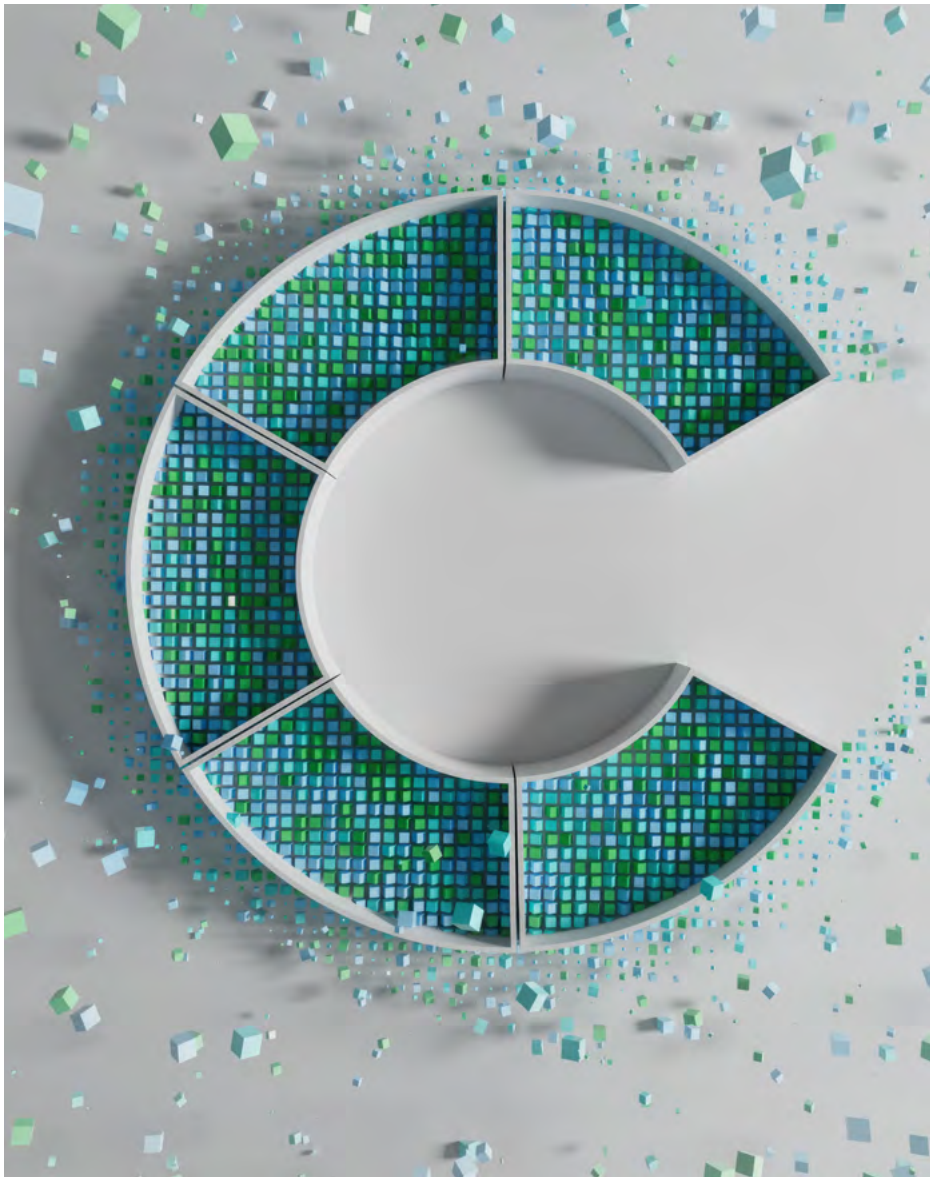


The 2025 Chief Data Officer Study

The AI multiplier effect

Accelerate growth with decision-ready data

IBM

How IBM can help

IBM has been at the forefront of helping organizations tap into the power of data and AI to drive business transformation. With extensive experience and expertise, IBM provides tailored solutions that address specific data challenges and opportunities, including developing dynamic data strategies, implementing AI-enabled decision support systems, and establishing scalable enterprise data architectures. IBM watsonx™ empowers organizations to harness AI for predictive analytics, real-time data processing, and automated decision-making.

For more information about IBM's data and AI services, visit https://www.ibm.com/consulting/data-ai

To explore AI solutions from IBM Software, visit ibm.com/watson.

For insights into AI innovations from IBM Research, visit https://research.ibm.com/artificial-intelligence

Contents

Ed Lovely

VP and Chief Data Officer
IBM

Foreword

The architecture for scaling AI: From fragmented to integrated enterprise data

Enterprise AI at scale is finally within reach. The technology is ready—as long as organizations can feed it the right data.

But many simply cannot. This year, I've personally spoken to more than 150 enterprise clients, and one challenge has emerged above all others: data is trapped in silos. Finance has their data. HR has theirs. Marketing, supply chain, legal—each function's data operates in isolation. No common taxonomy. No shared standards. No end-to-end visibility.

This isn't just an operational inconvenience. It's the Achilles' heel of enterprise AI transformation. When data lives in disconnected silos, every AI initiative becomes a drawn-out, six-to-twelve-month data cleansing project. Teams spend more time hunting for and aligning data than generating meaningful insights.

This year's Chief Data Officer (CDO) Study offers an alternative. Based on data from 1,700 enterprise data leaders, it highlights what can be achieved with a truly integrated enterprise data architecture. AI agents can be deployed at scale—and fast. With access to the right data, they can go beyond isolated use cases to cross-functional, high-impact use cases.

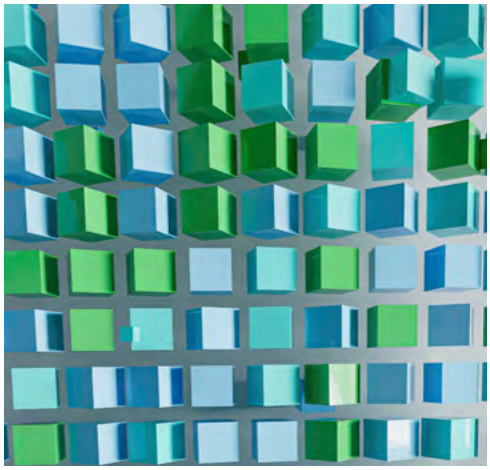
First, leaders must fundamentally shift their mindset. Stop seeing data as an application byproduct. Start viewing it as a strategic asset that flows across the entire value chain.

This means creating data standards that work across all systems, not just within individual ERPs. It means working backward from business outcomes to identify the workflows and data that truly matter. It means treating data experiences like product experiences—designed to attract users, drive adoption, and deliver intuitive value. Most importantly, it means shifting from data ownership to data stewardship, making information accessible where and when decisions are made.

The goal is federated access with security and governance—democratizing data in a safe, controlled way. This will transform your employees, regardless of their role, into trusted business advisors who can spend time generating insights instead of chasing data across silos.

Get this right, and the advantages compound rapidly. In the short term, you'll see faster AI deployment, better decision-making, and enhanced productivity. Long term? You'll have built an enterprise operating model that circulates intelligence throughout your organization. While competitors struggle with siloed AI experiments, you'll be scaling intelligent automation across every critical business process.

The companies that crack this code won't just have better AI—they'll have fundamentally different capabilities. They'll move faster, decide smarter, and adapt more quickly to market changes. Will your enterprise be among them?



Key takeaways

CDOs who tap into their organization's most valuable data—and have a clear vision of what they want to achieve—deliver better AI-powered business results.

CDOs are navigating in fog.

92% say they must focus on business outcomes to succeed in their role. But only 29% are confident they have clear measures to determine the business value of data-driven outcomes.

Data democratization expedites AI efforts.

80% of CDOs say giving employees access to data helps their organization move faster.

AI agents get the job done.

83% of CDOs say the potential benefits of deploying AI agents in their organizations outweigh the risks—and 77% say they're comfortable with their organization relying on outcomes from AI agents.

Data products give organizations the high ground.

78% of CDOs say leveraging proprietary data is a top strategic objective to differentiate their organization in the market.

Introduction

In an AI-first enterprise, **data makes the difference**

AI-first enterprises are redefining market mechanics. They're gaining ground with unprecedented velocity, creating a winner-takes-most dynamic.

It's not just products or services that set these disruptors apart. It's data. Organizations that can tap into their most valuable data—and have a clear vision of what they want to achieve—can train more targeted AI that delivers better business results.

AI agents, or software systems that can learn from their environments and act autonomously to achieve specific goals, can translate data into revenue, profit, and productivity. Whether agents are adjusting processes based on market signals, optimizing energy usage, or developing software features, high-value data is what brings them to life.

Yet not all organizations are seeing results. Lack of data is the culprit. But solving the problem isn't as simple as opening the floodgates and giving every employee unfettered access to everything. That could be a costly mistake. Instead, organizations must identify which data is worth most in each business context, then make that information accessible to the right teams at the right time—in the right way.

"Leading CDOs are not just optimizing functional capabilities, rather enabling their organizations to reimagine their end-to-end workflows powered by data and AI."

Vikrant Bhan, Global Head of Analytics, Data, and Integration, Nestlé

AI amplifies all outcomes, both positive and negative, so good governance must be top of mind. With scores of employees—and exponentially more AI agents—now creating and using data across every function every day, successfully harnessing its flow is essential to accelerate AI-powered impact.

What does that mean, practically, for enterprises that want to lead the future? To identify best practices, the IBM Institute for Business Value (IBM IBV) conducted in-depth proprietary research in partnership with Oxford Economics, surveying more than 1,700 CDOs across 19 industries and 27 geographies. We've also compared those results with findings from the 2023 CDO Study to paint a picture of how the CDO role has evolved.

The biggest shift has been clarity of focus. In 2023, CDOs knew they needed to pivot from strictly managing data to delivering meaningful business value. But that value was broadly defined, with only 58% of CDOs saying their data investments accelerated business growth.

Today, AI has made the CDO's mandate much clearer—they need to drive the business forward by using enterprise data to power AI. In this vein, 81% of CDOs now say the organization's data strategy is integrated with its technology roadmap and infrastructure investments, compared to just 52% in 2023 (see "The CDO Mandate" on page 8).

CDOs now agree that deploying data for competitive advantage is their top priority, ahead of even governance and security as core responsibilities (see "The path to data-driven AI dominance" on page 6). But there's a roadblock. Only 26% are confident their data capabilities can support new AI-enabled revenue streams. In a winner-takes-most market, this barrier seriously compromises an organization's growth prospects.

Our research has identified five data focus areas—strategy, scale, resilience, innovation, and growth—that help organizations deliver greater business value. The CDOs that excel in these areas are able to do more with their money—delivering higher ROI on both data projects and AI investments. They demonstrate that driving more value isn't about accessing more data. It's about using the most valuable data to deliver specific business outcomes. That's what sets leaders apart.

1. **Strategy:** Don't just collect data. Deploy it on a mission.

2. **Scale:** Give AI agents a fast track to data.

3. **Resilience:** Build unbreakable data pipelines.

4. **Innovation:** Deliver data to every desk.

5. **Growth:** Spot breakthroughs waiting to happen.

Perspective

The path to **data-driven AI dominance**

CDOs say leveraging data for competitive advantage is their top priority. But they see several obstacles in their path. Four out of their five top challenges are also their top priorities, revealing a clear strategic focus. Rather than shying away from the most difficult tasks, CDOs are tackling them head-on—because they know that's the only way to achieve the organization's AI ambitions.

To help enterprises gain an edge, CDOs must prioritize data democratization—giving more people more access to data—which leads to innovation, agility, and empowerment. Combined with efforts to secure data, ensure compliance, and maintain quality, that's the path to delivering data-led value with AI.

	Top priorities	Top challenges
1	Leveraging data for competitive advantage	Fostering a data-driven culture
2	Generating actionable insights through advanced analytics	Implementing effective data governance and management practices
3	Implementing effective data governance and management practices	Attracting, developing, and retaining talent with advanced data skills
4	Fostering a data-driven culture	Ensuring data security and privacy
5	Ensuring data security and privacy	Generating actionable insights through advanced analytics

"The crux is in trust. I give our customers, i.e., citizens or companies, the confidence that we handle their data properly. So, I am not a Chief Data Officer at all. I am a Chief Trust Officer."

Wim Stolk, CDO, Dutch Ministries of Economic Affairs; Climate and Green Growth; and Agriculture, Fisheries, Food Security, and Nature

Perspective

The **CDO mandate**

The role of the CDO has never been more pivotal—or more strategic.

Two years ago, CDOs were most concerned with issues surrounding data reliability and compliance. But quality control is no longer enough. CDOs must now deliver quality at scale. That requires the right IT infrastructure—less data warehouse, more data pipeline—but that's only one piece of the puzzle.

CDOs must also become AI product partners, enabling the innovation that provides a competitive edge. That means knowing what AI use cases are most valuable and what data is required to power them. And then making sure the data can be used repeatedly to drive targeted outcomes across the enterprise.

Our research shows that CDOs are up for the challenge. But they'll need to focus on three core strategic tasks where progress is lagging:

- *Business focus*: To deliver on enterprise goals in the age of AI, CDOs must build a stronger link between data and business objectives. An overwhelming 92% of CDOs say they must focus on business outcomes to succeed in their role (see Figure 1).
- *C-suite communication*: CDOs know they can't create value on their own. But only one-third strongly agree that they clearly convey how data drives business results. When data leaders struggle to articulate the value of their role, 86% of CDOs say it jeopardizes the organization's success.
- *Metrics*: Only 29% of CDOs strongly agree that they have clear measures to determine the value of data-driven business outcomes.

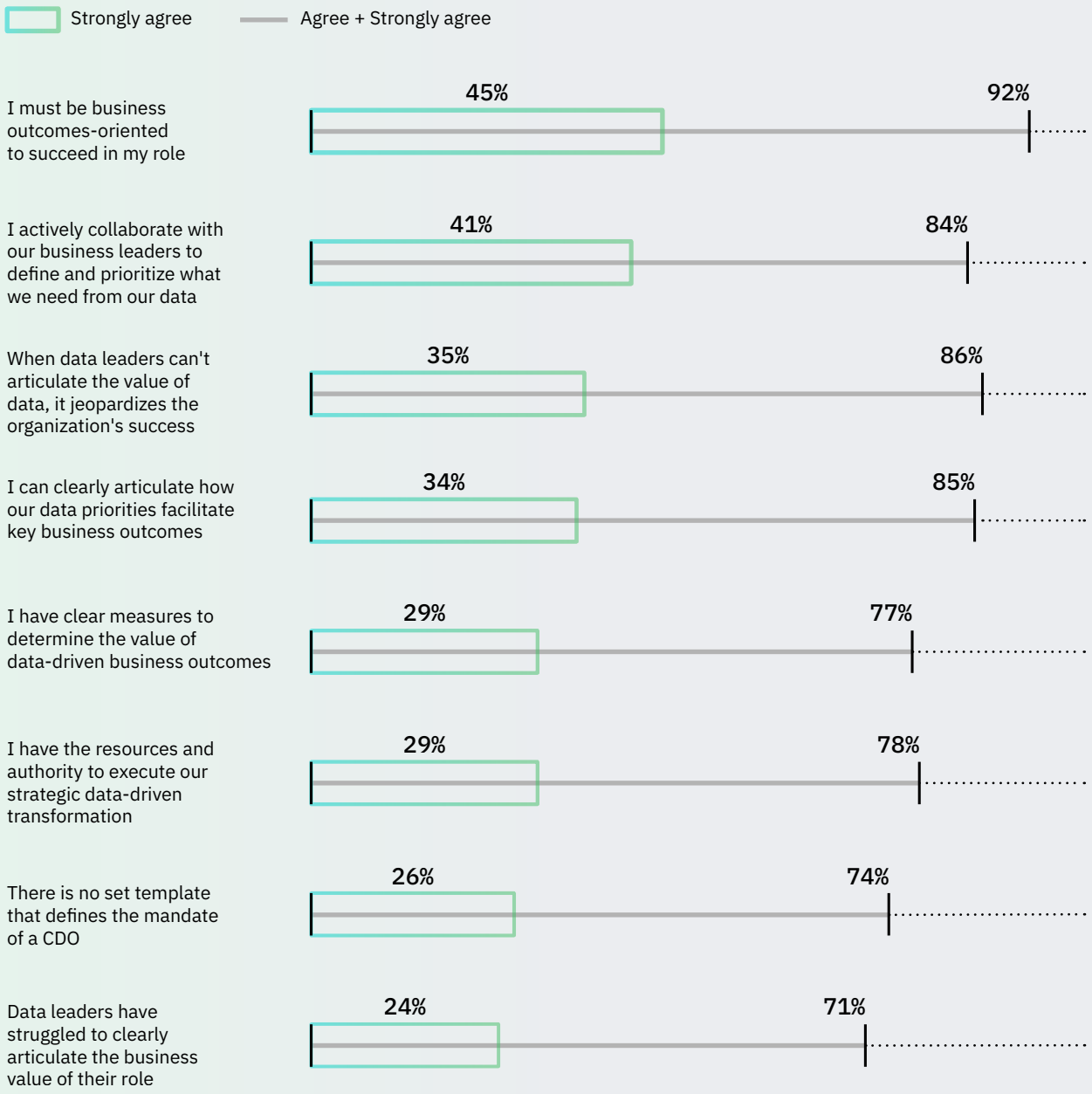
Explore the following sections for specific actions CDOs can take to deliver on their evolving mandate.

"The role of the Chief Data Officer is still evolving. There are no set templates for the operating model, which poses significant challenges in terms of how we approach centralization versus decentralization and the remit of governance versus delivery of data and AI as a practice."

Vikrant Bhan, Global Head of Analytics, Data, and Integration, Nestlé

Figure 1

CDOs are focused on outcomes—but many struggle to measure data's value



Strategy

Don’t just collect data. **Deploy it on a mission.**

Enterprise data strategy revolves around powering AI. 81% of the CDOs in our study prioritize investments that accelerate AI capabilities and initiatives.

As data becomes more central to competitive advantage, organizations are increasingly investing in data strategy to fuel better AI outcomes. Today, 13% of a typical organization’s IT budget is allocated to data strategy, up from just 4% in 2023.[1] But these funds shouldn’t be spent in a vacuum.

CDOs from organizations that deliver higher ROI on both data and AI investments are distinct in their commitment to delivering on business strategy. They’re 25% more likely to say they can clearly articulate how data priorities facilitate key business outcomes—and they have clear measures to determine the value of data-driven results 18% more often than their peers. Plus, they’re more likely to say they integrate data strategy with the organization’s technology roadmap and infrastructure investments.

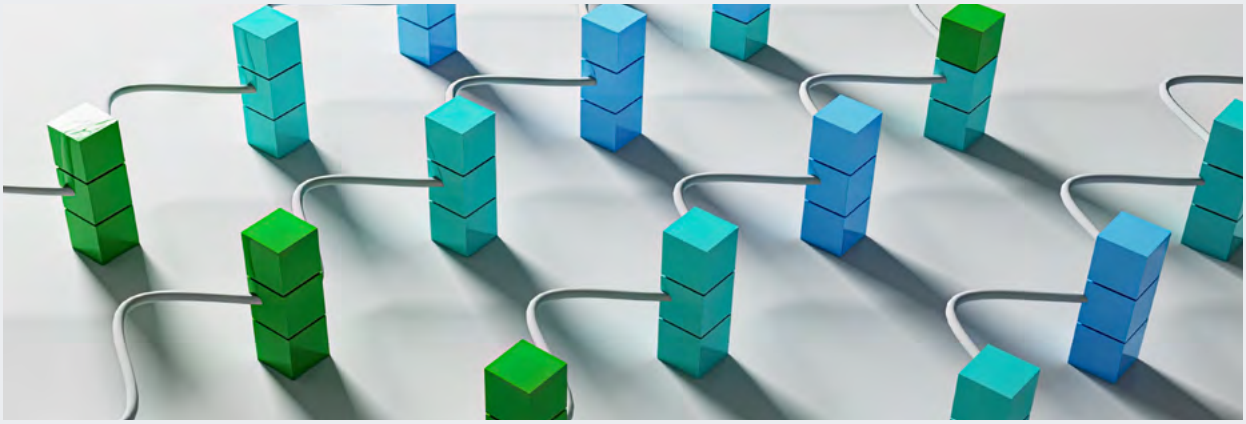
With the right hybrid-by-design cloud strategy in place, CDOs can create a data management framework that is optimized for AI, with the ability to handle massive volumes of data and provide real-time analytics. This allows them to deploy AI workloads wherever they’re needed, whether that’s in the cloud, on premises, or at the edge.

To point the entire technology estate toward this purpose, CDOs need to partner closely with other C-suite leaders, including Chief Information Officers (CIOs), Chief Technology Officers (CTOs), and Chief Information Security Officers (CISOs). (See “Data’s power couple” on page 14). That includes ongoing conversations about which employees and AI systems should have access to which data—and how technology could better support that access. Because conditions change, 83% of the CDOs in our study say their teams are continuously asking what additional data points their organization needs.

> "You're not just delivering the service. You're not just an enabling function. You're part and parcel of setting up a strategy together with those stakeholders."
>
> **Vikrant Bhan, Global Head of Analytics, Data, and Integration, Nestlé**

AI demands that CDOs work closely with business units, as they ultimately own data and best understand its value. In 2023, CDOs said they leaned on top-down decision structures to make the best use of data—but 81% now say data is primarily prepared for AI at the functional or project level. In some cases, CDOs need to provide the data business leaders require, while other times they will need to mine data to identify opportunities the business can capitalize on. In either case, they need to tap into proprietary enterprise data.

Proprietary data—the structured and unstructured data that an organization intentionally collects and stores for its operational and decision-making processes—can provide a significant strategic advantage. It can be used to develop data products, such as personalized product recommendations, predictive diagnostics and treatment plans, or optimized logistics and route planning, that allow both employees and AI agents to deliver better business outcomes. 72% of CEOs go so far as to say that proprietary data is key to unlocking the value of generative AI.[2]



Yet, many organizations struggle to use their data to power AI. CDOs agree that the top data barriers they face on this front are accessibility, completeness, integrity, accuracy, and consistency (see Figure 2). Fortunately, AI agents can help address these challenges. For example, they can autonomously cleanse data, detect anomalies and potential errors, and validate it against predefined rules and standards to boost accuracy.

AI agents can also enhance data integrity by using end-to-end lineage tracking throughout the data lifecycle—tracing origin and movement to provide transparency and accountability. And they can improve consistency by applying unified data models and synchronizing information across systems.

Unleashing AI on an optimized data estate—rather than accepting today's fragmented landscape—unlocks the enterprise's most valuable data. When CDOs enable teams and the AI systems they rely upon to use data more confidently, they can deliver AI outcomes that leave the competition behind.

"In the last two years, technology has given us the ability to treat unstructured data almost like structured data—including customer communications from call centers and WhatsApp or messages."

Irene Yusta Martín, CDO, MasOrange

CDOs that deliver higher AI and data ROI can better articulate how data facilitates key business outcomes—and more clearly measure the value of data-driven results.

Figure 2

Top challenges limiting the use of enterprise data by AI

Perspective

Data's power couple: **The CDO–CISO alliance can make or break your AI strategy**

To deliver value with AI at scale, speed and security must go hand in hand. According to recent IBM IBV research, 87% of executives say effective data security is essential for making the most of AI investments. But only half say they can protect sensitive data and prevent data leakage in most AI use cases.[3]

The relationship between CDOs and CISOs aligns two core imperatives: maximizing the value of data and protecting it as a critical asset. CDOs focus on enabling data-driven innovation, improving decision-making, and unlocking business growth, while CISOs safeguard the confidentiality, integrity, and availability of that data against evolving threats. Without coordination, security controls can slow data initiatives—or data initiatives can expose organizations to cybersecurity compliance or privacy risks.

An effective collaboration between CDOs and CISOs helps ensure that data strategies are secure by design—balancing accessibility, governance, and protection. This builds trust with stakeholders, reduces regulatory and reputational risk, and enables the organization to confidently leverage data for competitive advantage.

Balancing these priorities has become a strategic, board-level priority, as data misuse and data breaches can harm the organization's reputation and erode confidence in a brand. Ultimately, the CDO–CISO relationship bridges innovation and resilience, enabling organizations to use data both responsibly and effectively.

What to do

The CDO mandate

- **Develop a forward-looking data strategy**, in partnership with other business and technology leaders, that incorporates emerging technologies and trends and positions the organization to capitalize on future opportunities. Identify the data products that will do the most to deliver a competitive advantage.
- **Optimize your data estate**. Understand what data is required within each workflow, then assess that data's quality, as well as whether it can be accessed and used by AI. Leverage predictive analytics to anticipate future data needs and adjust strategies proactively.
- **Advocate for data literacy across the C-suite**, ensuring that all leaders understand the strategic value of data and support data-driven decision-making. Integrate data and insights across functions to improve engagement and efficiency.

Scale

Give AI agents **a fast track to data.**

AI agents can only be effective if they're given a clear mission—and access to the high-quality data they need to learn and improve.

Over the past two years, CDOs have made major strides on this front. In 2023, only 41% of CDOs said they had the right data platform in place to process enterprise data. In 2025, 75% say they have a data platform that allows integration across silos when needed.

With the right platform in place, AI can work with data that exists in multiple systems, formats, and locations across the enterprise. 81% of CDOs now say they bring AI to data rather than centralizing data for AI.

This approach lets organizations avoid the costs and security risks that come with relocating data while also accelerating AI-powered outcomes.

Getting there requires a modern technology foundation that lets data flow to the right place, at the right time. In a hybrid-by-design environment, for instance, enterprises can intentionally integrate data, applications, workflows, and cloud estates with specific outcomes in mind to deliver consistent results at scale.[4]

CDOs from organizations that deliver higher ROI on both data and AI investments focus on cultivating this type of dynamic data ecosystem. They're more likely to use a common data hierarchy that enables the integration of structured and unstructured data. They also invest in automated systems that can extract meaningful information from documents, images, and customer emails and phone calls at scale, ensuring AI has access to the same rich context that would inform a human employee's decisions.

"If AI has access to all data, it may think about how to use it effectively. Therefore, it's important to make it accessible to the entire company."

Hiroshi Okuyama, Chief Digital Officer, Director, and Member of the Board, Yanmar Holdings

"As you move from a system-centric to a data-centric organization, don't make technology your first attempt to solve problems. Once you have a solid data foundation, it's much easier to overlay technology."

David Lukcic, CTO, Tampa Electric

Multimodal integration—which combines different types of data inputs, such as text, images, audio, and video, within a single system or AI model—can make it easier for teams to access data insights. This is essential, as 82% of CDOs agree the data team must make interacting with business data simpler and more intuitive for users.

With a multimodal approach, data that typically lives across separate systems in sales, finance, logistics, and service departments, can be consolidated onto modern, cloud-based platforms to deliver richer AI outputs. Other types of modern data architecture patterns, such as data mesh and data fabric, are also gaining traction to support large-scale AI initiatives (see "Translating the language of data architecture," page 21).

Most organizations are moving in this direction, with 74% of CDOs saying they've established mechanisms for continuous data collection and updating to enable real-time or near-real-time data availability. However, only 19% of COOs say their organization has fully developed the components of an enterprise-wide data architecture and scaled data integration across all functions.[5]

Developing data products—packaged, reusable data assets that help users solve specific business problems—is one way enterprises can make data more accessible at scale, without putting sensitive information at risk. It allows data to be bundled into shareable, reusable, interoperable, and secure packages in support of different business use cases.

For example, creating a customer health score that is based on factors such as on-time payments, purchase volume, and contract renewal history can provide insights that streamline customer relationship management. AI agents can both create and use health scores to autonomously prioritize leads, identify at-risk accounts, and personalize campaign messaging, helping employees deliver better results with less effort.

But transforming data practices for an AI-fueled future may also require a shift in mindset, as CDOs see a focus on short-term performance and resistance to change as their most significant barriers to innovation (see Figure 3). Without a cultural shift, disconnected efforts could create more complexity and cost, rather than less.

Figure 3

Top barriers to innovation

82% of CDOs say their team must make interacting with business data simpler and more intuitive.

What to do

The CDO mandate

- **Build a scalable enterprise data architecture** to support data sharing and collaboration. Invest in a unified data ecosystem with modern composable platforms that integrate different core data sources with real-time access and governance.
- **Design data products that address business unit pain points** and decision-making needs, with clear ownership, user feedback loops, and continuous improvement cycles to ensure sustained value delivery.
- **Adopt hybrid cloud solutions** to optimize data storage and processing that is fit for the future, enabling seamless data sharing and real-time collaboration across global teams and systems.

Client zero story

The IBM CIO office **creates a single source of truth[6]**

The IBM Chief Information Officer (CIO) organization delivers, secures, and supports the IT solutions that employees, clients, and partners use every day. That means it stores massive amounts of operational IT data related to applications, devices, networking, infrastructure, and enterprise tools—data that has vast potential value.

However, this data was scattered across disparate data sources, including seven different data lakes built on various technologies. This fragmentation led to several issues. First, the CIO team couldn't access large amounts of data, hindering the ability to gain valuable insights and make strategic decisions. Second, governance, access controls, and processes were inconsistent across repositories, compromising data security. Finally, rampant data and extract, transform, load (ETL) duplication undermined data quality, increased operational costs, drained resources, and stifled innovation.

To address the challenges of fragmented and disorganized data, the IBM CIO organization underwent an IT transformation in the third quarter of 2024. It created a unified data hub, replacing disconnected silos with centralized control and streamlined accessibility. Previously, users laboriously extracted data from disparate environments. Now, with a unified architecture, a single query seamlessly pulls data from these diverse systems, eliminating substantial manual effort.

By moving data off legacy systems and reducing data redundancy, the platform had enabled USD5.3 million in cost savings by the first quarter of 2025. Additionally, the platform has improved data governance by providing a single source of truth and enabling more defensive data strategies.

Perspective

Translating the **language of data**

Data management is no longer a topic for tech experts alone. It's gone mainstream, as enterprises grapple with the complexity of delivering AI-powered outcomes at scale.

Yet, data terminology is still foreign to many businesses execs. They rely on CDOs to translate tech jargon into terms they can understand. This data-focused glossary can help the entire C-suite learn to speak the same language—and strategically invest in the approaches that will produce the best results.

- **Data architecture** is the overall framework and blueprint an organization uses to manage its data, from collection and storage to integration and use. It includes defining policies, data models, processes, and technologies to ensure data is accessible, secure, high-quality, and aligned with business goals.
- **Data models** are conceptual and technical representations that define the structure of data, show how different data elements relate to each other, and establish the rules for how data is stored and used. They serve as blueprints for designing databases and applications, enabling data consistency, and facilitating data sharing by providing a unified, business-readable view of information for various stakeholders.
- **Data products** are packaged, reusable data assets that solve specific business problems, similar to how software applications let users complete specific tasks. They combine raw data, analytics, and insights into accessible tools or dashboards that business teams can directly use to make decisions, track performance, or automate processes without technical expertise.
- **Hybrid cloud** combines on-premises infrastructure with public cloud services, creating a unified environment where data and applications can move between private and public clouds. This approach lets enterprises leverage the scalability and cost-effectiveness of public clouds while maintaining sensitive data on a private cloud for security reasons. For AI initiatives, hybrid cloud architecture can support large-scale computing needs while also complying with data residency regulations.
- **Data fabric** is a modern data management architecture that provides a unified, intelligent, and integrated layer across disparate data sources and environments. It creates a virtual, centralized view of data without needing to move it, allowing organizations to access, manage, and govern all their data in real time for analytics, AI, and machine learning applications.
- **Data mesh** is an organizational and architectural approach that treats data as a product owned by domain-specific teams, rather than centralized IT. It emphasizes decentralized ownership with federated governance. This approach enables self-serve data discovery and promotes data autonomy, leading to faster innovation cycles. It also supports complex data workflows and improves AI model accuracy.

"As CDO, it's my duty to teach the organization how to 'speak data.' But on the other hand, it's my obligation to learn their language and their definitions and understand operations and business."

Andrei Dumitrescu, CDO and Deputy General Counsel, State of Tennessee, Division of TennCare

Resilience

Build unbreakable **data pipelines.**

AI amplifies both the value of good data and the potential cost of poor data.

While human analysts might work around incomplete or inconsistent datasets, AI agents are more likely to perpetuate and scale biases, errors, or gaps in underlying datasets. Using data effectively means understanding and actively managing these risks.

Uncertainty is a big factor in the AI risk equation, but better governance has tipped the scales. Today, 83% of CDOs say the potential benefits of deploying AI agents in their organization outweigh the risks—and 77% say they're comfortable with their organization relying on outcomes from AI agents. This is a big shift from 2023, when CDOs were still struggling with data quality. At that time, only 44% said their leadership trusted the data the organization collected.

Still, there are operational lapses. While 80% of CDOs say they've started to develop a diverse range of datasets to train AI agents, 79% of CDOs say they're still early in the process of defining how to scale and govern them.

Treating data products more like other strategic assets can help CDOs create the rules and procedures that allow teams to derive value from data while also building trust in AI outcomes. This approach involves creating contracts that define how data can and should be used. As AI systems become primary data consumers, this documentation, including service-level agreements and quality metrics, help ensure data quality standards, refresh rates, and usage agreements are consistently met.

Productizing data also makes it possible to give more employees access to more data without introducing security risks. One approach involves creating an enterprise AI agent marketplace, where employees can access pre-vetted agents that have been developed to complete specific types of work. The centralized screening process involved with populating this type of marketplace checks AI agents for security vulnerabilities and other potential issues before releasing them for widespread use.

An agent marketplace helps organizations scale productivity gains while avoiding the expensive and risky proliferation of agents that could duplicate work, diverge from governance guidelines, or share sensitive information beyond its intended scope.

This type of centralized management of AI also drives better performance: CAIOs spearheading hub-and-spoke or centralized AI operating models see 36% higher AI ROI than those managing decentralized operating models.[7]

CDOs from organizations that deliver higher ROI on both AI and data investments are 20% more likely to say they understand the increased data access requirements of agentic AI and that they're developing policies for secure and controlled data sharing within their organization. As a result, these leading CDOs are more comfortable with their organization relying on outcomes from AI agents—and they have more clarity on the risks introduced by AI agents accessing enterprise data.

Issues around AI and data sovereignty, for instance, are calling into question both the provenance of data and the AI systems it trains. As legal boundaries come into force that define where data can be stored and processed, organizations must adapt their practices for compliance—and potentially replicate or relocate their AI infrastructure accordingly. In this environment, 82% of CDOs say their organization views data sovereignty as a critical aspect of its overall risk management strategy.

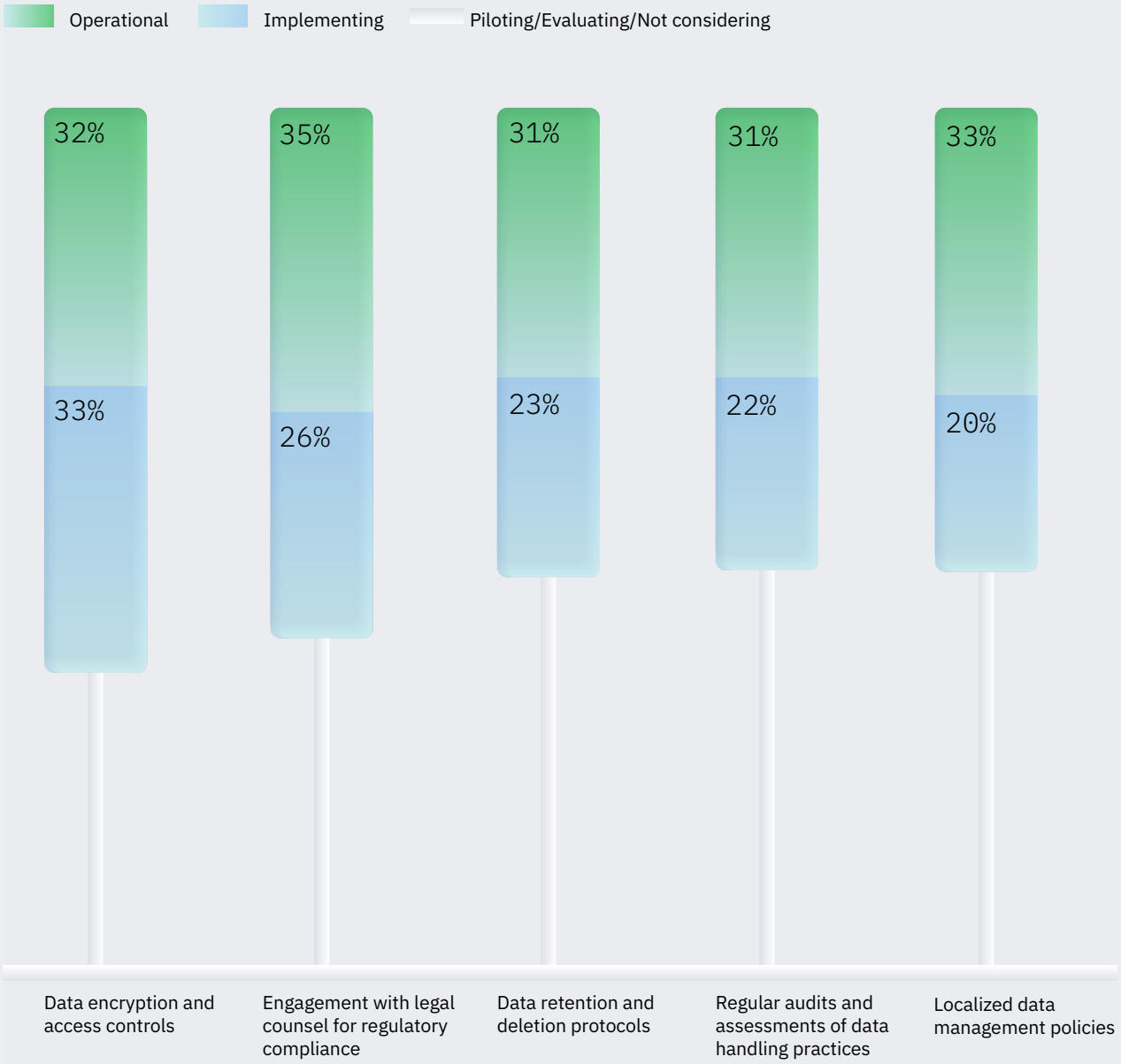
Organizations are acting on multiple fronts to address emerging data and AI sovereignty issues (see Figure 4). CDOs from the most data-driven organizations are once again more optimistic, seeing compliance with data sovereignty laws as a source of competitive advantage. Introducing data encryption and access controls is the most common measure organizations have taken. But more than half of CDOs say they are also leaning on localized data management policies and regular audits and assessments of data handling practices to keep their organization safe.

"We can now quickly integrate data and make it available. But that requires rethinking data products to align with our company's vision and to ensure they are scalable and cost-effective."

Irene Yusta Martín, CDO, MasOrange

Figure 4

Enterprises are taking decisive action to address data and AI sovereignty concerns



Survey question: Which of the following measures has your organization implemented to address data sovereignty concerns?

"Data is core to our business. Data governance plays a huge role, because our data must be trusted, well-managed, and integrated before we can go to the next level, which is using AI to unlock the true value of that data."

James Felix, Chief Digital Transformation Officer, Daiichi Sankyo

What to do

The CDO mandate

- **Phase in AI agents to continuously monitor data quality**, flag anomalies, and suggest improvements. Integrate their findings into your data governance framework, creating a feedback loop where the AI identifies issues that data stewards review and mitigate as needed.
- **Address emerging data and AI sovereignty issues** by regularly auditing data handling practices. Maintain a map of the organization's AI footprint and proactively address potential regulatory and geopolitical risks, enabling compliance management and operational continuity.
- **Build an AI agent marketplace to govern AI usage at scale**. Create a flexible, secure, and scalable data governance framework that adapts to the growing volume and variety of data. Identify opportunities for AI agents to create and use data products to distill more value from data without exposing it at the source.

Innovation

Deliver data **to every desk.**

If people can't access data—via data platforms or AI agents—its value is limited. And CDOs know they need to stop the data chase. In fact, 82% of CDOs go so far as to say they're wasting data if their organization isn't letting people access it to make better decisions.

Data democratization can also expedite AI efforts: 80% of CDOs say it helps their organization move faster. This speed will come, in part, from connecting employees, AI agents, and data products. In a separate survey of operations executives, 90% said AI agents will enable employees to drill deeper into analytics to support real-time analysis and optimization by 2027.[8]

CDOs from organizations that deliver higher ROI on both data and AI investments are ahead of the game. They're 20% more likely to say the risk of limiting employee access to enterprise data is greater than the risk of giving employees broad access. They are also 15% more likely to allow employees to access relevant data through a unified interface, while maintaining security and governance around it. These approaches can include role-based access controls, multilayered security architecture, and self-service with guardrails.

"In the past, management decisions were often shaped by management philosophy, experience-based intuition, and assessments of capable personnel. Moving forward, it's essential to adopt a more data-driven approach across the organization."

Hiroaki Ueda, Executive Officer for Digital Transformation Strategy, Daikin

"Changing culture is hard. But people are becoming more aware that their decisions must be based on data and facts, and that they need to collect evidence when making decisions."

Hiroshi Okuyama, Chief Digital Officer, Director, and Member of the Board, Yanmar Holdings

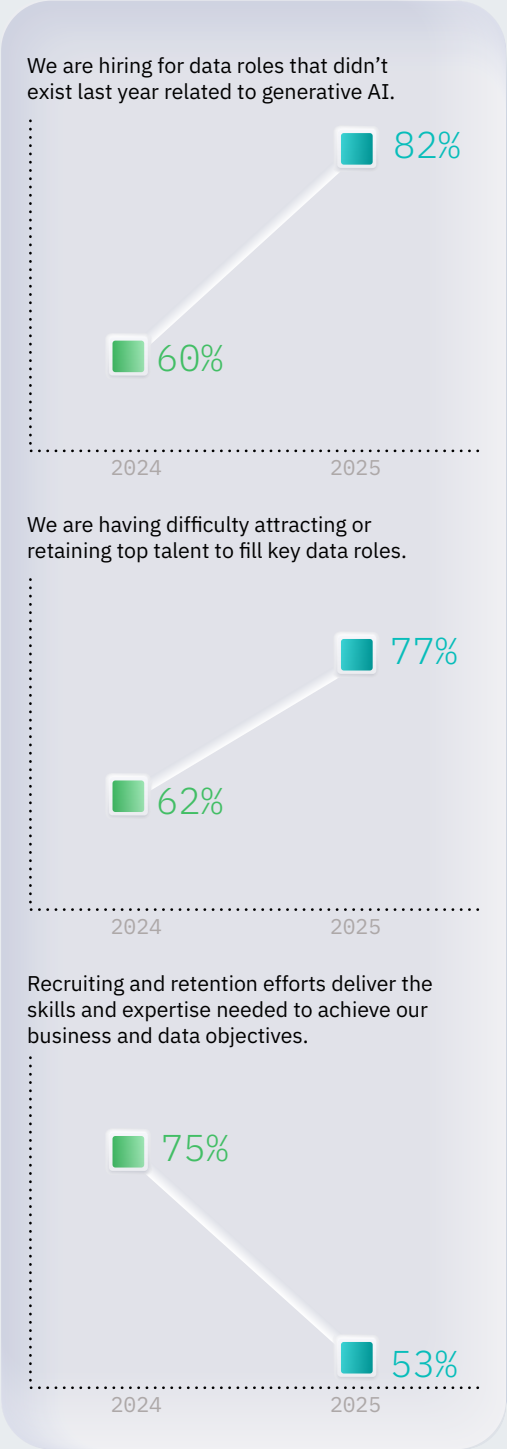
While 74% of CDOs say they actively promote a culture of data stewardship among employees, defining and delivering the appropriate level of access for different types of data is complex. CDOs are working to simplify this process, with more than two-thirds saying their role is more focused on enabling use than preventing misuse. This represents a big cultural shift toward openness—a strategic challenge that CDOs will need to help the organization navigate.

Business teams need people with data skills to help bridge the gap between what they do today and what will be expected of them tomorrow. But increasing talent scarcity is currently a barrier to building broader data literacy across the organization: 47% of CDOs now say attracting, developing, and retaining talent with advanced data skills is a top strategic challenge, up from 32% in 2023.

Today, 77% of CDOs say they're struggling to fill key data roles (see Figure 5). Only 53% say their recruiting and retention efforts deliver the skills and experience needed to achieve the organization's business and data objectives, down from 75% in 2024.[9] This may be due to how quickly team composition is evolving: 82% of CDOs say they're hiring for data roles that didn't exist last year related to generative AI, up from 60% in 2024.[10]

Figure 5

Data roles are shifting—and getting harder to fill



Case study

Document matching frees **Medtronic teams to focus on high-value work**[11]

At Medtronic, a global leader in medical technology, teams faced the time-consuming process of manually matching invoices, proof of delivery, and purchase orders. This labor-intensive workflow impacted operational efficiency and diverted talent away from strategic work.

Medtronic's Credit Services, Global Operations and Supply Chain Analytics, and Information Technology teams deployed an AI-powered solution that automates the ingestion and matching of invoices, proof of delivery, and purchase orders. By leveraging advanced machine learning and generative AI, the platform can handle complex formats, stamps, poor scans, and non-standard layouts with ease.

In just four weeks, Medtronic automated document matching within one department, setting the stage for broader transformation. Document matching time dropped significantly, with accuracy exceeding 99%. As a result, Medtronic freed up staff to focus on high-value activities.

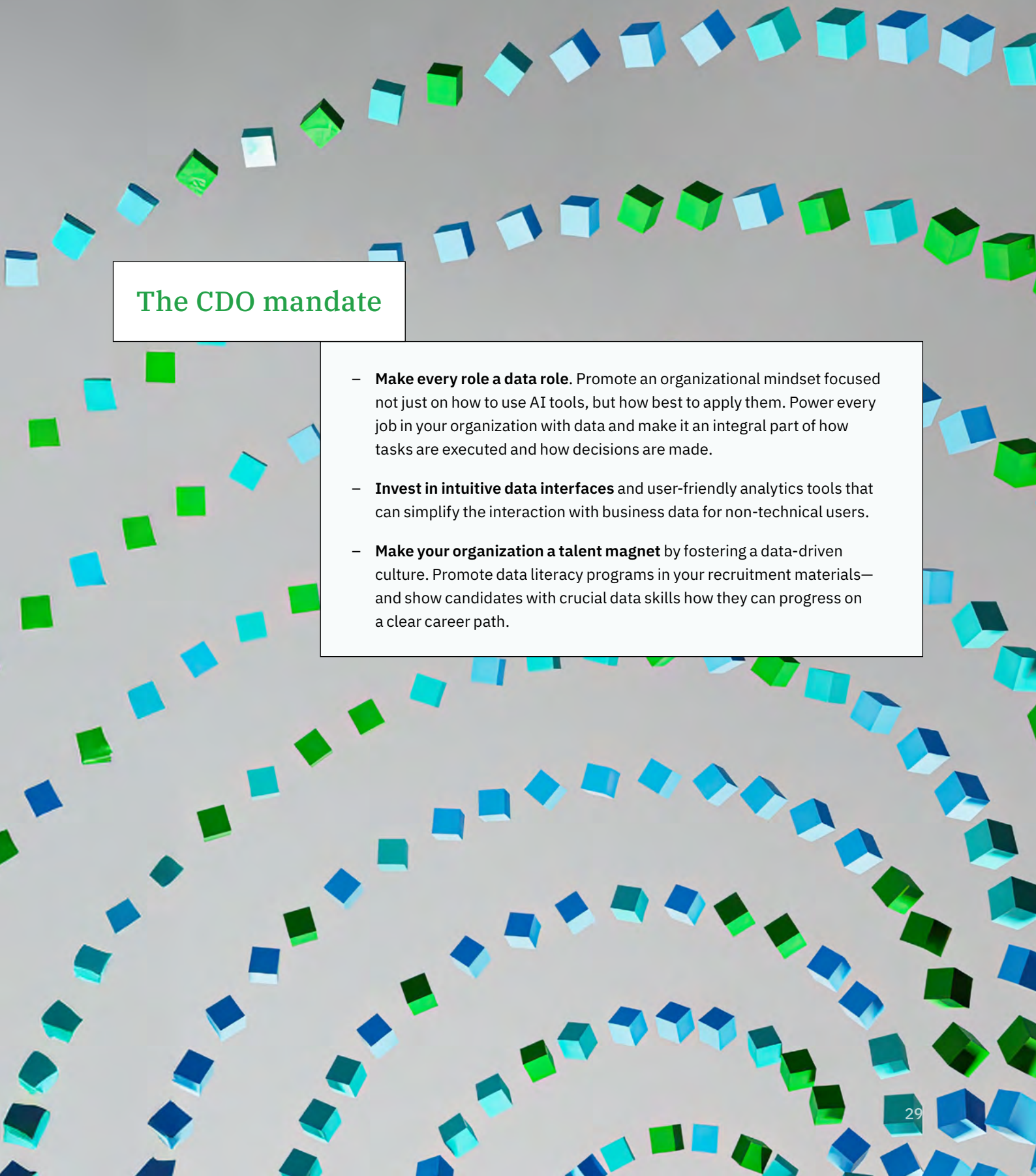
The solution offered the following key benefits:

- Reduced invoice processing time from up to 20 minutes per invoice to 8 seconds
- Minimized costly errors by delivering more than 99% accuracy
- Improved scalability by seamlessly handling growing document volumes
- Enhanced productivity by freeing teams to focus on strategic tasks.

"We're leveraging AI to create tangible value. When powerful technology meets human insight, it elevates processes and unlocks people's potential. We're not waiting for the future of work; we're actively shaping it."

Luciano Miranda; Vice President, Advanced Analytics, Global Operations, and Supply Chain; Medtronic

What to do



The CDO mandate

- **Make every role a data role**. Promote an organizational mindset focused not just on how to use AI tools, but how best to apply them. Power every job in your organization with data and make it an integral part of how tasks are executed and how decisions are made.
- **Invest in intuitive data interfaces** and user-friendly analytics tools that can simplify the interaction with business data for non-technical users.
- **Make your organization a talent magnet** by fostering a data-driven culture. Promote data literacy programs in your recruitment materials—and show candidates with crucial data skills how they can progress on a clear career path.

Growth

Spot breakthroughs **waiting to happen.**

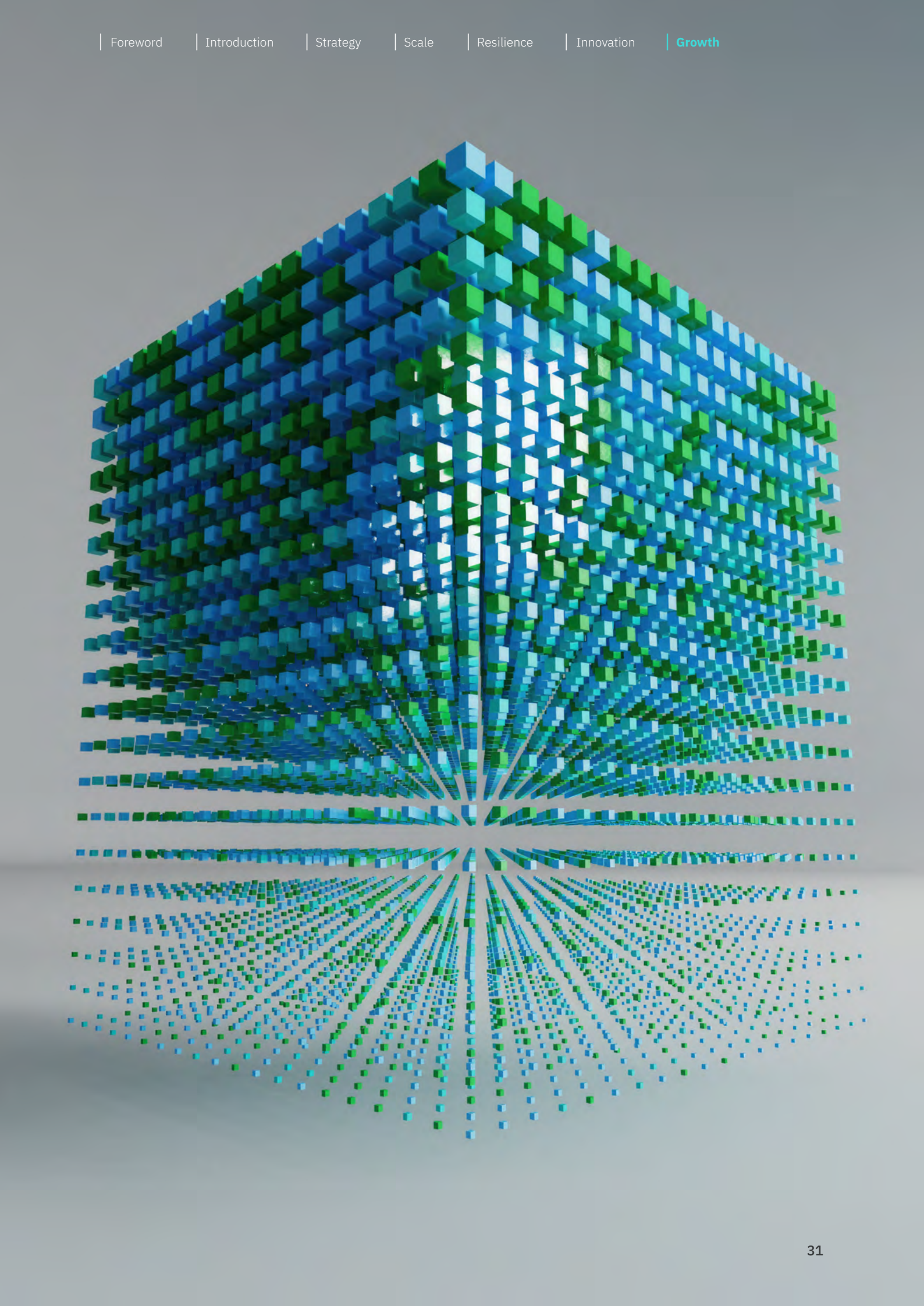
Proprietary data contains the organization's secret sauce—special ingredients that can't be replicated by the competition and that keep customers coming back for more.

84% of CDOs say their unique data products have already provided significant competitive advantages. These can include customer 360 views, real-time operational dashboards, or financial forecasting datasets.

What's more, 78% of CDOs say leveraging proprietary data is a top strategic objective to differentiate their organization in the market. As general AI capabilities become more commoditized, distilling value from proprietary data will become mission critical. That's in part because AI can reveal patterns and possibilities that were previously invisible. Transforming proprietary data into data products helps organizations quickly identify market gaps or productivity plays they can capitalize on—opportunities that other organizations using different datasets wouldn't be able to see.

"In complex international commercial flows, making informed investment decisions is increasingly difficult without robust, data-driven insights."

Hiroaki Ueda, Executive Officer for Digital Transformation Strategy, Daikin



Unstructured data, for instance, often contains nuanced information that is lost in structured databases. While the CRM system provides hard data about what a customer has purchased, it doesn't include the emotional context, such as frustration or gratitude, that are found in customer service emails. Today, only 26% of CDOs are confident their organization can use unstructured data in a way that delivers business value.

This lack of confidence—or perhaps even skepticism—may be rooted in complexity. Tapping into unstructured data requires advanced analytics and AI capabilities, high data quality, and a strong governance framework.

CDOs in organizations that deliver higher ROI on both data and AI investments are able to cut through this complexity. Their enterprise data strategy has clear mechanisms for creating value and turning it into revenue for their organization—and these leaders are 25% more likely to say AI has changed how they measure the ROI of data.

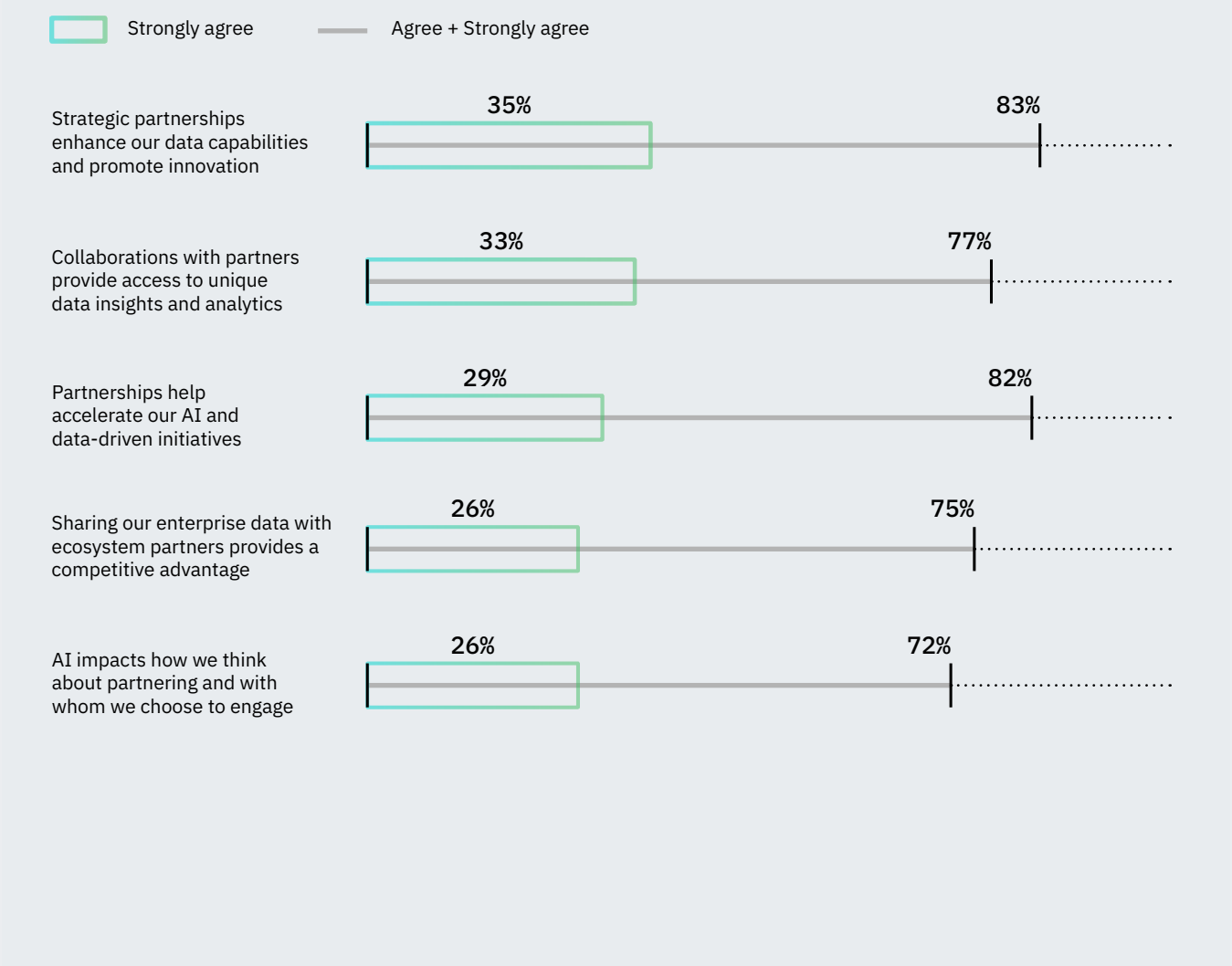
Leading CDOs are also more likely to see greater value in partnerships, which they say strengthens their market position. Ecosystem data—shared across partners, suppliers, distributors, and complementary businesses—is a rich source of market insights and hidden growth opportunities. It paints a full market picture that no single organization could create on its own. Partner data can also provide early signals of market shifts, such as material shortages or cost increases, months ahead of traditional forecasting methods.

CDOs see immense value in ecosystem data, with 83% saying strategic partnerships enhance their organization's data capabilities and promote innovation (see Figure 6). 82% also say partnerships help in accelerating AI and data-driven initiatives.

> "I spend a lot of my time meeting with peers in the industry to understand what I'm missing. What could we be doing better?"
>
> **James Felix, Chief Digital Transformation Officer, Daiichi Sankyo**

Figure 6

Ecosystem partnerships amplify the value of proprietary data



Case study

Data-driven decision-making **streamlines Matrix Renewables operations**[12]

Matrix Renewables, a leading renewable energy company, aims to maximize clean energy generation and grow fast while optimizing its operational efficiency. But the organization faced operational challenges with onboarding and monitoring its rapidly acquired and constructed assets.

Fragmented processes led to delays in issue resolution, hidden configuration problems, and ineffective monitoring at scale. As a result, marginal operational costs were not optimized, and the company's ability to scale and meet its long-term growth goals were constrained.

To overcome these issues, Matrix Renewables implemented a centralized, intelligent data platform. At the core of this transformation is an advanced analytics capability that combines AI and machine-learning models to detect underperformance, reveal hidden inefficiencies, and support data-driven decisions that directly impact ROI. The integration was carefully optimized to facilitate ample data availability and quality.

Matrix Renewables was able to shift from individual site monitoring procedures to a proactive, data-driven centralized method of asset performance optimization. This empowered teams with centralized streamline control, enhanced in-house reporting and transparency, and created a scalable, centralized performance monitoring platform that could enable scalable growth. As a result, Matrix Renewables has made significant improvements, including a 75% reduction in reporting time, a 10% reduction in downtime, and a recognized increase in annual production efficiency.

What to do

The CDO mandate

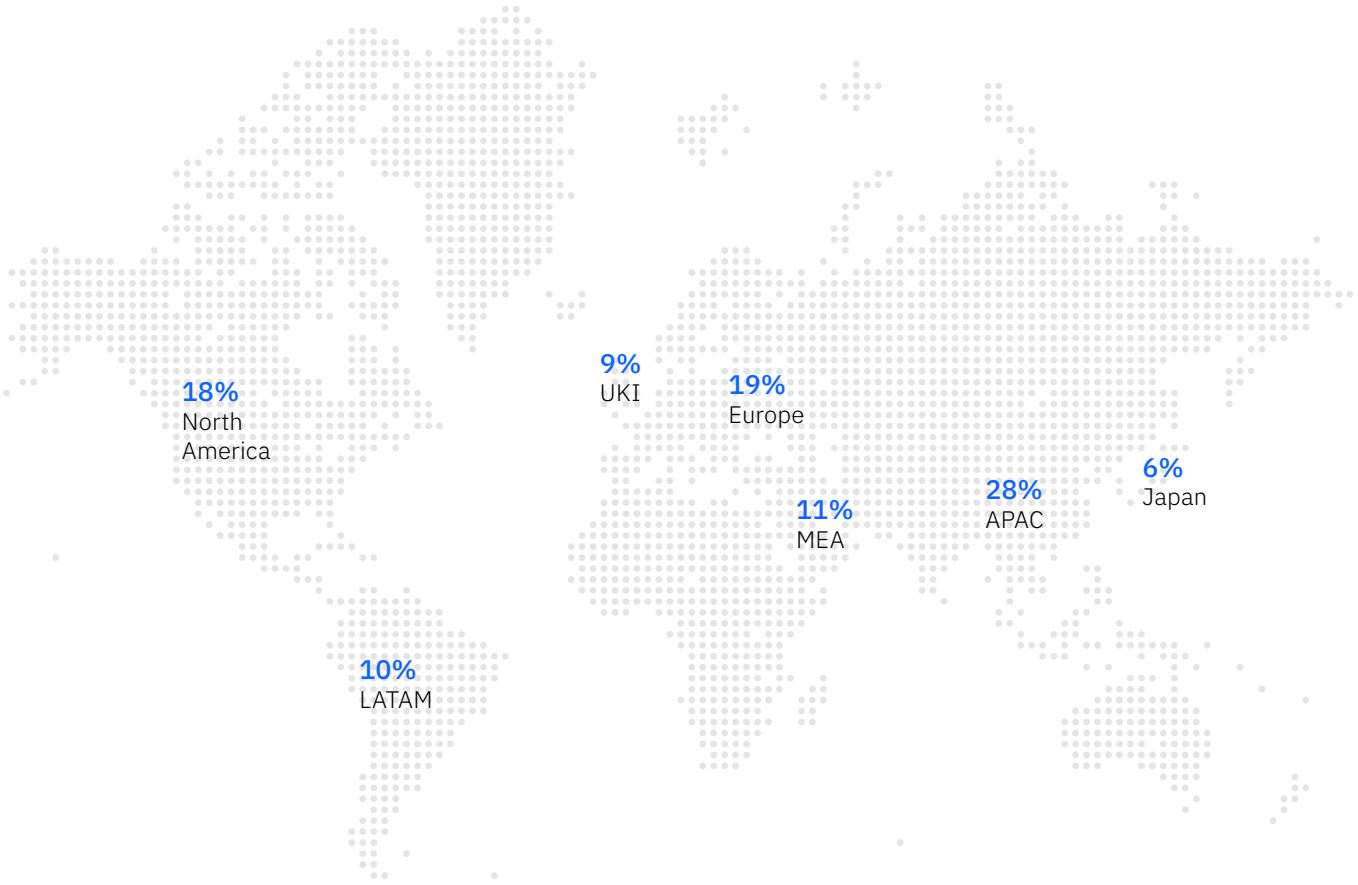
- **Unlock insights from unstructured data**. Deploy natural language processing, computer vision, and machine learning tools to automatically extract meaning from text documents, images, videos, and audio files. Use optical character recognition (OCR) and document intelligence platforms to digitize and analyze paper-based records, contracts, and forms.
- **Establish KPIs that link data initiatives to business outcomes**, such as increased sales conversions, reduced customer churn, or operational cost savings. Implement regular ROI reporting that quantifies the financial impact of data projects, making it easier to secure continued investment.
- **Enhance data capabilities through strategic partnerships**. Create a clear data sharing and collaboration framework that defines the terms and conditions of data sharing with ecosystem partners, including data governance, security, and compliance.

Research methodology

Research for the CDO study was conducted in the third quarter of 2025, targeting 1,700 senior data and analytics leaders. The sample included executives holding titles such as Chief Data Officer, Chief Data and Analytics Officer, Chief Analytics Officer, Chief AI Officer, and other senior roles.

Respondents represented 19 industries—including aerospace and defense, banking, insurance, telecommunications, manufacturing, government, healthcare, and energy—and were distributed across 27 geographies spanning North America, Latin America, Europe, the Middle East, Africa, Asia-Pacific, and Japan.

Global representation



1700	27	19
Senior data and analytics leaders	Geographies	Industries

Analytical Approach

To identify distinct strategic and operational profiles among CDOs, a hierarchical cluster analysis was performed to establish statistically different performance groups.

The clusters were defined using base variable standardized scores. Standardizing the variables ensures comparability across base variables with varying intensity scales. The base variables were comprised of five key attitudinal measures:

1. Alignment of enterprise data strategy with enterprise business strategy
2. Presence of clear mechanisms to create and monetize value from the data strategy
3. Orientation toward business outcomes in the executive's role
4. Importance of a well-managed enterprise data architecture for collaboration
5. Impact of AI integration in data practices on innovation power

Statistical Validation

To evaluate the robustness of the cluster analysis, a one-way analysis of variance (ANOVA) was conducted for each input variable. The analysis revealed statistically significant differences between groups, with the significance level set at $p < 0.001$, confirming meaningful separation.

Comparison tests were applied to determine which groups differed significantly on each measure. Additionally, group comparisons were conducted to examine relationships between group membership and respondent attributes, such as role, reporting line, industry, and geography.

These comparisons showed significant mean differences at the p=0.05 level, indicating distinct attitudinal and demographic differences across groups.

Industries	Count	Column %
Aerospace and defense	51	3%
Automotive	102	6%
Financial Markets	68	4%
Banking	136	8%
Chemicals	68	4%
Consumer Products	102	6%
Retail	102	6%
Electronics	68	4%
Energy and Utilities	85	5%
Government	170	10%
Healthcare	85	5%
Industrial Products	85	5%
IT services	68	4%
Insurance	85	5%
Life Sciences/ Pharmaceuticals	68	4%
Manufacturing	102	6%
Petroleum	85	5%
Telecommunications	102	6%
Travel and Transportation	68	4%
Total	**1700**	**100%**

Annual revenue/budget in 2024	
USD100 million to USD500 million	5%
USD500 million to USD1 billion	15%
USD1 billion to USD5 billion	20%
USD5 billion to USD10 billion	12%
USD10 billion to USD20 billion	13%
USD20 billion to USD50 billion	16%
More than USD50 billion	9%
	100%

Contributors

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https://ibm.co/ceo-2025

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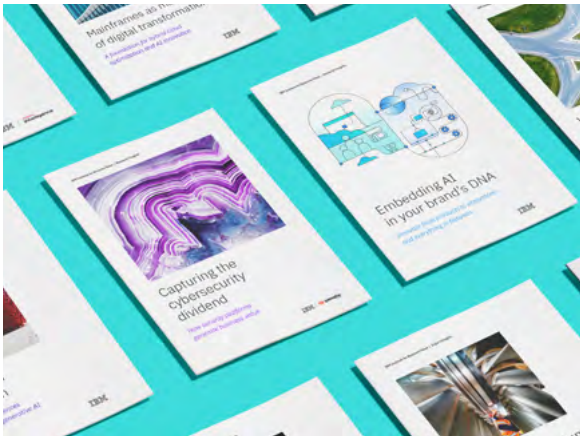
IBM Institute for Business Value. July 2025.
https://ibm.biz/chief-ai-officer

2023 CDO Study: Turning data into value
IBM Institute for Business Value. March 2023.
https://ibm.biz/cdo-2023



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Notes and sources

1 Global C-suite Series. 27th edition. CDO Study. *Turning data into value: How top Chief Data Officers deliver outsize results while spending less.* IBM Institute for Business Value. March 20, 2023. https://ibm.biz/cdo-2023

2 Global C-suite Series. 32nd edition. CEO Study. *5 mindshifts to supercharge business growth: Move from productivity to performance with agentic AI*. IBM Institute for Business Value. May 6, 2025. https://ibm.co/ceo-2025

3 Unpublished data from 1011 executives. IBM Institute for Business Value. 2025.

4 Ali, Mohamad, John Granger, Ric Lewis, Aparna Sharma, Kareem Yusuf, Varun Bijlani, Matt Hicks, Salima Lin, and Joanne Wright. *The Great Tech Reset: How hybrid by design creates business value*. IBM Institute for Business Value. November 18, 2024. https://ibm.co/great-tech-reset-book

5 Global C-suite Series. 34th edition. COO Study. *The intrepid COO: 5 strategies to shatter enterprise inertia.* IBM Institute for Business Value. August 28,2025. https://ibm.biz/2025-coo

6 "The key to the data treasure box: An IT transformation." IBM case study. Accessed September 30, 2025. https://www.ibm.com/case-studies/ibm-cio-watsonx

7 Al Falasi, Saeed, Lula Mohanty, Irfan Verjee, Anthony Marshall, and Jacob Dencik. *Solving the AI ROI puzzle: How Chief AI Officers cut through complexity to create new paths to value.* IBM Institute for Business Value. July 13, 2025. https://ibm.biz/chief-ai-officer

8 Payraudeau, Jean-Stéphane, Neeraj Manik, Khalid Siddiqui, and Karen Butner. *Orchestrating agentic AI for intelligent business operations.* IBM Institute for Business Value. May 12, 2025. https://ibm.co/agentic-process-automation

9 Global C-suite Series. 30th edition. Technology Leaders Study. *6 blind spots tech leaders must expose.* IBM Institute for Business Value. August 2024. https://ibm.co/cxo-tech

10 Ibid.

11 "Down from up to 20 minutes to 8 seconds: How Medtronic transformed invoice matching with AI." IBM case study. Accessed September 25, 2025. https://www.ibm.com/case-studies/medtronic-neudesic

12 "Matrix Renewables streamlines sustainable energy operations." IBM case study. Accessed September 25, 2025. https://www.ibm.com/case-studies/matrix-renewables

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