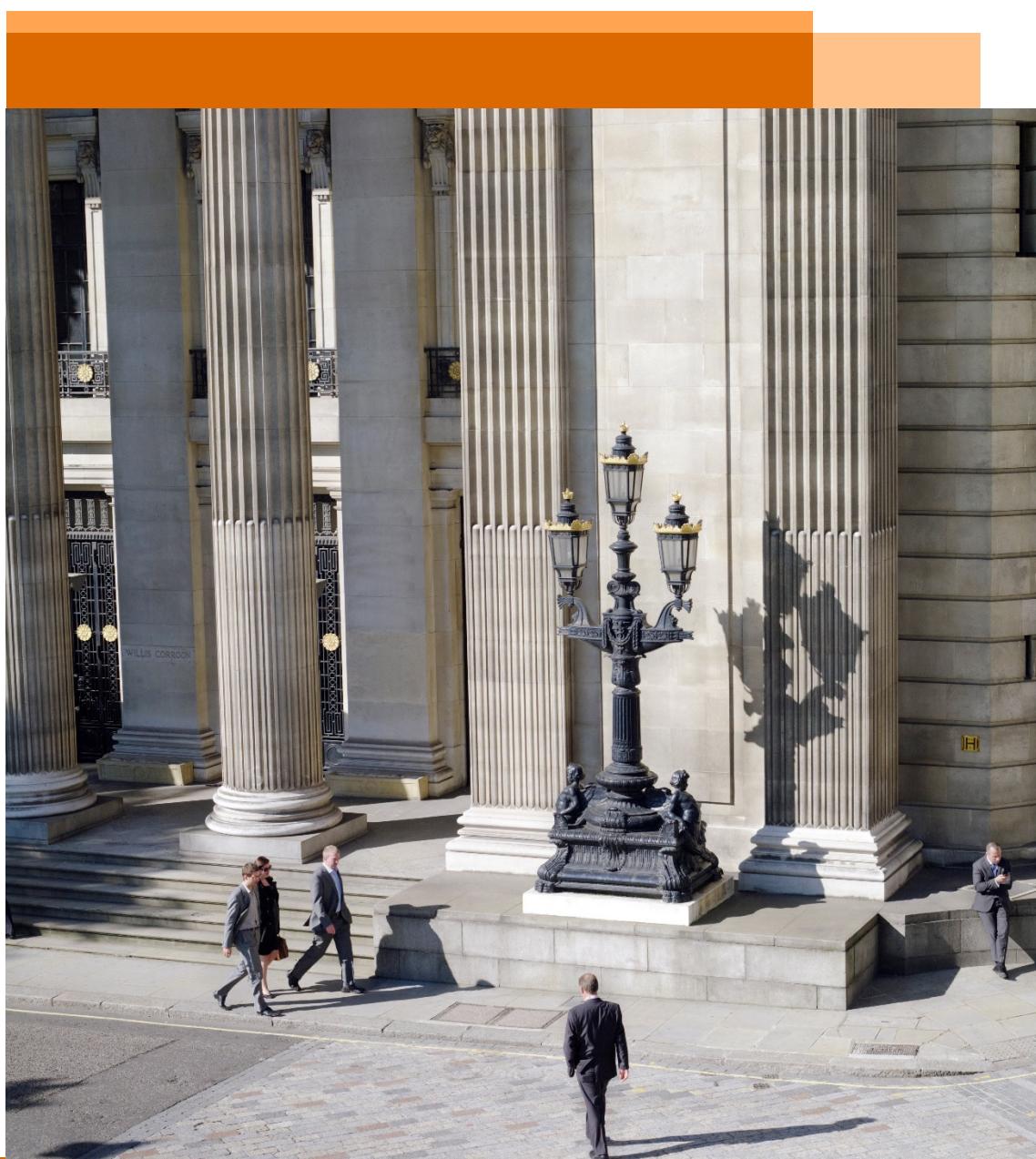


# ***Great expectations:*** The evolution of the chief data officer

*Amid today's competitive  
and regulatory challenges,  
the chief data officer  
emerges as a key player.*



## ***The heart of the matter***

*A new role is gaining ground in the C-suite: the chief data officer (CDO). Charged with the enterprise-wide governance and utilization of information as an asset, this emerging leader strives to harness data, manage risk, and create revenue-generating opportunities. Learn more about how the CDO can help financial firms respond to numerous critical and complex market and regulatory demands.*

### ***Now auditioning: Chief data officer***

Still recovering from the aftereffects of the Great Recession, financial institutions continue their efforts to demonstrate their ability to withstand another potential financial crisis and meet a variety of business challenges. Central to this goal is the ability to develop the long-term information strategy and governance needed to improve data transparency and generate business insights.

Regulatory mandates from the Volcker Rule of the Dodd-Frank Act to various capital planning regulations have further complicated the issue, forcing financial institutions to invest heavily in their data infrastructure and rethink how they govern data. This comes at a time when social media, mobile, and Big Data are exploding, further compelling financial institutions to reassess how they use information to do business. For example, institutions can now analyze customer attitudes on social media and use this real-time feedback to personalize products and manage

reputational and brand risk. Beyond the regulatory mandate and other external drivers, many executives are also beginning to recognize the strategic possibilities residing in their data. And they're focused like never before on finding ways to manage and govern data to create competitive advantage.

In this environment, a new role is taking shape and gaining ground in the C-suite: the chief data officer (CDO). This individual is charged with establishing and maintaining data governance, quality, architecture, and analytics—enabling firms to harness information to manage risk and create revenue-generating opportunities.

With the number of executives holding the CDO title on the rise globally, we'll explore how the role is evolving, what factors are impeding its success, and how organizations can extract the most from its potential. Approached correctly, the CDO role can create business value, help manage firm-wide risk, reduce cost, and drive innovation by leveraging information as an asset.

*"There are over 100 chief data officers (most having that actual job title)—serving in large enterprises in 2013. That's more than double the number we counted in 2012."<sup>1</sup>*

# An in-depth discussion

*The CDO role is gaining traction globally as business leaders look to respond to numerous critical—and sometimes conflicting—demands.*

## Great expectations

Expectations are high for the CDO role as it gains traction across the financial services industry. Leaders hope that the CDO will help them build a culture where information is proactively used to meet regulatory demands, manage risk, identify market opportunities, and increase shareholder value. Firms see the CDO role as an enabler as they look to respond to numerous critical and complex demands:

- Enhance customer experience by delivering personalized products and services.
- Navigate shifting and growing regulatory demands, manage risk, and meet regulatory requirements.
- Drive innovation to enable disruptive change across customer, product, sales, and distribution channels.
- Reduce costs and redundancies that result from multiple isolated data programs across lines of business.

Given this ambitious agenda, what can the CDO do to address these issues and how is this best accomplished?

## The CDO role

A Gartner study of large global enterprises indicated that the number of CDOs doubled between 2012 and 2013. It suggests that by 2015, 25% of them will have appointed a chief data officer.<sup>2</sup> Even as the number of CDOs grows, we find that the scope and expectations of the CDO role continue to evolve. Firms are continuing to refine how the role should play out, how to build consensus around the use of data at the business-unit and enterprise levels, and what approach makes the most sense for them.

We analyzed CDO trends and conducted in-depth discussions with executives in key financial institutions to gain insight into how the role of the CDO is evolving in today's environment.

While CDO responsibilities vary by organization, they typically cover:

**Data governance:** A sound data governance program includes: (1) a set of standards, policies, and processes that manage the quality, consistency, usability, security, and availability of information across the enterprise; (2) a governing body or council that oversees the execution of

these policies and procedures; and (3) an interaction model that defines when, where, and how the CDO engages with various business and IT groups.

### Data architecture and technology:

Data architecture is a collection of blueprints designed to standardize how data is sourced, integrated, and consumed across the enterprise and aligned with the business strategy. Technology refers to the infrastructure needed to build those blueprints: for example, data warehouses, Big Data platforms, and data integration tools.

### Data analytics:

A function that helps companies gain insight and perspective from their data. It includes real-time business intelligence, analytics, and reporting services. In mature organizations, this function has evolved into a shared services capability that provides robust data management and analytics capabilities in a cost-effective way. This reduces operational cost, fosters the reuse of data across the enterprise, and improves turnaround time.

When we asked financial institutions what the core responsibility of their CDO was, 77% answered that their initial focus was on data governance (refer to figure 1). In our view, this indicates that most CDO roles are still in the early stages of development, as governance provides the structure that helps enable the other two areas. To drive value, CDOs will need to extend the scope

<sup>2</sup> Gartner, "CIO Advisory: The Chief Data Officer Trend Gains Momentum," January 13, 2014.

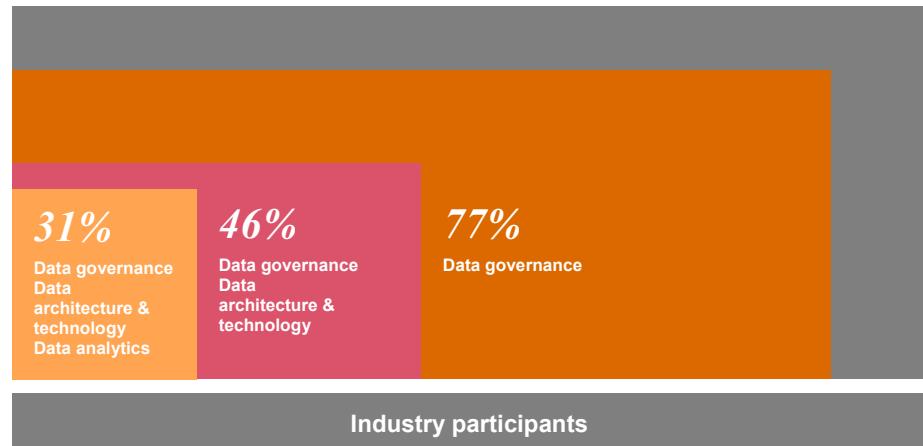
of their responsibilities to include data architecture, technology, and analytics.

As shown in Figure 2, our research indicates that nearly half of CDOs report into the technology function. While many financial institutions historically viewed data primarily as a technology issue, the trend is changing. In the past year, we have seen CDO reporting lines shift towards the business, and we expect this trend will continue.

Most financial firms view the CDO role as one that should function at the enterprise level in order to foster tone-from-the-top and uniformity across the organization. But starting at the enterprise level can be daunting and costly, both in terms of budget and time. As a result, some organizations have embarked on smaller-scale efforts by creating the CDO role at the business-unit or functional level (such as Risk or Finance). While these efforts lack the benefits that many firms value in a centralized model, they can be implemented more quickly and serve as a stepping stone for the enterprise-wide rollout. And they can allow executives to focus on areas where intervention is needed most urgently. We discuss the difference between the enterprise CDO approach and the business-unit/functional approach in Figure 3.

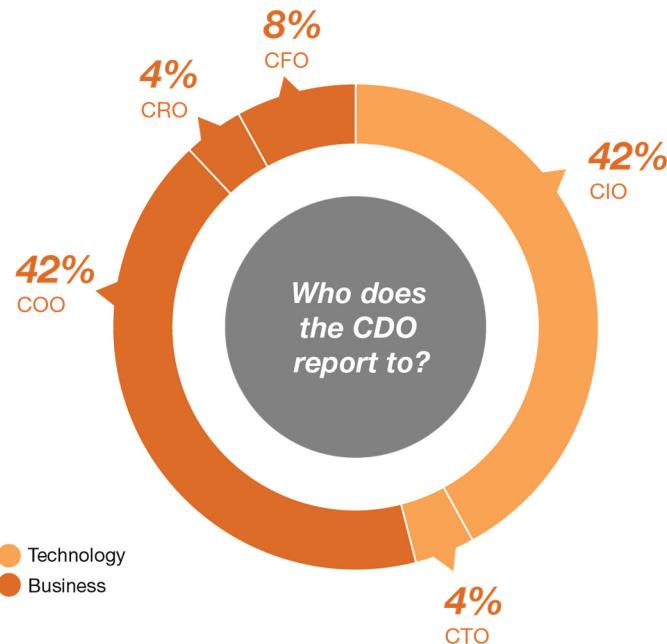
**Figure 1: Most CDOs focus on data governance.<sup>3</sup>**

Q: What is the scope of responsibility of the CDO at your organization?



**Figure 2: CDO reporting lines are shifting from the technology to the business.<sup>4</sup>**

Q: To whom does the CDO report?



<sup>3</sup> PwC analysis based on a 2014 internal survey of financial institutions.

<sup>4</sup> *Ibid.*

**Figure 3: How does an enterprise CDO approach compare with a business-unit/functional CDO approach?**

	Business-unit/functional CDO	Enterprise CDO
<b>Governance and standards</b>	<ul style="list-style-type: none"> <li>Ownership is established at the business-unit or functional level, but governance across business units and IT functions remains decentralized, and as a result, varies across groups.</li> <li>Less funding is needed compared to an enterprise-level effort. However, aggregate costs may be higher.</li> <li>There is a lack of enterprise ownership of critical data elements and processes, leading to varying standards across business units/functions.</li> </ul>	<ul style="list-style-type: none"> <li>Ownership is established for enterprise and business-unit data, along with policies and standards that are monitored and measured on an ongoing basis.</li> <li>There is increased organizational complexity and overhead; for example, the need to integrate different taxonomies for reporting purposes. However, aggregate costs should be lower.</li> </ul>
<b>Data architecture and technology</b>	<ul style="list-style-type: none"> <li>Technology standards, platforms, and processes are more flexible and responsive to the needs of the business unit or function.</li> <li>Mechanisms to align technology standards across business units are limited and ad hoc.</li> <li>Enterprise technology standards are made more complex due to multiple point-to-point interfaces across business units.</li> </ul>	<ul style="list-style-type: none"> <li>There is clear alignment across enterprise and business-unit technology standards, supported by a shared architecture roadmap and metrics.</li> <li>Data processes monitor and measure data efforts against a target state.</li> <li>Building enterprise-wide architecture and technology requires more investment up-front, but generally provides opportunities for long-term cost efficiencies by reducing redundancies and decreasing the level of manual data manipulation.</li> </ul>
<b>Data analytics</b>	<ul style="list-style-type: none"> <li>There are challenges in creating integrated enterprise-wide metrics and reporting solutions due to inconsistent taxonomy and data model.</li> <li>Multiple business units create reporting data repositories, resulting in inconsistent data quality from an enterprise perspective.</li> <li>Analytics are focused on needs specific to the business unit/function, and do not leverage insights from other parts of the business.</li> </ul>	<ul style="list-style-type: none"> <li>Enterprise-level views are enabled through centralized repositories following common interface standards, tools, data models, and architecture.</li> <li>In more mature organizations, shared analytics solutions can reduce cost and complexity and help prevent redundant IT investments.</li> <li>Data is used to drive business intelligence, so that management can make more informed decisions based on robust, integrated, analysis and reporting.</li> </ul>

## Challenges

While their potential is far-reaching, CDOs also face significant challenges. In the short-term, financial institutions need to address several issues as they set up the CDO organization:

- **Funding:** Setting up the CDO office requires funding. The associated costs can seem high for companies that view the goal primarily as a means to comply with regulatory issues, rather than as a means to drive business value. Many also disagree about who should fund the role—should it be an IT or a business responsibility? We've seen some organizations fund the CDO office through practical measures: consolidating data management groups with overlapping responsibilities, and driving down operational costs through data standardization.
- **Skepticism:** For many stakeholders, it may be hard to see the return on investment when benefits are difficult to measure, and the biggest ones may take years to realize. CDOs and their sponsors will need to win over critics that see the role as a short-lived trend rather than a competitive advantage that is here to stay.
- **Recruiting:** The CDO role cuts across business and IT domains, and it's not easy finding individuals with the depth of business and technology experience needed to gain credibility across the aisle.

Once the office of the CDO has been set up, CDOs will quickly face even more difficult challenges:

- **Scope:** CDOs will need to navigate overlapping data ownership interests while working out the scope of the role. Without clear delineation of roles and responsibilities, CDOs may have their hands tied. Even worse, any and all data problems organizations face may be dropped at the CDOs' doorsteps.
- **Technology barriers:** Balancing expectations such as sophisticated analytics and real-time reporting while untangling issues caused by years of underinvestment in IT will be difficult.
- **Long-term focus:** CDOs must balance the tactical needs of increasing regulatory demands with longer-term strategic objectives—and do it all in a sustainable, cost-efficient way.

Most financial institutions cannot afford to put these challenges off any longer. In our view, firms can get to the right answers by taking a pragmatic approach to the CDO role and assessing the distinct challenges they face—and then deciding where their resources can best be focused.

*Many firms grapple with questions about how best to position the CDO for success and overcome these issues. We often hear these questions from financial firms:*

- How can we make sure CDOs have a “seat at the table” for key business initiatives?
- How should CDOs collaborate with finance and risk functions to respond to data-intensive regulations?
- Should CDO efforts be driven by individual business units and functions, or should they be led at the enterprise level?
- What should the short- and long-term roadmap look like for establishing the office of the CDO?

## Our recommendations

Getting to the right answers will depend on an organization's current level of maturity as well as their immediate versus long-term goals.

In our view, there are three key actions that will help on the path to success:

### 1. Set the stage.

#### Promote buy-in for the CDO office.

Financial institutions should develop a strategic vision for the CDO role and articulate what they hope to achieve by creating the role. They will also need to acknowledge and plan for the near- and long-term challenges they face. Organizations should expect to achieve some near-term benefits, but recognize the full range and scope of benefits may not be realized for a few years. This underscores the importance of strong support from the top to promote buy-in for change and overcome skepticism of the potential benefits. This includes securing C-suite sponsorship and establishing a data governance committee comprising the CFO, COO, CRO, and CIO.

**Find the right talent.** Financial institutions will face the challenge of identifying and recruiting a single individual capable of effectively and credibly spanning both business and IT roles at the same time.

In our view, the CDO should come from an enterprise control background (such as risk or finance); he or she leverages this experience to manage the complexity of governing and aggregating data across multiple business units. The CDO is supported by a technology lead, who reports jointly to the CDO and CIO. This technology lead helps bridge the business-IT divide by aligning technology initiatives with the CDO's priorities.

#### Establish an engagement model.

Building up awareness of the CDO role is a common challenge. Organization leaders should educate stakeholders on how the role can benefit everyone from the lines of business, to marketing, to risk management and finance.

To that end, CDOs should develop a model where they regularly engage with risk, regulatory, and business leaders to attain a "seat at the table" when major decisions, risks, or projects impacting the information strategy arise. They can formalize this engagement by creating checkpoints in the organization's portfolio and project management processes that trigger the CDO's involvement when appropriate.

CDOs should be prepared to enforce data reuse and standardization, confront skepticism, and demonstrate the immediate and future benefits that come from more efficient and strategic use of information.

## **2. Define a business-driven information strategy.**

As we discussed earlier, two of the most pressing challenges CDOs face are overcoming skepticism and maintaining long-term focus. To confront these challenges, we believe CDOs should develop a business-driven information strategy that gains the greatest returns while reducing risk and cost.

A robust information strategy should:

- Recognize and reflect overarching business objectives and initiatives.
- Know and communicate how to use data to support the business.
- Identify data commonalities, and develop and carry out a plan for taking advantage of them across projects.
- Demonstrate the payoffs that an effective data management program can deliver.

To achieve these goals, CDOs should look for opportunities to reuse information assets across the enterprise. For example, by drawing linkages between existing compliance efforts and business goals, CDOs can get “more bang” for each compliance dollar that is being spent.

To illustrate the possibilities, let's take a look at data implications and opportunities associated with anti-money laundering (AML) initiatives. Banks monitor customer transactions in an effort to clamp down on illegal activities. This same information can be used to obtain insight into customer behavior and spending habits, thereby boosting cross-selling and other relationship-enhancement opportunities.

Similarly, compliance-related architecture, such as a customer complaints management system, can be used to generate sales and marketing leads. This customer-centric view provides multiple benefits, including cost savings, product development opportunities, and customer loyalty and satisfaction.

As CDOs begin to identify new ways to organize and adapt data to different uses, they'll need to remain aware of how their users' needs differ. For example, risk and regulatory initiatives will likely require stringent data quality. By comparison, customer-focused marketing initiatives will likely demand less precision, instead placing more emphasis on observed trends and behavioral indicators.

## **3. Use incremental steps to enable a successful CDO role.**

As we discussed earlier, there are pros and cons to having a business-unit CDO approach versus an enterprise CDO approach (see Figure 3). While the enterprise approach provides more robust, integrated management information—ultimately at lower overall cost—the initial investments needed may seem high. In our view, firms can find middle ground by using incremental steps to establish an enterprise-level CDO role.

**Step 1: Begin by focusing on data governance.** Given the high-stakes nature of today's regulatory challenges, most firms start with governance to establish guidelines that safeguard the firm from costly compliance missteps.

**Step 2: Once governance is in place, the CDO focus can be extended to include data architecture and technology.** By defining enterprise-wide technology standards and developing tools that can be reused, firms can reduce costs by promoting better planning and consistency around technology changes. Standard data protocols also reinforce governance by classifying products, customers, and other areas in a uniform way and providing rules for where it is stored and how it travels through systems.

**Figure 4: Use incremental steps to build a strong CDO foundation.**

<b>Step 1: Data governance</b>	<ul style="list-style-type: none"><li>Establish an operating model for data governance, including roles and responsibilities (such as governing body, data stewardship, and data custodians) and policies and procedures.</li><li>Define the scope and prioritization for rolling out and enforcing data governance policies and procedures.</li><li>Develop a reporting structure to manage compliance with policies and measure overall data governance effectiveness.</li><li>Develop relationships with risk, regulatory, and business stakeholders to formalize an engagement model.</li></ul>
<b>Step 2: Data architecture &amp; technology</b>	<ul style="list-style-type: none"><li>Assess the current-state data architecture, identify desired capabilities, and define the target-state architecture.</li><li>Define a roadmap with blueprints, milestones, and deliverables to achieve the target state architecture.</li><li>Develop baseline technology standards, tools, platforms, and processes that help users define and classify products, customers, and other areas in a standard way across the organization.</li><li>Plan the technology infrastructure (including both software and hardware) and processes you will need to implement the roadmap.</li><li>Roll out the roadmap and implement measuring and monitoring activities to verify objectives are being achieved.</li></ul>
<b>Step 3: Data analytics</b>	<ul style="list-style-type: none"><li>Decide which objectives you'd like to achieve using analytics. They could include, for example, monetizing customer data, enhancing transactions and operations, or improving risk management and regulatory reporting.</li><li>Determine the type of analytics techniques you need. Regulatory reporting tends to focus on look-back analytics, while more complex predictive models are needed to monetize customer data.</li><li>Assess the technical capabilities of the analytics team, and determine whether additional skills and resources are needed.</li><li>Evaluate whether analytics technologies and tools are addressing business needs.</li><li>Assess the potential value of a shared services and solution model, and develop a shared solutions operating model that outlines goals and strategic objectives. Measure productivity, efficiency, and opportunities gained through shared solutions.</li></ul>

**Step 3: Finally, develop an analytics capability.** Many firms already have analytics capabilities in pockets throughout the organization. This step is about taking a fresh look at business objectives and thinking about how the organization can make better use of analytics to achieve those goals.

For example, many organizations use analytics to forecast sales based on product and market data. Some may decide to expand their use of analytics to analyze customer spending habits and adapt product features to certain customer segments.

For organizations that already have strong analytics capabilities, CDOs should consider establishing a shared services unit that provides high volume analytics and reporting for the enterprise with accelerated turnaround times. This approach improves alignment with strategic objectives by creating more integrated reporting that targets business needs. It also breaks down siloed work by encouraging economies of scale, standard practices, and resource pooling.

Figure 4 outlines the key steps in rolling out the incremental approach. This approach helps financial institutions manage risk by building the foundations of the CDO program before expanding to areas that require more sophistication and investment. As with any process, however, organizations should tailor these steps to their unique situations. Some CDOs may choose to implement steps concurrently or in a different order, but they should be prepared for the added complexity this may bring.

# What this means for your business

## Benefits of our approach

Our recommended approach encourages effective data management, through which firms can:

### Reduce regulatory risks and costs

- Avoid costly regulatory missteps. Risk and compliance are mandatory requirements that demand timely and accurate information; failures in data quality and data timeliness may lead to regulatory penalties.
- Solid data management is critical to effectively complying with risk and regulatory demands such as AML, Dodd-Frank, FATCA, Basel Committee on Banking Supervision (BCBS) 239, European Market Infrastructure Regulation (EMIR), and Legal Entity Identifier (LEI).

### Shrink operational costs

- Reduce operational costs by eliminating redundant data maintenance, mappings, and reconciliations.
- Improve business processes and reduce data cleansing requirements.
- Focus the business on revenue generation activities, rather than expending resources on massaging, cleaning, and assessing data.

### Deepen customer loyalty

- Well-managed data enables financial institutions' efforts to understand and even predict customer needs. By creating more personalized, insight-driven experiences, organizations can deepen customer loyalty and capture higher share of wallet.
- Better information can also help institutions improve how they measure the performance of products and services. By quickly identifying winners and making adjustments to poorly performing ones, financial institutions can make more proactive business decisions and adjust to customer needs.

## The CDO competitive advantage: Winning it versus “winging it”

The CDO role has arrived at a critical post-recession junction—and it looks to be a role that many are embracing and will continue to explore.

Much potential resides in your data. With the right funding and leadership support, the right CDO can be the make-it-or-break-it differentiator. Careful assessment of how best to position and deploy this role will make all the difference between merely winging it with fingers crossed and actually winning transformative, sustainable competitive advantage.

*“Managing data requirements and aggregating and consolidating data are the two largest headaches for banks when grappling with stress testing....In the last CCAR tests, several major US banks had test submissions fail due to data quality issues, and were penalized accordingly.”<sup>5</sup>*

<sup>5</sup> SAS, “Stressed out? How US and European banks are responding to regulatory stress tests.” Copyright © 2014. SAS Institute Inc. All rights reserved. Reproduced with permission of SAS Institute Inc., Cary, NC USA.

---

*For a deeper conversation, please contact:*

---

**Michael Savelloni**

michael.b.savelloni@pwc.com

(646) 471 6444

<https://www.linkedin.com/pub/michael-savelloni/5/239/318>

**Ilka Vazquez**

ilka.vazquez@pwc.com

(646) 471 4572

<https://www.linkedin.com/in/ilka-vazquez-9642371>

**Tojo Johnson**

tojo.johnson@pwc.com

(408) 817-1281

<https://www.linkedin.com/pub/tojo-johnson/1/3ao/b51>

**David Yakowitz**

david.yakowitz@pwc.com

(312) 298 3439

<https://www.linkedin.com/in/david-yakowitz-177a905>

**Ramesh Nair**

ramesh.nair@pwc.com

(973) 236-5548

<https://www.linkedin.com/in/ramesh-nair-067b9a9>

**Salahaldin Hussein**

salahaldin.hussein@pwc.com

(646) 428-9067

[www.linkedin.com/in/salahaldin-hussein](https://www.linkedin.com/in/salahaldin-hussein)

---

**About our Financial Services practice**

PwC's people come together with one purpose: to build trust in society and solve important problems.

PwC serves multinational financial institutions across banking and capital markets, insurance, asset management, hedge funds, private equity, payments, and financial technology. As a result, PwC has the extensive experience needed to advise on the portfolio of business issues that affect the industry, and we apply that knowledge to our clients' individual circumstances. We help address business issues from client impact to product design, and from go-to-market strategy to human capital, across all dimensions of the organization.

PwC US helps organizations and individuals create the value they're looking for. We're a member of the PwC network of firms in 157 countries with more than 195,000 people. We're committed to delivering quality in assurance, tax, and advisory services.

Gain customized access to our insights by downloading our thought leadership app: PwC's 365™ Advancing business thinking every day.

*Follow us on Twitter @PwC\_US\_FinSrvcs*

---

"Great expectations: The evolution of the chief data officer," PwC, February 2015, [www.pwc.com/fsi](http://www.pwc.com/fsi)

This publication was produced by PwC's Financial Services Institute. Visit us at [www.pwc.com/fsi](http://www.pwc.com/fsi) to learn more about us and meet the team.

© 2015 PricewaterhouseCoopers LLP, a Delaware limited liability partnership. All rights reserved. PwC US refers to the United States member firm, and PwC may refer to either the PwC network of firms or the US member firm. Each member firm is a separate legal entity. Please see [www.pwc.com/structure](http://www.pwc.com/structure) for further details. This content is for general information purposes only, and should not be used as a substitute for consultation with professional advisors.