DATA: THE NEW LANGUAGE OF HR

Streamline and validate decisions for bigger business impact

upwork enterprise™

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FOREWORD

For years, we've been told that as HR leaders we need to earn our seat at the table. That we need to demonstrate to CEOs, CFOs, and their colleagues that we belong with them and can influence the business. That is no longer the case.

We are here, in the executive meetings, pushing and coaching our colleagues on new and innovative ways to think about our workforce.

Successful companies have leaders who realize that to differentiate themselves, it is imperative to have insights into the people working with their clients and customers every day. The employees who drive our businesses are either our gateway to making phenomenal impact in our industries — or they can lead us to sputtering out for what seems like no apparent reason.

Today's HR leaders have access to more data, greater breadth of context, and longer term pictures that put people at the center. We also understand that for big data to be most successfully employed, it is imperative that we combine it with the heart of our function.

People have many facets and when we understand and positively impact their whole selves, we create the most successful partnership between company and worker. In turn, this can drive innovation and business growth to higher levels.

This ebook shows how you can use big data to demonstrate HR's value through the language of business: time and money. By demonstrating value in this way, your HR team can affect the greatest impact on your business.

ZOE HARTE / VP, Head of Human Resources, Upwork

PART 1

INTRODUCTION

THE BIG DEAL ABOUT BIG DATA

Big data is a term describing extremely large data sets that are analyzed computationally to reveal patterns, trends, and associations. When you apply analytics to HR data, you get people analytics.

People analytics (aka workforce or talent analytics) uses statistical methodology and software to analyze worker-related data. This enables you to take big data a step further by giving you the power to see past the what, to why it's happening, and how to fix it. People analytics helps you optimize your workforce assets and improve outcomes through more-strategic human resource management.

GAIN A COMPETITIVE ADVANTAGE

Although using big data in HR isn't new, it's still in its infancy. A **2016 survey by Deloitte** reports only 32 percent of companies felt somewhat ready for people analytics. And only eight percent believe they're fully capable of developing predictive models. This means companies that have advanced people analytics capabilities now, can gain a serious competitive advantage.

SHARE A SINGLE LANGUAGE

The challenge for most HR functions is demonstrating value for their initiatives in terms that other business leaders can understand. Just as finance tracks return on investment and operations measures productivity, HR can measure — and influence — human-related values such as turnover. It's not about increasing employee engagement anymore; it's about saving the company X dollars in turnover, and increasing productivity by Y percentage.

The Society for Human Resource Management (SHRM) recently asked a group of workforce analytics researchers and executives about using **workforce analytics for competitive advantage**. The executive group suggested HR start with projects that solve practical problems. Especially in the beginning, the C-suite may be more supportive when your analytics help the company make smarter decisions. It's a reminder that:

The point of predictive analytics projects isn't to address HR outcomes. These projects should address business outcomes.

The need for HR to speak in the language of business is underscored by a **survey** of 300 U.S.-based companies. The responses make clear that the main obstacle to implementing workforce or people analytics is an "unclear connection between workforce analytics and results."

WORTH THE EFFORT

Talking the language of business doesn't just help you do better work and gain leadership support for your HR initiatives. Your evidence-based decisions can also help the company achieve higher returns with greater efficiency.

Studies show companies that use people analytics

- have **30 percent higher** stock market returns than that of the S&P 500
- are **twice** as likely to deliver high-impact recruiting solutions
- have **2.5x** healthier leadership pipelines
- are **2x** more likely to improve recruiting
- report that stakeholders are **4x** more likely to respect HR for its ability to positively affect the business
- are **6 percent** more productive and 5 percent more profitable

PART 2

MOVING BUSINESS FORWARD

CUSTOMIZE "BEST PRACTICES"

People analytics help you understand that elusive "why?" behind the numbers. In a nutshell, you'll gain insights on how to verify, or reject, long-held beliefs and methodology while taking your best practices to a whole new level.

Once you understand the "why?" of data, it's easy to pinpoint actions that deliver the best return for specific roles and specific times. For example, if you are determining the total cost of bringing in a new worker, you must consider multiple factors in the HR process.

This includes how long it takes to go from open requisition to the first interview. Is that cost factor impacted by your job posting effectiveness? At what rate are people clicking on them and applying? Or clicking and going somewhere else? Where should you spend money on improvements?

Then once the talent is sourced, how long does it take your employee to schedule an interview? What does that length of time tell you? That the employee is too busy to interview? Or that the need isn't that urgent to fill?

When executives understand the "why?" behind the numbers, they can understand how it affects their success and support a new solution. The following Salesforce case study demonstrates this.

CASE STUDY

CREATING A CONVINCING ARGUMENT FOR CHANGE

THE CHALLENGE

Salesforce is one of the fastest-growing companies on the Fortune 500, and it reached $5 billion in annual sales faster than any other enterprise software firm. Because of this growth, it's constantly in need of top developers. For years, Salesforce held fast to hiring only within the San Francisco area, where it's headquartered. But as competition for top developers increased in the Bay Area, so did Salesforce's decline rates from candidates.

When management saw the rising decline rates, it ordered HR to offer candidates higher salaries. But that wasn't a financially sound strategy. Then management suggested that HR hire more or better recruiters. But Salesforce already had a team of top recruiters. The old solutions weren't working anymore.

THE SOLUTION

The talent acquisition team knew the time had come for a new approach. The team also believed if management saw the right data, they would be more open to considering a new approach.

The team began by using industry and LinkedIn data to gain a new view of the market for developers. It then combined that data with its LinkedIn Recruiter and Jobvite data to see how many people they had reached out to, interviewed, rejected, made offers to, and hired. Analysis showed Salesforce had already touched most of the potential candidates in the San Francisco area.

THE RESULTS

Backed by this information, the team showed the heads of technology that the outdated solutions of paying more and hiring more recruiters were no longer the answer. The new solution must be to go where the talent was by expanding outside of San Francisco, an idea that bucked Salesforce tradition.

Providing further proof of the idea's viability, the team identified several markets throughout North America with a nearly untapped resource of talented developers. Not only were these rich resources, but Salesforce could also hire the talent at competitive rates.

This analysis provided the company a financially sound reason to open offices in those areas. Not only did people analytics resolve its business problem, but it also helped Salesforce move forward by disproving old beliefs and inefficient solutions.

EFFICIENTLY ADDRESS CRITICAL HR ISSUES

Spearheaded by companies such as Google, Facebook, and LinkedIn, people analytics is poised to transform how HR relates to larger organizational goals. Thankfully, off-the-shelf technology is making analytics more accessible for most companies. Most enterprise resource planning (ERP) and talent management systems, learning platforms, and engagement tools include analytics dashboards.

When you use data from these platforms in conjunction with other HR and business data, you can better predict risk, improve engagement and collaboration, analyze an employee's flight risk, identify candidates for promotion, and more.

Optimize time to hire

An overly long or convoluted hiring process can both drain interviewers and discourage qualified candidates. But if the hiring process is too short, it may increase the chance of making the wrong hires because the candidates aren't vetted accurately. Ask yourself this: *For different roles within your company, what's the optimal number of interviews needed to accurately vet candidates — and minimize the risk of losing highly desirable ones?*

Applying predictive analytics to your workforce data can help you answer this question.

Google was one of the first companies to use a data-driven approach to hiring. It developed an algorithm to predict which applicants were likely to be successful at the company. Google even reviewed rejected applications to find high-quality applicants its screening process overlooked. The conclusion: For Google, little was gained after more than four rounds of interviews.

PREDICTIVE ANALYTICS

Predictive analytics extracts information from data sets to determine patterns and predict outcomes and trends. It does not tell you what will happen in the future, but provides valuable insights that can inform business strategies or decisions.

Spend resources efficiently

Looking at multiple data points such as quality of candidates and time a manager takes to schedule interviews can show you where to focus your resources and efforts. For example, are people clicking your recruiting ads and applying, or are they going somewhere else? Why? You may find the time it takes to hire is affected by a perception in the marketplace or the quality of your ads.

Analytics provides a comprehensive picture of a situation, so you can identify potential bottlenecks and the root cause of an issue. This helps you optimize results while saving time and other resources.

Identify diverse talent

Increasing employee diversity at all levels isn't just about making the organization look good. Research shows that socially diverse teams are more creative and harder-working than socially homogenous groups because they provide "informational diversity." In other words, people from diverse backgrounds bring varied opinions, experiences, and perspectives to their roles.

When analyzing diversity, a good question to ask may be something like: *What variables are correlated with promotions and raises in our company?* This can be a powerful (and revealing) way to identify biases in your organization's review and compensation structures.

To help establish their baseline, Upwork reviewed best practices data from technology companies nationwide. Upwork monitors progress by regularly analyzing internal data collected from steps in the recruiting process to current employee surveys. They scrutinize details including the breakdown of the Equal Employment Opportunity (EEO) categories from recruiter phone screens, how many diversity candidates made it to each stage of the interview process, and how many of them made it to the offer stage. This detailed analysis helps Upwork identify bottlenecks and areas where they can focus on education, eliminate biases, and work towards a greater culture of belonging.

Improve retention

The Society for Human Resource Management estimates total costs for replacing an employee can range between **90 percent to 200 percent** of the employee's salary. What if you could predict the likelihood that a candidate would remain for 12 months *before* you hire them? Or know who was a flight risk *before* they left?

Using your organization's historical data to look for patterns and relationships among variables, people analytics can not only identify causes of high turnover, but also predict how likely an employee is to become a flight risk. This may be especially valuable for reducing "regrettable losses" — key high performers that are critical to the company's future success.

By analyzing reasons behind their voluntary and involuntary attrition, Upwork was able to make critical changes that led to a 50 percent decrease in voluntary, regrettable losses.

When **Google** studied its data to identify which employees were at higher risk of leaving, the company improved retention by more than 35 percent, and retained some of its most valued employees.

Promote fairly

Succession planning has never been more complex. Today's HR teams must maintain a skilled and reliable workforce while navigating three potentially challenging trends: a growing freelance workforce, companies' rising reliance on contingent workers, and high turnover rates in many industries.

Traditionally, HR handled succession using HR software and, sometimes, outside consultants. But these traditional processes can overlook many qualified candidates such as high-potential or high-talent candidates who are struggling under ineffective managers.

People analytics can help HR identify top talent for promotion who might otherwise be overlooked. In turn, this may help retain valuable employees.

Predict worker performance

Many HR departments have been collecting demographic and educational data for years. While these data are certainly valuable, they don't capture other factors critical to employee success such as personality and management style.

What if you knew which personality traits are associated with success in your organization? And for each role?

Increasingly, soft data such as psychographics are playing an important role in the hiring process. When you combine soft data with hard (quantitative) data, you can predict a candidate's likelihood of success.

These same data might also answer an equally important question: *What are potential conflicts or sources of tension we should look out for?* Knowing this can help HR prevent conflicts based on personality traits and characteristics between managers and new hires.

Better define roles and functions

An organization fueled by a data-empowered HR function doesn't just answer people questions. It can also help answer questions about the positions themselves. Do you know which projects are better performed by contractors? Conversely, are certain temporary functions better served in-house?

CASE STUDY

UNCOVERING THE TRUE CAUSE OF VOLUNTARY ATTRITION

THE CHALLENGE

Credit Suisse understood significant change doesn't happen by making blanket policies based on general data. It implemented predictive analytics methods to predict unwanted attrition down to the individual.

"We already had data collected after the fact on who left and the reasons they gave us," says William Wolf, Managing Director and Global Head of Talent Development. "We needed to look at why we don't have the compelling employee value proposition to keep that person here and at who else is at risk."

THE SOLUTION

Wolf assembled a small team made up of HR data analysts and a skilled quantitative methods expert. The team identified common variables of those who remained at Credit Suisse and those who left. "Individual variables and groups of variables have given us extraordinary insight into the causes of voluntary attrition," he notes.

"In the financial services industry, female attrition is a common issue. In this regard "the analysis revealed that at Credit Suisse, there is nothing inherent about being female that makes one more prone to leave," says Wolf.

THE RESULTS

The analysis revealed a surprising answer: Attrition was affected by what the team called "transition points." To lower voluntary attrition, Credit Suisse must "better manage the way all people make transitions, such as coming back from an overseas assignment, becoming a supervisor, or joining the company," Wolf explains. He adds that women were more at risk because they typically had more transition points than men.

How much does this finding affect the bottom line? **A one-point reduction in unwanted attrition saves Credit Suisse an estimated $75 million to $100 million a year.**

CASE STUDY

ANALYTICS WINS MANAGEMENT SUPPORT FOR RECRUITING SOLUTIONS

THE CHALLENGE

Opower is a 600-person company with a 15-person talent acquisition team. It has a dedicated analytics person who splits his time between HR and talent acquisition analytics. The company is growing rapidly, so the team spends most of its time recruiting for the 200 people Opower hires annually. Most of its analytics work is completed within Excel.

THE SOLUTION

The company wanted to know how many recruiters it needed to fill X number of positions.

It knew the answer depended on the type of role in question, but it needed hard numbers. So it created a model that looked at recruiter workloads and goals based on recruiting difficulty instead of number of hires.

Based on the data collected, **Opower decreased its average time-to-fill from 93 days to 67 days**.

The analytics team implemented another model to predict future hiring needs — which revealed that the current team had capacity to fill only 70 percent of the roles by its goal date. The team gathered data to present management with three scenarios:

OPOWER TALENT ACQUISITION PROPOSAL

Opower's talent acquisition team had a goal to hire 250 new employees for 2015. In order to meet this goal, they presented management the following options based on analytics.

CURRENT RESOURCES: 7 RECRUITERS

Forecasted outcome:
Miss goal significantly for 30% of roles.

Consequence:
Can not effectively support hiring for new business deals.

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OPOWER TALENT ACQUISITION PROPOSAL (CONT.)

EXPENSIVE FIX: ADDITIONAL $700K

Immediate resources:
Heavy use of agencies for an "immediate fix," since hiring new recruiters and ramping them up will take about 4 months.

Forecasted outcome:
Miss goal significantly for 5% of roles.

COST-EFFECTIVE FIX: ADDITIONAL $350K

Long-term resources:

- Use talent sourcing site to engage active tech talent.
- Add 1 contractor for Q2/Q3 to focus on roles that are easier to fill.
- Add 2 new full-time recruiters (plus evidence to support a larger team for the long term).
- Implement Q2 recruiter bonus program (0.5% of new hire salaries awarded in Q2 only) — experiment to increase capacity.
- Implement Q2 referral contest ($10K for all engineering hires).

Forecasted outcome:
Miss goal significantly for 15% of roles. Must prioritize to decide where we'll miss.

Source: HR Open Source

THE RESULTS

If the talent acquisition team had simply asked management for more money to hire more recruiters, it would have received tremendous pushback. Speaking the language of business, the team used data to guide management into supporting a resolution. Because management received the three scenarios in a language it understood, it confidently chose scenario three.

Here's how the cost-effective solution affected the business:

- It met 100% of goal in 2015 with a total of 237 hires
- Their talent sourcing site yielded ~2 hard-to-fill tech hires per month
- New resources/incentives increased capacity by ~20 roles per quarter
- Q2 recruiter bonus program effectively increased capacity
- Time-to-fill decreased by an average of 4 days
- Each recruiter filled ~2 more roles than expected

PART 3

DIVING DEEPER

ANALYTICS CAN FLEX WITH YOUR RESOURCES

Big data success stories often showcase industry giants that have entire departments dedicated to analyzing people data. But companies with limited HR resources can also achieve incredible success using big data. And you don't have to be analytically mature — or even have an in-house analytics team to start. You can always engage freelance experts to help you gather and analyze data.

Greta Roberts, CEO and co-founder of Talent Analytics, says you don't need to complete analytics projects in a linear fashion. Many believe they must step up levels of analytics maturity in the following order:

1. Descriptive analytics
2. Diagnostic analytics
3. Predictive analytics
4. Prescriptive analytics

Roberts says it's different for each organization. Two levels can blend at times, occurring simultaneously. Some levels may take longer to complete. Other levels may have smaller amounts of data, but be enough.

Where many HR departments go wrong is starting talent analytics with a huge HR project. **Success comes by addressing a specific business challenge**, such as improving worker safety. If you start with a business challenge, your findings will boost the company's bottom line.

BUILD A COMPELLING BUSINESS CASE

Ross Sparkman, Head of Strategic Workforce Planning at Facebook, suggests aligning an HR metric with a broader business function or metric. Using insights from the analysis, HR can then make changes on its side that will improve the broader business metric.

"If I am an organization that competes by bringing products to market faster than our competitors, and in order to do this I have a certain level of skilled employee that is required, our business driver/metric would be we have X number of days to get this product to market," Sparkman explains. "What I would then want to do as a people-related function is to identify a metric that would relate to that business driver or metric in the form of people. Therefore, if I require high-skilled talent in a short amount of time to meet this demand for bringing products to market in a short amount of time, the metric would be time to hire."

In short, show management how shortening time to hire (HR metric) improves the company's ability to get its product to market on time (business metric).

DETERMINE YOUR ANALYTICS MATURITY LEVEL

When Bersin by Deloitte studied 480 large companies, it found HR so far behind on using talent or people analytics that only **10 percent** had performed any significant analysis of employee data.

Only **four percent** had reached the point where they could perform predictive analytics about their workforce. That's the level where you understand what increases collaboration, uncover how pay affects performance, and so on.

This means the majority — nearly 86 percent — of the HR functions studied were in reactive mode. Essentially, they just answered requests for data. Many times, they cobbled together data from multiple sources. Some might have proactively shown what worked and what didn't through benchmarks and trends, but they still focused on reports or dashboards.

Talent Analytics Maturity Model®

According to the Talent Analytics Maturity Model, the higher your maturity level, the greater your impact on the business. Most companies are in levels one and two. The idea is, as your organization develops new skill sets and gains new resources, it moves up a level of maturity.

"You don't have to wait until you reach a high maturity level, but you have to know what matters to the business."

Maura Stevenson // Vice President of Talent Management at Wendy's

In levels three and four, HR becomes business partners and effects behavioral change. Other stakeholders come to you asking questions. And they're more likely to take actions based on your results.

Source: Bersin by Deloitte, 2013

As leading companies advance, they invest in

- sound data management, which delivers quality data
- business-consulting capabilities to focus on the right problems
- strong relationships with finance and operational analytics teams
- visual design and communications skills

THE TALENT ANALYTICS JOURNEY

TALENT MATURITY	HOW TO MOVE UP TO THE NEXT LEVEL
LEVEL 1: REACTIVE — OPERATIONAL REPORTING Percent of companies: **56%** Most analytics teams start here. Organizations are mainly **reactive**, responding to requests from stakeholders for data and reports. Data is in isolation and difficult to analyze.	Hire dedicated resources. Improve data quality; create data dictionary. Develop a 1- to 3-year plan.
LEVEL 2: PROACTIVE — ADVANCED REPORTING Percent of companies: **30%** The analytics team takes a more proactive approach to understanding stakeholders' needs and communicates findings through custom dashboards and reports.	Implement self-service reporting tools. Work on data integration. Build strong technical and consulting skills.

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THE TALENT ANALYTICS JOURNEY (CONT.)

TALENT MATURITY	HOW TO MOVE UP TO THE NEXT LEVEL
LEVEL 3: STRATEGIC ANALYTICS Percent of companies: **10%** Here, you crossed the bridge between reporting and analytics. The analytics team now **partners** with business leaders to understand their challenges and uses analytics to provide insights and solutions to talent challenges.	Use statistical models to identify drivers of certain outcomes. Develop data visualization skills. Learn to "tell the story" to business leaders.
LEVEL 4: PREDICTIVE ANALYTICS Percent of companies: **4%** You've reached the pinnacle of analytics: building predictive models. Your team uses its skills for **predicting** future outcomes or scenarios and is heavily involved in workforce planning and business strategy decisions.	Level 4 organizations have **30% higher stock returns** and are • 2x more likely to improve recruiting • 3x more likely to reduce costs • have 2.5x healthier leadership pipelines

Source: Bersin by Deloitte

5 TIPS FOR ESTABLISHING YOUR ANALYTICAL MINDSET

Approaching HR decisions from a data perspective requires a mindset shift. Without the shift, the insights your team derives from the data may be skewed. In turn, this may undermine your credibility with management and other stakeholders. These five tips can help your team start off — and remain — on a successful path.

1. Look outside of HR for data

To create a holistic picture that will help you extract meaningful conclusions, gather information from all relevant sources. Remember that other departments collect data too, so don't be shy about approaching other managers for their hard and soft information. Perhaps evaluating customer and financial data can help you predict worker performance. And bring in data from outside sources, such as industry associations or the government.

2. Use data ethically

Although you can find data everywhere, always make sure it's used ethically and fairly. But what's ethical and fair isn't always easy to determine, especially because social media can blur the lines. What if employees identified themselves as smokers on their company medical insurance forms? Can you use that data in predicting their tenure? Probably not. Set guidelines and partner with your legal team to decide which information is fair game and to ensure it's used fairly.

3. Lose your assumptions

Many HR people unconsciously make decisions colored by limiting beliefs, biases, and assumptions about workplace practices, hiring, or retention. But past habits of relying on gut instinct, logical reasoning, or even best practices may prove detrimental to your organization. Keep in mind that what works best for one company, with its individual workers, may not work well for your organization with your unique workers.

For instance, it's easy to assume new hires are more likely to quit than established workers. But one company's analysis found the opposite was true. In another example, a store believed that employees' greeting customers with a smile improved customer satisfaction. But analysis found that, for this store, the pre-work team huddles had more of an impact on customer satisfaction.

Analysis helps you function less on assumptions and more on truth. Instead of blindly following conventional wisdom, evidence informs what's best for your organization.

4. Ask the right questions

You can apply predictive analysis to questions about individuals and larger trends alike. On a micro level, you might ask *"What's the likelihood that this job candidate will stay with the company for at least a year?"* or *"How likely is it that this employee will meet his performance goals over the next quarter?"*

On a macro level, you might ask *"What's my risk level over the next three years?"* or a more complex *"How do we drive innovation within the company?"* Start with a specific question, then find the relevant data.

5. Go outside for help

Hire a consulting firm or freelance professionals. They all can help you define your questions, collect the data, and analyze outcomes using creative methodologies. What's more, they may provide a fresh perspective. Chances are they won't carry any company or industry beliefs. This may reduce risk of bias in their methods or bias in their conclusions.

PART 4

BUILDING AN ANALYTICS FUNCTION

THE ANALYTICS TEAM

Analytics is not the same as storytelling, yet both skills are equally valuable and critical in today's HR. A successful analytics operation must be effective at extracting insights and answering questions using data. And it must be able to share those insights with stakeholders to make sure they're acted upon.

The technicians

A successful analytics operation needs people with a mix of technical and creative skills. Those technical skills are the ones required to manage complex databases, build and test algorithms, and perform the kind of rigorous analysis needed to solve HR and business challenges.

These experts need to have the technical knowledge to

- identify what data is needed to answer a given question
- make sure that data is being collected and processed
- perform the analysis needed to draw valid conclusions

That said, working with data is about more than coding ability. Many powerful tools exist that allow analytics pros to query databases and build high-quality visualizations without writing a single line of code. The important characteristics here, more so than technical ability, are familiarity with the principles of statistical reasoning and a desire to challenge opinions with evidence.

Can team members separate correlation from causation? Do they know how to not be misled by outliers and false positives? This analytical mindset doesn't necessarily require expertise in the latest probabilistic forecasting techniques, but it does require the ability to think critically and scientifically.

Another invaluable part of a data-centric team: someone with experience managing complex projects and getting buy-in from various stakeholders. What do you do once you have statistically valid insights? A great insight is valuable only if you're able to act on it.

Big data and predictive analytics are cross-functional by nature, which makes the ability to manage complex projects involving multiple team members extremely important — especially since HR often faces an uphill battle when trying to get attention from other departments.

The storyteller

One of the most important skills in workforce analytics is knowing how to tell a convincing story. Because a page full of data doesn't convey insights — your story does.

Your analytics team must include someone who can draw insights from raw information, then present management with a compelling and succinct story that helps them "get it" quickly. If you want to influence change, your story should include actionable steps.

Maura Stevenson leads talent strategy for the Wendy's restaurant company, which encompasses 6,500 franchisees and company restaurants employing 31,000 people. As vice president of talent management, she often uses workforce analytics to show how talent affects business results.

When analysis revealed a franchisee's lowest performers hurt it more than its best people help it, Wendy's instructed franchisees to address low performers first and then hire better people to replace them.

Here, the story that data told didn't just show how employees affect business results. It also showed management where to act first.

A good storyteller expertly weaves both qualitative and quantitative data to tell a complete story. You can hire someone with that skill, or help a team member develop it.

Four traits of a fully developed analytics team

Bersin by Deloitte's research also discovered that organizations with mature analytics functions usually have a dedicated analytics talent within HR. Although this may be far off into the future for many companies, it's helpful to know what helped other companies achieve it. Bersin by Deloitte discovered all level three and four companies held these four traits:

1. **Keen technicians.** Teams have strong statistical and data skills. More than half of level 4 organizations have in-house staff with IT backgrounds. More than 70 percent have staff with expertise in data visualization, database, and statistics.
2. **Problem solvers.** Teams are also made up of people with strong HR, business, and consulting skills. They expertly use data to tell the story behind the numbers, which allows business leaders to grasp the situation and its implications quickly.
3. **Quality data.** They invest resources to ensure their data is updated and accurate. This helps uphold the team's credibility when presenting data to stakeholders.
4. **Custom dashboards.** Teams create customizable dashboards that help business leaders quickly receive the information they need, in a language they understand best.

CREATING A DATA STRATEGY

Data reveal whether your points are valid and help you reach your goals. You should know why you chose your goals and how they affect the company's bottom line. This keeps you from trying to "fix" things based on best practices or by following your gut.

Look ahead

Most HR teams focus on where they are now. They're busy figuring out how to solve immediate problems. Instead think about where you want to be in three to five years, and identify the tools you'll need to help you get there. You'll find data is one of those tools.

If you're spending money on something, you want to know where you're spending the money and how it's affecting the company. Don't wait for an issue to surface; be proactive. Let's say you currently don't have any safety or security issues. You should nonetheless proactively use people analytics to identify what your future risks might be and what your risk tolerance is so you can take preemptive measures if needed.

Help others succeed

Maybe your managers already ask for a lot of reports or data. But there's probably a lot of other data they don't ask for because they don't know what they need. Lecia Roundtree, Senior HR Business Partner at The Wine Group, suggests that during regular meetings with your boss, you say, "Hey, here's what we've found" as you show additional analytics. Be sure not to give data for data's sake, however. Tell a good story.

Show your managers how they can achieve their goals. Provide data that helps them look good as they're presenting the information to their boss or to other stakeholders. When you proactively offer additional data, you can help your managers make better decisions.

"It's not just about whether my boss looks at the data or not. Sometimes they don't, and that's okay. You want to create a history of information that when appropriate, it increases that person's value as well," Roundtree says.

Prioritize quick wins

Another popular data strategy is to prioritize quick wins. When LinkedIn was developing its talent analytics team, it built credibility faster by prioritizing quick wins that solved business problems.

Start with small projects that won't intimidate team members who have never performed analytics. When wins occur, celebrate them across the organization. This helps other departments see HR beyond the old stereotypes. They begin seeing HR as business peers.

DATA STRATEGY EXAMPLES

FACEBOOK'S RECRUITING FRAMEWORK

Ross Sparkman, Head of Strategic Workforce Planning at Facebook, suggests you start by understanding what the supply and the demand are, then develop a plan in alignment with your business.

In the case of STEM-related and highly technical roles that are in high demand, Sparkman says you should know what the supply of that pipeline is locally, regionally, globally, and within your own organization.

You should also understand what the demand for those skills or job types will look like in the future. Ask yourself: *What is the demand locally, regionally, and globally? What does the demand look like for competitors?*

Once you have a picture of the supply and demand now and for the near future, you can start developing strategies.

Begin by asking questions such as:

- Do we need to develop our own channel pipeline to potentially meet the shortage in supply? How does our compensation strategy compare to the market?
- Do we need to improve our retention so that we don't have to backfill?
- Do we need to look at leadership development programs within the organization?

GAP INC.'S SHIFT TO DATA-DRIVEN HR

The foundation for making data-driven decisions begins with having the right data and having defined metrics. Clothing retailer Gap Inc. couldn't do that across its six decentralized brands. Here's how Gap Inc.'s workforce analytics team created consistent self-serve reporting across all brands:

1. Map out all primary issues
   One issue was inconsistent processes and data. Because the brands were decentralized, each team applied its own calculations to determine metrics such as turnover. The teams also had incomplete reporting because global data wasn't fully integrated into the system of record.

2. Build analytical credibility
   The team began closing the gaps to create a truly data-driven HR function by

   - standardizing the data. It ensured reliable data by cleaning data, establishing governance standards, and creating a central data warehouse.

   - creating a workforce analytics training program that covered building queries, creating dashboards, and interpreting results.

   - developing a community. Analytics power users within HR shared success stories and lessons learned with other divisions and brands to break down silos.

3. Train business partners
   The team and its business partners helped create a culture of data-based decision-making across the entire HR function. They increased data familiarity by standardizing the language and definitions for all workforce metrics. Then they exposed everyone, from management to the board of directors, to analytics reporting and insights. Instead of being surprised when HR used data analytics, other departments began to expect it.

4. Measure inputs to determine results
   The team gathered input from HR participants about how data was collected, measured, and calculated. From this, they created a consistent set of methodologies to simplify reporting, benchmarking, and tracking.

5. Define success
   The workforce analytics team collected various key metrics to identify trends and cycles. It later applied these insights to expansion, retention, and other strategies.

HANDLING DATA REQUESTS

As your analytics team shows more wins, you'll begin receiving more requests from various departments. It's easy to lose focus or become overwhelmed. LinkedIn manages requests by creating a guideline that helps stakeholders ask strategic business questions:

Guidelines:

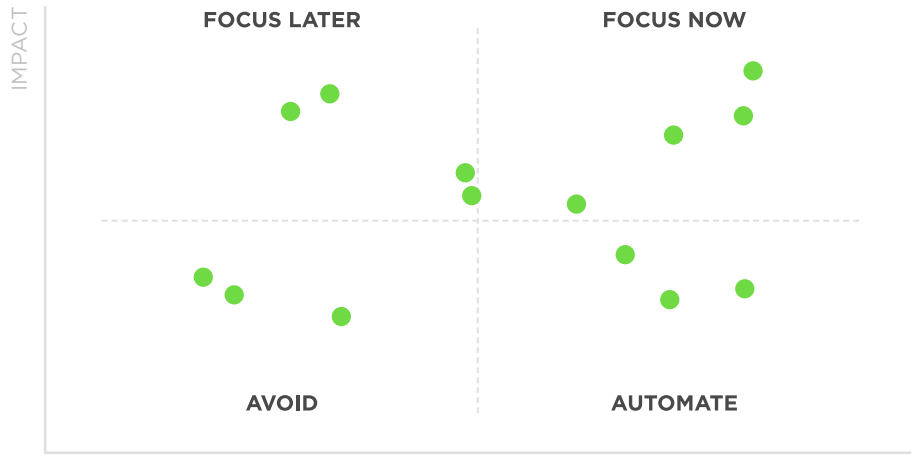
Data-oriented:
- Research questions need evidence in order to be answered
- Questions that are not data-oriented usually need to be more specific

Objective:
- Great questions do not have the desired answer built-in
- Make sure the answer to your question has the possibility of being positive and negative

Testable:
- Great questions allow you to test your instinct
- Sometimes the greatest learnings happen when the answer is unexpected

Specific:
- Specific questions focus the insights you are looking for and make them easier to find
- Broad questions can usually be broken down into several specific questions.

Then the team created a framework for prioritizing requests. This ensures its efforts have the greatest impact on the organization.



Source: Linkedin Corporation, 2015

PART 5

TECHNOLOGIES & PROFICIENCIES

TECH STACK AND SKILLS

Every organization requires a different blend of skill sets. Some analytics teams contain a roomful of experts. Others can consist of one or two people covering multiple functions. Remember, your analytics function doesn't have to all reside in-house. Especially in the beginning, seek outside help from freelance professionals, universities, and other companies.

After deciding how you'll use big data, the technologies below can help you achieve it. When assembling your analytics team, make sure they're skilled at your chosen technologies.

Data mining

Data mining looks for statistically meaningful relationships inside massive stores of data. Some common data mining tasks involve

- recognizing unusual patterns (e.g., factors correlated with increased sales)
- spotting outliers, which may be useful for detecting fraud
- dividing data into classes (e.g., flagging emails as important or unimportant)
- mapping relationships among different pieces of data, as in: In order for x to happen, y and z must happen first

For HR, data mining can be a real game changer. It can enable teams to make connections and test their gut-level assumptions using the data that have been sitting in an ERP.

While data mining can identify correlations among data, keep in mind that it doesn't show causation. For example, finding a positive relationship between employee performance and length of time employees have been at the company doesn't mean you should stop hiring outside people for new roles.

Machine learning

While traditional algorithms rely on human developers to provide explicit instructions, machine learning allows data to guide the process. Using a training set made up of representative data, the computer develops a model that can be compared against an expected output. The more data the computer takes into account, the more accurate and sophisticated its model becomes without developers having to write additional lines of code.

The same advancements in storage and processing that have facilitated the rise of big data have also allowed machine learning to advance by leaps and bounds. Storage and processing frameworks such as Hadoop and robust libraries for programming languages such as R, Python, and Java have made it feasible for the first time to feed machine-learning algorithms tremendous amounts of unstructured data. For data scientists, the ability to create algorithms that are guided by actual data is a huge advantage.

Keep in mind that creating an algorithm that takes data into account is not the same thing as creating an algorithm that evolves as more data pass through it. Depending on your business needs, you might consider incorporating a batch algorithm to periodically update your model or a more advanced incremental algorithm that updates itself automatically as new data is added.

Natural language processing

Natural language processing (NLP) is the use of computers to translate human language into the kind of structure a computer can understand and act upon. It's the technology that allows us to ask our smartphones for directions or help with recognizing the song playing on the radio. It's also the technology that powers the automated call centers we often reach when calling customer service.

NLP is one of the most important techniques for processing unstructured data. The consulting firm Capgemini uses NLP to automatically process applicant résumés for location and experience, then compares them against available job descriptions. NLP can also be used to conduct sentiment analysis to extract insights from employee surveys and other textual records.

Big data frameworks: Hadoop and Spark

As the variety and volume of data that companies collect continue to explode, so too does the popularity of Hadoop and Spark. These frameworks make it possible to store and process gargantuan amounts of unstructured data across cost-effective commodity hardware.

Let's start with Hadoop. Hadoop consists of two main parts. First, the Hadoop Distributed File System (HDFS) allows you to store truly massive files — tables with billions of entries — across dozens (or in some cases thousands) of inexpensive servers. By the same token, it can also be used to store numerous files in the same way. That's why HDFS is used by organizations working with some of the biggest data sets in the world — Facebook, Google, IBM, LinkedIn, and Yahoo all use Hadoop to manage their data.

But the ability to store all those data is useless if you can't do anything with the information.

That's where the second part of Hadoop comes in. The MapReduce paradigm is Hadoop's algorithm for processing and analyzing the massive amounts of data that HDFS manages. MapReduce inverts the traditional way data is analyzed. Rather than extracting data from those many servers and then transporting them over a network to be processed by analytics software (a processing- and time-intensive task), MapReduce moves the software to the data, executing certain computations in parallel.

Think of MapReduce this way: If you need to add a series of 100 numbers, you could do it by yourself (that is, serially), but that would take a while. This is how data analysis on a single machine works. Alternatively, if you got some friends together, you could divide up the numbers, add those, and then total the results. This is how MapReduce leverages a cluster of machines to quickly execute big analytics jobs.

In the world of HR, Hadoop is being used in all industries to generate specific predictions about employee performance based on discrete factors such as salary, shift time, and location, as well as to help guide hiring decisions.

Now let's look briefly at Spark. At a high level, Spark offers an alternative to Hadoop's MapReduce paradigm. Its basic data structure is the Resilient Distributed Dataset (RDD), which is a highly fault-tolerant multiset spread across clusters of machines. Spark copies most of its operations from the distributed hardware into RAM. By performing these operations "in memory," Spark is able to achieve much greater speeds than MapReduce, which relies on a linear dataflow structure.

The upshot is that Spark's speed is ideally suited to real-time processing, which allows data to be incorporated back into the system as soon as they are collected. This is a huge advantage for organizations that need to be able to make sense of data as they come in.

The languages of data science: Python, R, and Java

When it comes to data science, there's no one best programming language. However, there are a few standouts. Each has its own specialties, packages, libraries, and extensions that further enhance their capabilities. Here we'll briefly compare three of the most popular options: R, Java, and Python.

R was originally developed by statisticians as an open-source alternative to expensive suites of statistical software such as SAS and MATLAB. R been likened to Excel on steroids, able to sift through reams of data, execute sophisticated analyses, and produce publication-quality graphs and tables. In short, it's a tool built with data analysis in mind. Unlike object-oriented programming languages such as Java or Python, R is a procedural language, meaning it relies on a series of step-by-step subroutines to execute a programming task.

The advantage of procedural programming is that it gives clear visibility into complex operations with lots of dependencies, which can be important for many data-analysis tasks. The tradeoff is that this often requires more lines of code than object-oriented languages do.

Java is powerful, portable, and scalable, which makes the platform perfect for building enterprise-scale applications and supporting rapid growth. Java also includes many tools, collectively known as the Java Platform. This robust, open-source development environment includes libraries, frameworks, APIs, the Java Runtime Environment, plug-ins, and the Java Virtual Machine (JVM). Taken together, these tools simplify coding with Java and support development at every level, giving developers everything they need to build Java web systems and applications.

Java's speed allows it to outperform other languages and frameworks, which is a big part of why it's so well suited to large-scale applications. Another key aspect of Java is that it comes as close to being 100 percent object-oriented as you can get. With that comes all the benefits of object-oriented programming, from ease of development to modular software to flexibility and extensibility. And because it's one of the most widely known programming languages, finding and hiring talented Java developers is relatively easy.

Like Java, **Python** is built to handle high-traffic sites. It's fast and efficient, with an emphasis on code readability. Python's motto is "there should be one — and preferably only one — obvious way to do it." That can mean there's a bit of a learning curve as developers adapt to the ins and outs of Python syntax. But the upside is an ability to express concepts with fewer lines of code than would be possible in a more verbose language such as Java.

Python's other great strength is an extensive set of libraries that allow it to perform a wide array of tasks. These libraries have been built upon by a number of other libraries that extend Python's functionality even further. In short, Python represents a compromise between R and Java, combining the sophistication of the former with the speed and scalability of the latter.

Visualization tools

Sophisticated analysis tools allow us to glean insights we never could before, but those insights can easily be lost if they're not presented in a way that's easy to understand. For HR teams new to using data, it's even more important to be able to distill their insights into straightforward and compelling visualizations. Whether we're talking about simple bar and pie charts or highly interactive maps and timelines, a good visualization can be one of the most effective ways to present data.

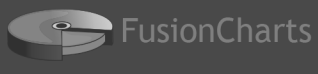
There are many ways to put together a good visualization. Developers skilled with R, Python, and Java can build sophisticated visualizations from scratch, but fortunately for nondevelopers, a number of commercial and open-source **tools make it easy to create professional-quality visualizations**.

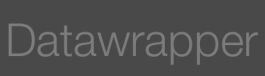
Even those who don't often work with data might still find themselves in need of a good graph or chart every once in awhile. Tools such as Excel and Google Sheets are widely used even by those who aren't data scientists to create basic charts and graphs.

There are also several free web-based options such as Plotly, TimelineJS, and Raw. These programs are designed to let just about anyone quickly produce a high-quality visualization, no coding necessary.

Then there are the heavy-duty tools, designed to work with huge troves of data (think in the petabyte range). These big boys produce complex 2D and 3D representations. They're the tools that data-heavy startups, governmental organizations, and major corporations rely on when making strategic decisions and presenting complex data sets. These tools include feature-rich platforms such as Tableau as well as specialized libraries for specific languages such as Python.

VISUALIZATION TOOLS



PART 6

LOOKING FORWARD

HR AS THE NEW BUSINESS STRATEGISTS

It's predicted that soon, companies won't be able to remain competitive or grow sustainably without incorporating people analytics into their strategy. Already, demand for HR professionals with analytical skills has jumped **41 percent** since 2013.

Every day, more HR professionals are proving that HR is inextricably tied to business success. "Because our CEO relies so much on data, it makes our role critical," explains Dawn Klinghoffer, Senior Director of HR business Insights at Microsoft. "We get involved with lots of big projects where data is key to decisions, even down to the latest reorgs that were announced this summer, which meant that we were providing lots and lots of cuts of data. This involved looking at things and asking, 'If we arranged things this way, what would that mean from a people perspective?' I'd like to think this helped making decisions on where we wanted to go. Our data is very much support for the strategy leads to make decisions."

As management sees how people-related projects help solve business challenges, it may funnel more funding toward HR initiatives. Before long, other business functions will be looking to you — HR — for strategic guidance. Big data and people analytics will help you deliver that guidance with more accuracy and efficiency.

Embracing numbers may seem daunting at first, but remember there's plenty of outside help available. Upwork Enterprise combines the largest freelancing talent pool with robust technology and personalized services, giving companies a single solution to engage contractors at scale.

Learn how **Upwork Enterprise** can help your business get more done with freelancers, while capturing data on productivity and spend so your teams can make data-driven decisions that move the needle.

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KEY CONTRIBUTORS

ZOE HARTE / VP, Head of Human Resources, Upwork

LISA ODA / Content director

JACQUELINE PAK / Product Marketing

BRENDA DO / Freelance writer

JUSTIN KEENAN / Freelance writer

ANNA PENIGINA / Freelance designer

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