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Market Pulse

BIG DATA BUSINESS:

9 TRENDS SHAPING THE FUTURE OF **DATA ANALYTICS**

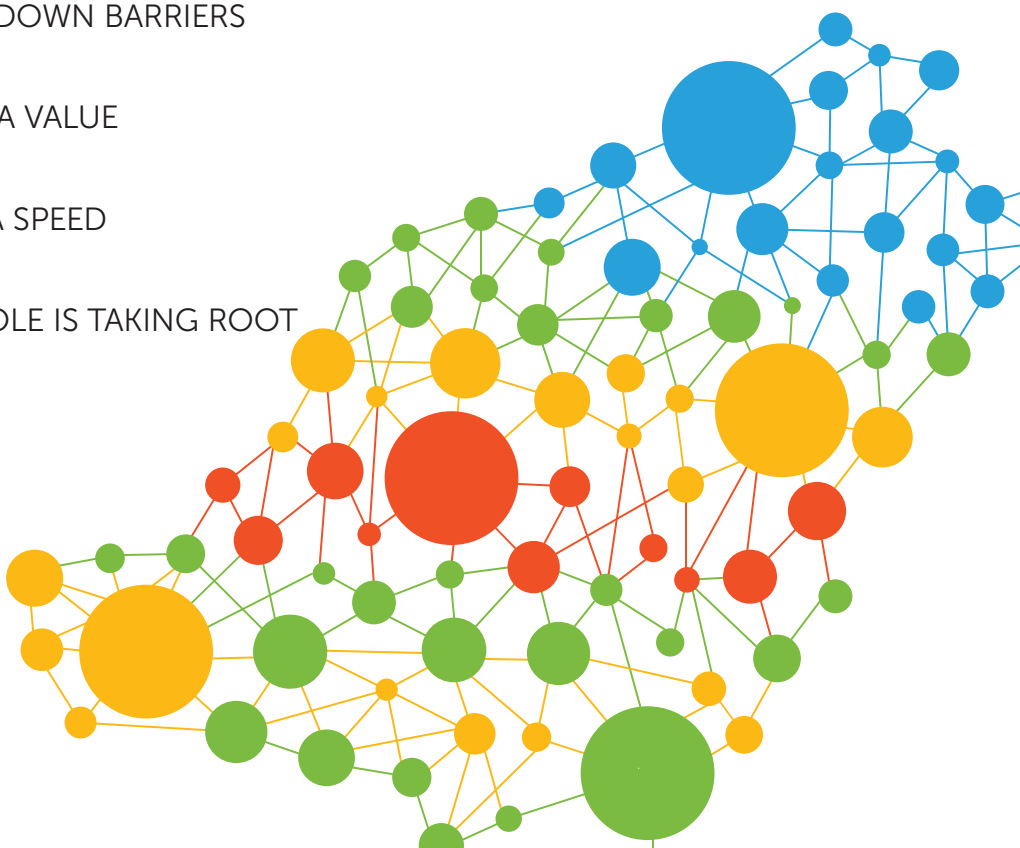
IDG Communications, Inc.

INTRODUCTION

With data becoming pervasive in business, it's easy to assume that most organizations have built core competencies around big data analytics. The harsh reality is that **67% of IT leaders define their big data environment as "chaotic."**

That's a key finding in a new IDG survey of CIOs and other IT leaders. These technology decision-makers describe their biggest big data challenges and point to solutions that can help bring more value to any organization. This report examines the state of the big data landscape and outlines how enterprises can capitalize on nine trends shaping the future of analytics:

1. BIG DATA IS EVERYWHERE
2. EXPECTATIONS ARE SKY-HIGH
3. ANALYTICS IS STILL THE WILD WEST
4. SECURITY REMAINS TOP OF MIND
5. INTEGRATION IS A MAJOR HURDLE
6. THE CLOUD IS BREAKING DOWN BARRIERS
7. THE HUNT IS ON FOR DATA VALUE
8. THERE'S A NEED FOR DATA SPEED
9. THE "CITIZEN ANALYST" ROLE IS TAKING ROOT



TREND 1: BIG DATA IS EVERYWHERE

The term "big data" has been around since the 1990s,[1] yet the explosion of data in the past few years has driven home its relevance and importance. **The world is already generating an estimated 2.5 exabytes of data every day. That's expected to rise to 463 exabytes daily by 2025.**[2]

IT and business leaders know they must extract as much value as possible to move with speed and gain competitive advantage. So, it's not surprising that 95% of surveyed organizations have deployed big data initiatives on a department or enterprise level.

In many instances, however, this first wave of big data deployments has been overrun by broader digital transformation efforts, along with new data sources such as the Internet of Things. These are amplifying the volume, variety, and velocity of data and make advanced, rapid analysis a priority.

95% of surveyed organizations have deployed big data initiatives on a department or enterprise level.

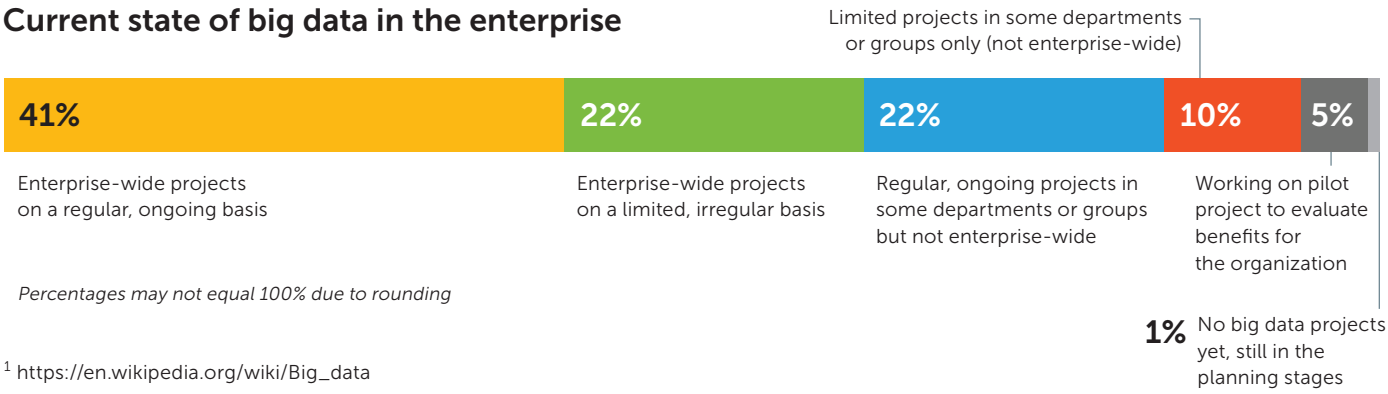
In a recent interview,[3] Gartner Research Director Jorgen Heizenberg said:

"Today, we are witnessing a paradigm shift from the way we manage data and analytics. On the one hand, we have an abundance of data and information available to us, and on the other hand, we lack the culture and human capabilities to properly collect, analyze, and manage data. This impacts one's ability to judge and make the right decisions for the business."

WHAT'S NEXT: As big data initiatives grow in scope and sophistication, can your workforce keep pace with the technology? CIOs must ensure the right skills and training are in place to support advanced analytics initiatives within IT and across the entire business.

FIGURE 1.

Current state of big data in the enterprise



Percentages may not equal 100% due to rounding

[1] https://en.wikipedia.org/wiki/Big_data

[2] http://res.cloudinary.com/yumyoshojin/image/upload/v1/pdf/future-data-2019.pdf

[3] https://www.gartner.com/smarterwithgartner/watch-these-data-and-analytics-challenges-and-trends/

Source: IDG

TREND 2: EXPECTATIONS ARE SKY-HIGH

A wave of excitement and urgency has accompanied the data explosion. IT and business leaders know there's hidden value within data, and expectations are high that capturing new insights from this data will unlock operational efficiencies and business growth. These expectations translate into a variety of business objectives that are influencing data investments, including better decision-making, security improvements, productivity increases, and enhanced customer experiences.

"My predecessors would have made a lot of decisions based on their experience and intuition. They are still very important, but you have got to triangulate them with data," Sim Tshabalala, CEO of Standard Bank, said in PwC's 22nd Annual Global CEO survey.[4] "As I always say: 'In God we trust; everybody else, bring data.'"

IT and business leaders know there's hidden value within data.

FIGURE 2.

Business goals driving investments for data initiatives in the next 12 months

Multiple selections allowed

Source: IDG

WHAT'S NEXT: To meet heightened expectations for business improvements, CIOs must continue to work closely with functional groups such as HR, finance, and supply chain to align data goals and initiatives. According to Gartner,[5] a business-driven strategy is key:

"Data and analytics leaders have to deal with delivering business outcomes from their data-driven programs today — and at the same time build an effective data and analytics organization that is fit for tomorrow. In order to meet these challenges, such leaders need to take ownership and develop a data and analytics strategy."

Some IT leaders are already moving in this direction, per IDG's "State of the CIO" report: **Strategic activities are taking up more of the CIO's time, up to 34% in 2019 compared with 25% in 2018.**

[4] https://www.pwc.com/gx/en/ceo-survey/2019/report/pwc-22nd-annual-global-ceo-survey.pdf

[5] https://www.gartner.com/smarterwithgartner/watch-these-data-and-analytics-challenges-and-trends/

TREND 3: ANALYTICS IS STILL THE WILD WEST

IT leaders are deploying multiple analytics tools to harness all of the data flowing into their organizations. **Nearly two-thirds (64%) of IT leaders say they're using two or more analytics solutions.** And those solutions often are scattered across different parts of the business, resulting in a lot of virtual wheel-spinning: Of survey respondents, 67% acknowledge that big data analytics is "chaotic" at their organization, and 70% agree that data is underutilized.

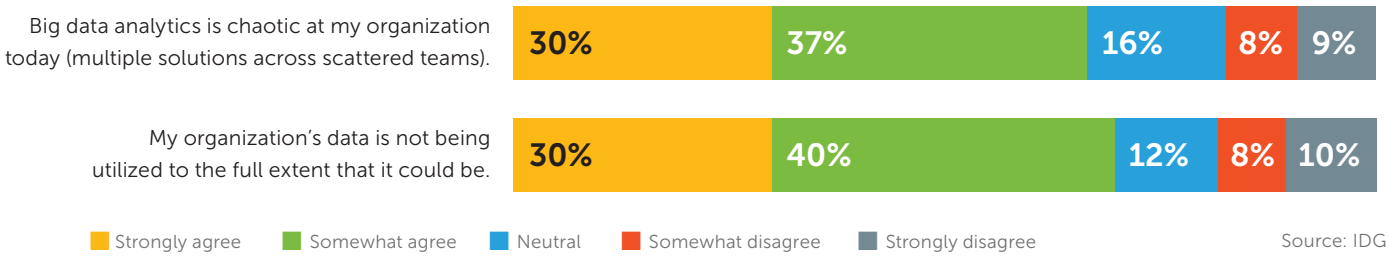
These findings should give pause to IT leaders. Whether the problem is undiscovered insights or simply the inability to connect dots across the organization, the enterprise is limited if it can't use the data it has.

67% acknowledge that big data analytics is "chaotic" at their organization

WHAT'S NEXT: Organizations looking to tame the Wild West of big data must define models that create a single source of truth for the enterprise. For example, some companies are using sophisticated data-modeling capabilities to build enterprise-grade semantic models into business intelligence datasets, which are then visualized in reports and dashboards. To do this, IT leaders need to leverage technologies such as the cloud and machine learning to achieve scale and speed, and to forge strategic partnerships with service providers to fill gaps in their in-house capabilities.

FIGURE 3.

Data analytics: chaotic, underutilized



Source: IDG

TREND 4: SECURITY REMAINS TOP OF MIND

Despite increased attention on enterprise security, high-profile data breaches continue to generate headlines — such as the 500 million Marriott records breached in 2018 and the Equifax breach of 2017, which exposed 145 million consumers' personal credit details. IT leaders understand the need for ongoing diligence: **Concern over data security is the top inhibitor to operationalizing big data,** and security is the area needing the most improvement for demonstrating ROI from data initiatives.

It's a big hill to climb. Given the high volumes of data, the variety of formats, and the need to support data-driven communication and collaboration beyond the traditional firewall, IT leaders must find the right mix of in-house and third-party technologies and processes to defend, detect, and respond to potential data breaches. For example, more than two-thirds (68%) of organizations say they're taking extra measures to protect unstructured data such as texts, videos, photos, and email.

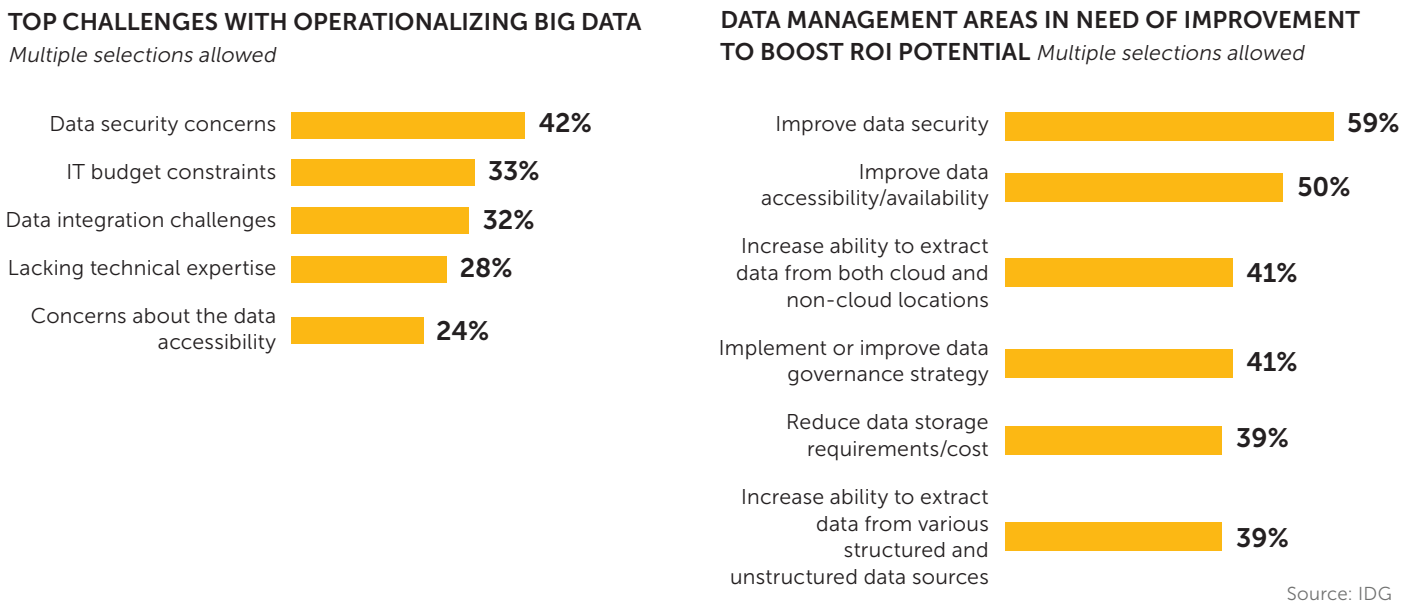
IT and security teams need to collaborate more closely than ever to identify threats and vulnerabilities proactively across their data ecosystems. They're making progress: Nearly two-thirds (64%) of respondents in IDG's "State of the CIO" survey say security is tightly integrated with IT strategy, a figure expected to jump to 82% in three years.

68% of organizations say they're taking extra measures to protect unstructured data

WHAT'S NEXT: IT and security teams should align to emphasize security capabilities when evaluating analytics solutions. For example, it's important to ask vendors if their technologies support fine-grain, role-based, and row-level security.

FIGURE 4.

Security's influence on data-driven initiatives



Source: IDG

TREND 5: INTEGRATION IS A MAJOR HURDLE

An emphasis on security has led to a mini data explosion unto itself, as security monitoring tools generate large data sets that are analyzed for threats. Security, however, is just one of dozens of data sources that IT is trying to corral, cutting across multiple applications, databases, and business systems.

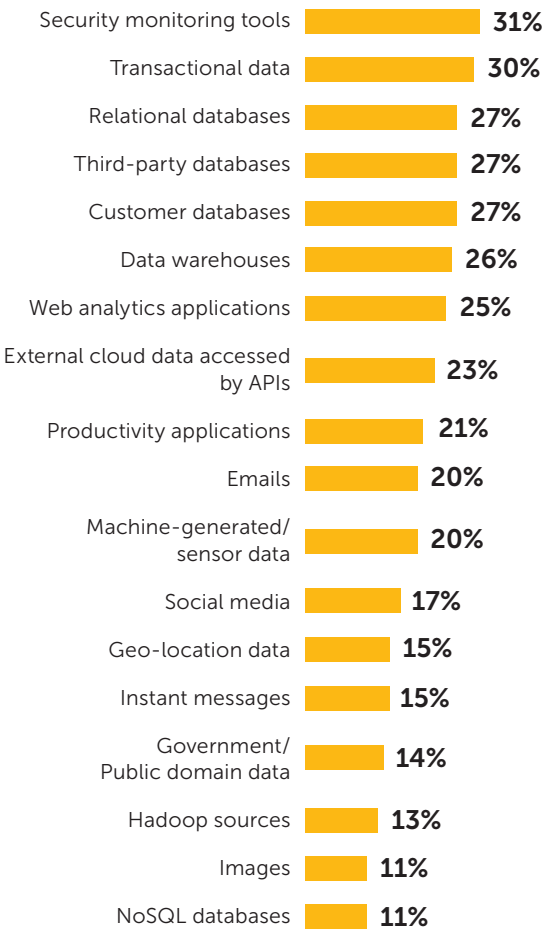
The number of data sources is compounded by the silos of data that exist in individual business units, departments, and geographies. This creates a variety of significant integration challenges, ranging from varied data formats and storage requirements to time-consuming, manual data exports and imports.

Digital transformation efforts depend on being able to integrate data from multiple applications and data sources. **Strategic IT leaders need analytics tools that are agnostic with respect to data sources, platforms, and data management: Of IT leaders surveyed, 81% say this feature is critical or very important.**

FIGURE 5.

Most common data sources

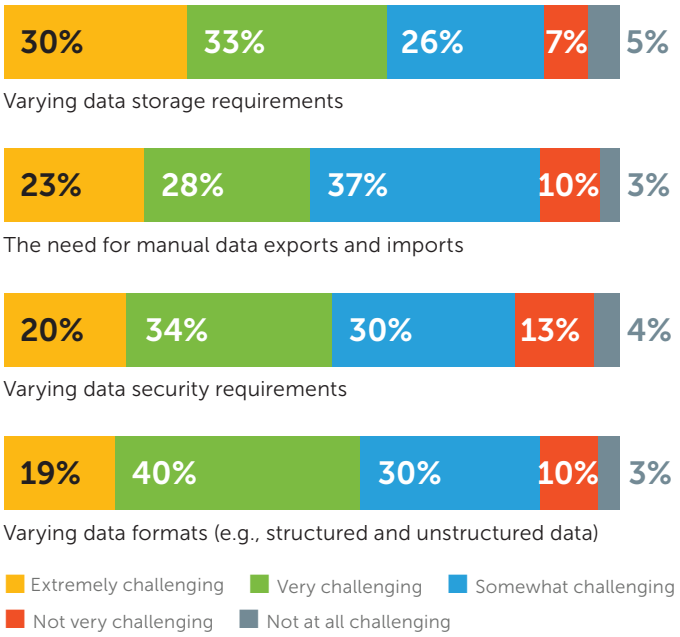
Multiple selections allowed



WHAT'S NEXT: Ask vendors if their analytics solutions have a built-in abstraction layer that keeps data preparation independent of the underlying source. This approach provides connectivity to a multitude of data sources.

FIGURE 6.

Challenges of pulling together data from multiple sources for analysis



Percentages may not equal 100% due to rounding

Source: IDG

TREND 6: THE CLOUD IS BREAKING DOWN BARRIERS

The benefits of the public cloud have moved beyond cost savings as organizations expand their transitions to cloud-based applications, platforms, and infrastructure. Early concerns about moving data to the cloud have given way to an understanding that **security protections from cloud service providers are often more robust than individual organizations can provide on their own.**

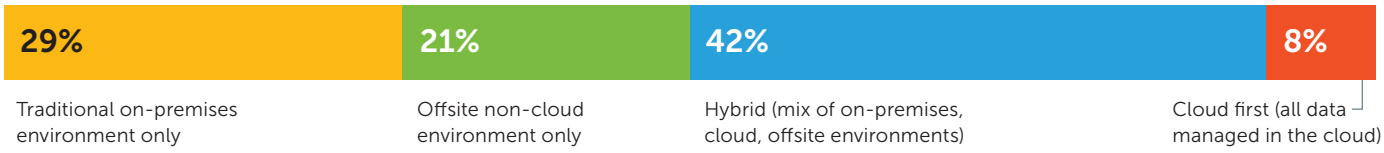
This acceleration to the cloud is evident with analytics solutions: Thirty-four percent now in use are cloud-based, but 71% of IT leaders say they're seeking a cloud-based deployment model when evaluating new analytics tools. They understand that the cloud provides the scale and speed organizations require to rapidly process and analyze large data sets.

Some legacy challenges remain. Nearly three in 10 organizations say they're managing all of their data in on-premises environments; just 8% say they're using the cloud for all data management. A hybrid model is most common, with 42% of organizations using a mix of cloud, on-premises, and offsite/non-cloud environments.

34% of analytics tools in use are cloud-based

WHAT'S NEXT: Expect CIOs to continue to move data and analytics capabilities to the cloud as they realize the benefits of scale and functionality — and make a strong business case to senior leadership for doing so. The growing sophistication and security of cloud platforms make it increasingly difficult to justify investment in on-premises infrastructure.

FIGURE 7.
Where data is managed



Source: IDG

TREND 7: THE HUNT IS ON FOR DATA VALUE

The primary role of analytics is to find valuable insights that lead to business improvements (see Trend 2). Yet, the challenges that our survey uncovered keep many organizations from achieving that objective. Just 31% of organizations say they're adept at extracting valuable insights from data across multiple sources to create trusted business assets. The rest consider themselves average at best.

While business and IT leaders strive for data-driven operations that drive significant value to the business, this goal eludes most organizations. As noted earlier, security concerns and integration challenges are persistent barriers to analytics excellence. Culture and skills also play roles: **Data science tops IT leaders' list[6] as the toughest skill set to hire,** ahead of other in-demand talents for security, artificial intelligence, and cloud services. Broadly, corporate cultures might not be ready to embrace a data-driven approach to decision-making, because either they're not structured properly to support it, or the workforce is wary of potential disruptions to the ways they currently work.

Culture and process are as important as technology during the transition to an organization that uses data to create new sources of value across the enterprise.

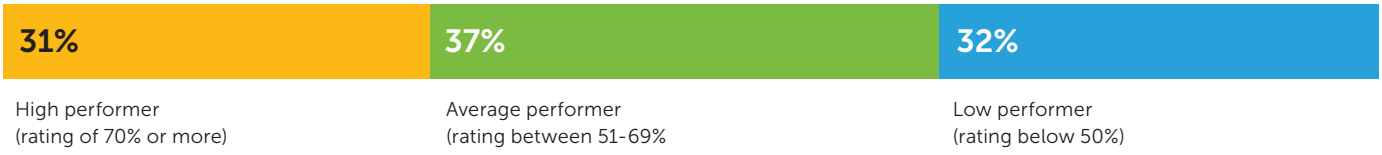
31% of organizations say they're adept at extracting valuable insights

WHAT'S NEXT: Change management is a critical part of the transition to data-driven operations. CIOs might need to take a step back from the ad hoc analytics initiatives popping up across the organization and create a holistic strategy that addresses technology, culture, and process. We're also likely to see an acceleration away from legacy environments that inhibit analytics maturity. It's worth noting, for example, that IT leaders who say they're closer to data-driven culture objectives are using cloud-based data analytics tools more heavily.

FIGURE 8.

Ability to operationalize data to create trusted business assets

(Rating from 0%→100%)



Source: IDG

[6] http://idgcommunications.lookbookhq.com/ciodigitalmagazine-cradlepoint/01-ciod-winter-2019--1

TREND 8: THERE'S A NEED FOR DATA SPEED

Business moves fast, but the pace has ratcheted up this century as the internet leveled the playing field for smaller companies and new entrants across industries. Today, companies of all sizes must be nimble and make decisions quickly to remain competitive.

The good news is they have a wealth of data. The challenge is the need for rapid query processing and number crunching to advance the speed of decision-making.

"The amount of data is growing quickly, and the urgency of transforming data into value in real time is growing at an equally rapid pace," Gartner vice president and distinguished analyst Donald Feinberg said at a recent analytics conference.[7]

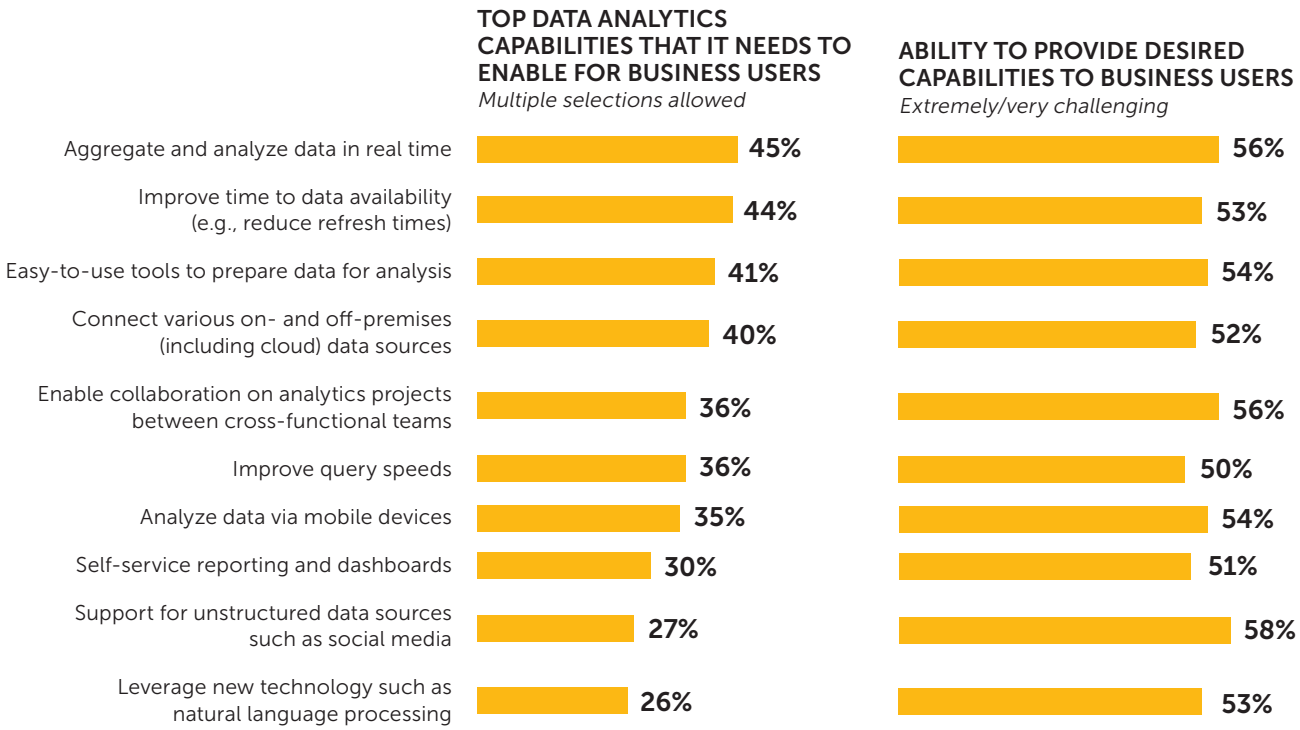
IT leaders understand this need for data speed. **Users are asking for real-time data aggregation and analysis, as well as faster access to data. Yet, these capabilities are among the most challenging to provide.**

WHAT'S NEXT: Automation of query processing and analysis is vital to improving data-driven decision-making. "Virtually every aspect of data management and analytics content development, up and down the stack, is leveraging itself to automate analytic processes [and] the way we get information from those systems to act in an optimized way," Rita Sallam, research vice president at Gartner, told CIO.[8]

Another consideration: aggregation features. The ability to aggregate data from multiple sources into one interface or report can improve query performance across petabyte-scale datasets dramatically.

FIGURE 9.

Enabling business users: opportunities and challenges



Source: IDG

[7] https://www.gartner.com/en/newsroom/press-releases/2019-02-18-gartner-identifies-top-10-data-and-analytics-technolo

[8] https://www.cio.com/article/3251720/4-data-analytics-trends-that-will-dominate-2018.html

TREND 9: THE "CITIZEN ANALYST" ROLE IS TAKING ROOT

With an ongoing shortage of skill sets in data science, companies need to reduce the burden on IT by empowering individuals to become "citizen analysts." This trend requires user-friendly tools that allow workers to perform analysis and pull their own insights from the data that's most relevant to their roles.

Tools that leverage advanced automation, reusable data models, and artificial intelligence provide a path for the citizen analyst. This shift also helps address cultural resistance. When users realize they can get the answers they need quickly without relying on specialized skill sets, they're more likely to embrace the tools at their disposal.

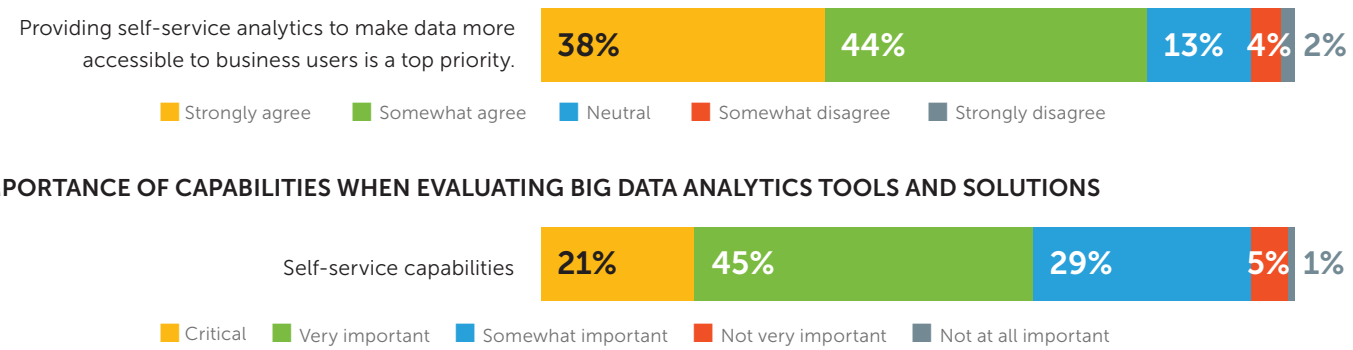
IT leaders understand the need to balance functionality and usability; 86% of respondents agree that analytics solutions should be both powerful and user-friendly. In addition, **82% agree that self-service analytics is a top priority at their organizations, and 66% say these capabilities are critical when evaluating new tools and solutions.**

There's a potential disconnect in the desire for self-service analytics and their actual deployment: Only 30% view self-service reporting and dashboards as a top capability for IT to enable. CIOs will need to balance the needs of both IT and citizen analysts to give users across the business the analytics capabilities they need to succeed.

WHAT'S NEXT: IT leaders should seek analytics tools with self-service capabilities that empower non-technical users to easily access, prepare, and visualize data. To further reduce the burden on IT staff, CIOs must accelerate automation efforts while adopting analytics tools embedded with artificial intelligence and machine learning. Looking forward, Gartner predicts that "conversational analytics" will gain traction, using natural language processing and virtual assistant technology to make everyday queries easier for users.

FIGURE 10.

Self-service is a priority



Percentages may not equal 100% due to rounding

Source: IDG

HOW TO QUIET THE CHAOS

CIOs risk being overwhelmed by multiple data sources, multiple tools, and rising expectations from executive teams and end users alike to find new ways to leverage data-driven insights across the organization.

This big data analytics landscape presents a prime opportunity for strategic CIOs to shine. With 64% saying[9] they're adding oversight of data analytics to their roles in 2019, it's time to pick a focus area or objective and run with it.

"More organizations embrace a data culture that unifies information from many sources to drive business decisions," says Arun Ulag, Microsoft general manager, engineering. "For a data-centric culture to thrive, it requires everyone to work from the same data platform and intuitive tools that let them leverage vast quantities of data quickly to reach insights."

A good first step to quieting the chaos is to identify which business intelligence (BI) tool can help simplify the complexities organizations face today. IT professionals realize how critical data is to their organizations; the next step in unlocking its power is further alignment of business and IT data goals to understand how big data analytics solutions can resolve concerns today and going forward.

About the survey

To better understand the most critical big data analytics trends affecting enterprises, IDG conducted a quantitative survey among 200 U.S.-based IT leaders at companies with 500+ employees, across all industries. To qualify, respondents had to be involved in decisions related to big data analytics initiatives such as strategy, needs analysis, recommendations, and solutions purchase/approval. Microsoft sponsored the survey, which was conducted online between April 30, 2019, and May 9, 2019.

[9] https://www.cio.com/article/3335497/winter-2019-state-of-the-cio.html

Why Power BI?

Microsoft Power BI addresses many of the challenges that organizations encounter with their big data initiatives:

- **SUPPORTS MASSIVE SCALE.** With Power BI Aggregations and Azure SQL Data Warehouse, organizations can perform petabyte-scale analytics with instant response times, exploring and analyzing trillions of rows of data and interactively extracting insights on the fly. Aggregations can dramatically reduce the cost of unlocking large datasets for decision making.
- **ELIMINATES ANALYTICS CHAOS AND THE NEED FOR MULTIPLE TOOLS.** Power BI establishes a common, cost-effective analytics platform that enables seamless collaboration across organizational data.
- **IMPROVES DECISION-MAKING.** A single platform that intelligently reacts to data changes and applies them globally ensures that business users have the latest information and can unlock insights quickly.
- **ENHANCES SECURITY.** Power BI provides a single, centralized security model with end-to-end visibility, control, and operational reporting capabilities to safeguard against security, privacy, governance, regulatory, and compliance concerns.
- **EMPOWERS CITIZEN ANALYSTS WHILE REDUCING THE BURDEN ON IT.** Power BI features self-service functionality and provides business users with access to consumable dashboards and reports. In addition, it encourages data exploration with its intuitive, familiar interfaces that naturally integrate with all the Microsoft services the business already uses.
- **REMOVES THE DATA INTEGRATION BARRIER.** Whether cloud-based or on-premises, Power BI seamlessly integrates data with built-in or custom data connectors, creating a single, accurate view of critical business insights.
- **PROVIDES DATA SPEED.** Backed by Azure, Power BI enables companies to analyze and extract insights from large datasets with instant response times. In addition, it easily integrates with artificial intelligence and machine learning models to fuel data analysis.

Power BI users are more likely to report their organizations have ongoing, enterprise-wide big data initiatives — 52% compared to 33% of non-Power BI users. This indicates ease of use and early success with pilot and departmental projects, which means Power BI can be rolled out on a regular basis throughout the organization.

In addition, Power BI users are more likely to agree that analytics solutions should be powerful and user-friendly, and that providing self-service analytics is a top priority.