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**The 2015 chief
digital officer study**



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Executive summary



The digital revolution is moving fast and spurring massive disruptions and transformations in industry after industry. A key sign of its growing importance is the rise of a new kind of executive: the chief digital officer, or CDO. Although the number of companies that have already hired CDOs remains small — just 6 percent globally, according to the results of our first annual study of the position — their ranks are clearly growing rapidly. In researching 1,500 of the world's largest companies through company filings and records and publicly available information (*see Appendix, page 23*), we found that those in consumer-focused industries, including media, entertainment, food and beverage, and consumer products, are at the forefront of the trend. Large companies are also ahead of the curve, no doubt due to their sheer complexity and the greater effort involved in carrying out the necessary digital transformation. And European companies are hiring CDOs at faster rates than companies elsewhere.

The CDOs themselves, more than 40 percent of whom are members of the C-suite, come from a variety of backgrounds, but by far the most common is marketing and sales, followed by technology. This suggests just how differently the CDOs and the companies that hire them imagine the role, and how varied the digital needs and pace of transformation are from one company to another. Flexibility is perhaps the single most important success factor for executives new to the position. CDOs who can adapt to rapidly changing circumstances while staying tightly aligned with their companies' business goals will be in the best position to lead the way to a full digital transformation.

New demands, new roles

Already, more than a quarter of the entire population of the world owns a smartphone. In 2014, global mobile data traffic reached 2.5 exabytes per month — that's 2.5 billion gigabytes, a figure that is 30 times larger than all of the traffic on the Internet back in 2000. With users connecting, interacting, and consuming data at these rates, it's no wonder that companies in almost every industry are hiring CDOs or the equivalent as fast as they can. The goals: to use online and mobile interaction in hopes of creating the best possible customer experience, and to fully transform the employee experience and the way companies deliver their products and services.

This level of connectivity is inevitably transforming how companies reach out to consumers, as well as to their business customers, partners, and suppliers. Companies in virtually every industry now understand just how much the digitization revolution is transforming the competitive landscape, and are preparing to participate in this brave new world, not just in their interactions with customers, but internally as well. Indeed, the demands of digitization will ultimately force companies to transform virtually every aspect of their business.

Hence the rise of the CDO, whose cross-functional task at a growing number of companies is to do nothing short of transforming companies for the digital age, overseeing the transition of operations, sales and marketing, systems, and production — along with the internal corporate culture and in some cases the company's products and services themselves. It is a tall order, especially considering that almost no one arrives as an experienced CDO; the role has just begun to come into existence. This executive has the dual task of developing both an all-inclusive digital experience for customers and the internal capabilities needed to support that effort — while simultaneously managing the considerable investment required. Digital transition will require as much as 50 percent of capital spending over the next five years, according to a recent Strategy& study. As opposed to other top executives — including CMOs, CIOs, and now chief data officers, an equally recent addition to the C-suite who primarily manage the effort to collect and analyze big data — we define the CDO as that executive

who has been given both the responsibility and the authority to bring about the company's transformation to a fully digital enterprise.

We see the CDO's role as taking care of digital innovation both externally, in the companies' interactions with customers, partners, and suppliers, and internally, collecting and analyzing data, improving efficiency through the use of digital technologies, and transforming organization and culture to enable their companies to compete successfully in the digital age. Given this wide variety of responsibilities, and companies' often varied levels of digital maturity, it's no surprise that a defining requirement for the position is flexibility — the ability to adapt quickly to the situation at hand — and that current CDOs come from quite diverse backgrounds.

This year, we studied records, filings, and other publicly available information such as media coverage from the top 1,500 public and private companies around the world by revenue to understand better how many companies have appointed CDOs, who they are, and where they fit in their companies' hierarchies. We also interviewed five CDOs from different industries and types of companies, looking more closely at their missions and goals, and how they carry them out. The data shows that although few companies have employed a CDO or someone in an equivalent position — just 6 percent — the numbers are clearly growing rapidly, and the tasks CDOs are expected to perform have expanded substantially, even as they vary significantly from company to company.

Because the CDO role is just a few years old, it is not yet possible to determine whether companies with CDOs perform better in the marketplace than others. Indeed, some companies are flourishing without a single executive overseeing their digital transformation at the highest level — though most of these companies are already quite far along in their digital journeys. We believe, however, that less advanced companies would clearly profit by hiring one top executive to develop and carry out a coherent digital strategy. The goal of this study is to better understand which kinds of companies are hiring CDOs, who these new executives are, and how they approach the tasks in front of them — and then to look at how, specifically, the CDOs at several very different companies are taking on the demands of digitization.

Less advanced companies would clearly profit by hiring one top executive to develop and carry out a coherent digital strategy.

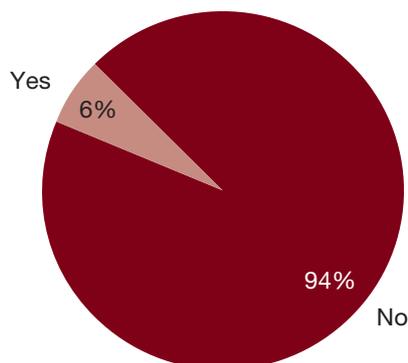
Who is hiring CDOs?

The finding that, out of the world's top 1,500 companies, only 6 percent had already created the position of CDO or equivalent came as something of a surprise. It suggests that despite the great deal of attention paid to digitization in the press and by consumers, a large percentage of companies haven't yet seen the need to give a single executive the power to oversee their digital efforts across the entire enterprise. Instead, these firms are likely trying to make do by managing their digital transformations at the function, business unit, and geographical market level. But it's also worth noting that of the 86 CDOs we did find, 31 of them were appointed last year, a spike suggesting that more companies are already assigning a growing level of importance to the idea of a dedicated digital leader (see Exhibit 1).

Exhibit 1

Surprisingly few companies have a CDO in place

Companies with a CDO or equivalent in place, 2015*



*Based on a Strategy& survey of the world's 1,500 largest companies by revenue.

Source: *Financial Times*; OneSource/Avention; Strategy& analysis

Further solidifying just how new the CDO role is, none of the industries we examined had more than a smattering of CDOs. The percentage of companies with CDOs varies significantly by industry, of course. Consumer-oriented industries, for instance, led the pack: 13 percent of communications, media, and entertainment companies have CDOs — despite our observation that many media and entertainment companies have already fully embraced the digitization trend — followed closely by food and beverage, with 11 percent (*see Exhibit 2*). And fully 31 percent of travel and tourism companies, within the category of transport, travel, and tourism, have CDOs — no surprise, as virtually the entire travel sector has moved online and is highly dependent on an almost entirely digital customer base.

Exhibit 2

Consumer-oriented companies are more likely to have a CDO in place

Percentage of companies with a CDO by industry, 2015

Industry cluster	No	Yes	Total	Percentage
Communications/media/entertainment	75	11	86	13%
Food/beverages/agriculture	73	9	82	11%
Consumer products/retail/wholesale	133	13	146	9%
Insurance	105	9	114	8%
Transport/travel/tourism	96	8	104	8%
Banking	178	13	191	7%
Pharma/health/chemicals	107	7	114	6%
Technology/electronics	88	3	91	3%
Automotive/engineering/machinery	106	3	109	3%
Utilities/oil/gas	196	5	201	2%
Other	161	4	165	2%
Metals and mining	96	1	97	1%
Total	1,414	86	1,500	6%

Source: *Financial Times*; OneSource/Avention; Strategy& analysis

At the other end of the spectrum, a mere 3 percent of technology and electronics companies had CDOs in place. This may seem incongruous at first, given these companies' determination to keep up with technological advancements, but it should not indicate that management's commitment to digital transformations is low. More likely, the functions and responsibilities that often fall under the remit of a CDO are already distributed among different areas within the C-suite management at these firms, and are already deeply entrenched in all aspects of the company's culture. Moreover, many of these companies deal primarily with other business customers, not with consumers directly, and business-to-business firms have typically lagged in their efforts to digitize.

Meanwhile, just 1 percent of metals and mining companies have a CDO, and 3 percent of automotive, engineering, and machinery companies do. Clearly, B2B companies have less external motivation to move quickly on digitization than do B2C firms. Yet this too will certainly change as new technologies such as the Internet of Things and enterprise-oriented apps make greater inroads into their operations and how B2B firms connect with partners and suppliers.

The metals and mining industry is a case in point. So far, this highly "analog" industry appears to see few opportunities to leverage digital technologies. But first movers will likely figure out the value of greater digital interaction with both equipment suppliers and downstream customers, and how they can generate greater transparency into order status, pricing, and quality while benefiting from the increase in data and analytics regarding internal operations, leading to further cost savings and optimized project time lines.

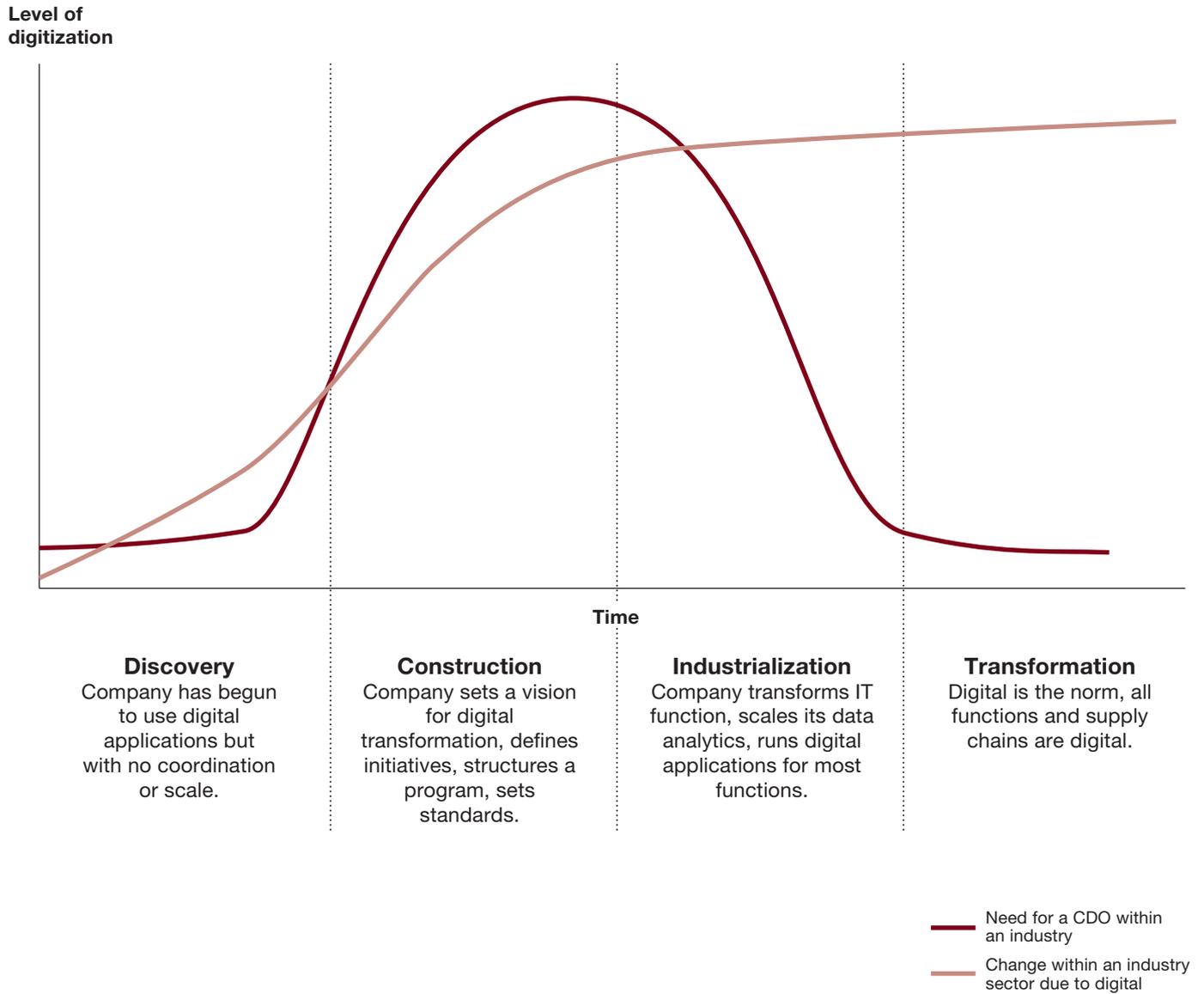
This considerable variation among industries can be explained partly by the extent to which a given industry is feeling the impact of the digital revolution. Although some are already over the "hump" in terms of digitization, others are only just beginning to feel its effects (see *Exhibit 3, next page*). Moreover, individual companies vary considerably in their approach to the position. Indeed, some may already be past the point where they see the need for a single executive to fill the position.

Larger companies also tend to be ahead of the curve in appointing CDOs. The proportion of companies with more than 10,000 employees that have appointed CDOs hovers between 5 and 9 percent, but falls between 1 and 3 percent for companies with fewer employees (see *Exhibit 4, page 11*). Digitization is changing the way all companies, large and small, run their businesses. Given their enormous complexity, however, and the sheer number of employees involved, larger companies face a much more difficult digital transformation effort, which is why it's likely that their efforts across all functions and business units require an executive focused on the process.

Some companies may already be past the point where they see the need for a single executive to fill the position of CDO.

Exhibit 3

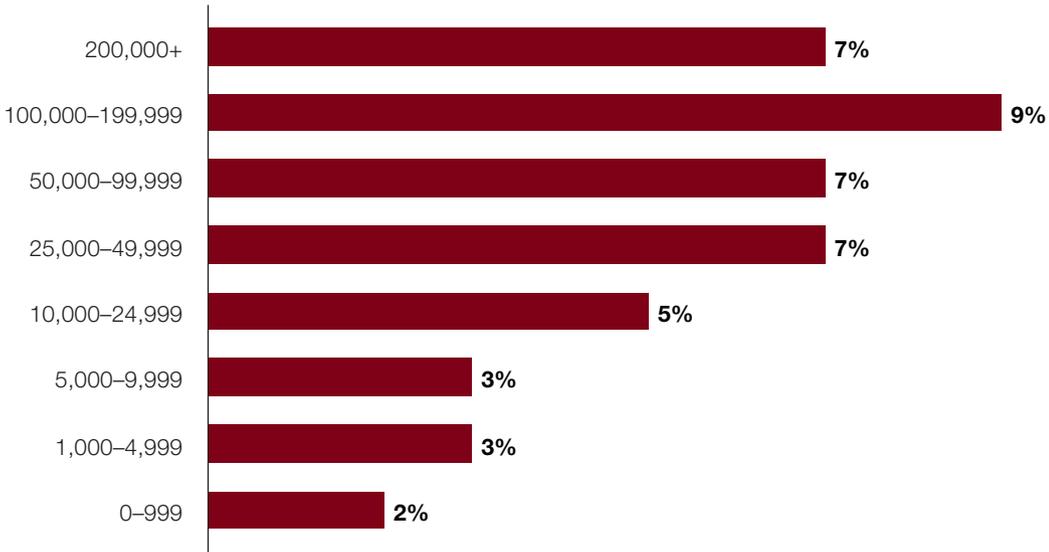
The need for a CDO during each phase of the digital revolution



Source: Strategy& analysis

Exhibit 4
Larger companies are more likely to have a CDO

Percentage of companies with CDO by employee size categories*



*Based on a Strategy& survey of the world's 1,500 largest companies by revenue.

Source: *Financial Times*; OneSource/Avention; Strategy& analysis

Moreover, major digital transformations (and the senior-level staff assigned to the cause) cost money, and may be beyond the means of many smaller firms, whose management teams are typically more focused on core tasks like finance and operations while their digital innovation efforts are often divided among executives at various units and functions.

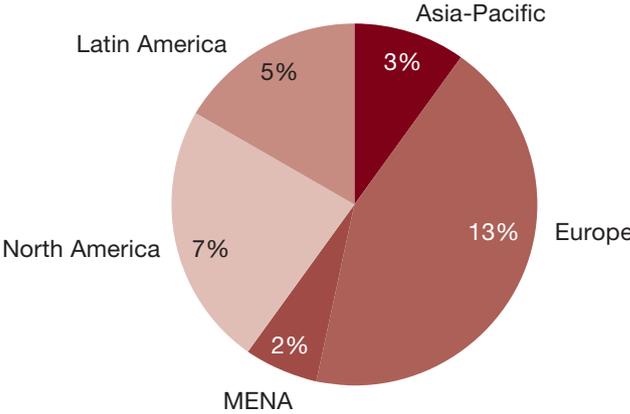
And although fully 13 percent of companies based in Europe have already appointed CDOs, just 7 percent of North American companies have done so, and 5 percent or less in Asia, the Middle East and North Africa (MENA), and Latin America (*see Exhibit 5, next page*). Yet it would be a mistake to assume that European companies are ahead of the curve in this regard. Rather, it is more likely a function of the fact that North American companies, like many electronics and media companies, feel that they “have it covered” elsewhere, with numerous high-level executives, such as CMOs, already in place to move the digital agenda along.

Indeed, it may very well be that many of the companies now appointing CDOs are actually *less* mature in their digital development, and feel that it’s important to have a single executive who can provide a stronger, faster solution to their digital needs. Meanwhile, most of the companies we looked at in the Middle East are engaged to varying degrees in the oil and gas industry, a largely B2B business where very few companies anywhere have felt the need to appoint a CDO thus far.

Exhibit 5

Companies in Europe are more likely to have a CDO than those headquartered elsewhere

Percentage of companies with CDO by region



Source: *Financial Times*;
OneSource/Avention;
Strategy& analysis

CDO demographics

As noted, the CDO is a relatively new position at most companies, with almost 80 percent having been appointed since 2012. Yet its rise suggests that many companies are taking very different, and much more integrated, approaches to how they view the technologies they use to manage internal operations and the customer experience. In the past, the traditional CIOs and CTOs were focused primarily on their companies' IT, managing employee desktops and enterprise-wide ERP and CRM systems. Then, as enterprise technology began to spread to other areas of the corporation, other positions arose, such as the CMO, who often worked closely with the CIO to incorporate new marketing technology into their repertoire.

The CDO role, however, has arisen under very different circumstances, based as it is on the need to steer the company through an era of massive disruption in every aspect of its external relationships and internal operations. Yet because companies vary so considerably in their levels of digital maturity, and because the demands of digitization depend so largely on the nature of the industry they do business in, it is virtually impossible to generalize about the CDOs' mission, or even their role within the organization.

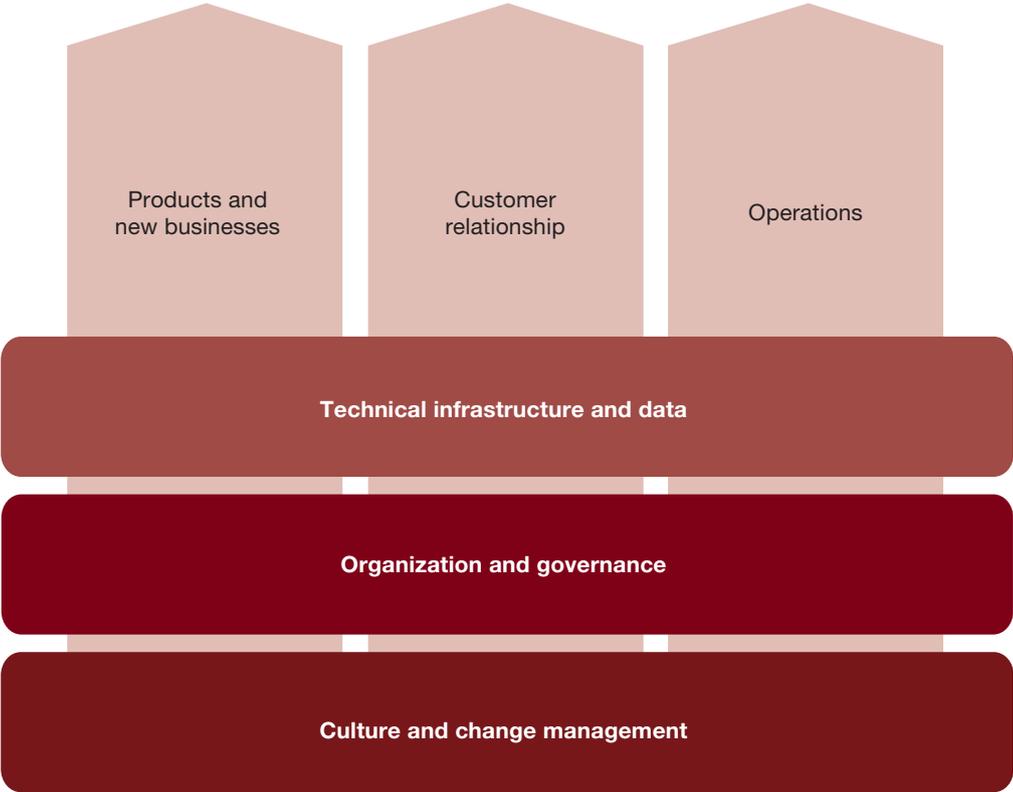
Considered from the point of view of what companies need to do to ready themselves for the digital future, it is possible to better understand the task that lies ahead of the new CDO — and just how daunting it often is. A full digital transformation should consist of six elements, all of which are critical to its successful completion, and the CDO, at least in theory, should be responsible for all of them (*see Exhibit 6, next page*). He or she should be responsible for both the customer-facing elements of the transformation, including the development of new products and services, and relevant customer experiences, enabled by digitization, as well as the operational changes required to make them a reality.

The technical infrastructure and data collection and analysis, too, should be under the purview of the CDO. So should issues surrounding how the company ought to be reorganized to carry out its digital

Exhibit 6

To maintain coherence, CDOs must be responsible for all aspects of the digital transformation

Digital transformation framework



Source: Strategy& analysis

mission, and the governance mechanisms required to ensure that critical and often hotly debated functions such as who should oversee the development of new digital services and data analytics are carried out effectively. Finally, the CDO must be an agent of cultural change, championing the digital transformation throughout the company.

Indeed, changing how people work — especially non-digital natives — and the corporate culture that underpins their work behavior is a critical element of the CDO's job. Pharmaceutical giant Bayer, for instance, has been operating with the kind of data that is now the foundation for digitization for more than a century. But as Jessica Federer, head of digital development at Bayer, notes, in digital transformations, “the data piece is actually the easiest. Data is data. It's the people piece that's the challenge. So we focus first on the people in the organization, and how we connect across synergies, across silos, over platforms and data.”

In order to achieve that level of connectivity, Federer began by creating a digital council consisting of the CIOs and CMOs of the human and animal sciences divisions, whose task it was to look at potential synergies. Below that level are the digital core teams and then a huge digital network, which Federer just happened to bestow with the acronym NERDs, or Network for Enterprise Readiness and Digital. “They're the ones bringing together digital marketing with digital product supply with digital R&D,” says Federer. “We used to do this in silos, but now we do it by sharing information.”

For similar reasons, three years ago Patrick Hoffstetter, CDO at auto manufacturer Renault, created what it calls the Digital Factory, the company's centralized digital transformation organization. His goals were twofold. First, with many people in the company and as many as 65 different outside agencies already working on digital, the overall digital strategy needed to be clarified. So, second, the plan was to use the Digital Factory as the basis for regrouping all of the resources and all of the experts from different functions and markets needed to carry out the strategy.

The impetus for the Digital Factory lay in part in the near-constant organizational debate between local and global priorities. “Nobody's questioning that global partnership, global platforms, global tools, global dashboards, global KPIs, and so on should be created and managed centrally,” he says. “But it's more unclear when it comes to content, data management, digital marketing, and the like.” Thus, the Factory's organizational role is to manage the interface between the local and the global.

The CDO must be an agent of cultural change, championing the digital transformation throughout the company.

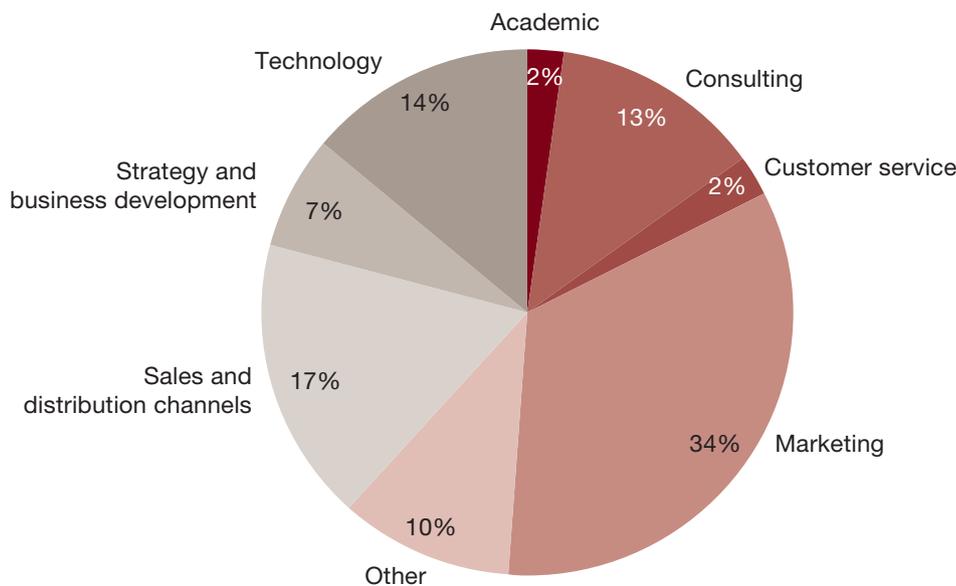
That, it turns out, includes providing support for smoothing the transition to what he calls “connected” employees — how they work today, their very different expectations, the tools they need to thrive. In short, going digital isn’t simply a matter of putting up an effective e-commerce website or engaging in social media. It requires a thoroughgoing rethink of how the entire company goes to market.

Thus, CDOs must take a much more cross-functional approach, spanning traditional IT and other, newer technologies, as well as marketing, sales, and other functions — all while they maintain intimate connections to their company’s business goals. As a result, the CDOs at the companies we studied come from a wide range of backgrounds — marketing, sales, technology, consulting, and academia. Of the CDOs we studied, more than a third have marketing backgrounds, and another 17 percent have backgrounds in sales and distribution, whereas just 14 percent have backgrounds in technology (see Exhibit 7).

Exhibit 7

Marketing and sales experience dominates the backgrounds of current CDOs

Number of CDOs by background/former experience



Source: *Financial Times*; OneSource/Avention; Strategy& analysis

The abundance of marketing-oriented CDOs suggests that companies are still taking an essentially customer-centric slant in filling the CDO position. “One reason why most operations in digital strategy and transformation are focused on sales and marketing is that these functions have a direct, quite short-term impact on the business,” Renault’s Hoffstetter says. “Whereas when it comes to the evolution of internal processes, internal social networks, acceleration of collaborative tools, internal training, it’s much harder to show any payback, and it takes a lot longer.”

Pursuing the transformation of the consumer-facing operations is a perfectly reasonable way to begin to go digital, but companies must understand that, although necessary, it isn’t sufficient. And it won’t allow companies to become fully coherent digital organizations. That, as noted, requires the digital transformation of the entire business, and the executive who leads the effort must be able to coordinate its every aspect. So it doesn’t really matter whether the CDO comes from marketing or IT or operations, as long as he or she has the capacity to take the cross-functional approach necessary to lead the charge.

Striving for coherence is also why so many CDOs are members of their companies’ C-suites — above 40 percent, according to our survey, although some companies still prefer to appoint CDOs to individual functions or business units (*see Exhibit 8, next page*). This is particularly true of consumer-oriented companies, which have come to learn early just how important digitization has become to their ability to compete by providing customers with the best possible experience in all their interactions with the company.

But it is also true of companies that are relatively early in their digitization efforts, and need the extra push forward that a single CDO can provide. Virtually every CDO interviewed for this study emphasized the importance of working closely with every function of the business to ensure that their strategies and decisions are thoroughly grounded in their company’s overall business strategy and goals. Being part of top management gives them that critical perspective, but they must also be given the power and support they need; otherwise, they may find themselves with a “seat at the table” but without the strategic and operational input that many CIOs have long been denied.

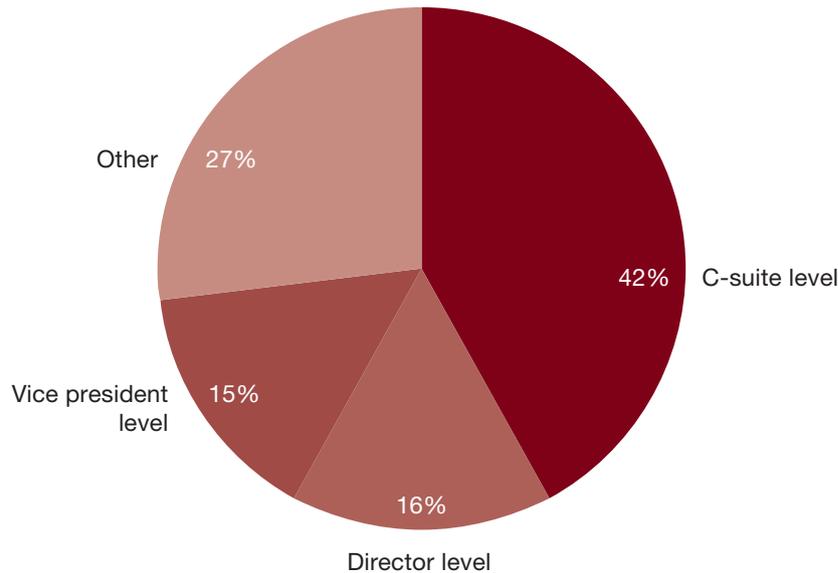
Corinne Avelines, who joined AkzoNobel’s decorative paints division as CDO in July 2014, points to this cross-functional approach as critical: “Commitment at the top management level to innovation and digitization has made my job considerably easier,” she says. “Senior support is key to ensuring commitment to digital at the company, especially one of this size.”

The CDO must have the capacity to take the cross-functional approach necessary to lead the charge.

Exhibit 8

CDOs at the C-suite level make up the largest proportion of all CDOs

CDOs by organizational structure level



Source: *Financial Times*;
OneSource/Avention;
Strategy& analysis

Companies that try to carry out their digital transformation without a CDO who has the necessary authority run the risk of creating a lack of coherence, especially given the importance of matching the new digital technologies involved in the transformation to the company's go-to-market strategy.

Indeed, given all the new digital technologies available in the pursuit of digitization — from social media to big data to the Internet of Things — many new CDOs will likely find it tempting to put the technological cart before the business horse. This is a mistake. The overall strategy must always drive decisions about how and what to digitize, especially at companies where the digitization efforts are less mature.

Noting the many distractions that CDOs are likely to face, AkzoNobel's Avelines strongly concurs with this view. "Don't take on every battle, because there are just too many — it's useless," she says. "Don't get too preoccupied with getting everything perfect — that's just impossible."

Gaining a competitive advantage in a fast-digitizing age is a challenge, so CDOs must understand their company's current position and future strategy, what will make an impact on providing value to the customer, and focus on that. Worry about the other things later."

CDOs must do more than simply align themselves with their companies' business goals. The impact of digitization is all-encompassing, and as such has the power to transform every aspect of the business — including those business goals themselves, whether that means pursuing a new business model, reimagining the customer experience, boosting digital innovation, or increasing operational efficiency. So it is incumbent on CDOs to participate actively in the creation of business strategy — and lead the process when necessary.

Chris Curtin, who has been the CDO at Visa for more than two years, believes strongly in this approach. "I not only think that the best CDOs are reflective of the business," he says. "I think that in many respects they *are* the business." To that end, he believes that CDOs should "forget about digital. Forget about new media. Forget about anything else. Whether it's McDonald's, whether it's Nike, at the end of the day, the goal is to sell more hamburgers or shoes or sports apparel. The business objective has to permeate the thinking and the strategies and the go-to-market approach of the CDO and his and her team. Never make the means the end. A million followers on Twitter is just a means. The end is the business goal."

Still, there will likely be tension between companies' business goals and the pursuit of their digital goals. Renault's Hoffstetter sees this as a critical challenge for CDOs. "Many companies struggle to maintain a balance between focusing on short-term business results and a longer-term effort at digital transformation, where it's much more difficult to demonstrate a clear return on investment," he says. "It's really hard for top management at a lot of big companies to be able to manage this kind of dual strategy." Performing this balancing act will require a strong CDO who can push the digital effort forward while maintaining focus on business goals and capturing short-term business wins that will demonstrate the value of the effort to the business.

It is incumbent on CDOs to participate actively in the creation of business strategy — and lead the process when necessary.

A rogue on the team

Our findings show that the qualities, skills, and job descriptions of today's CDO are diverse and fluid, and that companies are defining this key role in a wide variety of ways. Given the very recent emergence of the position and the many different kinds of companies that now need to "up their digital game," it makes sense that the entrepreneurial executives taking on the job are as unique as the circumstances they find themselves in.

That's a good thing. Most CDOs are still trying to figure out how best to enable the digital agenda of their companies, given the industry they're in, and the specific way their organizations should react to current and future digital trends and indeed to the very appearance of CDOs themselves.

One thing is certain, however: The CDO role is by definition transformational. The CDO's task is to bring changes to companies, and their cultures, which many are likely to resist, one way or another. Doing so will require the willingness, and the strength of mind, to be a disruptive force when necessary. "Make sure you become part of the team, understand and work within the culture, and apply the rules," says Hoffstetter. "But at the same time you need to maintain your energy and your external views and your willingness to disagree with others regarding digital strategy. I like to quote a counterpart at another large company who told me that to some degree, 'CDOs need to be hooligans.' You need to find the right balance."

Ultimately, the goal of every CDO is to ingrain the digital agenda so deeply and efficiently that it will become a way of life for everyone and every function in the organization, and a priority for every member of its C-suite. That's the vision Bayer's Federer has for her company. She is looking forward to a time when Bayer's digitization strategy, and the change management effort it requires, will get the company to a point where, she says, "we can stop talking about digital because it's just how we work, where IT and technology is so integrated into how we work and into what we do that we won't need to talk about it separately."

Conclusion

The rise of digitization is bringing about a singular shift in how companies operate and the technologies they use to interact with customers, partners, and suppliers. Until recently, they struggled to take a truly integrated, synergistic approach to the relationship between technology and the business. Now, however, all kinds of technologies, from big data to social networking to advanced mobility, are coming together and driving the need for every company to prepare for the digital future. Says Bayer's Federer: "Digitization has only become an option recently. And now it's not an option anymore. It's an imperative. We all have to do it."

Yet CDOs have a difficult road in front of them. Often, they must negotiate entrenched company cultures, fight for ongoing support from top management, and balance the creation of new digital strategies with the inevitable operational issues involved in a full digital transformation, even as short-term financial goals consume the activities of many employees.

Success will require that CDOs on this new frontier be adaptable, focus on business goals and the organizational and cultural changes needed, and remember that once digitization is firmly entrenched in their companies' everyday operations, they will have accomplished their mission. What's in store for them afterward is as flexible and undefined as the roles they occupy today.

Appendix: The global CDO study methodology

Strategy& researchers determined the global top 1,500 public and private companies by incorporating the Financial Times Global Top 500 companies by market cap and the top private and public companies based on revenues from OneSource/Avention. Market cap and revenue data was from 2013 and 2014. The researchers then studied the companies through corporate filings and records as well as other publicly available information, such as media coverage.

The study included 25 industries in Asia-Pacific, Europe, MENA, and North and Latin America.

In addition, Strategy& researchers conducted in-depth interviews by telephone in May and June 2015 with the following CDOs: Corinne Avelines, CDO at AkzoNobel's paints division; Chris Curtin, CDO at Visa; Jessica Federer, head of digital development at Bayer; and Patrick Hoffstetter, CDO at Renault.

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