

The New Normal: Fundamental Shifts for 21st Century Organizations and for the CIOs Who Lead Them

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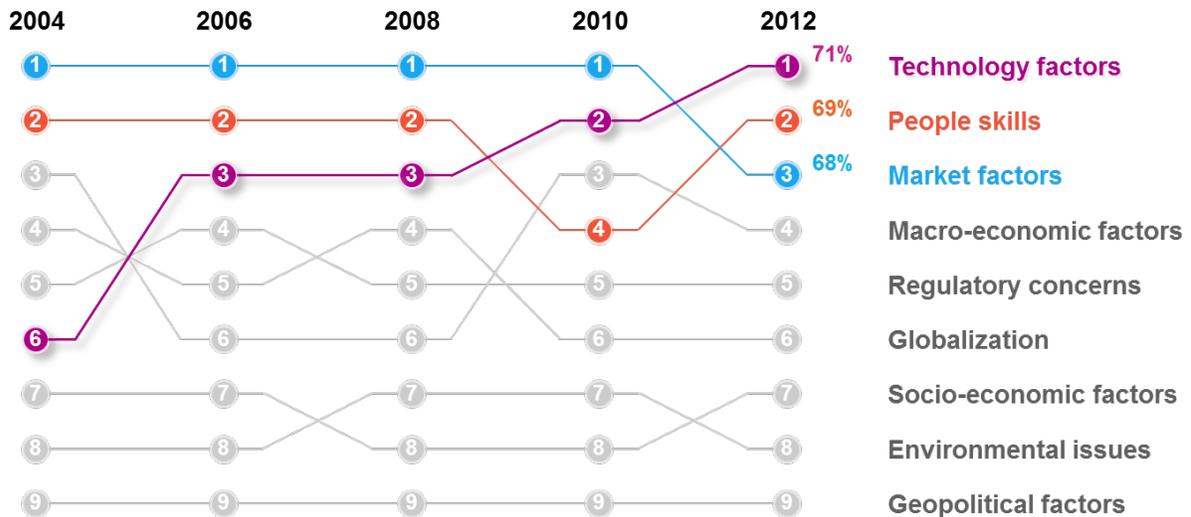
The New Normal (the business climate following the 2008 economic crisis) has ushered in fundamental changes to the structure and governance of many organizations and, therefore, to the executives who lead them. The Chief Information Officer (CIO) remained at the epicenter of organizational evolution and enablement. Shifts within the Information Technology (IT) landscape have created significant opportunities and challenges for organizations and for their CIOs. Through our research, we learned that effective IT leaders typically possessed six key competencies: Leadership; Innovation and Growth; Business Strategy and Process; Relationship Management and Communication; Business Management; Risk Management.

INTRODUCTION

The demands upon the Chief Information Officer (CIO) have changed significantly since its inception over 30 years ago. Increasingly, these executives have been responsible for many of the innovations that firms have taken advantage of throughout the recent world economic turbulence. Whether through cost reduction or innovation, the CIO has played a critical role in ensuring that organizations have received sustained or innovative services amidst drastically shrinking budgets. Yet in many organizations, the IT function has been seen as a hindrance rather than an enabler of the firm's ability to innovate. The costs associated with IT continue to escalate, while the time to market for new products and services seems to have gotten longer in an era where "real-time," "nimble," "adaptable," and "scalable" has continued to be more and more important than ever before [Chun and Mooney, 2009].

In a recent Chief Executive Officer (CEO) study [IBM Whitepaper, 2012], over 1,700 CEOs representing 64 countries and 18 industries were asked to rank a list of the external factors that will impact their organizations over the next three to five years. Technology was perceived as the leading external factor. As seen in Figure 1, Technology has consistently increased in importance from sixth in 2004 when the study was originated to first in 2012.

FIGURE 1
“WHAT ARE THE MOST IMPORTANT EXTERNAL FORCES THAT WILL IMPACT YOUR ORGANIZATION OVER THE NEXT 3 TO 5 YEARS?”



These findings should be viewed as a wakeup call for CIOs to re-think how technology is used and leveraged within their organizations. They must adapt their skills, roles, and responsibilities to match their organizations’ needs with both existing and ever-changing technology capabilities if they expect to meet the demands set by their CEOs and executive teams.

Our research has highlighted several emerging IT trends that have had significant impact upon how CIOs were required to further develop and evolve their roles and responsibilities. These include:

1. Social Networking Technologies (SNT) has emerged as a transformative way to access or to disseminate information across multiple constituencies, stakeholders and platforms. Yet these new technologies have presented significant security risks to the corporation’s operating infrastructures and knowledge assets.
2. Cloud computing has provided CIOs a new alternative means to deliver cost-effective and scalable applications, processing power, information storage, and other critical IT resources on demand. Leveraging these alternatives has had a significant impact upon the organization’s financial management, as implementing (external) Cloud computing resources has allowed firms to move owned or leased assets from the organization’s balance sheet and to reclassify the related costs as operating expenses. CIOs and management teams must decide how to adapt new business processes horizontally across the organization to maximize the benefits offered by Cloud computing.
3. “Affordability” (better known as “Better-Faster-Cheaper-NOW”) has been a common topic of discussion among corporate executives as they have been further tasked to drive the organization to do even more with less in a turbulent economy. The 2008 global financial crisis has forced firms to cut IT budgets, yet CIOs have been expected to engage the organization to use existing and new technology resources to do even more with much less.
4. Real-time analytics capabilities have become a must-have for many organizations with the explosion of data everywhere, especially customer information derived from social media sources as well as internal customer records. Firms have increasingly demanded immediate access to internal corporate data and external data from an ever-growing list of sources to develop insights and to generate actionable responses that produced measurable results in real-time. The ability to provide the firm with real-time analytical capabilities to test market strategies or understand the

immediate effectiveness of marketing campaigns is only one example of how CIOs have been held to a higher standard of responsiveness and service delivery.

5. Mobility is a critical dynamic that CIOs must leverage. It is estimated that by 2017 there will be more networked mobile devices than people on the planet. This explosion in digital ecosystems, platforms, and ubiquitous connectivity means that CIOs must consider the business implications both strategically and operationally for leveraging mobile devices to create business value for their organizations.
6. “Bring your own device” (BYOD also known as “consumerization of IT”) is an increasing trend in which employees bring personally owned mobile devices to work and use these devices to access privileged company resources such as email, company data, customer data, competitive data, etc. In the private sector, 74% of individual workers paid for their laptops themselves. However, only 12% of companies have formerly encouraged this practice or have policies to oversee it. Increasingly CIOs have needed to implement policies, create standards, and deploy tools and technologies to manage this heterogeneous environment.
7. Finally, there has been an increased influence and leveraging of external alliances and partnerships. CIOs have begun to extend their roles and responsibilities outside of the firm to collaborate more with customers, vendors, supply chain partners, and even -- in some situations -- competitors. CIOs needed to find ways to adopt and leverage new technologies that connected to their ecosystem in ways that were productive, added value and are, of course, was secure.

HOW CIOs HAVE PREPARED FOR THE NEW NORMAL

Over thirteen years ago, Ross & Feeney [Ross and Feeney, 1999] presented research on the evolving role of the CIO. At that time they described three key eras and the driving forces that were influential on the CIO’s role within each of them. The three stages represent the growth process of the CIO role as a function of organizational learning, depicting the evolution of the CIO’s credibility and status. The first era was the *Mainframe Era*. During this time, the role and responsibilities of the CIO were focused upon operational management of highly specialized functions. CIOs were responsible for the on-time delivery of automated or semi-automated products and services, and they ran operations that were heavily focused upon availability and reliability.

The second era was the *Distributed Era*. During this time, the role of the CIO evolved to become more of a strategic partner with other executives. Tactical operations management skills became more important as the role evolved into more of a strategic leader who was focused on more closely aligning IT with business strategies and outcomes. Typically CIOs at this stage engaged other members of the executive team, assisting in designing the organization, advising on IT architecture, and procuring technology for the organization.

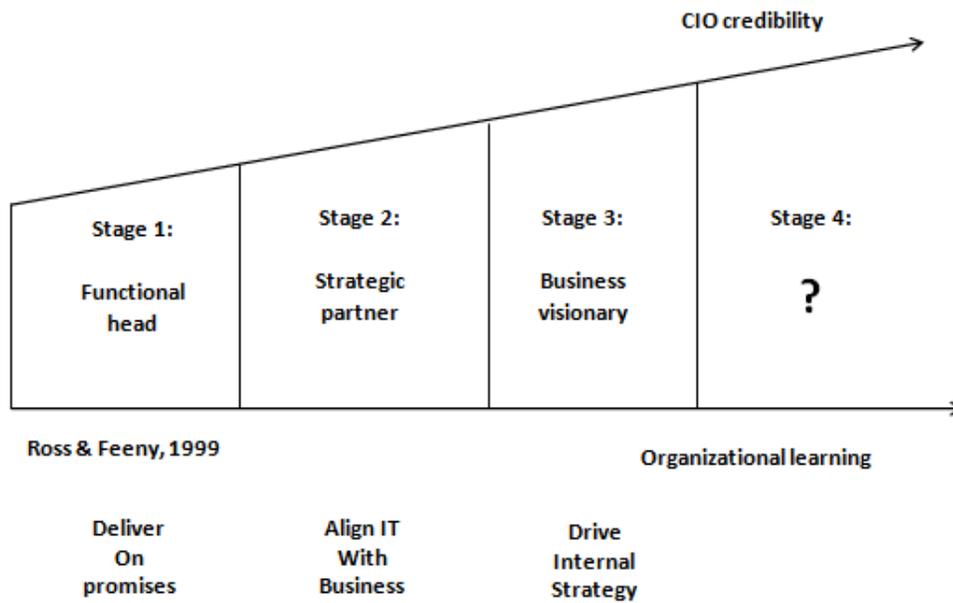
The third era was the *Web-Based Era*. Here, one of the key tasks of the CIO was to help drive the company’s internal and external strategy by supporting the development of new business models for use on the Internet and by introducing internal management processes that leveraged web-based technologies.

In our study, we were interested in understanding the skills, competencies, roles, and responsibilities of CIOs as it continued to evolve amidst ever-changing dynamics, most recently characterized by the *New Normal* (i.e. the post-2008 turbulent socio-economic and political environment). We pursued the answers to three key questions:

1. *What are the current roles & responsibilities of CIOs?*
2. *How have these roles & responsibilities changed over the last 10 years?*
3. *What are the attributes and characteristics of a successful CIO?*

By focusing upon skills and competencies exhibited by successful CIOs, we hoped to gain a better understanding of what enables these executives to adjust their roles and help adapt their organizations to meet the challenges and opportunities presented by the *New Normal*.

**FIGURE 2
THE EVOLVING ROLE OF THE CIO**



As a starting point, we identified both the business and technology drivers that characterize the environment within which today’s enterprises and their CIOs must operate. Tables 1 and 2 present these drivers as articulated by CIOs in this study.

**TABLE 1
KEY BUSINESS DRIVERS IN THE NEW NORMAL**

Key Business Drivers
<u>Global</u> economic & competitive challenges
Increased role of <u>government</u>
Political and social mandates for <u>transparency</u>
CEOs in search of <u>innovative business models</u> to adapt and grow
Traditional vendor and supply chain relationships replaced with <u>collaborative partnerships</u>
Focus on <u>delighting the customer</u>
Need for <u>increased risk management</u> & compliance

**TABLE 2
KEY TECHNOLOGY DRIVERS IN THE NEW NORMAL**

Key Technology Drivers
Ubiquitous <u>broadband access to the internet</u>
<u>Mobile</u> computing
<u>Consumerization</u> of information technology
<u>Social</u> everything
<u>Cloud</u> computing / Everything as a Service (EaaS)
<u>Explosive growth in data</u> generation, especially unstructured
<u>Data-driven</u> versus process-driven computing
<u>Real-time</u> analytics and business intelligence
Relentless focus upon <u>information security</u>

In the context of the *New Normal*, we learned that successful CIOs have expanded their roles and responsibilities from IT cost center managers to business-savvy enterprise leaders. These CIOs were full C-suite peers and have adapted their roles, responsibilities, and skills to match the changing needs of the enterprise and the marketplace within which they operate. They were responsible for educating colleagues and stakeholders and leading change both horizontally and vertically throughout their organizations. This evolution in CIO skills and competencies is shown in Table 3 below.

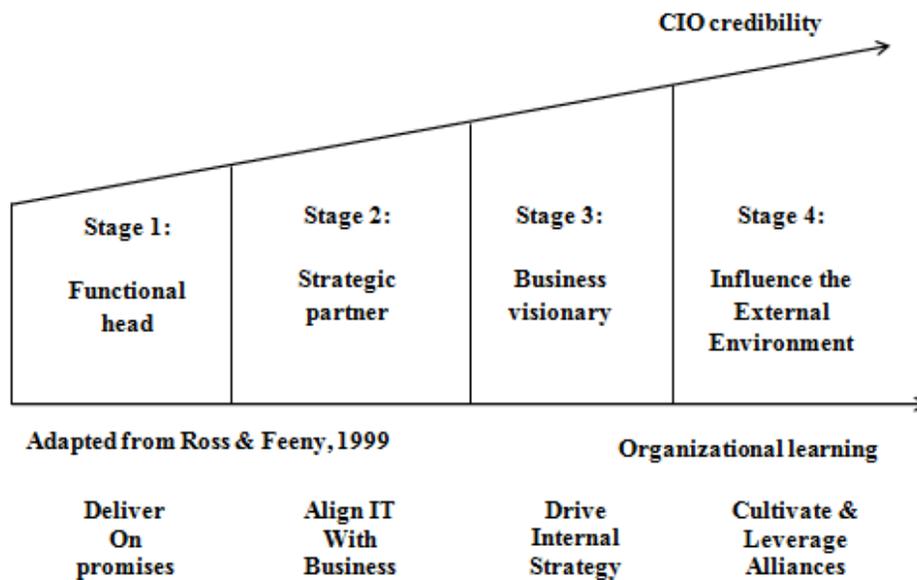
**TABLE 3
THE EVOLUTION FROM IT COST CENTER MANAGER TO BUSINESS SAVVY CIO**

From IT Cost Center Manager...		To Business-Savvy CIO...
Management	<input type="checkbox"/>	Leadership
Operational Efficiency & Expense Reduction	<input type="checkbox"/>	Innovation & Growth
Incremental Process Improvement	<input type="checkbox"/>	Business Strategy & Process
Reporting	<input type="checkbox"/>	Relationship Management & Communication
Technology Management	<input type="checkbox"/>	Business Management
Risk Avoidance	<input type="checkbox"/>	Risk Management

Historically, IT has created business value through the reduction or elimination of costs embedded within the organization by focusing upon streamlining processes and driving programs yielding operational efficiencies. Our research suggests that business-savvy CIOs were viewed as technology executives who took an active leadership role in their organizations by aligning and leveraging the IT function with the vision and strategic objectives of their enterprise and who ultimately enabled the creation of sustainable business value and growth.

Our research has also shown that, in addition to leading change and enabling business value creation internally, business-savvy CIOs actively influenced and leveraged the external environment to enhance strategic advantage. These CIOs demonstrated influential leadership by developing new forms of alliances with partners and suppliers to create value from the outside of the organization. An example of this skill to influence the firm's external environment was seen from the success story of the Bharti Airtel CIO, Jai Menon, who created strategic partnerships with external suppliers to plan and deliver infrastructure and operations based upon an innovative outcomes-based revenue sharing model. As part of his initiative, Menon was responsible for creating an outsourcing strategy to efficiently create scalable operations, to exploit best practices, and to obtain telecom industry knowledge on a global scale. The program included the integration of 64 different systems into a common platform, and created value for the firm by getting strategic partners and suppliers to embrace and support the firm's integration efforts. Hence, we argue that to continue to establish and expand their credibility and sphere of influence, CIOs need to acquire and develop skills and characteristics [Leidner and Mackay, 2007] that enable them to support their company's business vision, goals, and objectives by influencing strategic partners, alliances, and customers both internally and externally [Preston, et al., 2008].

FIGURE 3
AN EVOLVED ROLE OF THE CIO: THE EVOLUTION OF THE ROLE OF THE CIO



Our study indicated that successful CIOs were those who successfully adapted their roles in response to the demands of the internal enterprise and, at the same time, be responsive to and influenced key external relationships and processes.

We interviewed and surveyed over 413 CIOs in both the public and private sectors and solicited their input on what, in their opinion, was needed become an effective CIO in the *New Normal* business environment (methodology section, Appendix #1). Through this study, we also learned that not all CIOs

were able to change and adapt their roles, primarily due to the constraints of enterprise culture, legacy technology portfolios and their inability to influence internal and/or external change.

A NEW TYPE OF CIO LEADER: WHAT'S DIFFERENT ABOUT CIOS IN THE NEW NORMAL

Key CIO Competency #1: Leadership

CIOs universally indicated that one of their key competencies was the ability to be an effective leader. Effective leadership extended across many facets of the organization – from clearly articulating the strategic vision of both the IT and business operations, to helping to facilitate organizational changes related to shifts in business operations as a result of technology implementation. These executives indicated that effective CIOs were able to successfully develop business-oriented skill sets throughout the IT organization and were able to facilitate a better understanding for how technology impacted operations throughout the business units. As part of their efforts, CIOs indicated that they needed to actively seek and respond to internal and external customers' needs and to be able to establish insights that enabled the organization to drive business and technology strategies. Much of this leadership was demonstrated through coaching and developing talent within the organization. Leadership was also viewed as persuading others within the division and across other areas of the business to support new IT initiatives.

**TABLE 4
LEADERSHIP BEST PRACTICES**

Leadership Best Practices:
✓ Compel others to listen to you as a trusted advisor
✓ Develop a strategic vision around the business planning cycles
✓ Influence the appropriation process for budget allocation processes
✓ Communicate the vision of how IT will drive business
✓ Align business colleagues to a common IT vision
✓ Maintain strong relationships with executive colleagues
✓ Build strong teams and trusted relationships

Leadership Through Consensus Building

A CIO from a Japanese automobile manufacturer indicated that successful leadership involved motivating those around him. He mentioned that the days of conducting business through the process of “*let’s disagree and commit*” to a project implementation are gone. Instead, the CIO indicated that his colleagues adopted the new viewpoint of consensus building – “*Everyone agrees to support.*” The key objective was to get everyone in the organization to *support* your initiative whether or not they fully agreed with it. Included in this was the ability to maintain strong relationships with other C-suite executives. We learned that CIOs who could establish the role as a trusted advisor for both technical and business-related issues were most apt to be able to build consensus rapidly and effectively during program implementation.

Talent Management: Building Capabilities and Expertise in Others

CIOs also indicated that a major critical success factor was managing the talent within the IT department. There continued to be a consistent need to educate and to train IT staff on skills related to both the business and technology aspects of the enterprise. Oftentimes, IT staff members were primarily skilled in the technical aspects of the job, and they did not understand how to communicate with their

business colleagues and to explain how their efforts influenced or affected business activities or outcomes. CIOs expressed the need to consistently train the IT staff not just on current or new technologies, but also how these could be leveraged throughout the business.

Building effective capabilities involved expertise across three key domains: business, technical, and managerial. One Federal public sector CIO reflected, *“If you build capability in others (i.e., supporting management), it allows you to sit back and to reflect on the strategic vision that you need to help formulate and support, and to be able to prioritize the numerous initiatives that the organization needs to accomplish.”* CIOs expressed the need to train the IT workforce to be able to clearly define and measure the business value of technology investment in the context of the enterprise.

Preparing the Next Generation of CIOs

CIOs shared that preparing the next generation of IT executives was an important part of their jobs. They indicated that there was a need to establish a consistent and reliable pipeline of IT professionals with skills and expertise in leading business and technology initiatives. Building capability across the IT organization to understand and to communicate with the business was a critical challenge expressed by both public and private sector CIOs.

Public-sector CIOs indicated that one of the continuous pressing problems that existed within their agencies was the inability to retain talent. In public agencies, middle level IT managers were typically unwilling to remain with the agency and take on more senior positions, as public agencies typically did not invest the time or money to train upcoming IT executives. In fact, the organizational structures of public agencies were typically described as flat, resulting in the creation of fewer mid-level management positions than is true of private firms. This fact, coupled with the fact that public sector employees were oftentimes not as highly compensated as their private sector counterparts, meant that there exists little-to-no incentive for public sector IT executives to remain with the organization. Hence, the problem of not being able to develop or nurture the next generation of IT executives continued to be a challenge.

Talent retention by CIOs within both the public and private sectors was accomplished by crafting very detailed development plans for high-potential and high-performing employees. Public-sector CIOs oftentimes employed a higher proportion of contract staff as compared to their private-sector counterparts. This staffing approach was reportedly used as a means to temporarily accommodate budgetary challenges. We learned that oftentimes 25% or more of the IT teams in public agencies were contractors who were temporarily hired to serve a specific agency need. This approach commonly manifested itself in an organizational environment with a short-term narrow focus. In the private sector this “narrowness” of focus was also reported, but it was more often the result of silos separating the IT function or business unit from other business units. In both cases, the key skills required by CIOs were the ability to develop incentives and unite talent to help business units move forward collaboratively rather than competitively, and to motivate their teams to move beyond “business as usual” or “keeping the railroad running” objectives.

Enforcing an Enterprise View of the Organization Through Transparency

We learned that the one of the top objectives of CIOs was to motivate their organizations to think in terms of enterprise value rather than focusing solely upon point solutions. CIOs shared that one of the first steps to adopting an enterprise perspective was to establish trust with other division leaders across the organization. Establishing trust commonly began when the CIOs became stewards of information transparency and accuracy throughout the firm. In this context, unified data systems, data quality standards, and reduced data redundancy were described as imperative for eliminating “*competing sources of truth.*” Transparency was universally viewed as an essential and transformative principle of building trust and establishing leadership positions. CIOs unanimously struggled with the reality that “*transparency cannot be achieved with stovepipes.*” Hence, the competency of developing well-defined corporate-wide data models undergirding information stewardship was essential.

Key CIO Competency #2: Innovation & Growth

The second key competency for CIOs was the ability to engage in the creation and development of innovative technology-enabled growth strategies that aid an enterprise to maintain its competitive advantage in the marketplace. As part of this competency, CIOs noted that they proactively engaged in promoting the creative use of existing and emerging technologies to create new opportunities to grow the business. These technology executives underscored the need to identify new uses for existing technologies as well as the need to collaborate with internal and external constituents to drive innovation throughout the enterprise. Sources of innovation reported by CIOs interviewed included using new technology to replace or supplement existing solutions and drawing from external suggestions for how to more effectively leverage data to enhance or create new products and services. More than 75% of the CIOs involved in this study indicated a need to leverage technology to build a culture that is able to promote, engage in, and enable business innovation. Successful CIOs were able to link innovation to business performance outcomes. Constraints from the legacy systems or lack of collaboration were the most commonly cited reasons for CIOs not engaging in or embracing business innovation.

TABLE 5
INNOVATION & GROWTH BEST PRACTICES

<p style="text-align: center;">Innovation & Growth Best Practices:</p> <ul style="list-style-type: none">✓ Work regularly to develop a culture of innovation✓ Identify technology for competitive advantage✓ Establish capabilities for real-time data analytics✓ Secure resources for innovation by identifying opportunities✓ Identify both internal and external sources of innovation✓ Look for bottlenecks as well as how to leverage IT resources for value and growth✓ Lead initiatives to support flexibility and agility for rapid problem resolution✓ Ensure a proactive and collaborative process for evaluating innovation opportunities
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CIOs told us that their ability to articulate and communicate their role in driving innovation and their ability to define and deliver enterprise value were key elements of earning the permission to innovate within their organizations. However, we learned that only a few CIOs were successful in selling their beliefs and obtaining investment resources needed to move innovative ideas forward.

We additionally learned that CIOs were commonly challenged to offer new and innovative ways to use technologies to deliver disruptive innovations for competitive advantage, well beyond the more traditional responsibility of rapidly resolving operational problems. CIOs were tasked to be able to continuously examine how to use existing (and sometimes borrowed) IT resources to create new value and growth for their companies. Below, we offer several areas of focus that CIOs reported that enabled the innovation and growth of their organizations.

Build and Nurture Real-Time Data Analytics Capabilities

Real-time data analytics has become a new expectation for CIOs. CEOs have expected the CIO to enable the organization to access and analyze data as it became readily available via live real-time information feeds, RSS feeds, social media, sensors and many other structured and unstructured data sources. In the past, it was common for IT departments to run end-of-day programs to process data collected throughout the day to generate reports for future review. Today's business leaders expect CIOs to provide sophisticated analytics and immediate access to insights gained on a real-time basis. Providing real-time analytics capabilities has become the *New Normal* for CIOs in organizations that proactively

identify trends and demand actionable real-time insights in support of their business strategies. The CIOs that we surveyed reported that they were expected to lead the enterprise in continuously improving business capabilities to collect, analyze, and distribute knowledge immediately after it became available in the marketplace. One CIO from a leading search portal in Beijing, China shared how the real-time mining of data streamed from users' portal websites and micro-blogs helped them determine the feasibility and effectiveness of new product and service offerings. He indicated the ability to conduct real-time analytics helped the company to adjust marketing and product differentiating strategies as needed.

Innovating Data Delivery Through Social Networking

The recent rise in popularity of social networking in both personal and business contexts has provided CIOs with a plethora of opportunities and challenges as they have introduced these new sources of process and data innovation across their organizations. CIOs were clear that many opportunities for innovation came from customers, partners, or, in the case of public sector CIOs, from their constituent community. Social networking has played a major role in facilitating these innovative collaborative activities. Enterprise acceptance of social networking technologies has required CIOs to acquire additional expertise to address expanded requirements for IT governance, data privacy, information security, and risk management associated with the deployment and use of these capabilities. CIOs have used social networking to enable their organizations to get closer to their customers through instantly accessing and responding to customer data mined through these channels in real-time. CIOs reported that social networking technologies also introduced new challenges for their organization in the area of marketing, communications, and public relations as potentially negative feedback left by customers now needs to be responded to in real-time to avoid damage to the firm's brand. CIOs consistently indicated that social networking has forced their organizations to rethink their capabilities around generating and accessing new types of data and their ability to directly respond to data becoming available in real-time.

Adding Value from the "Outside In"

Traditionally, firms have provided value to their customers from the *inside out*, meaning that they were able to provide products or services that maximize value to the customer at a price that customers were willing to pay. In this instance, the CIO's primary role was to manage applications and data within the firm's operations and to provide technology solutions that would aid in the development and delivery of new and improved products and services. The *New Normal* for CIOs includes adding value from the *outside in*, where customers, prospects and alliance partners provide inspiration for new products and services.

A Texas city's CIO shared an innovative approach where he relied on the citizens' suggestions and ideas to identify and use publically available data to improve public services. The agency learned that one of the top frustrations for its citizens was the reporting, coordination, and fixing of potholes. Typically, citizens had to contact the appropriate agency to report the pothole, a work order was assigned through the appropriate channels, and the work was completed over a three-to-four week period. Constituents found the timeframe unacceptable. The city CIO was able to leverage social networking to enable citizens to report potholes to their neighborhood agencies electronically. Data was disseminated more efficiently and effectively to the multiple touch-points needed to address and fix the problem. Of importance was the ability of the CIO to facilitate rapid problem resolution and expectation management on behalf of his constituents. The key thing learned was that citizens wanted to be updated and informed on how long it would take to fix a problem. Customer response time was a critical driver of value, and the CIO had to have the skills to understand that priority (time), while becoming an active participant in community interaction and solution creation. This CIO was able to understand how to create value from the outside in.

Key CIO Competency #3: Business Strategy & Process

CIOs indicated that another key competency in their job was the ability to understand and to act upon the internal and external forces influencing the company's growth and success. These technology

executives were challenged to not only manage the technology portfolio but also to think strategically to create growth, to improve financial performance, to gain a renewed competitive advantage, and to be able to envision an end-to-end view of value creation on behalf of customers, shareholders, and employees. Business-savvy CIOs actively engaged in and contributed to the development and enhancement of the business strategy of the firm by bringing together resources from across the organization and by championing the collaboration and teamwork required to execute on the strategy. Typically this was accomplished through the CIO's understanding of the key business performance measures and their ability to enable and drive the organization to meet its strategic objectives.

TABLE 6
BUSINESS STRATEGY & PROCESS BEST PRACTICES

Business Strategy & Process Best Practices:

- ✓ Engage in systemic change management initiatives
- ✓ Build processes that leverage organizational assets beyond information technology
- ✓ Participate actively in developing business strategy
- ✓ Actively collaborate with colleagues to create a unified vision
- ✓ Champion service transformation
- ✓ Lead clear governance processes that include engaging external partners
- ✓ Develop indicators to directly link IT performance to business goals

Conducting a Feasibility Analysis for New Technological Integration

Several of the CIOs surveyed reported that many of their legacy IT systems that were implemented over the years had “stove-piped” architectures, mainly because each business unit had its own unique objectives and funding sources. Many of these systems were designed to serve a specific function of the organization and generally did not integrate or share information across other business units’ applications vertically or horizontally. Stove-piped applications continued to exist in many firms, and the inability of these applications to share and integrate data remains one of the biggest challenges to CIOs. This issue was made considerably more challenging when multiple business units within an enterprise share often disparate information and applications with external strategic partners and stakeholders.

Implementing these technologies provided a “quick fix” solution for accessing and aggregating data from siloed sources, but they also distracted an organization from dealing with fundamental business and technology issues that need to be addressed to efficiently address horizontal integration.

Many CIOs surveyed discussed the opportunity to leverage cloud computing to supplement or to enhance the company’s IT applications and infrastructure. Cloud computing has required CIOs to address potentially significant changes in their model for delivering technical solutions to their internal and external customers. Cloud computing has enabled a much shorter time-to-market for new products and services while potentially affording more highly scalable and easier-to-manage operations. This type of computing enabled CIOs to more rapidly adjust the firm’s IT resources (i.e. applications, data, servers, storage, and networking) to meet fluctuating and unpredictable business demands.

CIOs additionally shared the need for increased understanding of how new technologies affected their IT portfolio management, including applications, infrastructure, architecture, and security risks. Although many available technologies in the industry provided desirable benefits for the organization, CIOs told us that the ability to determine how new technologies contributed to short and long-term realization of goals and objectives and how they support the strategic vision of the company was a critical skill that all CIOs need to possess.

Change Management

Over 98 percent of CIOs who participated in this study identified change management as an essential competency that was significantly underdeveloped in many technology executives. CIOs attributed this gap to their lack of hierarchical authority to enact or mandate technological and business process change within or across other business units or throughout the enterprise. We learned that leading process change and change management was a significant challenge due to deep-rooted traditions, regulations, and sometimes contracted or unionized labor. CIOs indicated that the skill of collaboration (internally and externally) was critical to success, as was the ability to create incentives within a frequently scrutinized and often constrained environment. Several CIOs indicated that their ability to create clear incentive structures, provide oversight, and demonstrate a willingness to manage risk acceptable levels of risk were critical to their success. In the area of change management specifically, CIOs emphasized the need for strong communication skills, a record of bringing diverse groups together from within the organization and external to it, business analysis skills, and strong negotiating skills.

Business Analysis Trumps Technical Skills

Ninety percent of the CIOs involved in our study mentioned that the CIO role used to be highly technical. However, in the *New Normal*, the role required strong business analysis skills. They indicated that providing clarity of vision as a leader and delivering high quality products and services tied to business strategy and metrics were additional critical success factors. One way that these CIOs demonstrated these skills was through thoroughly understanding and articulating how technology was used to improve or to bring innovation to the firm's business operations. These technology executives shared that a fundamental expectation of the CIO role was to understand key business performance measures that drove the organization's performance and to use technology to support and to improve business operations. CIOs needed both knowledge of the business-line and the IT that supported the achievement of mission. This often entailed having a line-of-site to the transactional level of the organization and a concept of the customer's definition of "value" or measure of success. The ability to identify and solve business problems was clearly essential to the CIOs interviewed for this study.

Key CIO Competency #4: Relationship Management and Communication

CIOs indicated that one of their key roles was to inspire and build trust throughout their organizations or agencies. They discussed the need to be able to demonstrate superior relationship management and influence skills within and across all levels of the organization as well as with external stakeholders. The ability to exercise a powerful and transparent two-way communication channel on the business issues within the C-suite and throughout the organization was considered key.

CIOs also reported that the skills to clearly communicate the business value of technology to across all levels of business management and operations were additional critical success factors.

TABLE 7
RELATIONSHIP MANAGEMENT AND COMMUNICATION BEST PRACTICES

Relationship Management and Communication Best Practices:
✓ Ensure effective exchange of information regarding current state and future directions with business peers
✓ Develop business capabilities within the IT team
✓ Know the critical competencies for the team's success
✓ Link mission, not adjustable metrics, to team's performance

Managing Horizontally as Well as Vertically

CIOs expressed the need to be able to “*manage horizontally and vertically.*” We learned that this skill set was particularly important in leading and managing through the adaptive changes in enterprise structure in the *New Normal*, including downsizing, outsourcing, and the increased adoption of cloud technologies. Here the CIO took the leadership role by filtering out noise related to technology hype that comes from both external and internal sources while simultaneously championing new value creation through innovation that positively impacted the accomplishment of strategic goals and objectives. Often the negotiation process with senior executives was as complex as negotiating with external partners and stakeholders. Multiple iterations of obtaining buy-in from fellow executives were often required. Throughout the technology adoption and implementation process, information on the project needed to be communicated with transparency, frequency, and in language that other partners and stakeholders could understand.

Seeing Things from the Customer’s (or Citizen’s) Perspective

CIOs indicated that they needed to understand, to influence, and be influenced by the needs and directions of their external environments. They shared that a key responsibility of CIOs was to identify and create value from the perspective of the firm’s external environment. We learned that several CIOs adopted a customer-centric approach, which meant that they needed to identify problems and provide solutions for rapid problem resolution and adding value from the customer’s perspective. This involved identifying, often through observation, what was valuable to the customer and changing processes in order to maximize value. For the private sector this meant that they identified potential problems early and, at times, contacted the customer after seeing complaints in social media before the complaints were raised to the company. It also meant completely considering the value propositions for customers in terms of time, convenience, and choice. For the US city county CIOs we spoke with, it meant that many of the community problems that were identified by the agency were situated close to the citizen’s home (e.g. potholes, street lighting, public safety, transportation, housing, etc.). In this context, customer-centricity was referred to as the “*Front Porch View.*” For Taiwan’s national government, it meant setting up a public webpage that enabled citizens to share ideas with the CIO’s office about how to improve the nation’s technology infrastructure on behalf of the needs of the citizens. For the private sector CIOs, it meant having their IT staff accompany business managers in their jobs to better understand opportunities and challenges and to determine how the IT department could leverage technology to create value-added solutions. From this perspective, internal and external stakeholders were better informed about projects that immediately made a positive impact on the organization. CIOs that followed this management approach aligned the internal resources and processes of the enterprise with the resources of their external environment in order to most effectively meet or exceed business and technology goals and objectives.

Key CIO Competency #5: Business Management

A key dimension of the Business Management competency was the effective establishment and management of human capital. At the top of the list of organizational and talent management skills was the CIO’s ability to prepare the next generation of IT professionals. Public-sector CIOs have a clear vision of where they need to take their agencies, but one of the biggest challenges was to acquire, train, and transform the human capital necessary to successfully execute projects in the *New Normal*.

We found that over 93% of the CIOs could identify the technical competencies and skills and human capital needed to establish a world-class IT organization. But within public agencies there was oftentimes no formal process for developing the skills of IT professionals. This resulted in public agency employees who have legacy skills and were unable to keep up with the technology demands of today’s fast-paced and rapidly changing environment. Legal constraints imposed by unions were also deemed to have adversely impacted talent management programs. Additional challenges reported by public sector CIOs included building coalitions within their departments and externally across other divisions, steering committees, and supply chain partners.

TABLE 8
BUSINESS MANAGEMENT BEST PRACTICES

Business Management Best Practices:

- ✓ Develop business and IT capabilities of the team
- ✓ Know the critical competencies required for the team's success
- ✓ Link mission, not adjustable metrics, to team's performance
- ✓ Establish a plan to acquire and grow talent
- ✓ Develop and incorporate appropriate incentives and disincentives
- ✓ Make recognition visible for high performing team members
- ✓ Familiarize yourself with the basic finance principals and processes
- ✓ Position your firm's governance model as it relates to cost-effectiveness, asset utilization, business growth, & business flexibility
- ✓ Establish IT governance mechanisms around decision making structures, alignment processes and formal communication
- ✓ Understand how your governance policies align with those of your strategic partners
- ✓ Strive to establish your IT governance policies on one page
- ✓ Revisit and redesign your IT governance policies and procedures on a regular basis

We learned from the CIOs involved with our study that business management entailed the development and implementation of an effective strategic governance model. They needed to clearly define and measure the return on technology investments in the context of how the enterprise defined value. We also learned that effective CIOs' took their existing business management skills and used them to influence external strategic partnerships and alliances so that their efforts were also aligned with the vision and strategic goals of their firm.

Demonstrating Sound IT Governance and Business Management

CIOs identified the need to be leaders who identified and implemented sound strategic IT governance models that influenced and affected many parts of the business. They indicated that their organizations typically realized value throughout the business operations immediately following the implementation process. CIOs indicated that in order to demonstrate credibility, they needed to demonstrate and display a sound command of corporate finance principles and a basic understanding of financial analysis so that they could evaluate and justify the business rationale for major IT initiatives. These CIOs shared the need to collaborate with their management teams in ways that transcended the traditional IT cost center management span of influence. In this context, CIOs needed to be able to demonstrate business value creation in terms of both revenue generation and cost-reduction.

Balancing the Big "P" and the Little "p" (Power and Persuasion)

CIOs strove to be trusted advisors and information stewards within their organizations. They were required to play an active contributing role in the overall strategy formulation and execution. These executives needed to provide a clear vision of how IT helped to drive the business forward. Over 97% of the CIOs surveyed believed that a key competency required was the ability to lead and influence others without any formal authority. These CIOs revealed that in order to be successful in their jobs, they needed to maintain strong relationships with executive colleagues from other agencies and lead by persuasion rather than relying on the power associated with their positions. The competency of exercising power and persuasion was especially important when CIOs needed to negotiate for budgets during the appropriation process. CIOs needed to convince leaders and colleagues of the value that their organization may bring

with the use of technology. Much of the persuasive power came through an acute understanding of the appropriations process and by proposing how the technology added value to business operations.

Exercising and Demonstrating Affordability

Largely precipitated by the economic crisis, CEOs have tasked CIOs to take on additional leadership roles by leveraging the IT portfolio to deliver better, faster, cheaper (and give it to me now) technology solutions that make doing business more affordable. From a financial perspective, sound business management encapsulated the ability to demonstrate return on equity, return on capital, and return on assets. CIOs expressed the need to display a sound command of corporate finance principles and to conduct basic financial analysis as related to IT investments including a demonstrated understanding of how technology enhanced business operations. From a customer focus and revenue generating perspective, sound business management included the ability to innovate and to derive revenue from new products and services and the ability to increase market share by expanding the existing customer base. From a back office perspective, sound business management means the ability to improve operations through better asset utilization (efficiency), more accurate planning and forecasting (effectiveness), and on-time delivery of products and services (quality).

Determining the Longevity of an IT Implementation: “Red Light, Green Light, 1-2-3”

The average tenure of a public sector CIO is about 6.3 years. Given the high rate of turnover of these technology executives, CIOs needed to accurately select the appropriate projects that could have been completed during their tenure. *Red Light, Green Light, 1-2-3* was a concept used by a finance department CIO in New York. It referred to the scorecards used to measure employee performance and project success. It also pertained to the constant stopping (Red Light) and starting (Green Light) of IT project implementations due to electoral cycles or budget constraints.

CIOs in both public and private sectors needed to demonstrate that they were able to manage implementations amidst ongoing executive changes in their organizations. They were required to demonstrate leadership by effectively prioritizing the projects to be budgeted and resourced. One executive noted that without this competency, decision-making and long-term planning suffered because executives did not want to put the red light on a project and be held accountable for the losses attributed to sunk investments. Performance was typically evaluated according to the accuracy of the scorecard and not on project success. Similarly, CIOs avoided starting projects that could not be completed during their tenure. The ability to see long-term success beyond the political headwinds and turbulence was therefore deemed essential.

Key CIO Competency #6: Risk Management

CIOs expressed a strong need to be able to communicate effectively about risk and risk tolerance as it related to internal and external threats and to adopting and deploying new technologies. A comprehensive Risk Management agenda required CIOs to understand the broader elements of risk – technology, operations, and enterprise risk. It also entailed guiding the enterprise to understand and define its risk appetite and the levels of risk that were acceptable to the firm, including balancing the cost of risk avoidance with the numerous opportunities for growth.

TABLE 9
RISK MANAGEMENT BEST PRACTICES

Risk Management Best Practices:

- ✓ Create a culture of risk awareness
- ✓ Understand the levels of risk that the firm is willing to accept
- ✓ Establish an operational risk taxonomy
- ✓ Proactively engage in regular and consistent communication about risk with your colleagues
- ✓ Establish a contingency plan for risk management
- ✓ Consistently monitor internal and external points of compromising exposure
- ✓ Regularly revisit the established rules established by the firm
- ✓ Educate your colleagues on the systemic impacts of risk exposure

CIOs have not typically been granted the authority (or resources) to manage enterprise risk. Traditionally, the technology executive managed the risk associated with adopting new technology or securing corporate data. We learned through our study that, in the *New Normal*, Boards of Directors and CEOs more commonly relied on the CIO to define and to manage the elements of internal and external risk at an enterprise level. CIOs increasingly led the enterprise risk management function in a manner that created business opportunity, well beyond the more traditional function of asset protection. CIOs established an integrated systemic risk management protocol that were supported by end-to-end processes and tools that enabled their enterprises to manage and balance opportunity with safety and soundness. A CIO of a leading ERP and cloud computing service provider in Hong Kong understood the need to allow employees to use their personal mobile phones to engage in constant and immediate communication with their external customers and the competitive advantage that leveraging these technologies enabled. He also saw the risks to the security of enterprise information posed by employee use of personal technologies and implemented the appropriate controls to balance the risks with the opportunities.

Risk Management

The consumerization of IT, where employees used their personal technologies, e.g. smartphones, laptops, tablets, etc., for both business and personal purposes, was increasingly prevalent. Employees who used personal devices that were provisioned with personal applications and service providers posed potentially significant risks to enterprise infrastructures, operating environments and data. These technologies were, at the same time, seen in some organizations as an effective opportunity to provide employees with access to real-time data and extended communities of professional peers that enhance understanding, insight and decision-making. CIOs who operated in the *New Normal* identified the need to establish a more consistent approach to managing risk, and to create a culture that was *risk aware* versus *risk averse*.

CIOs needed to have the skills to identify, understand and address factors that contributed to risk associated with technology, operations, and information at an enterprise level in a seamlessly integrated manner. They needed to be able to effectively communicate risk and to transparently discuss risk tolerance with their executive colleagues. Several US Federal government CIOs surveyed for this study indicated a tendency to be more risk averse than their private sector counterparts. Electoral cycles and budget constraints played an integral role in driving a more conservative approach to risk management for these technology executives.

Reducing Corporate Risk and Security Exposure

Associated with IT governance, the ability to reduce corporate risk and minimize security exposure was identified as another key skill needed by business-savvy CIOs. New and innovative uses of technologies such as social networking, wikis, and blogs have provided new capabilities for organizations to capture and to disseminate information, but they have also created new security risks that organizations must address and manage. Interestingly, we heard from several CIOs in our study that internal security breaches, even when unintended and/or not intentionally malicious, represented a meaningful percentage of all identified incidents. Increasingly, CEOs required CIOs to incorporate social networking into the firm's daily activities. More than half the CIOs that we spoke to had been actively involved in designing and deploying strategies and policies for enterprise use of social media and social networking. CIOs indicated that there were many points of failure throughout the process through which data was shared across the organization, and that they need to understand every step in the process to identify, evaluate and remediate as appropriate, potential points of failure and risk.

Leading Enterprise Development of a Risk Management Culture

One of the major challenges that CIOs face today was to design, build, and to embed a culture of active risk management across the organization. Because enterprise risk management, by its nature, spanned multiple lines of business and functions at every level of organization, CIOs needed to lead this effort in areas where they have both explicit authority and control, as well as in areas where they need to leverage their persuasion skills to achieve acceptance and participation in critical enterprise risk management initiatives.

CONCLUSION

Given the introduction of new business models and rapidly advancing technologies, CIOs were forced to adapt. Consequently, their role and the competencies needed to be successful have changed with the *New Normal*. Our research identified and described six key competencies that effective IT leaders possessed. These competencies spanned industries, countries and across public and private sector enterprises. Numerous other key competencies were identified by CIOs, but these others were not yet consistently practiced across all boundaries. For this reason, we believe businesses have only begun to understand the value that CIOs have brought to the organization. As the understanding and momentum builds, it is likely that new and innovative CIO competencies will surface. It is our hope that, by identifying and describing these competencies, we can assist organizations in developing CIOs who will copilot successful enterprises in both the public and private sectors operating within the *New Normal*. We asked CIOs to provide us with strategies that IT executives should consider as they develop competencies and evolve their role as business-savvy executives.

We end this article by providing the top six strategies identified by technology executives who participated in our research for building the critical competencies that enable CIOs to lead their enterprises in leveraging IT to drive innovation and generate sustainable business value.

Six Strategies for Becoming a Business-Savvy CIO

1. Focus on the data, not the applications that delivers it.

Being a successful CIO is about focusing on the data, not just the development and delivery of applications. The ability to define data, develop data models, and rationalize data structures across horizontal processes and boundaries was paramount for p CIOs. Building competencies in this area required both technical skills and specific understanding of the data from the perspective of customers and ultimate beneficiaries. If CIOs do this well, there is the potential to add significant value to the organization by connecting the value of the data directly to the value of products and services to customers. Questions that CIOs asked that they deemed useful in understanding how to provide value were: *What frameworks and metrics apply to measuring customer value? How can we better anticipate*

customer needs? Have we established a process for setting priorities? What customer-facing systems can help customers understand trade-offs and increases the control that they have over data?

2. Distinguish among compliance versus regulations versus legacy constraints.

Among CIOs, these three areas of focus tended to get muddled into a single category, impacting the CIOs' ability to focus on the data. Successful CIOs built this competency in a number of ways, primarily through formal and informal meetings with their peers in other agencies. In this context, helpful questions CIOs asked themselves were: *How do we distinguish between data usage and data collection? How do we communicate compliance and related costs? How are trade-offs calculated and communicated? How will the data be used? What are the constraints on interpretation of the data? Who defines and manages data definition and stewardship?*

3. Spend the first 90 days understanding the landscape.

One of the first things CIOs new to their positions needed to do was understand the business model down to the transactional levels of detail. CIOs needed to understand the fundamentals of the business and determine how to focus the organization's resources available and efforts underway. Also included in this 90-day process was building rapport with colleagues in other divisions and agencies. Questions that CIOs asked in order to build this competency were: *What is the project portfolio and how do I evaluate the current status? Do I have monthly "health checks" of my portfolio? What are the upcoming milestones? Are there any "hot buttons" that I need to be aware?*

4. Establish communities of interest to learn from and to measure progress.

CIOs reported that the best approach to learn about the most effective management techniques and technology adoption methodologies was through discussions with colleagues at other organizations and agencies. They established informal conferences or technical forums where colleagues demonstrated the latest tools and discussed the implications, consequences, and benefits of strategies and tactics. Successful CIOs also engaged in benchmarks of their own organization's efforts compared with other firms to identify areas of strength, weakness and opportunity. Questions CIOs asked to help them establish communities were: *Who would it be helpful to network with, both in the public and private sectors, given the strategy and direction of the organization? What organizations should be included in benchmarking? What groups are currently available to help me succeed?*

5. Understand how social networking technologies can aid or hinder your organizations and agencies.

The use of social networking technologies has been challenging for some organizations because it requires the integration of multiple automated and manual processes across multiple lines of business and functions. Questions that CIOs could ask themselves include: *What forward-facing service areas exist that are congruent with the social networking model? What companies or divisions are using this technology, and how is it working? How can I engage constituents in providing services, and even prioritization?*

6. Build Bridges.

It was important for public sector CIOs to build rapport and establish relationships with the executives from other agencies. Oftentimes these agencies provided ideas or resources for colleagues to adopt and leverage within their own environments. Without establishing relationships with other agencies, CIOs would spend most of their time attempting to integrate silo and horizontal business processes within and across other agencies without the critical knowledge required to do so effectively. Questions CIOs asked their agency personnel as well as other public sector CIOs were: *How do we integrate the horizontal and vertical processes within our agency? What are the benefits and challenges associated with our current constraints? How can we leverage our current constraints? How can we create partnerships to facilitate span of influence and control? How can we help each other achieve success?*

METHODOLOGY

This research utilized data collected from two sources of research collected by the authors. In the first study, the Center for CIO Leadership sent a confidential online survey to 2,421 CIOs worldwide in July 2011. The study was promoted via Twitter, the Center's LinkedIn Group, and Center partners and yielded 338 responses. The objective of the study was to understand the status of the global CIO profession within six specific best-practice competencies that the Center for CIO Leadership and its academic partners believed were imperative competencies for technology executives [Center for CIO Leadership, 2012]. The original survey instrument [Figure 4] was developed by the Center for CIO Leadership in collaboration with Dr. Lynda Applegate of Harvard Business School and Dr. Soumitra Dutta of INSEAD. Some of the questions in the survey were sourced from *The New CIO Leader Self-Assessment* in *The New CIO Leader: Setting the Agenda and Delivering Results*, authored by Dr. Mariane Broadbent and Elen S. Kitzis. The data used in this manuscript was developed based on an updated survey (2011) in collaboration with Dr. Marianne Broadbent (EWK International), Dr. Joe Peppard (Cranfield's Information Systems Research Center (ISRC)), and George Westerman (MIT Sloan's Center for Digital Business), and additional review from Dr. Haim Mendelson (Stanford University).

**FIGURE 4
ORIGINAL CIO SURVEY INSTRUMENT**

4. Leadership Section

The questions on this page regard your Leadership role.

*** Please indicate to what extent you rate your skills and competencies in the following key leadership areas. Choose on a scale of 1 to 5 where 1 = "Strongly disagree" and 5 = "Strongly agree"**

	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
I serve as a trusted advisor with line of business leaders and management.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am regarded by my colleagues as a leader of change and transformation in my company.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I can communicate complex IT strategies and execute programs in terms that are understandable to my executive peers and are clearly linked to business priorities.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
We have established a governance model that integrates key business priorities and allows us to make better strategy and investment decisions.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have a clear vision for how IT will drive the business forward.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I work to help others build strong teams and trusted, productive relationships across my organization.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have established strong relationships with my executive colleagues.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I know how to lead and influence others when I do not have formal authority.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
My business colleagues are aligned to my IT vision.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

5. Business Strategy and Process

With these questions we examine Business Strategy and Process.

* Please indicate to what extent you rate your skills and competencies in the following key leadership areas.
Choose on a scale of 1 to 5 where 1 = "Strongly disagree" and 5 = "Strongly agree"

	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
I have built a clear and effective governance process for engaging high-performing external partners (e.g., for outsourcing, co-development, etc.).	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have an IT risk-management strategy.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I deliver on the business strategy through an action-oriented plan that links to these business goals.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have developed business value indicators that link IT performance metrics and business goals.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
My IT risk-management strategy is fully integrated with our enterprise risk-management strategy.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I can link IT investments to one or more key business drivers: top-line growth, bottom-line savings, return on invested capital and reputation.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I fully understand my business environment including competition, emerging industry trends, suppliers, customer base and regulatory environment.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have a comprehensive ("end-to-end") view of my company and technology's roles in enabling the enterprise to deliver business value to customers.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am an active participant in developing the business strategy for my company.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am viewed by my industry peers as a leader.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

6. Innovation and Growth

We focus this section on Innovation and Growth.

* Please indicate to what extent you rate your skills and competencies in the following key leadership areas:

Choose on a scale of 1 to 5 where 1 = "Strongly disagree" and 5 = "Strongly agree"

	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
My executive peers look to me to deliver technology that creates competitive advantage for our company.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I regularly work with clients and external stakeholders to develop new opportunities and/or innovations.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am leading initiatives to ensure that my organization and the enterprise are flexible and agile enough to support the rapid rate of change.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I proactively ensure that we have a process within the company for encouraging, identifying and evaluating technology-driven innovation opportunities.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I constantly examine how we can use our IT resources to extract greater customer value and economic growth.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Members of my IT team are actively involved in identifying how IT can enable business opportunities for the company.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have successfully secured resources for innovation and investment by identifying technology-enabled business opportunities for my company.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

7. Organization and Talent Management

These statements relate to your views on Organization and Talent Management.

* Please indicate to what extent you rate your skills and competencies in the following key leadership areas:

Choose on a scale of 1 to 5 where 1 = "Strongly disagree" and 5 = "Strongly agree"

	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
My team utilizes effective communication skills to establish credibility with business peers.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I know the critical competencies that my team requires to be successful.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I actively develop the long-term business and IT capabilities of the people within my organization.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have analyzed our business priorities and have a plan in place to acquire and grow the talent needed to achieve those priorities.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have a program in place that links business and technology objectives to my IT team's performance goals.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have put in place training opportunities for my leadership team and have actively identified a succession plan.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have developed a process and a plan for delegating authority, enabling me to spend more time on other strategic activities.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

The authors of this paper also conducted 75 personal semi-structured interviews and aggregated the data into a second dataset. This dataset was integrated with the findings of the CIO Leadership Survey whitepaper to write this paper. Personal interviews were conducted with CIOs from both the private and public (national, state, and county government) sectors across the United States and internationally (e.g., China, Japan, Australia, India, New Zealand). The key research questions for the study were: *What are the roles & responsibilities of CIOs? How have these roles & responsibilities changed over the last 10 years? What are the attributes and characteristics of a successful CIO?* Each interview lasted approximately 60 minutes.

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