

From innovation to monetization: The economics of data-driven transformation

Used strategically, an organization's data gains value over time.
But to unlock its potential requires first establishing the right technical
and cultural foundations.



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Across industries, for companies large and small, vast new data streams are now the guiding force behind new revenue opportunities and the catalyst for dramatic operational makeovers. In a Midwestern field, for example, a moisture and soil temperature sensor network helps farmers reap data-driven insights that drive better decisions on everything from seed selection to crop yield. In a congested city, a transportation provider taps telematics data and predictive analytics to assess and remap routes, saving millions of gallons of fuel, cutting hundreds of metric tons of carbon dioxide emissions, and shaving off hundreds of millions of dollars in costs.

While there's no question that big data is the key to business success in the analytics-driven future, the sheer volume of data collected is not the defining competitive differentiator—rather, it's what companies do with that data that determines whether they win or lose.

To capitalize on the promise of data-driven innovation—whether the goal is increasing productivity or monetizing new products and services—companies first need to build the proper foundation, which includes establishing processes and policies for gathering, cleansing, organizing, and accessing their data.

Key takeaways

Big data is the key to business success in an analytics-driven future.

But the volume of data is not the competitive differentiator; it's what companies do with that data that separates them.

Modern data architecture and management must take a holistic, end-to-end view.

To ensure that organizations harvest the most value from their data, the processes must be adaptable to changing needs and able to create a data pipeline that places a premium on analytics.

Of course, implementing a suitable technology infrastructure is central to ensuring data can be used widely by the organization. One capability for developing that kind of agility is essential: big data storage solutions that are designed to ingest, manage, blend, and prepare data from any source in near-real time. Unlike traditional data management approaches that tend to be stymied by too many silos and tool sets, modern data architecture must take a holistic, end-to-end view of the many ways that data might be used today, and in the future.

While busy preparing their IT infrastructure for the data-driven future, companies must simultaneously recalibrate their corporate

culture, business processes, and governance practices to reflect the economic value of data and analytics, fully recognizing the potential to drive innovation and smarter decision-making. Business leaders should emphasize the importance of collaboration and data sharing using financial incentives and positive performance feedback to foster employee buy-in. Investment in new data visualization tools and analytics platforms can make the discipline more accessible to a broader user constituency, and adherence to data governance practices will ensure consistency and quality of insights.

As digital transformation takes hold, data and analytics can be used as a springboard for innovation as well as an engine for growth. Experts project the annual value of digital transformation to be \$20 trillion, or more than 20 percent of global GDP, sparking a fundamental shift in how organizations develop, produce, and sell products and services.



The time is ripe for data-driven transformation for a variety of reasons. Competitive pressures are making it essential for companies to be more efficient, more agile, and more innovative. At the same time, there has been a change in priorities, as enterprises move away from automation of business processes through lengthy and complex enterprise resource planning (ERP), customer relationship management (CRM), or supply chain management (SCM) deployments toward data-focused efforts that use those same systems in concert with external data sources to garner fresh insights. Despite the shift in priorities, those insights remain elusive. Companies are struggling to pinpoint actionable intelligence that sheds light on customer preferences for cross-selling opportunities, drives improved product and service offerings, or can be used to optimize business processes.

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Source: Gartner

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The primary challenge stems from the deluge of data pouring in from all directions. Experts estimate that 2.5 quintillion bytes of data are generated every day, piling up to over 44 trillion gigabytes by 2020. To put this in perspective, 90 percent of the world's total data resources created throughout human history have been generated in just the last two years.

This flood of data is the result of accumulation from every conceivable source—enterprise IT systems, social media, video-monitoring systems, and internet of things (IoT) platforms among them—that continuously collect and transmit data. Of all the sources, the one poised for the greatest growth is IoT-derived data. In fact, the IoT device landscape is burgeoning and vendors are working furiously to satisfy the needs of every type of enterprise, in every corner of the world, in many new and unexpected ways. It is an exciting time, as systems are being developed to sync up a slew of consumer products (everything from wearables to appliances to autonomous vehicles) and connect commercial and industrial resources such as manufacturing equipment, transportation fleets, medical devices, and city infrastructure.

The magnitude and pace of IoT deployments is also staggering. Gartner estimates that 8.4 billion connected “things” were in use in 2017, up 31 percent from 2016. That number will reach 20.4 billion by 2020, reflecting a compound annual growth rate (CAGR) of 19.9 percent from 2016. According to research from IDC, IoT data will account for 10 percent of all data registered globally by 2020. In response, the worldwide market for big data and business analytics tools—the foundational elements for extracting value from that data—is white hot, expected by IDC to swell at a CAGR of 11.9 percent through 2020, resulting in more than \$210 billion in revenues as businesses ramp up investment.



Changing
the role
of data

The economics of data has also radically changed. Traditional data warehouse and business intelligence efforts have been expensive and complicated. As a result, data was aggregated, limited, and summarized, while access was granted to a coterie of highly trained business analysts and specialists.

“The whole economics of data was one of scarcity—it was guarded in the high priesthood of the data warehouse and very little was given out to the people,” notes Bill Schmarzo, big data analytics visionary and CTO of IoT analytics at Hitachi Vantara.

The debut of Hadoop and other big data technologies helped tip the scales, making it cheaper to capture, store, and hold onto all that data—structured and unstructured—for future use, whatever the future might look like. Without a proper technological foundation, most enterprises will continue to be overwhelmed by data rather than being in the position to use data to bring new insights to

bear on strategic decision-making.

In order to effectively capitalize on data for business differentiation, organizations need to address the challenge of valuing data as a corporate asset. From an economics perspective, data is unique when compared to other corporate assets that depreciate as they age and can only be used for a single transaction at any given time. Since the same data and analytics can be leveraged simultaneously across multiple use cases without additional cost, the combination becomes a high-return form of corporate currency. By embracing this view of data and analytics, organizations can more easily recognize opportunity and clearly direct how and where to invest to get the biggest return.

In the industrial sector, for example, companies are leveraging IoT data and analytics to perform predictive maintenance on key assets, increasing uptime and cutting costs. They are also using data insights drawn from process and production environments to achieve operational efficiencies and increase yield. In the logistics and transportation space, data-driven insights are helping companies optimize routing, reduce costs, and diminish carbon footprints. Health care companies are managing patient traffic, improving patient outcomes, and bolstering efficiencies, while retailers are embracing the technologies to improve inventory levels and calibrate marketing programs.

Experts
estimate
that **2.5**
quintillion

bytes of data are
generated every
day, piling up
to over

44 trillion

gigabytes
by 2020.

Source: Domo

“You can’t transform your company without data,” says Wayne Eckerson, founder and principal consultant at Eckerson Group, a research and consulting firm. “It’s required to deliver digital experiences, monitor your effectiveness in delivering those services, and figure out ways to improve. Without data, you can’t compete in the insights economy, and you’re flying blind.”

Also essential for succeeding in the data-driven future is a proper architecture for turning raw data into actionable insights. In addition to big

Vantara. “It’s a living, breathing analysis process created with orchestration and optimized with automation.”



Instilling a
data-driven
culture

Just as important as putting the proper infrastructure in place is cultivating a culture that recognizes and takes advantage of the economic value of data and analytics as a

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data storage capable of ingesting and managing data in real time, a data pipeline is essential for automating the management, analysis, and visualization of data from multiple sources. Such a framework creates a holistic approach to data analytics, making it the core of strategic business processes and empowering many in the organization, not just a select community of data scientists.

“With a data pipeline, you might pull data out of Salesforce, do analytics on that data, and pass the results of that analysis on to the next step in the pipeline,” explains John Magee, vice president, portfolio marketing at Hitachi

non-fungible asset. By embracing the economics of data, organizations can make informed decisions about where to focus efforts as well as how to recoup investment quickly. It’s also important to grasp how to best monetize data—not necessarily by selling the data, but by creating new or additional revenue streams from the insights buried in the data.

Aside from digital-native giants like Uber and Amazon that were built from the ground up to parlay data-driven insights into new revenue opportunities and services, more traditional large companies have generally been slow to get in on the act. However, there are some

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shining examples of traditional companies that have pivoted quickly. For instance, Pratt & Whitney has monetized its data by developing new “product-as-a-service” offerings that change the dynamics of capital expenditures. One of their new products allows airlines to pay for the time they use aircraft engines (“power by the hour”) rather than making an outright purchase. This same approach is used to supply airlines with maintenance and repair services based on data analytics of actual engine usage.

For this kind of a shift to be successful, organizations need to codify processes around data analytics, including how to identify business cases, the business decisions that ultimately support those use cases, and the data that would inform better decision-making. “It’s not the data that makes us better—it’s the insights and analytics we gain from that data that helps us make better decisions,” says Schmarzo. “If the data isn’t actionable, the decisions aren’t actionable.”

To promote a culture that prioritizes data and analytics, Schmarzo says organizations should embrace new hiring incentives and

compensation plans to foster a culture of data sharing and collaboration. Silos are a huge hurdle to realizing data-driven insights, and encouraging business users to break down data fiefdoms will foster sharing and transparency, he says. Democratizing data analytics through culture as well as through new visualization tools will also expand the practice beyond what’s possible with traditional data scientists. By 2019, Gartner anticipates that citizen data scientists will surpass professional data scientists in the amount of advanced analysis that is produced.

While many leaders from across industries and across functions have a vision for what a data-driven enterprise can be, there is still much work to be done. Those in the driver’s seat are nurturing a culture that prioritizes data and promotes collaboration. They are actively aligning with technology partners to build out scalable infrastructure and intelligent data analytics pipelines. By doing all this and more, savvy leaders are helping organizations understand the true value of data as a corporate asset and cementing its role in delivering a competitive advantage.

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