Is your Chief Digital Officer MIA?

How CDOs can accelerate digital maturity and improve financial success

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Digital strategy from IBM provides you with the support to succeed and grow. We empower you to offer new experiences through a disruptive focus on business model innovation and market activation. We help you accelerate the building of expertise and new ways to work in a technologically-focused, digital-enabled environment.

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Talking points

Accelerating digital maturity

Although many organizations still have not embraced the concept of Chief Digital Officer (CDO), we found that hiring a CDO and placing that person in the right organizational structure is associated with higher digital maturity.

Improving the bottom line

Presence of a CDO, combined with a robust digital transformation program, is also correlated with financial outperformance among organizations of all sizes.

The bigger the organization, the bigger the impact

Organizations with annual revenues of more than USD 20 billion, which have digital transformations well underway, realized the greatest financial benefits from engaging a CDO.

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The CDO's tumultuous path to relevancy

Business magazines have recently been thick with obituaries for the role of Chief Digital Officer. Just as quickly as the CDO came onto the scene, the role's popularity seemed to flame out. Heralded in 2012 as "the most exciting strategic role in the decade ahead," just a few years later, headlines appeared predicting the CDO's demise. By 2016, a *Forbes* headline warned: "Say Goodbye to the Chief Digital Officer." In 2018, we got "Does the Chief Digital Officer matter anymore?" and "The death of the chief digital officer." And in 2019, "Have we reached 'peak' Chief Digital Officer?" and "Chief Dinosaur: The Chief Digital Officer role is already heading toward extinction."[2]

But despite the seemingly fickle view of the value of the CDO role, it remains clear that digital transformation continues to be a mission-critical undertaking for many established companies.[3] Why then, when organizations are clearly in need of digital leadership, has the role of CDO seemed to lose favor? And moreover, has the dismissal of the CDO role been premature?

Ill-defined vision and organization scope

There are several reasons why the CDO may have fallen short of expectations in some organizations. Consider the tricky corporate environment CDOs are typically asked to join. Indeed, CDOs are often introduced into the mix when CEOs acknowledge that the digital transformation they envisioned has stalled or failed, and an outsider is needed to accomplish it.

Circumstances can worsen if an organization hasn't adequately determined a vision and scope for its digital transformation, leaving the CDO with an ill-defined mission. What's more, often there is no precedent to inform the CDO's reporting structure, or range of responsibility and authority, leaving them rudderless.

Fewer than 10%

of organizations in the S&P 1200 indicate the presence of a CDO in their annual reports.[1]

Yet as many as 92%

of surveyed organizations that scored high in digital maturity have a CDO.

While 61% of CDOs

in our study report to the CEO, our analysis revealed the biggest financial benefits accrue to organizations where the CDO reports to the CIO.

But despite these hindrances, CDOs are fully aware that they are expected to deliver tangible results quickly. "Transformation takes time," says a CDO we interviewed. "But, by the time you're hired, it's likely the company is already a few years into the problem, and they are anxious to see results right away." (See Mass media company: "Gaining credibility with quick wins.")

Great expectations and unrealistic qualifications

Further complicating the effectiveness of the role is the lack of a clear set of personal attributes for a "model" CDO. The qualities, experience, and expertise that organizations want in a CDO are all over the map: crackerjack digital technologist, data scientist, business strategist, visionary, inspirational leader, change agent, and peace maker—with a customer-centric, results-oriented mindset, profound industry insight, and a deep understanding of the operational inner workings across the enterprise.

Finding this digital unicorn is no easy task.[4]

Making a successful CDO

This IBM Institute for Business Value (IBV) study is designed to cut through the confusion, and get to the heart of the questions surrounding the role of CDO. Specifically:

– Could an organization grow faster by appointing a CDO? Or could that possibly generate confusion and indecision among current business leaders?

– Should the role be tactical and aligned to a specific, clearly defined set of digital-related tasks? Or should the CDO have a broader agenda to orchestrate the organization's overall digital transformation strategy?

– To be most effective, to whom should CDOs report and who should report to them?

– What type of background, skill sets, and traits should organizations prioritize when searching for a CDO?

And, importantly:

– What type of improved ROI on digital investments might a business be able to achieve if it appoints a CDO—especially one with the most desirable set of characteristics and experiences?

To answer these questions, the IBV, in collaboration with Oxford Economics, conducted the Chief Digital Officer survey with 1,500 business executives, of which half were CDOs, in 20 countries and across 18 industries. We also held a series of in-depth interviews with CDOs. Based on our analysis, we created a framework to determine under what circumstances it makes sense to appoint a CDO. And, if one is appointed, what are the characteristics and responsibilities that are most likely to yield consequential business benefits from the role? (See Insight: "How we define 'Chief Digital Officer'.")

Surprises abound

We were able to draw out some unexpected conclusions—challenging the idea that CDOs may not be necessary. While it should be noted the relationships and other findings we cite are correlations and not necessarily causal, our analysis suggests that companies would be remiss to discount the benefits of a CDO too quickly. In fact, depending on the size and complexity of a business, having the right type of CDO on board could become one of an organization's most important keys to success.

Empty seat or gaping hole?

Fewer than 10 percent of organizations listed on major stock markets around the world mention the presence of a CDO as part of their C-suite team in their annual reports. Yet half of the CEOs surveyed in our 2018 IBV CEO Study said their current business models are threatened by competitors using digital technologies that create more compelling value propositions than they can provide.[5] In the same study, CEOs also said their organizations are in need of more digital expertise or improved digital execution.[6]

This doesn't add up.

Mass media company: Gaining credibility with quick wins

We conducted a series of in-depth, one-on-one interviews with CDOs for this study, including a former CDO for a leading, US-based mass media company. When we asked him about the lessons learned in that position, he high-lighted the need to establish credibility with quick wins.

"Companies don't always do a good job defining their CDO expectations," he admits. "They tend to focus on a single digital platform. But true transformation is about reinventing digital and physical offerings to provide one, holistic experience for customers. So, here you come with these big, long-term goals—that's what they hire you for—but you also need to decide what you can tackle right away."

This CDO adds, "Every organization has low-hanging fruit. For us, it was improving download speeds. I had to find a way to create real incentives for engineering to fix this."

The results? "Ad impressions went up. Conversion rates went up. It was a great first win: measurable, impactful, visible. It bought me capital across the organization that I'm going to accomplish the things I set out to do."

Insight: How we define "Chief Digital Officer"

CDOs are business executives responsible for creating and executing strategies for digital solutions across their enterprise. The scope of the role can vary from one organization to the next, but CDOs typically work horizontally across functions and lines of business.

Despite strong evidence suggesting enormous potential benefits, our data shows many organizations continue to report relatively low investment in digital initiatives.

A short-sighted view of digital transformation

When the role of CDO started to emerge, a question often asked was whether it should be a temporary or a permanent position. Many believed it would be a short-term requirement—carrying an implicit assumption that digital transformation is not an endless state, but one with an endgame.

In other words, once the enterprise adopts new ways of working and is able to create new platforms, products, and services fueled by digital innovation, CDOs will have worked themselves out of a job. Mission accomplished.[7]

While perhaps fine in theory, in practice, most organizations aren't far enough along in their digital transformation for such nuance to matter. This is not the reason we see so few organizations with a CDO at the table.[8]

A better explanation may be that an organization's vision for its digital transformation is often limited. Instead of seeing digital transformation as a strategic, cross-enterprise pursuit that includes not only technology but organizational and process redesign, the digital focus of many organizations is often much narrower.

As many as 43 percent of the 1,500 executives surveyed characterize their approach to digital as "relatively limited in scope." They see digital transformation not as an opportunity to fundamentally reinvent their businesses through strategic digital initiatives, but rather as a set of technology-focused projects impacting one or a few business functions.

Under investment in digital initiatives

Despite strong evidence suggesting enormous potential benefits, our data shows that many organizations continue to report relatively low investment in digital initiatives.[9] Half of the 1,500 survey respondents say digital initiatives comprise only 10 percent or less of their current IT budgets.

If organizations lack an overarching vision for their digital future and have not invested sufficiently to achieve enterprise-wide transformation, it follows that these companies may not fully appreciate the opportunities a CDO could champion. Indeed, if organizations maintain this myopic perspective toward digital transformation, would a new C-suite officer be needed to spearhead it? Probably not.
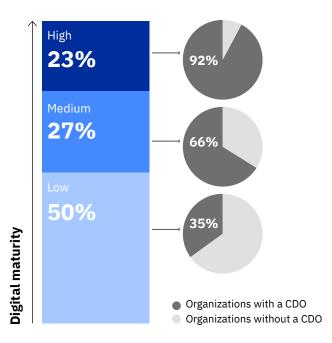
Driving digital maturity and performance with a CDO

It's a similar situation with digital maturity. Organizations that don't have sufficient interest or investment in digital maturity may not need CDOs either. Through self-assessment and benchmarking tools, organizations can assess their digital maturity across key benchmarks encapsulated by the recent IBV study, "The Cognitive Enterprise."[10]

Although the extent of an organization's digital maturity might impact the decision of whether to appoint a CDO, our analysis suggests that digital maturity is not independent of the presence of a CDO. In fact, the presence of a CDO is associated with higher digital maturity, and so the role in and of itself may accelerate the digital maturity of an organization. (See "Appendix: Study methodologies.")

Indeed, our analysis reveals that as many as 92 percent of the organizations that score high for digital maturity have a CDO on board. Compare that to organizations scoring low for digital maturity, which make up half of our total, 65 percent of which do not have a CDO (see Figure 1).

Figure 1

The presence of a CDO and improved digital maturity

High
23%

Medium
27%

Low
50%

Digital maturity

92%

66%

35%

● Organizations with a CDO
○ Organizations without a CDO

n=1,500.

While we recognize correlation is not causality, the results of our analysis were startling. Although having a CDO does not guarantee a high level of digital maturity, it appears unlikely that an organization achieves a high degree of digital maturity without one.

But our surprising results didn't stop there. We also found that an appreciation for the value that a CDO can provide, combined with the desire to build a robust digital transformation program, are also strongly correlated with the financial performance of organizations we surveyed.

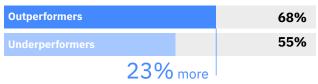**Outperformers embrace digital transformation and the CDO**

We asked all the executives to assess their organization's revenue growth and profitability against their competition. More than half—52 percent—say that their organization underperforms compared to peers. Nearly one-in-five (19 percent) say their organization's performance is on par. And 29 percent indicate that they outperform their competition.

When we examined the group of financial outperformers in greater detail, two elements stood out. The extent to which high performing organizations value the CDO role, and their commitment to large-scale, digital transformation were higher than their underperforming peers (see Figure 2).

Figure 2

Outperformers versus underperformers—the necessity of a CDO and commitment to digital transformation

CDOs are necessary for my organization's success

Outperformers	68%
Underperformers	55%

23% more

We expect to invest in large, cross-functional technology-based transformation programs

Outperformers	74%
Underperformers	42%

76% more

n=1,500.

The CDO reporting structure is as varied as the organizations we surveyed.

The CDO in profile

The survey data revealed several interesting insights in terms of CDO reporting structure, responsibilities, and professional background.

CDO reporting structure

Within this diverse sample of organizations, several interesting findings emerged. Almost two-thirds of the 750 CDOs we surveyed report directly to the CEO—a surprisingly large percentage. Far fewer report to the CIO or Board of Directors. A very small proportion report to other roles, including the Chief Marketing Officer, Chief Technology Officer, and Chief Innovation Officer.

We also looked at who reports to those CDOs. More than 70 percent of the organizations with CDOs say that their organization's digital designers report directly to their

CDOs. Thirty-one percent count creative directors among their team members, and 30 percent mention data scientists. The remaining set of reportees comprise a broad mix of roles including Chief Innovation Officer, Chief Marketing Officer, Chief Experience Officer, Chief Customer Officer, developers, and systems engineers. It appears that the CDO reporting structure is as varied as the organizations we surveyed (see Figure 3).
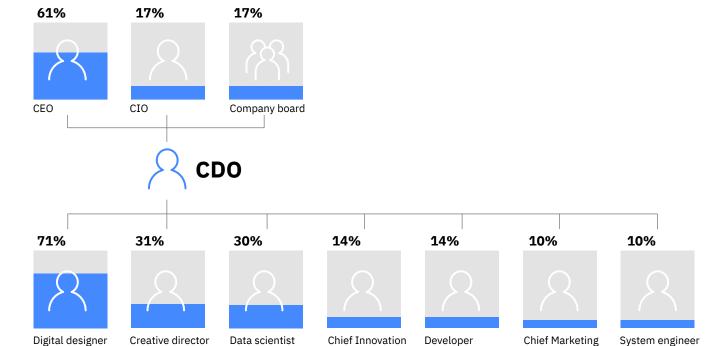
CDO responsibilities

Almost two-thirds—65 percent—of our 750 CDOs indicate that they are the primary owners of their organization's digital program. Another 29 percent say they share responsibility for their digital program equally with a team of other executives. Only six percent say they are not an owner—but instead, hold the more limited role of influencer.

When asked about their specific responsibilities, the CDOs indicated a range of activities. Almost all—91 percent—say that building a business case for their organization's digital

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Figure 3

A who's who: Reporting structure of a CDO

61%	**17%**	**17%**
CEO	CIO	Company board

CDO

71%	**31%**	**30%**	**14%**	**14%**	**10%**	**10%**
Digital designer	Creative director	Data scientist	Chief Innovation Officer	Developer	Chief Marketing Officer	System engineer

n=750.

strategy is central to their work, and 42 percent spend more than a fifth of their time doing so. Other core responsibilities include defining their organization's digital strategy and advancing operational and cultural change for digital adoption (see Figure 4).
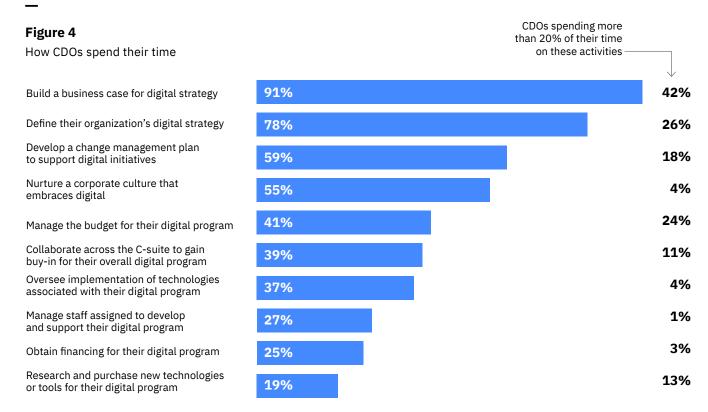
CDOs' professional preparation

As might be expected, the vast majority of the surveyed CDOs–84 percent–have an undergraduate degree in STEM subjects: science, technology, engineering, or mathematics. Sixty-two percent say they hold advanced degrees in business or management. Most–86 percent– cite careers focused on technology and innovation. Far fewer, but still more than half—56 percent—include business strategy among their primary disciplines.

Sixty percent of the CDOs tell us that they have already spent more than two years developing digital strategy and/or executing digital initiatives sometime prior to taking our survey.

The survey asked CDOs what they believe are the most important skills required for them to be successful. Three skills rose to the top: innovation (96 percent), technology (93 percent), and business strategy development (73 percent).

We also wanted to know more about CDOs' anticipated career trajectories following their current role. Most—86 percent—expect to continue in their current CDO role for at least two years or more from the date they took the survey. After the two years are up, 38 percent plan to be a CDO in some other organization.

For the CDOs who now report directly to a CEO, as many as 80 percent are setting their sights on their boss's chair— that is, a CEO role as their next career move, either in their current organization or elsewhere. Ambition seems to be a central characteristic of CDOs.

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Figure 4
How CDOs spend their time

CDOs spending more than 20% of their time on these activities

Activity	%	CDOs spending more than 20% of their time
Build a business case for digital strategy	91%	42%
Define their organization's digital strategy	78%	26%
Develop a change management plan to support digital initiatives	59%	18%
Nurture a corporate culture that embraces digital	55%	4%
Manage the budget for their digital program	41%	24%
Collaborate across the C-suite to gain buy-in for their overall digital program	39%	11%
Oversee implementation of technologies associated with their digital program	37%	4%
Manage staff assigned to develop and support their digital program	27%	1%
Obtain financing for their digital program	25%	3%
Research and purchase new technologies or tools for their digital program	19%	13%

Note: For this question, CDOs were able to select multiple responses, so the percentages do not total 100 percent. n=750.

Demystifying CDO impact

Armed with data describing the CDOs' role and having established some relationship between the presence of a CDO and digital maturity, we took our analysis a step further. Our aim was to determine which specific organizational and CDO attributes are most highly correlated with our sample's business performance.

We ran a regression analysis that resulted in eight variables that appear to have the most significant impact on performance. (See "Appendix: Study methodologies.") This set of characteristics, strategies, or beliefs attributed to both the organization and CDOs themselves, presents an optimal scenario that aligns types of CDOs and organizations with business performance. In other words, an organization with the attributes identified in the model and a CDO like the one highlighted in the model, has the combination of elements most highly correlated with strong business performance (see Figure 5).

Organization size matters

According to the model, CDOs are associated with the biggest financial improvement when they are employed by organizations with annual revenues greater than USD 20 billion. This makes sense. Large organizations can offer greater flexibility for role specialization, focus, and funding.

Plus, the scope and scale of a high-revenue, multi-faceted business may need a CDO to cut through the complexity to drive a comprehensive program of digital transformation, and in so doing, promote greater relative value. Large organizations are also better able to distribute across business units the costs associated with ambitious transformative initiatives that could lead to improved financial performance.

Enthusiasm for digital transformation is vital

The extent to which an organization considers its digital journey "mission-critical" matters a great deal as well. For organizations that employ a CDO, 91 percent of the survey respondents who aren't CDOs agree that digital transformation is an essential differentiator for their business.

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Figure 5

Organizational and CDO attributes most highly correlated to outperformance

	About the organization	About the CDO
Characteristics	The organization has an annual revenue of over USD 20 billion	CDO's direct reports include the Chief Innovation Officer and data scientists
		CDO has mostly focused on business strategy in his or her career
		CDO reports to Chief Information Officer
Strategies and beliefs	The organization has launched or is planning to launch a highly strategic, enterprise-wide, cross-functional digital transformation program	CDO says that digital transformation needs to be evolutionary and not revolutionary (for example, their organization's existing business model(s) continue to be important while they embrace digital-enabled business model innovation)
		CDO recognizes that digital evolution is an ongoing process
		CDO asserts that design is a key skill required for digital evolution

n=750.

Conversely, our research also shows a clear association between the lack of a CDO and relatively low levels of digital commitment. For example, among the 647 surveyed organizations without a CDO, only 21 percent have developed a strategic, enterprise-wide program to rethink their operating models, which inevitably requires digital capabilities and expertise. Even fewer, 15 percent, consider budgeting for digital initiatives a priority. This lackluster approach toward digital transformation is clearly unlikely to move the needle.

Additionally, understanding the motivation behind an organization's desire to fill the role says a lot about whether that CDO is set up for success or failure (see "Insight: When hiring a CDO is a bad idea").

Optimal CDO reporting structure

The reporting structure for the CDO turns out to be a significant factor determining success or otherwise. Contrary to many of the assumptions we held prior to this analysis, the data indicates there is a higher positive financial impact when a CDO reports to the CIO rather than to a CEO. This is even more surprising since just 17 percent of the 750 CDOs we surveyed report to their CIO. Having the CDO report to the CEO appears to have little if any impact financially.

CDOs are most successful when they have the resource muscle of direct reports—specifically, an organization's Chief Innovation Officer and its data scientists. This also indicates that a digital program led by CDOs works best when it is focused on both strategy and innovation that are data-driven.

Insight: When hiring a CDO is a bad idea

According to the president of an executive search firm that places many of the top CDOs in North America, "Driving digital transformation across the whole enterprise is what the CDO is uniquely qualified to do.

He asserts, "It's the only rationale for bringing a CDO on board. When I hear a client wants marketing to be more digital, or wants the CDO to act as mediator between the CMO and CIO, red flags go up."

"A lot of what drives the need for transformation—at least initially—is improving the customer experience," he told us. "So, if they don't have a CDO, this responsibility sometimes falls to the CMO.

"However," the head of the search firm cautions, "not all CMOs have the necessary digital expertise. CTOs or CIOs aren't always good alternatives either. Their roles are often too inwardly focused. Companies need a person in the C-suite whose sole responsibility is to digitally transform the whole enterprise.

"But," he adds, "if clients say they just want to digitally transform marketing, I tell them they don't need a CDO. Go get a vice president of digital marketing to report to the CMO."

He also predicts that if an enterprise wants a CDO to act as a cushion between the CMO and CIO due to stalled digital transformation efforts, the CDO will be consumed managing no-win political battles. Instead, this client may benefit more by replacing their CMO or CIO with someone better suited to take on CDO-related responsibilities.

Insight: Recipe for success

One of the CDOs we interviewed was working for a large US city. We asked if the reporting structure contributed to her success. She agreed that it had, crediting her boss's strong relationship with the mayor. Having the support of the mayor and being aligned with the CTO, she says, was key.

She also told us how she coaxed cooperation from the many different groups that had a stake in the digital transformation she was leading. "I started the job by conducting listening sessions within the government and with constituents," she recounts. "You need to find champions and make sure the implementation of your program reflects and reinforces the overall business strategy." She adds, "It really depends on the leadership. Having a clear mandate from your leadership is the most important thing."

Her advice to aspiring CDOs: "Be prepared to be an organizational therapist."

One CDO we interviewed was responsible for jumpstarting digital transformation for a major US city. She agrees that reporting to someone other than the top executive has its advantages. Even in a government agency, the dynamics were similar to that of a business. "I didn't report to the mayor, but he empowered us, and it was very collaborative," she recalls. "It's extremely important, too, that you are on the same page with the CTO or CIO. You can't be in a situation where you are competing against them." (See "Insight: A recipe for success.")

Digital experience is important, just not all important

It is understandable if business leaders assume that a new CDO has to be a digital aficionado. However, our analysis indicates top CDOs' strongest characteristic is actually business strategy, not technology.

Of course, a keen understanding of technology is still quite important.

However, the most successful CDOs possess a strong business strategy background, rather than a history of being a computer scientist or technologist. Indeed, it does not seem to matter how much time CDOs have spent in a digital role in the past. We found that prior digital experience of CDOs appears to have no bearing on improving financial performance. Instead, it is all about the qualities that CDOs bring to the future.

A winning strategic approach for CDOs

Recognizing the vital role of good design—for customer and employee experiences, processes, products, and services—is also a differentiating characteristic of top CDOs.

Additionally, top CDOs take a balanced approach toward transformation. They seem to be evolutionaries and not revolutionaries. They are less interested in a digital overhaul for its own sake, or for the purpose of showcasing the newest technologies. They believe their organizations' traditional business models are necessary for ongoing financial success and recognize that digital innovation—when treated as a process for continual improvement—can chart the course for their organization's successful future.

Regardless of size, CDOs have an influence on predicted ROI of digital investments.

Reaping the rewards—CDOs and ROI

Ultimately, organizations want to know if having a CDO will improve the ROI on their digital investment. Indeed, the expectation of improving the ROI of digital investments is a constant pressure for most, if not all, CDOs. Nearly three-quarters of CDOs say it is one of their most important key performance indicators (KPIs). In fact, for organizations with CDOs, the top six KPIs are mostly aligned to improving top- and bottom-line results:

1. Return on investment
2. Increased revenue
3. Improvements in customer engagement
4. Reduced operational costs
5. Improved profitability
6. Improved brand differentiation.

With the insights from our performance model in mind, we conducted additional analysis to determine the extent to which having a CDO might impact an organization's digital investment (see "Appendix: Study methodologies").
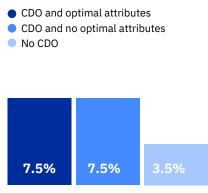
The results are telling. When a CDO is present, and when optimal attributes based on performance and digital maturity analysis exist, there is a clear association with a higher ROI for large- and medium-sized organizations.
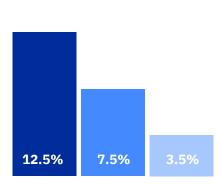
The bigger the better

According to our findings, large organizations that have a CDO with optimal attributes fare especially well, with a possible ROI for their digital investment as high as 17.5 percent. Even without optimal attributes, organizations could anticipate a higher ROI than if they had no CDO on staff. This pattern holds true regardless of organizational size.

While this model does not guarantee a specific ROI target will be achieved with a CDO, the presence of one appears to indicate a positive impact on an organization's ROI on their digital investment (see Figure 6).
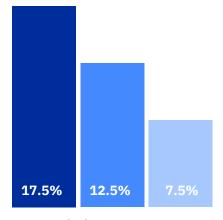
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Figure 6
Predicted ROI on digital investments

- ● CDO and optimal attributes
- ● CDO and no optimal attributes
- ● No CDO

Small organizations
(< USD 5 billion in annual sales): 7.5% | 7.5% | 3.5%

Medium organizations
(USD 5-20 billion in annual sales): 12.5% | 7.5% | 3.5%

Large organizations
(> USD 20 billion in annual sales): 17.5% | 12.5% | 7.5%

n=1,500.

Action guide

Is your CDO MIA?

If your organization is looking to appoint its first CDO, or if past experience with this role didn't meet expectations, but your organization still needs to fill a leadership gap to drive digital transformation, consider the following recommendations.

1. Plan, organize, and structure

Even the most adept executive could have a difficult time succeeding without a clear mandate, leadership support, and needed resources.

– Set realistic expectations. The scope and scale of digital transformation, especially for large organizations, often warrants a leader at the C-suite level to drive change across the enterprise. That said, be realistic about your digital aspirations, the work required, how quickly you need to show improvement, and the expertise of your current leadership to decide if bringing on a CDO is the right move.

– Carefully consider where the CDO sits. Because the CIO as boss is most highly correlated to outperformance, position the CDO as an extension of the CIO's technology agenda, with aligned strategies, priorities, and budget. While the CIO attends to the day-to-day IT needs of the business, the CDO can focus on the strategic, operational, and organizational changes that come with digital transformation.

– Round out the CDO's capabilities with the right team. It may be tempting to think of the CDO as a singular force who can serve as the charismatic change agent. But CDOs have the most positive impact on performance when they are supported by people with a diverse set of skills, including a Chief Innovation Officer. This may be especially beneficial for larger organizations, where the need for innovation at scale could be essential. Have data scientists report to the CDO since the success of digital transformation rests largely on the effective use of data and data insights.

2. Finding the right person for the right job

Given the wide swath of responsibilities a CDO can be expected to cover, what expertise and focus should your CDO have? Base this, in part, on your organization's digital maturity and what is needed to take your journey to the next level.

– Match the CDO's scope to the needs of the business. If your organization treats digital transformation as a series of technology upgrades, you don't need a CDO; you need a program manager. However, if your organization sees its digital journey as a strategic, integrated, collaborative, iterative process, the CDO's impact should be multifaceted, not limited to IT, marketing or any other function.

As you define the scope of the CDO role, look beyond the obvious areas needing improvement and empower the CDO to boldly imagine the future of the business. This means your CDO needs to be more than a problem solver. She or he needs to be a visionary who relishes the opportunity to bring that vision to life.

– Prioritize the strategist. It may seem counter-intuitive to suggest that CDOs don't need deep digital expertise, but it's their background in business strategy rather than their technology proficiency that is more closely correlated to improved financial performance. That's not to say they shouldn't be digitally astute and data savvy, but rather, their most valuable skill could well be their ability to think and act strategically. When evaluating candidates for this role, you may find the strategist to be a better fit than the technologist.

– Embrace the digital evangelist. In addition to their strategic mindset, effective CDOs are change agents who know how to inspire people to come together to execute their vision. CDOs should be approachable communicators who can supply executives, employees, and ecosystem partners with a continual drumbeat of meaningful information about their digital progress and its impact.

3. Keep your eyes on the prize

Our analysis demonstrates that a specific combination of organizational and CDO attributes appears to deliver the best opportunity for success. Even if your organization or an individual CDO doesn't have all these qualities, a few standout attributes should command everyone's focus.

– Indulge the power of good design. The design of customer experiences, front-end and back-end processes, products, services, physical spaces, and brand elements can all be improved by your organization's digital transformation. Appreciating the role of design, and being able to integrate it effectively, are among the CDO characteristics that have the highest financial impact. CDOs need to be steadfast in their delivery of well-designed digital interactions for customers and employees. They should treat digital technologies as the enabler of better experiences, not the objective.

– Don't change for the sake of change. As the "Chief Change Agent" for the C-suite, your CDO's job is to consider where your organization is headed and how digital initiatives figure into that vision. What will your organization need to do? What challenges will you need to overcome, not just to compete, but leapfrog progress?

While blue-sky solutions may be the necessary course, effective CDOs understand it's important to not introduce change for change's sake. Effective CDOs share the belief that their organization's traditional business models can thrive with improvements.

– Play the long game. It's one thing to paint a picture of your digital transformation and even create a roadmap for your digital journey. But it's quite another to sustain commitment for that vision with adequate funding and continued adoption across senior leadership and throughout the organization. The CDO needs to work closely with functional leaders to establish an enterprise-wide alignment of digital goals and prioritized investments that employees at all levels can see as evidence of the improvements being made.
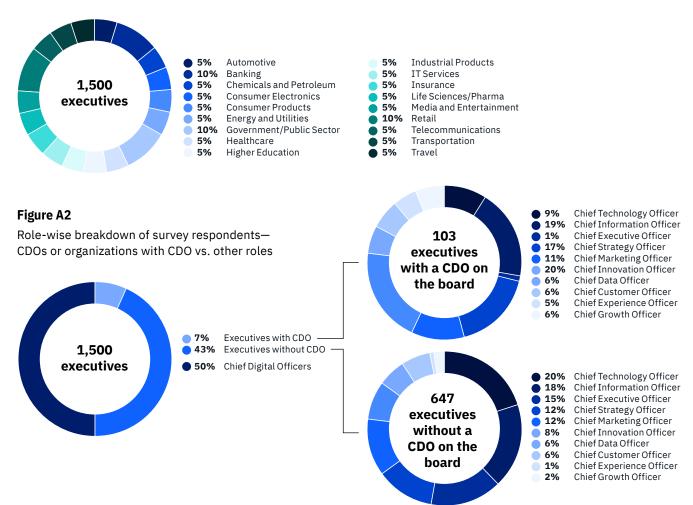
Appendix: Study methodologies

In cooperation with Oxford Economics, the IBM Institute for Business Value surveyed 1,500 executives representing 18 industries (see Figure A-1).

Global representation included 325 respondents from the US and Canada, 150 from Latin America (including Mexico); 300 from Western Europe; 75 from Nordic countries; 75 from the Middle East; 75 from South Africa; 100 from India; 100 from the Pacific; 150 from China; and 150 from Japan.

Among the 1,500 respondents, half (750) were Chief Digital Officers. The other half included a variety of C-Suite titles. Within this mixed group of C-suite officers, 103 belonged to organizations that had a CDO on board, 647 were from organizations without a CDO (see Figure A-2.)

Sixty-four percent of the sample included organizations with annual revenue—or budgets (for non-profits or government agencies)—in the range of USD 500 million to 5 billion. Organizations with annual revenue (or budgets) from USD 5 billion to 20 billion comprised a quarter of the sample, and approximately 12 percent had revenue (or budgets) greater than USD 20 billion per year.

—

Figure A1

Industry breakdown of survey respondents

5% Automotive	**5%** Industrial Products
10% Banking	**5%** IT Services
5% Chemicals and Petroleum	**5%** Insurance
5% Consumer Electronics	**5%** Life Sciences/Pharma
5% Consumer Products	**5%** Media and Entertainment
5% Energy and Utilities	**10%** Retail
10% Government/Public Sector	**5%** Telecommunications
5% Healthcare	**5%** Transportation
5% Higher Education	**5%** Travel

1,500 executives

Figure A2

Role-wise breakdown of survey respondents— CDOs or organizations with CDO vs. other roles

1,500 executives

- **7%** Executives with CDO
- **43%** Executives without CDO
- **50%** Chief Digital Officers

103 executives with a CDO on the board

- **9%** Chief Technology Officer
- **19%** Chief Information Officer
- **1%** Chief Executive Officer
- **17%** Chief Strategy Officer
- **11%** Chief Marketing Officer
- **20%** Chief Innovation Officer
- **6%** Chief Data Officer
- **6%** Chief Customer Officer
- **5%** Chief Experience Officer
- **6%** Chief Growth Officer

647 executives without a CDO on the board

- **20%** Chief Technology Officer
- **18%** Chief Information Officer
- **15%** Chief Executive Officer
- **12%** Chief Strategy Officer
- **12%** Chief Marketing Officer
- **8%** Chief Innovation Officer
- **6%** Chief Data Officer
- **6%** Chief Customer Officer
- **1%** Chief Experience Officer
- **2%** Chief Growth Officer

Analytical models

To understand and determine various relationships we deployed multiple regression models based on different sets of data.

CDOs and digital maturity

To determine the relationship of the presence of a CDO and digital maturity, we created a regression model with 18 potential contributors to digital maturity as independent variables. The dependent variable in the regression was a digital-interest scale developed by combining a series of responses to a survey question about drivers for digital transformation. This model was run on the entire data set of n=1,500 respondents.

On completing the run, we found that eight of those variables were statistically significant indicators of digital maturity when we looked at different respondent sets, that is, nearly 850 organizations with a CDO versus 650 organizations without one.

Regression coefficients informed relative weights of each of the eight factors on digital maturity, which in turn informed predictions of—and relative value derived from—strategic priorities or levers required to achieve higher digital maturity levels.

The factors that outweigh all others can be grouped into three broad areas: commitment—an organization is committed to the strategic importance of digital investments and a digital program; strategy—an organization is actively creating digital strategies and skills; and sense of purpose—an organization already has strong digital skills along with a shared belief in the power of digital to transform their organization and their industry.

We found that the most important single variable—accounting for fully one quarter of digital maturity in the index—is an organizational commitment to the approach that digital strategy and day-to-day digital activities and plans must be aligned. These strategies cannot simply reflect aspirational, visionary goals, but need to have practical application to real actions and outcomes. This degree of orchestration calls for dedicated leadership and oversight.

CDO presence and business performance

To identify which organizational and CDO variables offer the highest correlation with business performance, we identified 87 explanatory variables from our survey that could explain the potential reason for outperformance. We took the survey data of 750 CDOs from our survey and examined the difference between how high performing organizations had responded to the 87 variables and compared them to other organizations in our sample.

This comparison yielded 29 variables that we could regress against business outcomes of the high-performers. Post-regression we reduced these variables down to eight closely aligned ones, which reflected on those organizations and CDOs that have the biggest impact on business performance. We then deployed these top eight variables in a model that enabled us to run scenarios and estimate organizational performance.

Measuring CDOs' effect on digital ROI

Based on the above sets of analyses, one could identify a set of optimal CDOs who could potentially lead their organizations to success. To answer the question if a CDO has much influence on the possible ROI of an organization's digital investment, we ran nine scenarios explaining expected ROI over two years. The scenarios were run based on:

a) Size of the organization (revenue or budgets, in case of non-profits):

– Small (less than USD 5 billion)

– Medium (between USD 5 and 20 billion

– Large (more than USD 20 billion)

b) CDO presence:

– No CDO present

– Presence of a CDO without optimal attributes

– Presence of a CDO with optimal attributes

ROI estimates were based on anticipated ROI from -10% to 40% range. Specific numbers were based on band midpoints. We then employed a logistic regression model to predict ROI.

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Notes and sources

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