



# Big Data and AI Executive Survey 2021

## Executive Summary of Findings



***The Journey to Becoming Data-Driven:  
A Progress Report on the State of Corporate Data Initiatives***

**With a Foreword by Thomas H. Davenport and Randy Bean**

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## Foreword

It has been nearly a full decade since this executive survey was first launched in 2012. Much progress has been made, but which work remains to be done. The theme for this year's survey findings might be "dogged optimism despite COVID and culture." The COVID-19 pandemic seems to have posed few substantial obstacles for Big Data and AI within the participating firms, many of which are in relatively pandemic-resistant industries like banking and healthcare. It is notable that just under 10% of respondents said their company would spend less on data and AI initiatives because of COVID, and 31% will spend more. Presumably, data and AI programs have benefitted from increased spending on digital migration initiatives by companies during the pandemic.

Cultural change, however, seems a more significant barrier to long-term success. Over the years this survey has been conducted, we have commented on the challenge of changing corporate cultures in a more data-driven direction. This year's findings exhibit that challenge to an even greater degree. All questions relating to the long-term progress of corporate data initiatives exhibited declines from 2019 and 2020 levels, a disappointing development. Less than half of companies noted success in these key metrics of progress:

- Driving innovation with data
- Competing on data and analytics
- Managing data as a business asset
- Forging a data culture
- Creating a data-driven organization.

In the latter two categories, just under a quarter say they have achieved these cultural goals. In addition, a slightly increased percentage from last year -- now 92% -- attribute the "principal challenge to becoming data-driven" to people, business processes, and culture, with only 8% identifying technology limitations as the barrier.

These are extraordinary results. They strongly suggest the need for change in the focus of data executives toward programs that address data culture, literacy, and decision-making—even at the expense of technology initiatives. We have noted several senior data leaders who are now emphasizing the creation of data-driven cultures, but we do not see enough of them and we are not sure their efforts in that direction are sufficient.

### **Nevertheless, Optimism Prevails**

Despite the challenges with long-term cultural change, company representatives were for the most part optimistic about data and AI within their organizations. Investment levels remain high. An amazing 96% say their organization has achieved successful outcomes from Big Data and AI—up more than 25% from last year. 92% report that the pace of Big Data/AI investment in their



organizations is accelerating — up 40% from the 2020 survey. Overall, 81% say that they are optimistic about the future of Big Data and AI in their firms.

These results suggest that 2020, despite all its business and social challenges, was the year in which AI turned the corner of value realization in large firms. The percentage reporting that AI applications are in either widespread or limited production reached 77% -- although most report only limited production. AI is still viewed as the most impactful disruptive technology, though its lead over other technologies is decreasing. It might be viewed as a sign of maturity for AI that it is becoming more familiar and viewed as less transformational.

### **Data Leadership Still Problematic**

Although the respondents to this survey, 76% of whom are Chief Data/Analytics Officers, are positive about the technologies they manage, they are less enthusiastic about their own roles. There appears to be a growing consensus within organizations that the Chief Data/Analytics Officer has the primary responsibility for data — 49%, however a quarter of companies still report that there is no single point of accountability. There is also increasing consensus that the focus of data leaders should be on offense and revenue-generating activities, with 70% suggesting that offense-oriented data initiatives are more vital than defense-oriented ones like regulatory and compliance issues. We have observed both trends within companies recently.

Over the past several years of this survey, the percentage reporting that the profile for a successful chief data officer is an “external change agent or outsider” has increased. This year, however, that percentage declined a bit, as did the percentage advocating that the CDO is a line of business executive with responsibility for business results. The category that has increased this year — by about 8% -- is a CDO who is a company veteran or insider. Perhaps this is a signal that such executives are more likely to bring about change in company cultures related to data.

Perhaps the best indicator of the problematic nature of data leadership is that just under half of the respondents feel that the Chief Data Officer role is still “nascent and evolving.” But it is somewhat good news that the percentage feeling that the role is “successful and established” has increased by about 5% over the past year, and those feeling the role is “struggling with turnover” has decreased by the same percentage.

In summary, the data leaders whose perspectives are reported in this survey believe strongly in the value of data, analytics, and AI. They do not appear to be as confident that their role is structured in the right way. And they are even less convinced that their company is on the right path toward data-driven cultures and organizations. We hope that these perspectives will lead to a change in the focus and emphasis of data-related programs and processes during 2021 and in the years ahead.

Thomas H. Davenport and Randy Bean

January 2021



## Introduction

Since this executive survey was first launched in 2012, nearly a decade ago, leading companies have steadily invested in Big Data and Artificial Intelligence (AI) initiatives in efforts to become more data-driven and apply data to make better business decisions. Big Data and AI investment has reached a state where it is nearly universal, with 99% of firms reporting active investment in these areas, and 91.9% reporting that the pace of investment is accelerating.

Even with these levels of committed investment, challenges remain. Firms are continuing to struggle to derive value from their Big Data and AI investments and to become data-driven organizations. The following findings from our 2021 survey reflect the challenges that firms are facing:

- Only 48.5% are driving innovation with data
- Only 41.2% are competing on analytics
- Only 39.3% are managing data as a business asset
- Only 30.0% have a well-articulated data strategy for their company
- Only 29.2% are experiencing transformation business outcomes
- Only 24.4% have forged a data culture
- Only 24.0% have created a data-driven organization.

Clearly, there is opportunity for growth and improvement. After all, becoming a data-driven organization represents a transformational process. For the 5<sup>th</sup> consecutive year, executives report that cultural challenges – not technology challenges – represent the biggest impediment to successful adoption of data initiatives and biggest barrier to realizing business outcomes.

Data is a journey, and in this spirit, the theme of the 2021 executive survey is “The Journey to Becoming Data-Driven: A Progress Report on the State of Corporate Data Initiatives”.

This survey was first conducted in 2012 -- in response to Fortune 1000 business and technology C-Executives who sought to understand the potential impact of Big Data, and its implications for their businesses.

For this survey and report, the term Big Data is used in its broadest sense – meant to comprise all investments in corporate data initiatives, regardless of the volume or type of data.

We are very grateful to report this year that 85 Fortune 1000 or industry leading firms are represented in our 2021 survey, our highest rate of participation and representation. This year, a record 76.0% of respondents held the role of Chief Data Officer or Chief Analytics Officer.

As always, a special thank you to all the executives who participated. We are very appreciative.



## 2021 Survey Participating Firms

A record number of blue-chip companies participated in the 2021 executive survey – a total of 85 firms. Data intensive industries are heavily represented. Here are the 2021 participants:

### FINANCIAL SERVICES | INSURANCE

<b>AIG</b>	<b>Freddie Mac</b>	<b>Nuveen   TIAA</b>
<b>Ally Financial</b>	<b>Hanover Insurance</b>	<b>PNC Bank</b>
<b>American Express</b>	<b>The Hartford</b>	<b>Prudential</b>
<b>American Family</b>	<b>Huntington Bank</b>	<b>Regions Bank</b>
<b>Bank of America</b>	<b>Invesco</b>	<b>Scotia Bank</b>
<b>Bank of China</b>	<b>JP Morgan Chase</b>	<b>State Street</b>
<b>Berkshire Hathaway</b>	<b>Kemper Insurance</b>	<b>Sun Life Financial</b>
<b>Capital One</b>	<b>Key Bank</b>	<b>Swiss Reinsurance</b>
<b>Capital Group</b>	<b>Liberty Mutual</b>	<b>TD Ameritrade</b>
<b>Charles Schwab</b>	<b>London Stock Exchange</b>	<b>TD Bank</b>
<b>Citigroup</b>	<b>M&amp;T Bank</b>	<b>UBS</b>
<b>Citizens Bank</b>	<b>Mastercard</b>	<b>VISA</b>
<b>Credit Suisse</b>	<b>Mass Mutual</b>	<b>Voya Financial</b>
<b>Deutsche Bank</b>	<b>Met Life</b>	<b>Webster Bank</b>
<b>Discover</b>	<b>MFS Investments</b>	<b>Wells Fargo</b>
<b>Equitable</b>	<b>Moody's</b>	<b>Zions Bank</b>
<b>Fannie Mae</b>	<b>Morgan Stanley</b>	
<b>Fidelity Investments</b>	<b>New York Life</b>	

### HEALTHCARE | LIFE SCIENCES

<b>Alexion</b>	<b>Cerevel</b>	<b>Merck</b>
<b>Alkermes</b>	<b>Cigna</b>	<b>Optum   United Health</b>
<b>Anthem</b>	<b>CVS Health</b>	<b>Parexel</b>
<b>Astellas</b>	<b>Eli Lilly</b>	<b>Pfizer</b>
<b>Bristol-Meyers Squibb</b>	<b>Glaxo Smith Kline</b>	<b>Sanofi</b>
<b>Celgene</b>	<b>H3 Biomedicine</b>	
<b>Cellarity</b>	<b>Humana</b>	

### CONSUMER | BUSINESS SERVICES | GOVERNMENT

<b>Alliance Data</b>	<b>Global Energy</b>	<b>Richemont</b>
<b>Bose</b>	<b>Hanesbrands</b>	<b>Rogers Communications</b>
<b>Bloomberg</b>	<b>McDonalds</b>	<b>Starbucks</b>
<b>Catalina Marketing</b>	<b>Neustar</b>	<b>Walmart</b>
<b>Equifax</b>	<b>New York City</b>	



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## 2021 Participant Summary

The 2021 survey continues to reflect heavy participation from data intensive industries. Financial services firms continue to be at the forefront in term of the scope and depth of their data requirements and initiatives.

Healthcare and life sciences continue to be an area of growth in data usage, a point that was well illustrated by the response to the COVID-19 epidemic during 2020, and the focus on gathering Big Data to forecast case rates, mortality, and to rapidly develop a safe and effective vaccine.

This year's survey also features representation from a range of firms that are committed to using data to make better business decisions. The Fortune 1000 is well represented by some of the best known and well-established brands.

Here is a summary of 2021 survey participants by industry segment.

<b><u>Industry Participation</u></b>	<b><u>2018</u></b>	<b><u>2019</u></b>	<b><u>2020</u></b>	<b><u>2021</u></b>
<b>Financial Services</b>	<b>77.2%</b>	<b>73.8%</b>	<b>67.1%</b>	<b>66.3%</b>
<b>Healthcare   Life Sciences</b>	<b>8.8%</b>	<b>16.6%</b>	<b>25.6%</b>	<b>21.8%</b>
<b>Additional Industries</b>	<b>14.0%</b>	<b>9.6%</b>	<b>7.3%</b>	<b>11.9%</b>

NewVantage Partners Executive Survey respondents constitute the most senior corporate executives with oversight and responsibility for Big Data and AI initiatives within their respective firm. Upon publication of the 2012 survey, Thomas H. Davenport called the survey “one of the few I have seen that focuses on large organizations and offers responses from C-level executives”. Nearly a decade later, with this being our 9th survey of senior corporate executives, the prominence and reach of the survey and its participants continues to grow. The survey has become an industry benchmark, quoted in leading business publications, and referenced at industry events worldwide.

The following represents a summary of the 2021 executive survey participants by responsibility.

<b><u>Respondent Role</u></b>	<b><u>2018</u></b>	<b><u>2019</u></b>	<b><u>2020</u></b>	<b><u>2021</u></b>
<b>Chief Data Officer   Data Leader</b>	<b>55.6%</b>	<b>56.8%</b>	<b>62.2%</b>	<b>65.0%</b>
<b>Chief Analytics Officer   Analytics Leader</b>	<b>15.3%</b>	<b>16.0%</b>	<b>11.0%</b>	<b>11.0%</b>
<b>Chief Information Officer   Technology Leader</b>	<b>13.9%</b>	<b>17.3%</b>	<b>21.9%</b>	<b>12.0%</b>
<b>Chief Executive Officer   Business Leader</b>	<b>5.6%</b>	<b>2.5%</b>	<b>2.4%</b>	<b>2.0%</b>
<b>Chief Marketing/Digital Officer   Strategy Leader</b>	<b>2.8%</b>	<b>4.9%</b>	<b>1.2%</b>	<b>3.0%</b>
<b>Other</b>	<b>6.9%</b>	<b>2.5%</b>	<b>1.2%</b>	<b>7.0%</b>

Chief Data/Analytics Officers constitute a new high of 76.0% of this year's survey respondents.



## 2021 Executive Summary

Leading companies have made significant strides in their efforts to realize business results from their Big Data and AI investments, as evidenced by the data in this year's survey. However, significant challenges remain. Anyone who has spent serious time in the field of data understands that becoming a data-driven organization does not happen overnight.

Building a data culture is a process. These efforts unfold over time. Perhaps, what has been less appreciated is how much time these data-transformation efforts take for mainstream companies, saddled with legacy systems, legacy cultures, and in some cases, legacy skill sets.

Here is a summary of key themes from NewVantage Partners 2021 Executive Survey:

### **A decade in, Big Data is firmly in the mainstream**

When this survey was first launched nearly a decade ago, companies had just begun to embrace Big Data and its expected transformational impact. Today, nearly a decade later, mainstream companies have come a long way in having expanded their commitment and investments in data. This is evidenced by the percentage of firms investing in data initiatives – 99.0%, appointment of a Chief Data Officer (CDO) – 65%, and reporting of measurable business outcomes – 96.0%. There is no question that Big Data has been absorbed into the mainstream during this decade.

### **Leading companies report significant strides in achieving business outcomes**

Big Data and AI investment is holding strong and the pace of investment is accelerating, as are companies reporting successful business outcomes. This year, there was nearly universal acknowledgement -- 96.0% -- that Big Data and AI efforts were yielding results, an increase from half that number – 48.4% -- just a half decade ago.

### **Companies still face significant headwinds to becoming Data-Driven however**

Making a commitment to data-driven transformation is one thing; executing on that commitment is quite another. A decade into these efforts, companies still have a long-way to go – only 39.3% are managing data as an asset; only 24.4% have forged a data culture within their firms; only 24.0% have created a data-driven organization. There is still much work to be done. Leading companies still have some ways to go on their data journey.

### **The Chief Data Officer role is firmly established, but not firmly defined**

Mainstream companies have firmly adopted the CDO role during the past decade – 12.0% in 2012 to 65.0% in 2021. However, clarity on responsibilities, focus, purview, and reporting relationship remains in flux. Less than half of Chief Data Officers – 49.5% -- have primary responsibility for data within their firm. Organizations fluctuate between appointing external change agents – 44.4% -- and company insiders – 23.5%. Only a third of companies – 33.3% -- confirm that the CDO role is successful and established, although this represents an improvement from 2020.



## **Culture still eats strategy for breakfast**

This aphorism is attributed to legendary management consultant Peter Drucker, and it certainly appears to hold true for data transformation efforts. Leading companies continue to identify culture – people, process, organization, change management – as the biggest impediment to becoming data-driven organizations – 92.2%. Few companies – only 30.0% -- have even developed a well-articulated data strategy that culture could eat for breakfast. There is plenty of work to be done.

## **Adoption of Artificial Intelligence (AI) increases at a steady pace**

Companies are progressing steadily in their adoption of AI initiatives – 77.8% of companies report AI capabilities to be in widespread or limited production, up from 65.8% last year; only 4.1% report no applications of AI in use. With overall investment levels in data and AI increasing, progressive adoption of AI capabilities can be expected to continue.

## **Although progress has been slow, companies express hope for the future**

In spite of the many challenges that leading companies face as they pursue efforts to become more data driven, an overwhelming majority of executives are hopeful for the future – 81.0% expressed optimism about the outlook for data/AI within their firms; 91.9% indicated that the pace of investment in data/AI was accelerating; 45.4% described their companies as leaders in making progress on data/AI; 91.6% reported that even with the COVID-19 epidemic, their companies would be spending the same or more on data and AI initiatives. Companies appear to be committed to progressing their data-driven efforts entering 2021.

## **A decade of transformation. What lies ahead?**

Looking back a decade to when this survey was first launched at the behest of a group of leading corporate executives, the interceding decade has represented a period of meaningful transformation for mainstream companies. Big Data and AI were nascent capabilities which received minimal investment. Firms had begun to think about what it would mean to be data-driven, but few had developed formalized programs and articulated a corporate commitment. The function of a Chief Data Officer was non-existent, except within a small handful of companies. In those instances, the role was mainly structured around risk mitigation and regulatory compliance.

During the past decade, Big Data and AI have become mainstream. Firms are deeply engaged in this transformation and there will be no turning back. This annual survey is a testament to the efforts of data executives and practitioners to raise corporate consciousness around the business value of well managed data for business decision making. We have come far. There is still much progress to be made.





## Investment

In recent years, it became evident that investment in Big Data and AI initiatives has become essentially universal. Data initiatives have become mainstream. As data continues to proliferate, companies are struggling to stay ahead of the demand by investing in data governance, data management, data literacy, and a range of initiatives to ensure that they progress in their efforts to make more and better data-driven decisions.

Investment in Big Data and AI initiatives is largely unchanged in recent years. Data investment has become ubiquitous.

<b><u>Investment in Big Data/AI</u></b>	<b><u>2019</u></b>	<b><u>2020</u></b>	<b><u>2021</u></b>
<b>Investing in Big Data/AI</b>	<b>97.2%</b>	<b>98.8%</b>	<b>99.0%</b>

Following a notable decrease in the pace of investment in Big Data and AI initiatives in 2020, executives report that the pace of investment has resumed – 91.9% noting an increase in the pace. One possible explanation for this increase is that firms are investing again after taking a year to digest the rising levels of investment of previous years.

<b><u>Pace of Investment in Big Data/AI</u></b>	<b><u>2019</u></b>	<b><u>2020</u></b>	<b><u>2021</u></b>
<b>Pace is Accelerating</b>	<b>91.6%</b>	<b>51.9%</b>	<b>91.9%</b>
<b>No</b>	<b>8.4%</b>	<b>46.9%</b>	<b>8.1%</b>

Total dollar investment in Big Data and AI has remained consistent since 2020, with 62% of firms reporting investment exceeding \$50M.

<b><u>Investment in Big Data/AI</u></b>	<b><u>2018</u></b>	<b><u>2019</u></b>	<b><u>2020</u></b>	<b><u>2021</u></b>
<b>Greater than \$500M</b>	<b>12.7%</b>	<b>21.1%</b>	<b>18.3%</b>	<b>16.7%</b>
<b>\$50M -- \$500M</b>	<b>27.0%</b>	<b>33.9%</b>	<b>46.5%</b>	<b>45.3%</b>
<b>Under \$50M</b>	<b>60.3%</b>	<b>45.0%</b>	<b>35.2%</b>	<b>38.0%</b>

Big Data and AI investment appears to be generally consistent with recent years, with offensive revenue generation – 82.7% -- being the dominant driver of investment, although there has been a modest decline in recent years, perhaps due to greater attention to issues of risk mitigation.

<b><u>Drivers of Big Data/AI Investment</u></b>	<b><u>2019</u></b>	<b><u>2020</u></b>	<b><u>2021</u></b>
<b>Offensive</b>	<b>91.7%</b>	<b>89.0%</b>	<b>82.7%</b>
<b>Defensive</b>	<b>8.3%</b>	<b>11.0%</b>	<b>17.3%</b>



It is noteworthy that fewer executives named AI and Machine Learning as the most impactful disruptive technology in this year's survey, down from 69.5% in 2020 to 47.5% in 2021.

This may be attributed to a notable increase in AI investment and adoption, with the result that AI has become adopted into the mainstream and is no longer viewed as being disruptive, or attributable to a more modest outlook and expectations relative to the application of AI within the companies that participated in the survey.

Cloud Migration continues to be an important consideration for leading companies, increasing from 11.0% to 16.8% this year. Other disruptive technologies receiving double-digit mention include digital technologies and modern data architectures.

<b>Most Impactful Disruptive Technology</b>	<b>2017</b>	<b>2018</b>	<b>2019</b>	<b>2020</b>	<b>2021</b>
<b>AI/Machine Learning</b>	<b>46.6%</b>	<b>71.8%</b>	<b>80.0%</b>	<b>69.5%</b>	<b>47.5%</b>
<b>Cloud Migration</b>	<b>8.2%</b>	<b>12.7%</b>	<b>8.8%</b>	<b>11.0%</b>	<b>16.8%</b>

AI investment and adoption continues to grow, with 95.9% of firms reporting that AI is being used in some form of pilot or production initiatives. Companies reporting an increase in instances of AI in widespread or limited production also rose from 65.8% in 2020 to 77.8% in this year's survey.

<b>AI Investment and Adoption</b>	<b>2020</b>	<b>2021</b>
<b>AI in Widespread Production</b>	<b>14.6%</b>	<b>12.1%</b>
<b>AI in Limited Production</b>	<b>51.2%</b>	<b>65.7%</b>
<b>AI in Pilot</b>	<b>26.8%</b>	<b>18.1%</b>
<b>No AI in Use</b>	<b>7.3%</b>	<b>4.1%</b>

Notably, in this unprecedented and challenging year for all companies, that investments levels in Data/AI spending were largely unchanged due to COVID-19. An overwhelming majority of companies – 90.6% -- reported that spending increased or remained the same due to COVID-19, with 31.3% spending more than anticipated.

<b>Impact of COVID-19 on Data/AI Spending</b>	<b>2021</b>
<b>Spending More</b>	<b>31.3%</b>
<b>Spending Same</b>	<b>59.3%</b>
<b>Spending Less</b>	<b>9.4%</b>



## Business Results

Big Data and AI adoption continue to represent a significant challenge as leading companies struggle to become data driven. Rather than exhibiting steady improvement, firms appear to be confronting greater challenges as demands increase, data volumes grow, and companies seek to mature their data capabilities.

Organizations continue to struggle with making the transformation to becoming data driven, as reflected in the metrics, and evidenced in notable declines in key measures of achievement:

- Only 24.0% have created a data-driven organization, a decline from 37.8%
- Only 24.2% have forged a data culture, down from 26.8%
- Only 39.3% are managing data as a business asset, a decrease from 50.0%
- Only 42.1% are competing on data and analytics, a decline from 45.1%
- Only 48.5% are driving innovation with data, a fall from 48.5%
- In addition, only 29.2% are achieving transformational business outcomes, and only 30.0% of firms have developed a well-articulated data strategy for their company.

<b><u>The State of Big Data/AI</u></b>	<b><u>2019</u></b>	<b><u>2020</u></b>	<b><u>2021</u></b>
<b>Driving Innovation with Data</b>	<b>59.5%</b>	<b>64.2%</b>	<b>48.5%</b>
<b>Competing on Data and Analytics</b>	<b>47.6%</b>	<b>45.1%</b>	<b>41.2%</b>
<b>Managing Data as a Business Asset</b>	<b>46.9%</b>	<b>50.0%</b>	<b>39.3%</b>
<b>Well-Articulated Data Strategy</b>			<b>30.0%</b>
<b>Transformational Business Outcomes</b>			<b>29.2%</b>
<b>Forged a Data Culture</b>	<b>28.3%</b>	<b>26.8%</b>	<b>24.4%</b>
<b>Created a Data-Driven Organization</b>	<b>31.0%</b>	<b>37.8%</b>	<b>24.0%</b>

Even with the significant headwinds that large companies face in their efforts to become data-driven, executives are optimistic about the future. As observed, investment levels are strong and steady, and the pace of investment is increasing, as is the realization of successful business outcomes.

This year's survey observed a notable increase in companies reporting successful results from their Big Data and AI investments – a significant increase to a near-universal 96.0%, up from 70.3% in 2020 and nearly a 100% increase from 48.4% just five years ago. This suggests demonstrable progress.

<b><u>Successful Outcomes from Big Data/AI</u></b>	<b><u>2017</u></b>	<b><u>2018</u></b>	<b><u>2019</u></b>	<b><u>2020</u></b>	<b><u>2021</u></b>
<b>Yes</b>	<b>48.4%</b>	<b>73.2%</b>	<b>62.2%</b>	<b>70.3%</b>	<b>96.0%</b>
<b>No   Too Early to Tell</b>	<b>51.6%</b>	<b>26.8%</b>	<b>37.8%</b>	<b>29.7%</b>	<b>0.0%</b>



This rise in achieving successful business outcomes is matched by an overall feeling of optimism – 81.0% -- on the part of corporate data executives, even with the headwinds that organizations face in their efforts to become data-driven. It appears to be the prevalent view that data is receiving its due, and that companies are on the path to turning the corner in their Big Data and AI efforts.

<b><u>Outlook for Data/AI within your Firm</u></b>	<b><u>2021</u></b>
<b>Optimistic</b>	<b>81.0%</b>

This progress is further reflected in the view of company executives that their firms have established themselves as leaders – 45.4% -- in Big Data and AI. Although a majority – 54.5% -- do not see their companies as leaders, this is not surprising based on the headwinds to becoming data-driven and the recognition that most companies still have a long way to go in these efforts.

<b><u>Progress on Data and AI</u></b>	<b><u>2021</u></b>
<b>Leaders</b>	<b>45.4%</b>
<b>Followers</b>	<b>39.4%</b>
<b>Uncertain</b>	<b>15.1%</b>

The greatest challenge for leading companies in their efforts to becoming data-driven continues to be due to cultural barriers – 92.2% -- not technology limitations and a lack of viable technology options. This is an instance of technology being ahead of capacity for adoption.

Firms continue to struggle with challenges relating to organizational alignment, business processes, change management, communication, people skill sets, and resistance or lack of understanding to enable change. Investments in data governance, data literacy, programs that build awareness of the value and impact of data within an organization, may represent an eventual step in the right direction.

<b><u>Principle Challenge to Becoming Data-Driven</u></b>	<b><u>2018</u></b>	<b><u>2019</u></b>	<b><u>2020</u></b>	<b><u>2021</u></b>
<b>People   Business Process   Culture</b>	<b>80.9%</b>	<b>92.5%</b>	<b>90.9%</b>	<b>92.2%</b>
<b>Technology</b>	<b>19.1%</b>	<b>7.5%</b>	<b>9.1%</b>	<b>7.8%</b>



## Leadership

The Chief Data Officer role is firmly established and there is no turning back. For the past half decade, well over half of leading companies have established a CDO function and appointed a Chief Data Officer. Although the role continues to evolve, companies appear to be steadfast in their commitment, with nearly two-thirds – 65.0% -- having a sitting executive in this role today.

<b><u>Appointment of a Chief Data Officer</u></b>	<b><u>2012</u></b>	<b><u>2017</u></b>	<b><u>2018</u></b>	<b><u>2019</u></b>	<b><u>2020</u></b>	<b><u>2021</u></b>
<b>Yes</b>	<b>12.0%</b>	<b>55.9%</b>	<b>62.5%</b>	<b>67.9%</b>	<b>57.3%</b>	<b>65.0%</b>
<b>No</b>	<b>88.0%</b>	<b>44.1%</b>	<b>37.5%</b>	<b>32.1%</b>	<b>42.7%</b>	<b>35.0%</b>

As the CDO role has evolved during the past decade, a growing percentage of Chief Data Officers – a record 70.1% -- are focusing on offense-driven revenue generation activities, up from 54.6% in 2020 and 44.0% a half decade ago. Demand is increasing for CDO's to operate in close alignment with line of business leaders to deploy data to drive business outcomes.

<b><u>Primary Focus of the CDO</u></b>	<b><u>2020</u></b>	<b><u>2021</u></b>
<b>Offense   Revenue Generation</b>	<b>54.6%</b>	<b>70.1%</b>
<b>Defense   Regulatory   Compliance</b>	<b>45.4%</b>	<b>29.9%</b>

Even with this greater focus on offense and revenue generation activities, the Chief Data Officer remains a staff role for most companies. There has been no appreciable change over the past half decade in the extent to which CDO's are assuming direct revenue responsibility or P&L authority.

<b><u>CDO with revenue responsibility</u></b>	<b><u>2018</u></b>	<b><u>2019</u></b>	<b><u>2020</u></b>	<b><u>2021</u></b>
<b>Yes</b>	<b>13.5%</b>	<b>11.3%</b>	<b>12.3%</b>	<b>13.6%</b>
<b>No</b>	<b>86.5%</b>	<b>88.7%</b>	<b>87.7%</b>	<b>86.4%</b>

Ultimate responsibility and ownership for data continues to be an ambiguous point for most companies, with less than half of Chief Data/Analytics Officers – 49.5% -- having this responsibility and authority. Nearly one quarter of companies – 24.2% -- still point to no single point of primary accountability for data ownership within their firms, with little progress.

<b><u>Primary Responsibility for Data</u></b>	<b><u>2018</u></b>	<b><u>2019</u></b>	<b><u>2020</u></b>	<b><u>2021</u></b>
<b>Chief Data/Analytics Officer</b>	<b>47.9%</b>	<b>48.1%</b>	<b>40.2%</b>	<b>49.5%</b>
<b>Chief Information Officer</b>	<b>0.0%</b>	<b>4.9%</b>	<b>11.0%</b>	<b>12.1%</b>
<b>No Single Point of Accountability</b>	<b>23.9%</b>	<b>28.4%</b>	<b>26.8%</b>	<b>24.2%</b>
<b>Other Executive</b>	<b>0.0%</b>	<b>18.6%</b>	<b>12.0%</b>	<b>14.2%</b>



Expectations of the Chief Data Officer continue to evolve, with the pendulum shifting between the desire for an external change agent who will bring an outside perspective to the company and drive business change, in contrast with the internal company veteran who knows the organization well, understands the business culture, and knows how to get things done.

This year, there appears to be a slight shift back in the direction of company veterans – 23.5% -- versus external change agents – 44.4%, but time will tell. A third of companies still look to other skill sets in filling the Chief Data Officer role, notably an ownership of business results – 16.1%, analytics leadership – 8.6%, and technology expertise, 7.4%. These numbers have remained generally consistent over the years.

<b>Profile of a Successful Chief Data Officer</b>	<b>2018</b>	<b>2019</b>	<b>2020</b>	<b>2021</b>
<b>External change agent   outsider</b>	<b>34.0%</b>	<b>38.2%</b>	<b>48.5%</b>	<b>44.4%</b>
<b>Company veteran   insider</b>	<b>32.1%</b>	<b>32.4%</b>	<b>15.8%</b>	<b>23.5%</b>
<b>LOB executive   owns business results</b>	<b>11.3%</b>	<b>13.2%</b>	<b>21.4%</b>	<b>16.1%</b>
<b>Data scientist   analytics leader</b>	<b>15.1%</b>	<b>5.9%</b>	<b>5.7%</b>	<b>8.6%</b>
<b>Technology executive</b>	<b>7.5%</b>	<b>10.3%</b>	<b>8.6%</b>	<b>7.4%</b>

There continues to be a split between those companies that believe that the long-term role of the Chief Data Officer should be as an executive decision maker for the entire firm, sitting on the executive committee – 47.4 %, and those who view the role as best fitting one level down – 48.4%. The view that the CDO role was interim or unnecessary in the long term appears to have diminished – down to 4.2% this year.

<b>Long Term Role of the CDO</b>	<b>2018</b>	<b>2019</b>	<b>2020</b>	<b>2021</b>
<b>Sits on executive committee   Tier 1</b>	<b>50.0%</b>	<b>45.0%</b>	<b>37.9%</b>	<b>47.4%</b>
<b>Reports to executive committee   Tier 2</b>	<b>37.1%</b>	<b>37.5%</b>	<b>50.7%</b>	<b>48.4%</b>
<b>CDO is interim or unnecessary   to be phased out</b>	<b>12.9%</b>	<b>17.5%</b>	<b>11.4%</b>	<b>4.2%</b>

Ultimately, it should be no surprise that the CDO role continues to be nascent and evolving for most companies – 48.8%. A significant number of firms continuing to struggle with turnover – 17.9%. Only a third of companies – 33.3% attest to the role being well-established and fully successful, though this represents an improvement over last year – 27.9%. Clearly, the Chief Data Officer role continues to evolve.

<b>Success of the CDO Role</b>	<b>2020</b>	<b>2021</b>
<b>Successful and Established</b>	<b>27.9%</b>	<b>33.3%</b>
<b>Nascent and Evolving</b>	<b>49.1%</b>	<b>48.8%</b>
<b>Struggling with Turnover</b>	<b>23.0%</b>	<b>17.9%</b>



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## About NewVantage Partners LLC

NewVantage Partners (NVP) are strategic advisors to Fortune 1000 firms and market leaders in data-driven business transformation. In this capacity, NewVantage serves as trusted advisors to client companies, guiding and assisting them in the processes of:

- Leveraging data as a business asset
- Becoming a data-driven enterprise
- Forging a data culture and mindset
- Innovating with data to achieve competitive success.

Services include data strategy, data governance, data management, and change management.

### Leading Data-Driven Business Transformation

Since 2001, NewVantage Partners has helped a blue-chip roster of Fortune 1000 companies and industry leaders leverage data and analytics to drive innovation and business transformation. Our clients include leading financial services and life sciences firms, and data-intensive firms across many industries.

NewVantage Partners thought-leadership perspectives appear in leading publications, including *Forbes*, *The Wall Street Journal*, *Harvard Business Review*, and *MIT Sloan Management Review*, through our Executive Thought-Leadership Roundtable Breakfasts, annual Big Data/AI Executive Survey, and through our industry keynote panels and speaking engagements.

NewVantage is headquartered in Boston with offices in New York, San Francisco, and Raleigh.

## Thought Leadership

### Harvard Business Review

[Are You Asking Too Much of Your Chief Data Officer?](#) February 7, 2020.

[Companies Are Failing in their Efforts to Become Data-Driven.](#) February 6, 2019.

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[Why Chief Data Officers Must Assume Leadership for Data Success.](#) November 30, 2020.

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[How Big Data and AI Are Driving Business Innovation.](#) February 6, 2018.

### Forbes

[The 'Failure' of Big Data.](#) November 5, 2020.

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