Understanding Today’s Chief Data Scientist

In their October 2012 Harvard Business Review article, Tom Davenport and D.J. Patil called Data Scientist, “The Sexiest Job of the 21st Century.” The subject is clearly part of the zeitgeist: academics, industry analysts, consultants and executives all have debated issues such as the required experiences, need for academic training programs, the shortage (or not) of qualified data science talent, and the best way to structure data science teams.

As Heidrick & Struggles’ Big Data & Analytics Practice has continued to expand globally (more than 125 searches in the past 24 months), we have repeatedly been asked about this subject—with an added focus on Data Science leadership from both executives and companies looking to hire such executives. Data Scientists are asking us:

- What academic and commercial credentials will make me a more viable candidate in the market?
- Where should Data Science be positioned within a company for success?

Our clients want to know:
- What qualifications should we expect to find in the market?
- Where will we find the best talent with the highest likelihood of success?

To better answer questions such as these, we examined publicly available data on a sample of 100 U.S.-based companies—large, medium and small, across several different industries—that employ Chief Data Scientists (CDS). We viewed the results through the lens of our extensive leadership search and advisory experience, paying close attention to company size, the education credentials of those in the CDS position, their past commercial experience, and their leadership roles.

We learned that those in the CDS position most likely have advanced degrees (primarily in computer science or engineering). They average nearly 15 years of post-degree commercial (PDC) experience. However, except for small companies, the CDS is not likely to be on the top management team.

Before looking more closely at our research results, let’s be clear about the positions we are discussing. A CDS is more than a number cruncher. The role calls for expertise in statistics, programming, database technology and data visualization—all while requiring industry knowledge and business savvy. The most successful are energized by applied data science rather than “blue sky” research and are able to engage with a non-technical audience to communicate the value proposition of their work. In our view, these are not individual-contribution roles, these are the most senior data-science positions within a firm, whether they carry the Chief Data Scientist designation or not.
EDUCATION

Many traditional colleges and universities are beginning to offer degree programs, continuing education certificates, and massive open online courses with specific “data science” content. However, these choices for data science training have just begun to become available. Rather than hypothesizing about an ideal credential, our research focused on the qualifications of those now sitting in the Chief Data Scientist position.

Across our entire sample, Data Science leaders were just as likely to have earned a PhD as to have earned any other degree. Among companies with fewer than 10,000 employees, 70-75% hired Data Science leaders with at least a Master’s degree; for larger companies, that number jumped to 85%.

For those who identified a major, computer science was the most common field of study; there were twice as many computer science doctorates as those of any other field.

Only 13% of the total sample held an MBA, but Data Science leaders in companies with 1,000 or more employees were four times more likely to hold an MBA than those in smaller firms. Executives who otherwise held only a BA/BS were most likely to also have an MBA.

Conclusions

• A PhD is neither a ticket-to-entry nor a required qualification of a Chief Data Scientist.
• Those with computer science and engineering degrees have transitioned into Chief Data Scientist roles at a faster pace than those with other academic qualifications. As companies have sought leadership talent for emerging data science teams, we suspect that the deepest pool of management talent have earned degrees in computer science and engineering fields because many companies have a longer history of hiring into these functions and have talents pools of greater scale with these credentials. As the market for data scientists matures, we anticipate that other fields of study including social sciences, physics and math will rise in prominence amongst sitting Chief Data Scientists.
• While an MBA may be seen as a “nice to have,” and may add credibility to those executives whose education otherwise ended with a Bachelor’s degree, it does not appear to significantly affect the commercial viability of those Chief Data Scientists with Master’s- or PhD-level credentials.
**EXPERIENCE**

Our initial hypothesis was that there would be a large population of CDS with limited commercial experience, having spent significant time in academic environments. This sentiment is shared by many and is often extolled in the popular press. While this may be true for individual contributors and more junior executives, it is not true for most CDS, despite the high proportion of CDS with doctorates. In order to evaluate this and to normalize our data, we looked at post-graduate continuous work experience, whether the executive had joined the workforce after graduating with a Bachelor’s or PhD. We also applied a filter based on company size.

Across our sample, the average and median Post-Degree (PD) experience is 16 years.

The average Post-Degree Commercial (PDC) experience is 14.6 years and the median is 14.5 years. More than half (57.4%) of the companies in our sample had CDS with 1-15 years of experience. The largest companies (>10,000 employees) were most likely to diverge from this general trend. Within this category, 55% of companies had CDS with 16+ years of PDC experience.

Only 8.5% of the companies studied had CDS with five or fewer years of PDC experience. The smallest companies in our sample (1-50 employees) were the most likely to have CDS with five or fewer years’ experience, representing 13% of the group.

On the other end of the spectrum, only 4.3% of our sample had a CDS with 31+ years of experience. Again unsurprisingly, the largest companies in our sample were most likely to have a CDS with PDC experience outside the norm, 10% of the CDS in this group had more than 31 years of PDC.

Taking a broader view, 37.2% of our sample had CDS with 1-10 years of PDC experience. We were surprised to see that this number was somewhat consistent across company sizes. In fact, the smallest companies in our sample were just as likely as the largest companies to have a CDS with 1-10 years of PDC experience (34.7% and 35%, respectively).

Most CDS in our sample had 11-20 years of PDC experience, representing 45.7% of our overall group. The one group that stood out most distinctly in this category was small companies, where 56.5% of the sample had a CDS with 11-20 years of PDC experience.

Conclusions

- Despite popular opinion, today’s Chief Data Scientists are likely to have a significant amount of commercial experience under their belt. A successful track record of commercial experience is valued across companies of all sizes.
- Overall, company size had some effect on outliers in terms of PDC experience. The largest companies were more likely than others to have a CDS with decades of commercial experience, while the smallest companies were more likely than the overall sample to have a CDS with very little commercial experience. However, these extremes represented only relatively small portions of each group.
- The smallest companies in our sample were the most likely to have a CDS with 11-20 years of experience. We suspect there are two reasons for this result. For one, those in smaller companies are likely to have been founders or are attracted to entrepreneurial/early-stage companies and will return to these environments throughout their career. For another, these companies are likely to value a CDS with experience building and leading a team and helping to scale a company. Unsurprisingly, our research has found that a CDS is more likely to hold a prominent leadership position within a smaller company.
LEADERSHIP

The Chief Data Scientist role is gaining traction at companies of all sizes, from start-ups to established global enterprises, as reflected in our sample. However, based on our research, it is evident that the “seat” a Chief Data Scientist occupies can vary widely.

In order to evaluate this category, we examined publicly available information to determine whether the individual in question is identified as part of the leadership or management team.

In the overall sample, 34% of Chief Data Scientists were identified as part of the management team. However, rates varied inversely with the size of the company. In the smallest companies, 60% of the CDS had a seat at the table; for those with 51-200 employees the rate dropped to 53%, and for those with 201-1,000 employees it dropped further, to 23%. No companies larger than that reported a CDS on the management team.

Founders comprised only 8% of the overall sample. At the smallest companies, 20% had a CDS/founder on the management team. Among companies with a CDS on the management team, 24% were founders.

Conclusions

• While some Chief Data Scientists are aligned to research laboratories or centers of excellence, others assume positions as part of the leadership team and have a more visible “seat at the table.”

• In most cases, Chief Data Scientists have yet to be widely accepted as part of the management team.

• Data Science clearly holds a more prominent leadership position in smaller companies, and founder status has a significant impact on the likelihood of a CDS sitting on the management team.
FINAL THOUGHTS

Our research and experience tell us that the role of Chief Data Scientist is penetrating the business world at a growing rate. While the marketplace for talent will certainly evolve over time, companies and data scientists will be rewarded for keeping a few points in mind about today’s market.

For Companies

- Don’t be distracted by the academic credentials and raw intellectual horsepower alone. The key to success Chief Data Scientist is a track record of applied commercial experience.
- No one academic field holds a monopoly on minting qualified data scientists.
- A PhD should be considered a nice to have, but not a requirement.

For Data Scientists

- Being the smartest person in the room is not enough. Commit to developing your commercial skills so that you can communicate the value of data science to a non-technical audience.
- Before assuming a role leading a data science organization in a commercial setting, you will likely need experience outside of academia.
- Unless you have a track record of commercial success and are part of a smaller organization, don’t expect a seat on the leadership team.

BIG DATA & ANALYTICS PRACTICE

Launched in 2012, Heidrick & Struggles was the first major global firm with a Big Data & Analytics Practice. The Big Data & Analytics Practice has built a world class knowledge base to counsel and assist clients with their talent needs, as well as help them understand what leadership they need to deliver on their future strategy. Combine this with the firm’s strategic leadership consulting expertise, and you have a dynamic blend of counsel that nobody else can currently offer in the marketplace.

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