



Building a Data-Driven Culture to Accelerate Digital Transformation

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Introduction

For organizations undergoing a digital transformation, the promise of faster innovation and increasing competitiveness is very alluring. Data and analytics are unquestionably attracting ever-growing investments and are quickly becoming the centerpiece of digital enterprise strategies.

In 2019 alone, Fortune 1000 companies invested more than \$6.5 billion in big data, analytics, and artificial intelligence (AI).¹ However, according to VentureBeat, a large number of enterprises are discovering the ROI is falling considerably short of expectations, with more than 87% of data science initiatives facing difficulty making it off the ground.²

Now, many enterprises realize that while having the right data and technologies in place is critical to supporting a data-driven strategy, the real challenges in achieving the full value of their investments are more human in nature.³

Addressing these challenges is often the responsibility of the chief data officer (CDO). Today's CDOs face two major challenges: an ever-growing skills gap and a lack of trust in the data due to a lack of data literacy. As CDOs strive to lead their organizations' data-driven transformation, they may struggle with a limited number of people to perform the work. And even when they do have enough resources, those people often lack the right skills to unlock the value and new opportunities in their data. Trust in the data remains an issue as well;⁴ without a data-driven culture in which everyone understands and can speak fluently about data, how it is used, and its value to the organization, the reality of driving people to trust and use data science results can remain a significant challenge.

Introduction

(continued)

Availability of key skills has been a top 10 ‘extreme concern’ for the last decade, impeding innovation and prompting higher people costs.⁵ And it’s not getting any better—particularly for CDOs responsible for their organizations’ digital transformation. In Gartner’s most recent CDO Survey, 25% of data leaders said the lack of relevant skills or staff and poor data literacy are two of the top three roadblocks to their data and analytics teams’ success.⁶ These roadblocks, however, are not insurmountable.

In this eBook, we’ll explore how upskilling and reskilling can be leveraged to address the human challenges that can keep organizations from realizing the full value of their data and technology, providing a helpful resource for CDOs working to put their business on the fast track to a data-driven future.

The Human Challenges of Digital Transformation

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Digital transformation can set the stage for massive innovation and growth: better customer service, increased personalized customer experiences, more streamlined and efficient business processes—the list goes on.⁷ But, technology is only part of the equation. The alchemy that creates a successful transformation requires technology and people. **No matter how good a piece of technology is, without the people with the skills to use it effectively, the potential for driving business results cannot be fully realized.**⁸

Data-driven transformation requires a data-driven culture

Turning data into value doesn't begin and end with data teams. Often, achieving successful digital transformation requires significant cultural changes to become a data-first organization.

Hallmarks of a data-first organization include:⁹

- Embracing data-driven decision making processes as opposed to relying on intuition or other subjective criteria
- Treating data as a strategic asset of the company and understanding the importance of capturing, cleaning, and curating meaningful data from across the enterprise¹⁰
- Making data and data science results widely available and accessible throughout the organization, enabling employees at every level and in all areas of the business to use the right data at the right time

Data-driven organizations are:

23x

more likely to acquire customers

6x

as likely to retain customers

19x

as likely to be profitable as a result

[McKinsey]

Building a collaborative, data-first culture can feel like an uphill battle for many organizations. The most significant challenges may include the following scenarios.

Finding enough people with the right skills – Facing an ever-growing skills gap, CDOs struggle with finding enough people with the right skills to do all the data-related tasks necessary to drive business results and innovation. It can be difficult enough to find candidates for data-related positions, let alone those with the right mix of skills and expertise that the organization needs. As a result, data and analytics teams may not have the right skills to deploy on time and ensure data quality, including data and analytics core competencies, interpretability skills, and proficiency in open-source technologies and multiple programming languages.

Lack of trust in the data – Lack of model explainability and the ability to effectively communicate business value often results in a lack of buy-in from cross-functional partners and management. These trust issues are even more challenging to overcome in organizations that have not yet adopted a data-first culture or embraced data-driven decision making.

Imbalance between supply and demand – The growing number of businesses investing in digital transformation combined with the technology skills gap has created an imbalance in supply and demand for data-driven talent. Subsequently, this imbalance is causing intense competition and skyrocketing costs for organizations seeking to better leverage their data.

These challenges are fundamentally human challenges. An organization's ability to overcome these challenges can make or break the success of digital transformation.¹¹

The growing cost of the growing skills gap

37%

YoY growth in demand for data scientists [[LinkedIn](#)]

10,000

Estimated number of people with the skills needed to tackle AI challenges [[New York Times](#)]

61%

Number of CIOs reporting difficulty in recruiting IT talent [[Robert Half](#)]

45 days

Average number of days it takes to fill a data science and analytics job [[IBM](#)]

\$30K

Recruiting costs to fill one data science role [[IADSS](#)]

\$108K

Median base salary for data scientists [[Glassdoor](#)]



Chief Data Officers Must Develop Digital and People Strategies

Chief Data Officers Must Develop Digital and People Strategies

Today, many CDOs still believe their primary responsibility in delivering a successful digital transformation is to implement new technologies and hire more talent. But this belief may be one of the reasons why so many transformations fail.¹² **CDOs must be willing to step into their larger role as strategic leaders to help their organizations create a data-first culture and find their “true data north.”**¹³

Unlocking the power of data is not necessarily a trivial matter. It depends on developing—and socializing at the executive level—a shared understanding of the long-term business objectives informed by data science. This requires taking an honest look at an organization’s baseline capabilities, setting realistic goals for data capabilities that can be built to close the gaps, and building and evolving teams to support those goals—both in terms of skills and organizational structure.

CDOs are key to building a data-driven future

Organizations that engage a CDO are 160% more likely to have a successful digital transformation.¹⁴ In data-first organizations, CDOs are changing the executive conversation about the strategic use of data and insights to drive value and business transformation. **In fact, CDOs are increasing consistent production of business value by 260% and their teams’ overall effectiveness by 190%. And, they are doubling the business ROI of their digital transformation in their organizations.**¹⁵

“Our job as data leaders is to create business value from data. If the primary blocker is a skills gap, then it’s our job to break down that gap—to map the right skills to people across the business and to get them the skills they need so that they, and in turn our companies, can reach full potential.”

EMILY GLASSBERG-SANDS
Vice President, Data at Coursera

A CDO Must Help the Entire Organization Find its “True Data North”



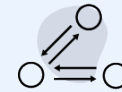
Understanding **long-term business objectives** at the executive level



Assess the **baseline capabilities** of the current organization and the external talent market



Set realistic **goals for data capabilities** that will help achieve long-term business objectives



Determine how to **build and evolve a team** to support these goals

Training Employees is the Fastest Way to Build Technical Acumen

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Businesses cannot hire their way over this skills gap at a price they can pay, so the imperative is clear. Employers and employees must join hands and invest in upskilling or risk irrelevance. The fact that the data and analytics field continues to evolve at an exponential speed only exacerbates the problem.

Today's CDOs are struggling with skills gaps in three key areas:



Programming languages

Open-source languages like Python are flexible, cheaper, and standardized. Yet, current staff with experience in legacy languages often lack training in newer, open-source options.



Methodologies for new data types

Much of a data practitioner's training and experience (e.g., statistics and machine learning) focuses on the use of numeric data. But today, big data now provides organizations with new data types, which require all-new skills such as NLP and computer vision, to effectively drive business results.



Cloud skills

Cloud platforms offer reliable and cost-effective opportunities for innovation and improving business processes. However, many employees are accustomed to on-premises systems and don't have the skills necessary to realize the benefits of the cloud. Eighty percent of cloud leaders identified a lack of internal skills as a top barrier to cloud success¹⁶.

Reskilling and upskilling offers a powerful—and preferred—way to address the growing skills gap¹⁷ in these and other technology areas. There are several reasons for this. **For example, reskilling and upskilling is the fastest way to build data science and analytics teams' technical acumen with new skills in different programming languages.** With expanded access to tools and open-source programming languages like Python and R, and web applications like Jupyter Notebooks, employees can innovate faster and accelerate go-to-market strategies. Additionally, they can more effectively mitigate deployment issues and address data quality issues.

Investing in training programs provides the ability to further develop employees who possess extensive knowledge of legacy systems—allowing an organization to leverage previous investments in technology and improve the portability of existing data.¹⁸

The benefits of upskilling and reskilling can extend beyond the data and analytics teams, too. Expanding these teams' core competencies allows the ability to increase self-service capabilities, encouraging other groups within the organization to embrace and leverage the power of data.

Building trust in the data through upskilling

Successful CDOs can use upskilling to help their teams tackle trust issues in four powerful ways:

- Provide data teams additional training in interpretability skills
- Expand on data and analytics core competencies
- Equip data teams with better communication skills
- Promote machine learning operations (MLOps) to improve the development and reliability of machine learning models and provide training to enhance collaboration



Building the Capacity (and Willingness) to Interpret, Utilize, and Leverage Data

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Data literacy is foundational to any organization seeking to fully leverage its data transformation. All of the hallmarks of an analytics-driven, data-first organization—viewing data as a strategic asset, embracing data-driven decision making, and enabling employees at every level to use the right data at the right time—first requires a basic understanding among teams throughout the organization of how data can be used to drive business results.

Becoming a data-first organization also requires a level of trust and a willingness to interpret, utilize, and leverage data. And often, people don't trust what they don't understand. An organization's ability to use its data to drive value is limited when people in non-data positions lack the skills to speak "data" fluently enough to:

1.

Understand what data and information is relevant to their role in the business.

2.

Ask the right questions and communicate their needs to data and analytics teams.

3.

Interpret the results of data science and use them effectively.

Data is a team sport where everyone has a role to play

Upskilling to build data literacy provides people throughout the organization with the skills they need to partner effectively with the data and analytics teams. While this kind of cross-collaboration is critical to extracting the full value of an organization's data, it is impossible to achieve if different teams cannot speak the same language at even a basic level. Everyone in the organization needs to abide by a common framework and language for efficient, high-quality decision making and a basic understanding of what is—and is not—possible with data and data science.

According to Gartner, CDOs in particular should focus on a mix of tactical and strategic activities to create skill and expertise—data literacy—in all relevant business units.¹⁹ **When it comes to digital transformation, organizations that invest in developing the right talent and skills throughout their organization are more than 3x likelier to succeed.**²⁰

Tips for building data literacy

Demonstrate the business value of data

Inspire them with examples relevant to their roles in the company

→ Helps to create a willingness to embrace the data and a desire to learn more

Train everyone in the organization to be data-driven decision makers

Teach them the types of data that can be used to inform their decision making and how it

→ Increases the operating efficiency and productivity of an entire organization

Cultivate data-first teams with data-specific titles and skill sets

Examples include “Data-Driven” Product Manager, “Data-Driven” Marketer, “Data-Driven” Sales Leader

→ Helps to identify the right types of training, establishes & reinforces a “data-first” mindset

Three Keys to Becoming a Data-Driven Organization

1. Cultivate a data-first culture
2. Upskill existing talent
3. Reskill employees to fill in-demand roles

Upskilling Can Fast-Track to a Data-Driven Future

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Developing talent and skills throughout the organization is one of the most pivotal factors for successful data-driven transformations.²¹ **Whether it's increased revenue, reduced costs, or improved efficiencies, upskilling is a proven way to accelerate digital transformation and build data fluency, setting you on the direct path to becoming a data-driven organization.**

CEOs favor upskilling over hiring by more than 2.5 times, especially for key skill gaps.²² They are finding that upskilling and reskilling helps their organizations meet data-related business needs in many different ways, including:

- Ensuring data scientists, data engineers, and machine learning engineers are up to speed on the relevant tools, technologies, and methods
- Equipping non-technical staff to collaborate more effectively with technical staff
- Leveraging the in-depth domain expertise of the existing workforce and their understanding of the business²³
- Improving employee retention by 38%,²⁴ resulting in lower recruitment and onboarding costs, particularly for in-demand jobs
- Enhancing competitiveness by providing learning opportunities that engage employees and, in turn, promote innovation

CEOs favor upskilling over hiring by more than

2.5x

especially for key skill gaps

Organizations meet little resistance from employees when it comes to upskilling and reskilling. Most companies already have employees that are motivated to learn, driven either by the need to stay competitive in the job market or their desire for professional development. **Based on data from over 70 million learners on Coursera, course enrollments in the computer science domain have increased 300% YoY (2019-2020).**²⁵

Upskilling and reskilling requires a holistic approach

From driving literacy, to upskilling, to reskilling, a lot of companies find that building a high-quality learning solution from scratch to address their data skills gap can be challenging due to the difficulties inherent in:

- Matching the right skills with the right roles
- Building a comprehensive program that meets the upskilling and reskilling needs of everyone in the organization
- Customizing the solution to fit any industry and company

Whether CDOs are contemplating building a customized learning program or working with a training partner, the most effective programs provide comprehensive skill development, focused on developing the right skills by role and function. Not everyone needs to understand causal inference. Not everyone should be studying neural nets. And no one needs to learn every programming language. Organizations should only invest in programs that provide employees the right skills by role and function.

The top five trending categories of data-related skills*

Data Scientist

1. Multi-Task Learning
2. Machine Learning
3. Python
4. NLP
5. Deep Learning

Data Engineer

1. Python
2. Machine Learning
3. Multi-Task Learning
4. Big Data
5. Apache Spark

Machine Learning Engineer

1. Machine Learning
2. Multi-Task Learning
3. Deep Learning
4. K-Nearest Neighbors Algorithm
5. TensorFlow

Data Analyst Generalist

1. Python
2. SQLite
3. Deep Learning
4. Machine Learning
5. Multi-Task Learning

*Trending skill data from November 2020

Get Started with Data & Analytics Academy

The Data & Analytics Academy from Coursera is a total skill development solution that builds data literacy for everyone, critical data skills for each team, and helps to reskill people for in-demand data roles. Designed from the learning patterns of 70M+ learners on Coursera, the Data & Analytics Academy includes hands-on projects and learning tracks from top institutions like Johns Hopkins and Duke to Google and IBM.

[Learn more](#) about the Data & Analytics Academy or [talk to a learning consultant today](#).

About Coursera for Business

Coursera for Business is the complete, job-based skill development solution for empowering your teams with the high-impact skills that drive innovation, competitiveness, and growth.



Appendix

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