KPMG

Data as an asset

Initiate your journey to unlock data's full potential

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Capitalize on data's near limitless value to exploit its power

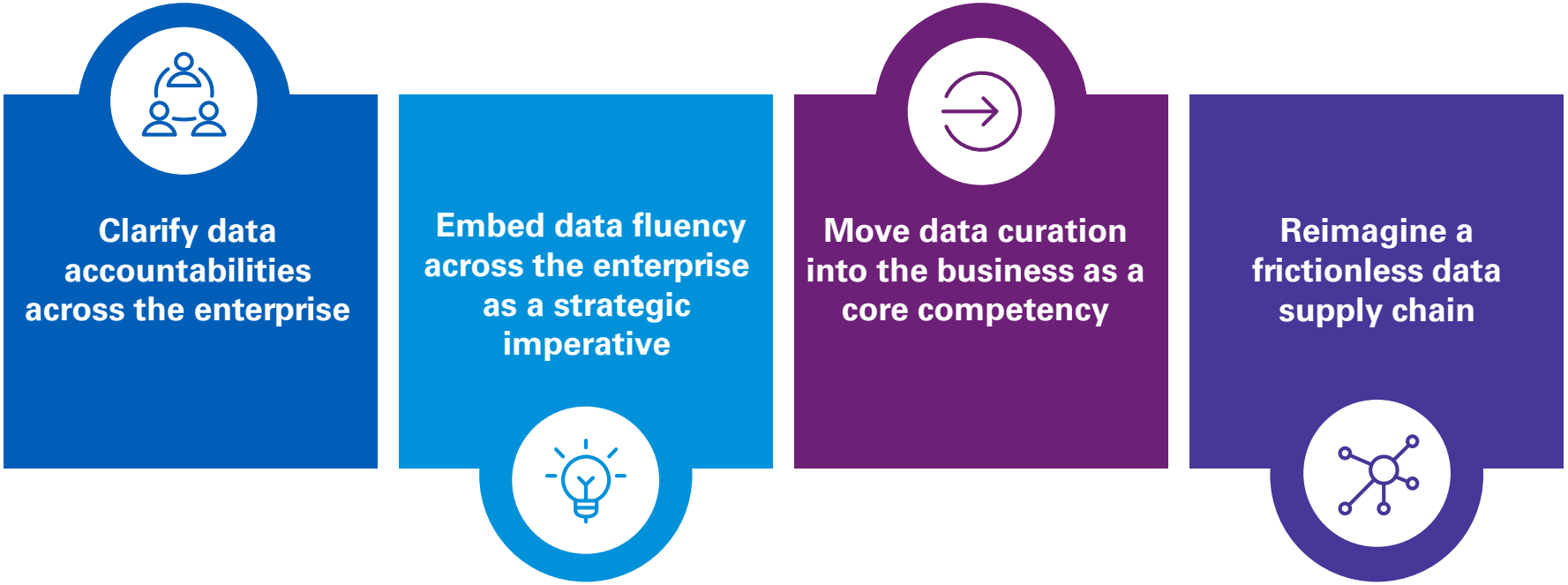
Data is now the most significant asset many organizations possess. Businesses worldwide are investing billions in an effort to unlock its secrets and enormous disruptive potential. It's at the heart of new business models, technologies, and an ecosystem of companies providing almost anything as a service. And over the next three to five years, the IT function's success will depend on how effectively it enables the organization to unleash the power of data.

The promise of 5G is helping to drive explosive growth in the number of connected devices, the rise of vast sensory networks feeding rich visualization, and rapidly evolving methods of using and analyzing data have ushered in a new age of enlightenment, driven by insights gained from connecting customer, strategic, and operational data.

At the same time, data storage costs have fallen to near-zero, and data transfer and processing costs are also declining. This sheer amount of data and sources creates near-limitless opportunities to uncover actionable insights into customer and employee experience, product pricing and cost dynamics, operational performance, risk modeling, and more. In the age of the customer, refining data into an asset is the key to unlocking new business models and thriving in a highly volatile market.

> Only 17 percent of organizations say they are very or extremely effective at maximizing the value from the data they hold.
>
> —Harvey Nash/KPMG CIO Survey 2019

Many understand that data is the new gold—yet despite massive investments, many companies struggle to mine and refine it successfully. The reasons are many, including data fluency, complex and siloed system architectures, access controls and policies, cultural issues, and interoperability issues across the business. However, leading organizations are fundamentally reimagining their relationship with data and, as a result, transforming IT's role to materially impact business outcomes. Over the next three to five years, leading companies are expected to adopt four key data principles into their operating models:



This paper explores each of these areas and looks at how IT leaders can launch or accelerate their journey to becoming a digital, data-driven enterprise.

Clarifying data accountabilities across the enterprise

Data's rising importance to organizations has had wide-ranging implications for the IT function's role and accountabilities. Organizations have responded by rewriting the span of control of the chief information officer (CIO) and chief technology officer (CTO) as well as establishing new roles such as the chief digital officer or chief data officer.

For many organizations, these changes have not been easy and in many cases have resulted in collisions of responsibility, conflicts on priorities, jockeying for influence, and struggles over the strategic direction of the enterprise. However, there is good news. Boards and CEOs are bought into the strategic imperative of maximizing the value of their data and are rapidly maturing their understanding of these roles and governance.

> 67 percent of CEOs believe their organization could significantly improve its understanding of its customers
>
> —KPMG CEO Outlook 2019

The rising importance of the chief data officer

As data becomes an increasingly vital source of direct and indirect value, the extended data supply chain has become more important to organizations. This is creating the need for a new role focused on managing that value chain: the chief data officer. The chief data officer is a C-level executive responsible for the organization's data management and governance and for establishing and integrating data and information policies in the company. As such, the chief data officer is the pivotal figure in aligning a company's data and information strategy with its overall business strategy.

While reporting lines often vary, future chief data officers will increasingly find themselves reporting to the COO or CEO. Digital leaders today are recognizing the importance of having the chief data officer closely aligned to the business and measured via their impact on the top and bottom line.

One new chief data officer at a major home loan corporation was determined to avoid the mistakes of predecessors who had focused on a pure technology approach and failed to engage the business. She, along with the executive team, saw data as a vital part of the organization's future. Core to the strategy was a business-centric vision of empowerment, simplification, reuse, and control of critical business data. A central tenet was to ensure anyone could find the critical data they needed quickly and easily, without having to rely on what they called "friends and family" networks.

She effectively teamed with the CIO and CTO to ensure that data was available, timely, high-quality, transparent, understandable, and reusable—and moved through the data value chain efficiently. She recalls, "When employees began to share, reuse, and trust each other's data, certainty around the loans the company was guaranteeing grew."

For instance, when the organization embarked on a new initiative to find a more effective way to transfer risk, she inserted herself early on in the process to encourage the business to source required data from an authoritative data source. This resulted in a win-win situation. The business benefited from a controlled and a demonstrably better source of quality data while the chief data officer was able to enhance and drive adoption of key data management capabilities.

Embedding data fluency across the enterprise as a strategic imperative

To capitalize on data as an asset, organizations will need to become more data driven—and data fluent. One promising accelerator toward data literacy is the explosion of "citizen developers," that is a business user with a blend of both business and technical acumen, rather than a traditional developer, who can create applications that generate business value. These non-IT technologists are taking advantage of advances in software – and platform—as-a-service offerings (SaaS, PaaS) and low-code platforms to rapidly create and deploy technologies that both harness existing data and create new sources for others to use. Backed by business and functional experience, citizen developers are hungry to consume, integrate, and share data across a wide range of products and services.

Enabling citizen developers

While there is tremendous demand from the community, this shift requires IT to take the lead in enabling citizen developers throughout the enterprise, upscaling the data literacy and skills of those in the business, and updating their own skill sets to adapt to the needs of a digital economy. The future IT function should primarily focus on these citizen developers as a means to greatly expand organizational data fluency, equipping them with tools, standards, and control principles to democratize development.

Upscaling data literacy across the business

Data literacy is widely acknowledged as an essential future skill set, but CEOs, chief data officer (CDOs), and CIOs will not be successful by simply mandating adoption. To reap data's full benefits, it's imperative to invest in programs to upscale the data and analytics skills of staff across the business and set baseline expectations for data literacy and usage throughout the organization. Organizations should develop a foundational capability framework, supported by appropriate training programs (e.g., hackathons, data ethics), to meet their unique requirements. Today's tool vendors are already rushing to fill the demand, offering curriculums and certifications on data literacy. However, like any other major transformation, becoming a data-driven culture needs to appeal to both the value to the business and the value to the individual. Increasing data literacy over the next three years will require intentional and tailored approaches that illustrate the value of sharing, the power of actionable insights, and persuasive influence of data on shaping the customer experience.

The next level of technical skills in the IT workforce

With citizen developers and business analysts expanding the breadth of possibilities, the IT workforce will be tasked to handle the most complex and technically challenging problems. New, emerging technologies like advanced analytics, AI, and machine learning demand IT functions to be more technically capable and adaptive than ever before. IT's technical acumen will need to diversify into advanced data architectures, creating easy-to-access API libraries, and automating large portions of the data supply chain. Currently siloed automation and machine learning capabilities and centers of excellence will mature and graduate into new scale within the future IT function.

Moving data curation into the business as a core competency

To supply the information the business uses to inform decision making, data must first be curated. Typically, data curation is carried out by data engineers and data architects, who create and manipulate an array of data sets, tables, and systems using complex queries in SQL or other programming languages. However, as companies redefine their operating models to run at market speed, data curation will no longer remain the sole domain of technical professionals. Curation will need to move into the business, closer to customers, in order to enable organizations to move with the speed and agility the market demands. Data marketplaces with guided self-service and "signals repositories" will be critical enablers of this vital shift.

Data marketplaces and guided self-service

In the not too distant future, organizations will establish data marketplaces that serve as one-stop shops connecting data producers with internal data consumers. These data marketplaces will offer cataloged and categorized data from both internal and external third-party sources; advanced algorithms and machine learning will be used to carry out data curation activities. Data consumers will be able to "shop" for the best available data for their business needs, much as they would shop for items on any e-commerce site. This data can be curated further by marketplace participants themselves, while crowdsourcing can be used to suggest similar or relevant data. In time, internal data marketplaces could be opened up to external parties such as customers and suppliers.

However, allowing completely open access to the data available on data marketplaces could be problematic in an environment of rising data privacy and protection requirements. A more prudent approach is to use *guided* self-service. With this approach, the data marketplace is built from a data consumer's perspective. Developers create consumer personas and map their journeys to understand both how consumers discover, change, interact with, and use data for various purposes as well as how the data itself influences behaviors or outcomes. Guided self-service can thus be a useful tool for narrowing the scope of certain projects and prioritizing use cases and features based on the human factor.

One of the world's leading media and advertisement investment companies is rapidly expanding its use of a self-service data market. Challenged to contain cost while eliminating stale data from a disparate set of global data marts, the company decided to invest in a global standard platform to allow agencies from around the world to self-serve their most important data. Presented through an interactive and intuitive portal, the data market is a comprehensive collection of internal and external feeds aligned to critical business goals, data management tools to support configuration and curation of content, and API feeds for application developers to leverage.

Different global agencies can now access the most current planning tools, billing systems, bid management tools, and a stream of real-time data from stock markets, weather, and social media listening posts. The marketplace has become a hub where advertisers and agency professionals can connect and make informed decisions on campaign strategies tailored to their markets. The user experience is guided by role-based access and persona-driven use cases. While currently for internal employees only, the company plans to monetize a version of the marketplace in the coming years as a new business service to the media industry.

Signals repositories

Many organizations are finding it challenging to interpret and capitalize on the ever-expanding wealth of data available, as traditional operating principles, indicators, and decision drivers simply can't keep pace. A new approach is emerging—one that can "listen" to the data available and transform it into more easily consumed "signals."

These signals are analytics building blocks, created by transforming a combination of internal and third-party structured and unstructured data into complex algorithms that AI systems can use to significantly improve prediction accuracy. After building or acquiring these signals, organizations will be able to make them available through the data marketplace as a sort of signals repository; there, the signals can be used to help respond quickly to changing business needs, drive economic value, improve time to market, and more. The signals repository will also help the organization alleviate the need for data modelers and data engineers. IT will play a key role in driving adoption of the signals repository—and in helping the organization build its capability to transform raw data from the signals found on the repository itself.

Use cases for signals are already emerging. One example is a quick-serve restaurant selecting their next location. Through the signals repository, the company looked at the housing market (e.g., how many four–bedroom houses have decreased in value over the last 24 months within 20 km of this location), convenience factors (e.g., how close is an ATM to this location), community information (e.g., what are the school holidays and how would they impact demand for this location), geospatial points (e.g., foot traffic), government and regulatory data (e.g., crime statistics), and infrastructure (e.g., proximity to public transportation) to pick the right location while increasing the revenue forecast accuracy by nearly 40 percent.

The use of signals repositories will also have profound implications on the product and service development lifecycle. Rather than rely on a list of requirements or user stories to drive product or service design, development, and delivery, organizations will augment the process by incorporating real-time signals and other data to create new customized products and services. Doing so effectively will require more than simply creating and embracing the use of signals repositories, however. To act on signals at scale and at speed, organizations will need to shift their operating model to seamlessly connect the front, middle and back offices—what KPMG refers to as the connected enterprise (kpmg.com/connected).

A frictionless and widely accessible data supply chain

Traditionally, IT architecture viewed data as a foundational layer, efficiently moving data from one system to another or storing it as byproduct of business operations. The data supply chain was sequential: data was created, acquired, extracted, and sometimes stored for later consumption or distribution, often going stale or lying inaccessible in the process. Today's organizations fully recognize that data resides at the very core of the business and everything else flows outward from the value of unlocking it. This means the data supply chain must be reimagined.

IT, and enterprise architects in particular, will need to lead their organization towards a frictionless and widely accessible data supply chain by embracing new approaches, including data virtualization, microservices, data as a service (DaaS), and Lambda data processing architecture. These technologies will be critical enablers of the reimagined data supply chain and make it significantly easier for the organization to access, manage, and use data.

Only 18 percent of organizations feel they are very or extremely effective at maintaining an enterprise-wide data management strategy

—Harvey Nash/KPMG CIO Survey 2019

Data management and governance will be powered by AI

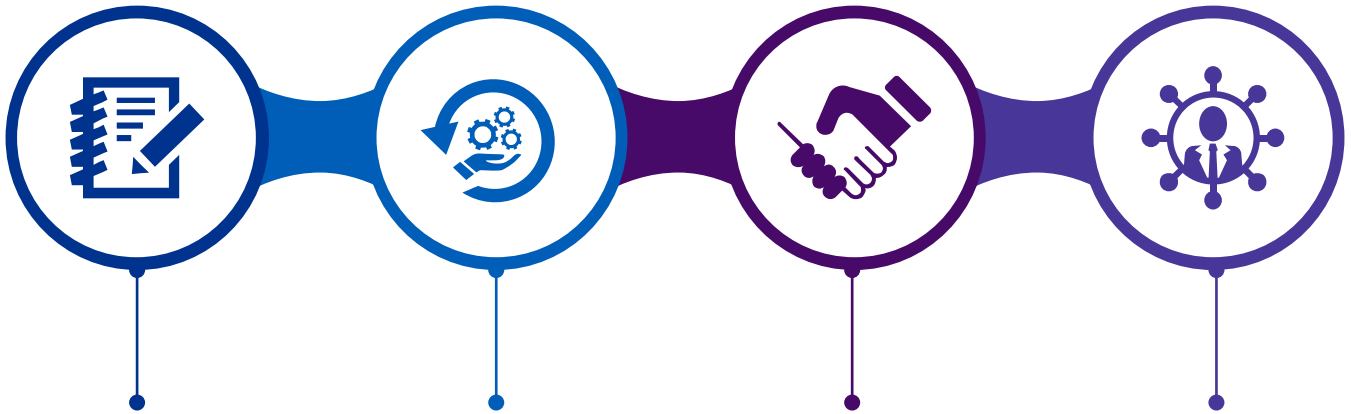
As the data supply chain changes, data management and governance will need to be reimagined as well. Today's approaches to manage data and ensure its quality tend to be labor intensive, simplistic, and rule based. They rely on subject-matter experts to define rules (e.g., field formats, null checks) and handle data profiling and monitoring. While marginal improvements can be achieved in certain areas, these traditional approaches can't efficiently scale to handle today's immense data sets, nor are they nimble enough to adapt to the needs of a rapidly changing business landscape.

To overcome this challenge, organizations will need to use new approaches that apply AI, machine learning, and even deep learning to core data management and governance matters—particularly data quality. Using machine and deep learning can greatly reduce, if not outright eliminate, an organization's need to manually profile data, develop rules, prepare reports, and monitor results.

Life science companies are leaders in applying deep learning to improve diagnostic and efficacy results. A pulmonary company has recently used AI and machine learning to analyze thousands of lung cancer cases. By using deep learning across millions of data sets, the company enhanced their diagnostic algorithm and are now more quickly and accurately able to diagnose a variety of lung pathologies. Furthermore, their machine learning engines are being continuously trained based on valid exceptions and changing patient scenarios. This level of analysis and continuous improvement was not possible through human means.

What you should do now to unlock the power of data

IT leaders are at the forefront of efforts to help drive their organization's digital transformation and enable the business to turn data into insights that deliver growth, efficiencies, and competitive advantage. But where to begin? Having worked with companies around the world to help them capture the value of their data assets, KPMG professionals have learned that many digital leaders all embrace a few common strategies:



Create a data value proposition grounded in business imperatives

Clarify functional accountabilities built into the operating model

Start the organization's journey toward data literacy

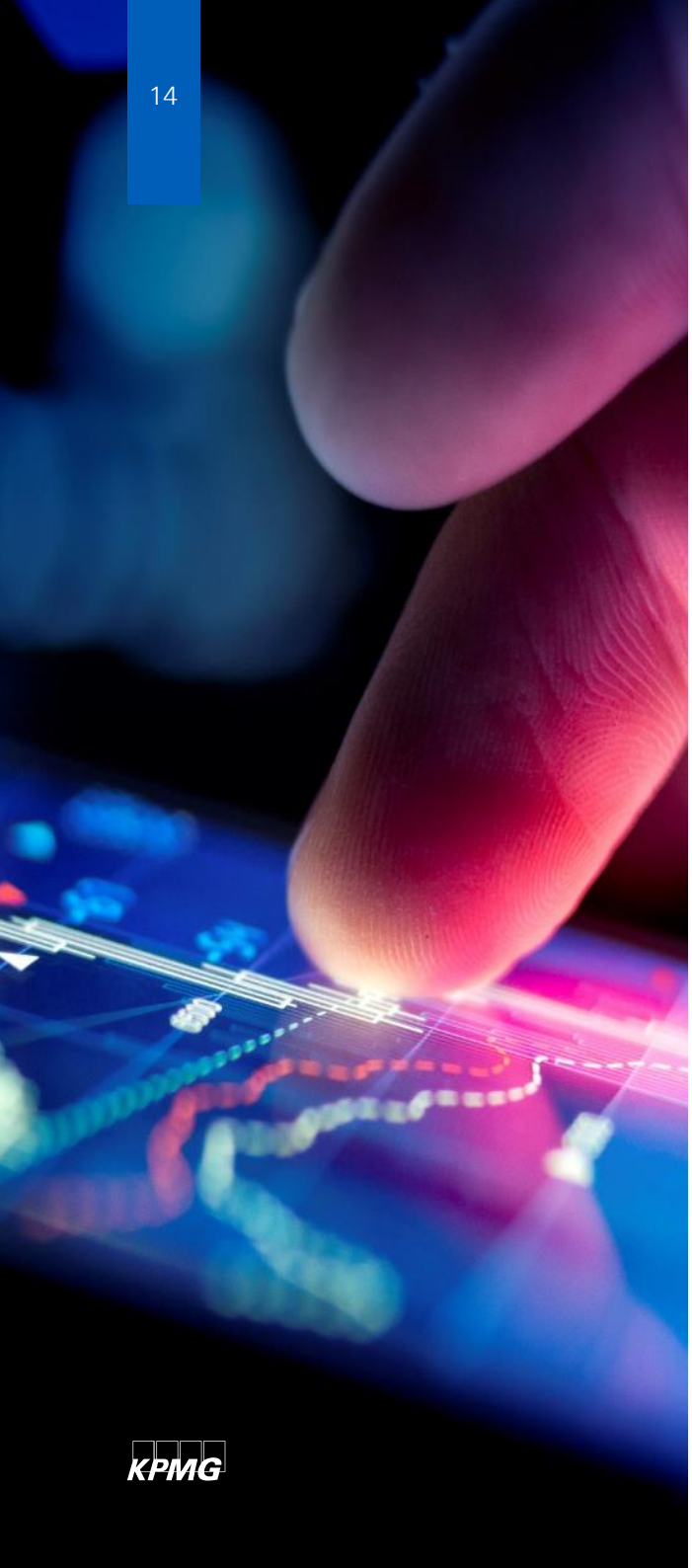
Manage the cultural shift

Create a data value proposition grounded in business imperatives

In KPMG member firms' experience, companies often struggle to unlock the value of data—even after significant investment—because they didn't tailor their data initiatives to the organization's business imperatives. Data enables business strategy; it's not a business strategy itself. Before an organization moves forward with data initiatives, there needs to be a well-articulated value proposition that holistically describes the challenges, problems, or hypotheses that data will help address. Who are the beneficiaries? What additional capabilities are required beyond sourcing data? Consider whether the organization sees data as an asset, a liability, or both. Finally, digital leaders need to implement tangible, measurable metrics linked to business outcomes.

Clarify functional accountabilities built into the operating model

Successfully using data as a valuable business asset requires clear accountabilities and spans of control for key technology leaders—and buy-in from those leaders. With the proliferation of tech-savvy leaders in the C-suite, CEOs are taking the time needed to clearly define roles across the technology value chain—CIO, CTO, and chief digital and data officers alike—regarding the data-driven transformation effort. Digital leaders are creating a collaborative discussion to ensure everyone is clear on their accountabilities, decision governance, how teams will collaborate, and the customer outcome everyone is focused upon. This clarity will better equip these leaders to define their respective operating models more appropriately.



Start the organization's journey toward data literacy

Data literacy is critical for creating a strong data-driven culture and enabling the business to make the best use of data. Data literacy is especially important for IT professionals, as it allows them to be better business partners and ensure the organization effectively capitalizes on its data assets. Once a clear data-centric business case is made, IT leaders should collaborate cross-functionally to define the required data-related skill sets and competencies needed to improve the core IT function's data literacy to solve the most challenging and high-value business problems. At the same time, the CEO and management committee should bring their attention to building a broader data literacy program to ensure the organization is "future data ready."

Manage the cultural shift

Digital transformation and embracing a data-driven way of doing business represents a fundamental cultural shift for most organizations, and that shift needs to be managed effectively. New ways of working, tooling, and governance will be introduced at every layer of the organization. Stakeholders across the enterprise will need to understand how data will change the business, from decision making to delivery and beyond. They'll want to know how using data will impact their day-to-day work and how it will benefit them. There will be a focus on new types of performance measures. All of this will require a comprehensive change management and communications program that engages and explains what's changing and what being data driven really means—and empowers people across the organization to play an active part in the transformation. Companies that put culture and people in the center of the data-driven transformation will be more likely to move beyond incremental gains and scale the value of their data assets.

KPMG can help

CIOs and other IT leaders face increasingly complex demands and challenges in today's fast-changing, highly competitive business environment. IT can no longer simply support the business—it must help advance it. Executives and boards alike expect digital transformations that capitalize on data and new technologies to drive growth, improve agility, and enhance the customer experience. They also expect to see a return on their digital investments.

KPMG can help. As leading data and analytics advisers, member firm professionals can work with you to leverage AI, machine learning, and other new technologies to realize the value of your data assets and use them to drive innovation and growth. If you're ready to start or accelerate your journey towards being a digital, data-driven organization, contact your local KPMG adviser.

Related reading

This paper is part of KPMG's Future of IT series, exploring the six most important things that market leaders will do in IT over the next five years. For more on the Future of IT and to read other papers in the series, please visit kpmg.com/Future-IT.

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