with analytics.

5 Questions to Improve Your Data Visualization

- 1 Are we **presenting or circulating** information? Presentations require less detail and more conciseness.
- 2 What kind of **chart or table** is best?
- 3 Does the visual **bring attention** to my message?
- 4 Do the visuals **accurately represent** the numbers?
- 5 Is this **memorable**?

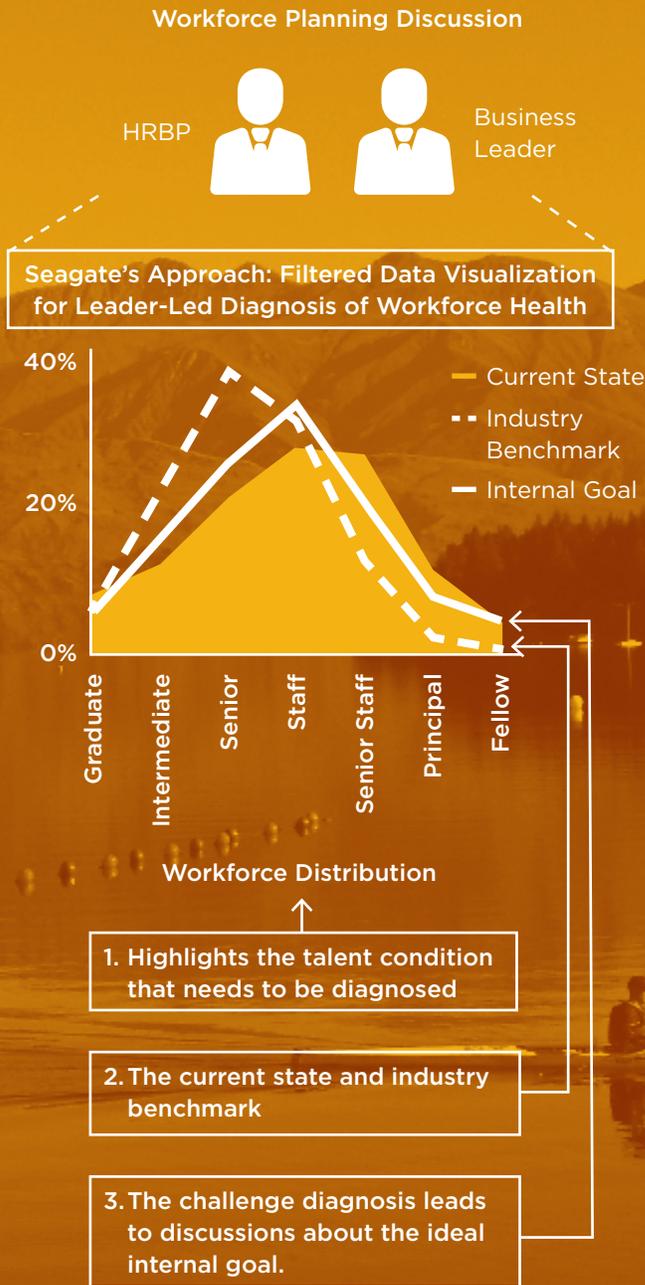
Source: CEB analysis.

Case in Point: Beta Company¹

Thinking about how to use a visually creative communication vehicle for your data can help it capture stakeholders' attention and enable you to narrate how the data should be used. Beta Company, for instance, published FAQs from customers in a visually appealing coffee-table book. Using this format made it much more likely that the recipients will indeed read the list of FAQs and think about how the questions apply to the work they are doing.

¹Pseudonym.

Figure 2: Seagate's Filtered Data Visualizations



Source: Seagate Technology LLC; CEB analysis.

4. Interactive

Leaders are used to analyzing and dissecting issues and approaching possible solutions with skepticism. Presenting only your conclusions for them to agree or disagree with is not likely to build their trust in the data or see the benefits of analytics. Instead, let leaders interact with the data themselves and draw conclusions from it. After all, leaders are more likely to trust something they've worked with themselves and more likely to act on insight they had a hand in providing.

Quick Tips for Applying This Principle:

- Allow stakeholders to change the way the data is selected, aggregated, and represented rather than presenting a static report.
- Frame interactions around talent analytics as discussions, not presentations.
- Allow leaders to see what various future possibilities are based on the data.

Case in Point: Seagate

Rather than reporting exhaustive workforce data in planning discussions, HRBPs at Seagate use analyses and visualizations to help leaders diagnose challenges themselves. Getting leader involvement builds credibility in the identified problem, gives leaders ownership earlier in the decision-making process, and makes a clear statement that HR is using its research to support leaders in creating a more informed business agenda.

Concluding Thoughts

As more HR functions look to inform talent decisions with data, learning how to communicate data-centric insight is imperative. By learning how to engage stakeholders with these findings, HR functions can gain a seat at the table to help their partners make better, more-informed talent decisions.



In the News

CEB's Take on What Others
Are Writing About Talent Analytics

The Challenge of Mainstreaming Human Capital Reporting

By Matt Dudek, Jessica Knight, and Blakeley Hartfelder and originally appearing on *Talent Daily*

In an article for CFO,¹ David McCann takes a look at two groups—Principles for Responsible Investment and the Human Capital Management Coalition (HCMC)—that encourage organizations to publicly disclose human capital metrics (e.g., turnover, absenteeism, employee engagement). It's an uphill battle for these advocates, McCann writes, as not everyone is convinced these metrics are worth using or disclosing.

For the opposition, McCann cites Tom McGuire, former finance and marketing executive and now talent strategy leader at Talent Growth Advisors. McGuire states, "Whether a company is well run is a good question, but a more relevant one is, how do its people impact its value? To understand that, you need to look at the company's intellectual capital—patents, brands, and proprietary technologies and methodologies. The only source of any of those things is people."

McCann also quotes Jeff Higgins, CEO of the Human Capital Management Institute: "If you lose 20% of management in a year, that's way too high. Losing 20% of your call-center workers is okay. It's also fine if 20% of a retailer's customer-facing staff is lost. But it's disastrous if a professional services firm has 20% turnover

among customer-facing professionals. The metrics that come out of the investor groups' engagements with retailers may be used to compare the companies with one another, but it's unknown how granular the information is, so therefore it's unknown how useful such comparisons will be."

This discussion is evidence that investors are starting to understand the importance of human capital when looking at a company's value, and they are looking for ways to get data and information related to that. But actually understanding what the metrics indicate and how to interpret them is harder than it may seem. This might be an opportunity for talent analytics professionals, and HR leaders more broadly, to step in and educate their peers in corporate leadership about which metrics to share as well as how to think about them. People data is only going to be as strong as the story built around it.²

One potential barrier to increased reporting of human capital metrics is the need for guidelines equivalent to the generally accepted accounting principles. Not having such guidelines may also limit that data's usefulness in comparing companies' relative value and performance. To address this issue, the Center for Talent Reporting has created what it calls Talent Development Reporting Principles (TDRp) as a standard for human capital reporting.³

McCann notes that HCMC has started to push for disclosure among retailers.

This makes sense; some objective human capital measures link directly to the bottom line in retail (e.g., if staff aren't on the floor or knowledgeable about products, customers won't buy). But those links are weaker in other industries.

Deciding how to measure certain metrics is another challenge. Absenteeism and turnover have near-universally accepted definitions, but metrics such as engagement and productivity have competing definitions used by different vendors. Therefore, investors and analysts cannot benchmark across firms, limiting the momentum of mainstream reporting for these metrics.

Improving human capital data collection and reporting are worthy endeavors to better understand and communicate the value of talent. But given these challenges, it's not hard to see why efforts to make human capital reporting a standard practice have been slow to gain steam.

¹ David McCann, "The Holes in Human Capital Metrics," CFO, 11 October 2016, <http://ww2.cfo.com/human-capital-management/2016/10/holes-human-capital-metrics/>.

² For more information, see our article at cebglobal.com/talentedaily/hr-needs-to-know-sentiment-analysis/.

³ CEB Learning & Development Leadership Council members can watch our 2014 webinar with Dave Vance, the center's executive director, at cebglobal.com/member/learning-development/events/replays/14/talent-development-reporting-principles-new-standards-for-the-m.html.

Winning on HR Analytics Book Review

By Caitlin Dutkiewicz



In *Winning on HR Analytics*, Ramesh Soundararajan and Kuldeep Singh address how to take “an analytic view to HR.” With chapters focused on key HR domains—organizational design, talent acquisition, learning and development, engagement and retention, competencies, and compensation and benefits—the book walks readers through traditional forms of measurement and highlights ways organizations can mature their analytical approach.

The book strongly emphasizes grounding analytics work in business questions by aligning to key strategic initiatives. As we know, solving leaders’ most pressing challenges not only drives impact but also secures buy-in and creates momentum for analytics projects moving forward.

The book also succeeds in dispelling common myths in talent analytics—for example, that you need to have perfect data or make large technology investments to run successful analyses.

Soundararajan and Singh’s work however, sweeps over some of the difficulties talent analytics teams face today—challenges such as accessing and synthesizing data from different systems, developing strong internal partnerships with data owners and line leaders, and creating clear processes for project scoping and prioritization.

But if you’re new to HR measurement and analytics, this book will serve as a good primer for the possibility and power of data for the HR function. It’s full of examples and offers thoughtful questions and tactical advice to get you approaching HR analytically.

How Can Talent Analytics Create More Business Value?

By Marianne Stengel and originally appearing on *Talent Daily*

In an article for the *Harvard Business Review*,¹ MIT research scientist Kalyan Veeramachaneni details some research into the question, “What would it take for businesses to realize the full potential of their data repositories with machine learning?” One key challenge he identifies is that “machine learning experts often didn’t build their work around the final objective—deriving business value.”

“In most cases,” Veeramachaneni states, “predictive models are meant to improve efficiency, increase revenue, or reduce costs. But the folks actually working on the models rarely ask ‘What value does this predictive model provide, and how can we measure it?’ Asking this question about value proposition often leads to a change in the original problem formulation, and asking such questions is often more useful than tweaking later stages of the process.”

As evidence, Veeramachaneni cites his experience participating in a panel of machine learning enthusiasts: “I polled the audience of about 150 people, asking, ‘How many of you have built a machine learning model?’ Roughly one-third raised their hands. Next, I asked, ‘How many of you have deployed and/or used this model to generate value, and evaluated it?’ No one had their hand up.”

In other words, the machine learning experts wanted to spend their time building models, not processing massive datasets or translating business problems into prediction problems.

To get more value from their data, Veeramachaneni concludes that companies “need to focus on accelerating human understanding of data, scaling the number of modeling questions they can ask of that data in a short amount of time, and assessing their implications.” These are valuable principles for talent analytics leaders to keep in mind.

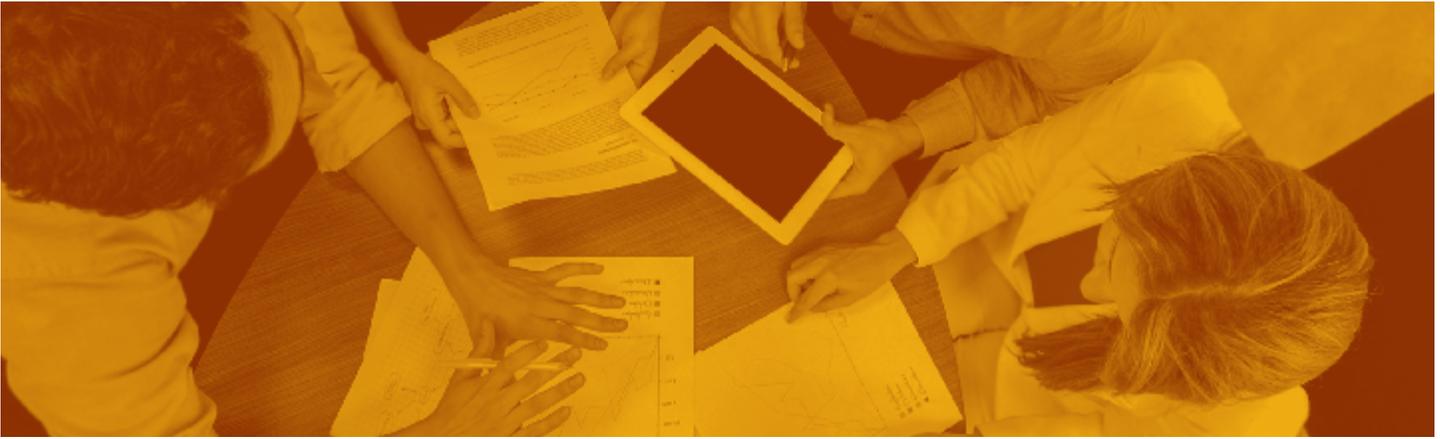
Business impact is not easy to achieve. In a peer benchmarking conversation² at our September ReimagineHR event in Miami, talent analytics professionals

identified their main challenges as deriving better insights from the data they were collecting and communicating those insights to their internal clients. Many participants said their organization was still ineffective at using talent analytics to drive business decisions.

In HR, analytics teams generally do not have too much data or models that are too complex. We hear quite often that they know better than to hire data scientists who are only interested in creating beautiful models. Rather, their first priority is building a team that can translate whatever data they have into meaningful reports that drive business leaders to act. At a time when many organizations are just starting to build their talent analytics capabilities, it’s a good reminder to keep aspirations small and to not be discouraged if your analytics efforts don’t yet live up to the stories you’ve heard about the Googles and IBMs of the world.

¹ Kalyan Veeramachaneni, “Why You’re Not Getting Value from Your Data Science,” *Harvard Business Review*, 7 December 2016, <https://hbr.org/2016/12/why-youre-not-getting-value-from-your-data-science>.

² For more information, see our article at cebglobal.com/talentedaily/4-trends-in-talent-analytics/.



A Lesson in Using Predictive Analytics to Drive Retention

By Blakeley Hartfelder and originally appearing on *Talent Daily*

When we talk to HR leaders about predictive analytics, the first thing they usually want to do with this new advanced tool is improve retention. That's definitely easier said than done—especially if you want the project to actually drive results instead of just being an interesting research topic.

Aliah Wright at the Society for Human Resource Management highlights¹ the success story of one organization that had a strong need to retain its highly skilled employees and used predictive analytics to help meet that goal: “When a top employee at the Anderson Center for Autism, a private school in Staatsburg, NY, handed in her resignation, the school’s HR department was expecting her. The HR staff had been using a predictive analytics program to help them gauge retention.

“The software is so good that we were developing a retention plan for her as she was preparing to resign,” said Gregg Paulk, director of information technologies for the 92-year-old nonprofit organization. After HR staff spoke with her, ‘she actually rescinded her resignation,’ he added.”

Wright then provides some background on this school’s effective process: “In 2001, the school undertook a new technology initiative spurred and funded by the No Child Left Behind legislation. Using Ultimate Software’s UltiPro, Paulk said the company ‘grew... and kept head count flat, reduced paper [processes] by 95%, and increased the time spent on employee development by 30%. The software also allows staff to manage time and attendance from anywhere [and yields] improved reporting and compliance.

“The software also helped us avoid the loss of key talent with predictive tools. It’s really powerful, and it’s astonishing the results we’ve seen,’ Paulk said. ‘[The tools] helped us understand our challenges and put the puzzle pieces together.”

It looks like Anderson has done a few things really well, which makes it a great example of how to apply analytics most effectively.

1. Anderson didn’t just choose to focus on retention because it was interesting or because it had the data to explore the topic; Anderson was instead trying to solve a problem that was affecting its bottom line.

2. Anderson was focused: It applied predictive analytic tools to essential employees, not everyone. This hopefully means it can truly understand

what is driving its most important employees to leave the organization—and stop them.

3. Anderson has gone beyond analysis and numbers to develop clear plans of action when it does discover that a key employee is thinking of leaving.

To be able to act on insights and data from predictive retention analytics, the most successful organizations think about how they will use those results even before the analysis starts coming in. Who will they share the information with? What steps will HR and managers take to encourage employees to stay? And are those steps the same for all employees?

These best practices apply whether you are managing retention with advanced analytics or with low-tech tools like stay interviews and career conversations. CEB Corporate Leadership Council™ members can read more about how to measure and mitigate attrition risk in our *HRBP Quarterly*.

¹ Aliah D. Wright, “How One Company’s Foray into Predictive Analytics Aids Retention,” Society for Human Resource Management, 21 October 2016, <https://www.shrm.org/resourcesandtools/hr-topics/technology/pages/how-one-companys-foray-into-predictive-analytics-aids-retention.aspx>.

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- How do we ensure the quality and usability of our **data**?
- How can we identify the right **structure** for talent analytics at our organization (e.g., centralized, decentralized)?
- How do we determine which investments to make in **technology**?
- How do we establish **processes** to focus talent analytics on the right priorities in the right way?
- How can we build **relationships** to take advantage of analytics capabilities elsewhere in the organization?

Event Dates

Chicago: 29 March 2017

New York: 27 April 2017

Denver: 11 May 2017

Houston: 24 May 2017

Toronto: 8 June 2017

London: 28 June 2017

Brussels: 10 October 2017

Eligibility: The most senior person whose primary responsibility is talent analytics, plus the head of HR. Up to two attendees per organization.

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¹ The link is available to CEB Corporate Leadership Council™ members only.

About *Talent Analytics Quarterly*

We've heard your demand for more dedicated support on talent analytics. *Talent Analytics Quarterly*, our quarterly publication featuring business and functional insights for talent analytics leaders, is one of a series of new resources we have created to meet this demand.

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