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Data for Humanity

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“The problems of the world are too big to be solved by traditional philanthropy. If we are to make a meaningful difference on the great challenges of our time, we have to put our hearts, minds and talents where our money is. We have to commit to a strategy of ‘doing well by doing good’ by doing what we do best.”

Shamina Singh, Founder and President of the Mastercard Center for Inclusive Growth

Could data, used better, solve the world's most pressing challenges?

Leading companies are turning to data to tackle issues such as the energy crisis, climate change, income equality and a lack of resources for fast-growing populations.

Looking at organisations with revenues of \$500 million or more, new research from Lenovo explores the potential of large businesses to use their influence for good. These companies believe collaborative data sharing and analytics will play a fundamental role in addressing global crises – which is why over half are now planning to increase their investment in data storage and artificial intelligence (AI).

In a survey of 600 business executives across 10 industries and five countries, Lenovo learned that the average company anticipates that their investment in data technologies and data-led-initiatives will increase their revenues by 50% over the next five years. This equates to an additional \$1.5 billion per company over that period. However, when this finding is applied to the top 100 listed firms in each country surveyed it translates to \$8.5 trillion in additional revenues globally by 2027. These figures are particularly striking because the research was conducted during a period of economic uncertainty and widespread predictions of a global recession.

Their confidence suggests companies see data as a tool for financial resilience as well as public good. The research supports this: around 70% of organisations are already using their data to achieve a mix of environmental, social and governance (ESG) and financial goals. But there is scope to go much further, and a few leading companies are showing us how.

Step up, Data Leaders

Lenovo's research identifies an elite group of Data Leaders. These data-centred organisations are using data successfully across a number of business areas, which is giving them stronger financial and ESG results compared with their peers. They have better employee productivity and a greater capacity for innovation, and are far more likely to be taking action against issues such as global warming, poor education and the energy crisis.

In today's unpredictable world, these Data Leaders could be the blueprint for a kind of business that is both ethical and profitable. So what does it take to become a Data Leader? And how can other companies follow their example to use their data for good?

70%

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About the research

The data in this report comes from a survey of 600 C-suite executives and those reporting directly to C-suite. It was commissioned by Lenovo and conducted by FT Longitude, a Financial Times company, in September 2022.

The respondents represent a range of industries: transportation and logistics, business services, technology, media and telecoms, real estate and construction, pharma, medical and biotech, hospitality and leisure, industrial and chemicals, financial services, energy, mining or utilities, consumer and retail.

They represent five countries: France, Germany, Italy, the United Kingdom and the United States.

Fifty-five percent of the organisations surveyed had revenues of \$500 million–\$1.99 billion; 30% had revenues of \$2 billion–\$4.99 billion; and 15% had revenues of \$5 billion or more.

Section 1.

Understanding the challenge ahead

Organisations face a confluence of crises

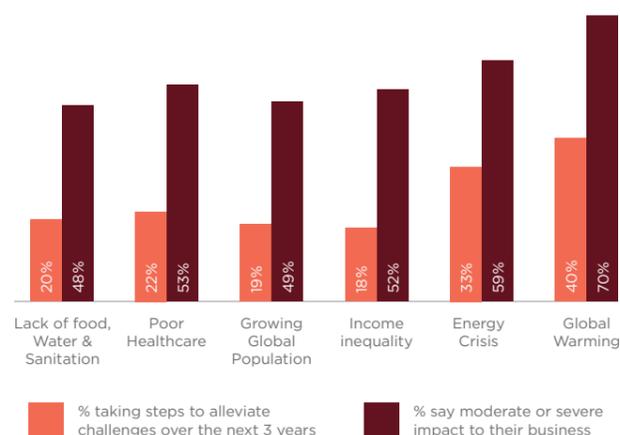
Businesses today must navigate a world of disruption. Between geopolitical tensions, COVID-19, collapsing supply chains and economic instability, they are facing challenges on a business level as well as a humanitarian one.

Our respondents identify the energy crisis as their biggest threat over the next three years: 71% expect it to have a moderate to severe impact on their business. The next biggest threats are global warming and income equality (59% and 52% respectively). They are also feeling the weight of other macro trends: pandemics, talent shortages, rising operational costs, and a move towards hybrid working.

So they recognise that there are tough times ahead, but less than half of businesses have near-term plans in place to address these issues. For example, fewer than 40% are taking steps in the next three years to address the challenges of the energy crisis; this figure falls to 33% for global warming and to 18% for income equality.

Not enough businesses are actively preparing for the challenges ahead

Why the inaction? Our research suggests that companies could be ignoring global pressures to focus on financial stability – after all, 23% tell us that their organisation’s ethical ambitions conflict with their primary business objectives. But with global disruption becoming the new norm, inaction will no longer be an option.



“Data and technology are improving lives and connecting people in unprecedented ways, yet too many people are still being left behind,” says Mastercard’s ShaminaSingh.

“If we can increase the capacity of civic and social sector organizations to solve systemic problems, then there exists real potential to transform the lives of people and economies in need.”

Data sharing could be the way forward

As datasets and analytical capabilities grow, senior executives believe that a collaborative approach to data will be fundamental to improving global stability and security.

Over the next three years, at least six in 10 of the business leaders we surveyed expect data to be highly important in tackling global warming and the energy crisis. More than half believe it will play a key role in addressing income equality, unemployment, poor healthcare and lack of food, water and sanitation.

Data is already helping researchers make strides in genomics, thanks to the development of solutions like GOAST (Genomics Optimization and Scalability Tool)². This innovative software can efficiently analyse large volumes of data at high speeds, allowing scientists to process the human genome 188 times faster than before. This has rapidly reduced the waiting times on results which in turn speeds up the rate of scientific discovery.

How AXA uses data to tackle chronic disease

The insurance industry could not function without data. And in recent years, data analytics has started to open up new opportunities for the sector, helping insurers to target new markets and give customers a more personalised service.

Healthcare is one of the most promising areas, particularly as the population grows older and rates of chronic disease increase. Roland Scharrer, Group Chief Data & Emerging Technology Officer for the global insurance provider AXA, sees a joint opportunity to use data for health as well as business.

“Diabetes, cataracts and cardiovascular disease can be better treated in a systemic approach by taking medicines and visiting the doctor very regularly,” he says. “Through disease management programs, data and digital solutions can help patients plan appointments with doctors and specialists and provide reminders about the treatments.”

Patient data is also creating better outcomes for rarer diseases such as lung cancer and multiple sclerosis, which are harder to diagnose. Early detection is essential here, and data sharing is allowing doctors – and insurers – to predict the onset and detect the signs much sooner than before.

² <https://pages.lenovo.com/genomics.html>

One clear area where data can address problems is in city planning. The survey respondents expect data to shape the urban landscape, improving workspaces, healthcare, retail, manufacturing, transport and security. Some '5G Smart Cities' are already making it happen.

Barcelona, for instance, distributed Edge servers on thousands of streets, spreading network capacity and boosting user connectivity. This decentralised network has allowed citizens and tourists to access real-time data much more quickly than before, creating environments that are safer and easier to travel around.³

"They're putting the decision-making processor closer to the action," says Matthew Higham, Chief Digital Officer at smart infrastructure solutions company Costain. "Five to six years ago, we didn't have that technology."

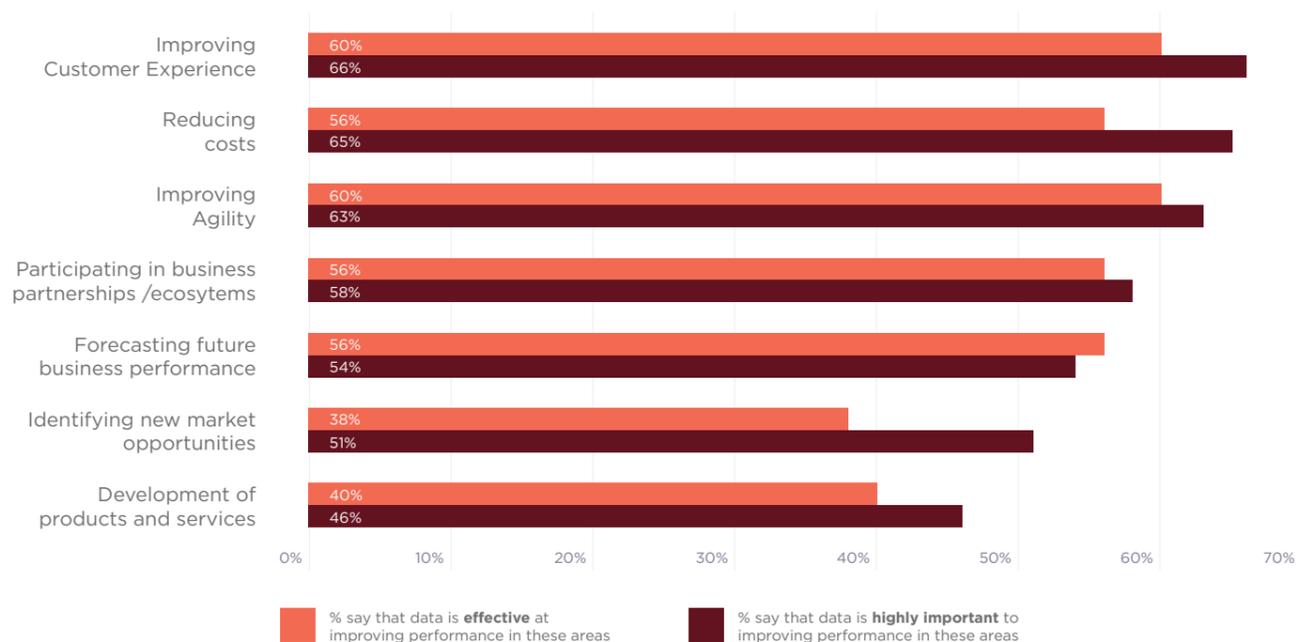
This kind of scaled data-acquisition model helps to form a more complete view of the city, which could transform its approach to security. Previously, Higham explains, a network of CCTV cameras streamed back to a control centre, relying on human reactions to trigger a response. "But if you have 10,000 live camera feeds, that's a huge network - it makes it really difficult," he says.

"Now, we can use AI technology to read and understand the cameras, see what the incident is, make a decision and then refer that back - just the decision, rather than streaming the entire camera footage. The technology augments the human decision-making process. That's what cities need: to be able to measure more, measure faster and make much clearer decisions."

Beyond these public benefits, data is also improving business performance. Sixty percent of the respondents say that data has effectively improved their agility and customer experience, and 56% have used it to reduce costs and forecast future performance.

"The technology augments the human decision-making process. That's what cities need: to be able to measure more, measure faster and make much clearer decisions."

Data makes businesses stronger, but they must get better at using it



Making more of data

Executives understand the importance of their data and have an appetite to do more with it: 30% are already using data to transform their workspaces, and 26% say they want to do more to use their data to benefit humanity.

According to Julie Kae, Executive Director of the business analytics platform Qlik, there does not need to be any conflict between these two goals.

"We've built models that align ESG metrics with a company's goals for profitability, showing how the two can intersect," she says. "It's not mutually exclusive - you can align your environmental goals with the ability to grow and maintain your profitability as an organisation. Often, we hear in the news that it is an either/or situation: 'Protect the planet or make profits.' But that's absolutely not the case."

Some of the biggest sustainability gains will come from data sharing. Costain, for example, is seeing the benefits of this on large construction projects such as the A30 for National Highways in the UK.

"We need to create open data ecosystems that allow all actors to transparently measure and record their carbon footprint all the way through the lifecycle," says Matthew Higham, Chief Digital Officer at smart infrastructure solutions company Costain. "You're then able to compare several projects equally, rather than just hoping you might make some change that has a long-term impact."

Business leaders are keen to get this kind of value from their data, and they believe that the best way to do that is with targeted technology investments. So more than half plan to increase their investment in data storage and analytics tools over the next five years.

Looking ahead at the next 12 months, on average companies will invest \$3 million in data technologies and initiatives, and they anticipate an 81% return on their investment. They expect their investment in data to increase their revenue by 50%, which amounts to an average of over \$1.5 billion per company over five years.

This optimism demonstrates executives' strong confidence in the capabilities of data - particularly when we consider the weak economic backdrop.

"Data must be treated more as an asset than as a commodity," says Roland Scharrer, Group Chief Data & Emerging Technology Officer at AXA. "I don't like the comparison of data with oil, because it doesn't convey how important it is to keep data secure, treat it well and continuously unlock its value."

Regional and industry findings

- Over the next 12 months, the energy, mining and utilities sector plans to invest the most in data (\$4.2 million on average) and business services organisations are likely to invest the least (\$2 million on average).
- At a regional level, the US plans to invest the most (\$3.5 million) and France the least (\$2.5 million). The US is followed by the UK (\$3.4 million), whilst Italy plans to invest \$3 million and Germany, \$2.8 million.
- Overall, the most popular focus for increased investment is cybersecurity tools. The industries that are most likely to prioritise these are industrial and chemicals, hospitality and leisure, real estate and construction, and technology, media and telecoms.
- AI tools are another top choice for investment, and are favoured by the consumer and retail, transportation and logistics, and energy, mining and utilities industries.

³www.lenovo.com/il/en/data-center/smart-city-barcelona

Section 2.

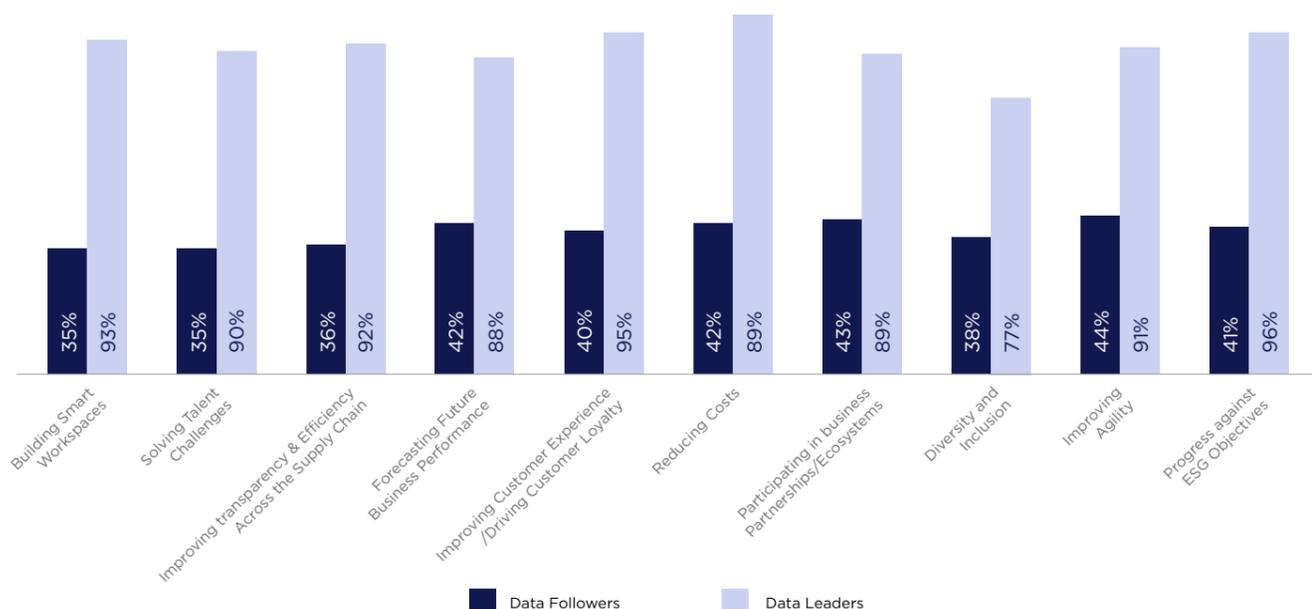
What we can learn from the Data Leaders

Some firms are pulling ahead

Many companies want to use data, but the vast majority (85%) are not using it to its full potential. Only 23% are prepared to manage the vast amounts of data that will be generated by the Internet of Things; the same number say they are struggling to use their data in a way that has a human impact.

A few companies, however, are harnessing data to a high degree: The Data Leaders. Representing 15% of the organisations in our research, these Data Leaders are successfully using data across a number of business areas. They are more likely to agree that they are moderately or highly effective at using data to improve performance in areas such as ESG, DEI and improving the customer experience.

Behind this top group are the Data Followers, which are lagging with their data strategies. Organisations in this group, which is 37% of the total sample, are far less likely to agree that they are moderately or highly effective in using data to drive business performance.



Percentage that say they are 'moderately effective' or 'highly effective' at using data to improve their organisation's performance in the following areas

The Data Leaders are using data to accelerate business success

Our research shows that there is a stark difference between the Data Leaders and the Data Followers in how they approach global threats. We see a strong correlation between mature data strategies and ESG performance, with the Data Leaders doing far more to address the challenges of global instability.

Looking ahead at the next three years, the Data Leaders are much more likely to be taking action against global warming (34% vs 29%), the energy crisis (60% vs 33%), poor healthcare (29% vs 18%) and poor education (61% vs 25%).

The Data Leaders better understand the importance of data in solving these challenges, and their most effective use of data is in progressing ESG initiatives (96%). In contrast, only 41% of Data Followers say they are effective here.

The Data Leaders are more likely than the Data Followers to say they are using their data for a mix of business and altruistic initiatives, rather than just to drive profit. This suggests that as organisations become more advanced in using their data, they are more likely to use it for good.

Crucially, these Data Leaders are striving for better ESG performance without sacrificing business outcomes. Our research shows that the Data Leaders are highly effective at using data to:

- Improve customer experience and loyalty (95%)
- Increase supply chain transparency and efficiency (92%)
- Enhance agility (91%)
- Solve talent challenges (90%)
- Reduce costs (89%)

And the Data Leaders perform better financially than the Data Followers. More than three-quarters (78%) have increased their revenue over the past 12 months, compared with 50% of the Followers, and 70% have improved customer satisfaction, compared with 45% of the Followers. The Data Leaders are also far less likely to have experienced the effects of poor data management in areas including revenue, employee productivity and capacity for innovation.

How Mastercard is deploying data for positive social impact

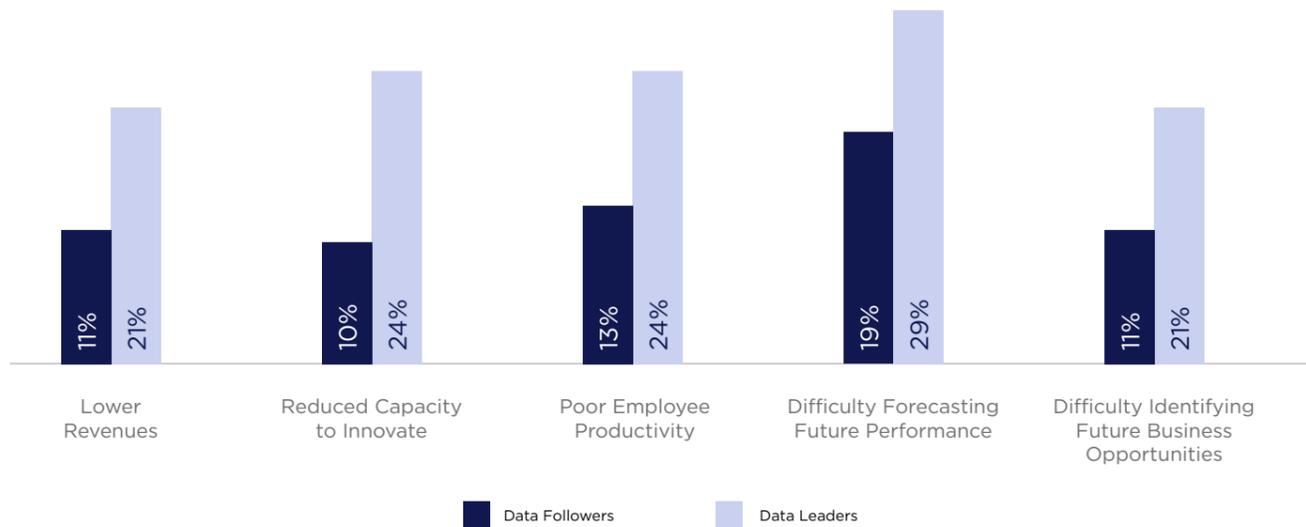
Global payments leader Mastercard hopes to establish a model for corporate data responsibility through the Mastercard Center for Inclusive Growth. Its mission: to advance sustainable economic growth and financial inclusion around the world.

In 2021 the center developed a scoring system that shows the social and economic profile of an area. It compiles data from several external sources, such as the Office for National Statistics and HM Land Registry, as well as anonymised and aggregated activity from within the Mastercard network. Collecting this data in one place helps policymakers see how an area is succeeding or failing, which highlights pockets of inequality across the country.

Mastercard's approach to data has also proved invaluable in other markets, particularly during the COVID-19 crisis, when Asian-owned businesses in the US experienced heightened levels of xenophobia. Shamina Singh, Founder and President of the Mastercard Center for Inclusive Growth, explains how data analytics revealed the full picture.

“What we found was disquieting: Not only were they harder hit than the rest of the city, but they were also hit earlier than other communities, likely due to xenophobia and a misguided fear of Asian establishments at the outset of the pandemic. Because our data was close to real-time, it helped local leaders make better decisions about where to deploy relief funding.”

The Data Followers are more likely to experience problems as a consequence of poor data management



Percentage that say they are 'moderately effective' or 'highly effective' at using data to improve their organisation's performance in the following areas

For most companies, ambition does not match ability

Our research suggests that lack of technical capabilities may be holding some businesses back. Many companies admit they are struggling with their data platform, with only 52% saying they are happy with the one they are currently using. Additionally, less than a quarter (23%) say they are ready for the vast amounts of data generated by connected devices. As more data is generated from Internet of Things devices, the risk to organisations that have not yet made data a priority increases.

In many organisations there is scope to go much further, particularly when it comes to sharing data with external partners. Less than half of businesses are currently sharing their data for humanitarian purposes, for instance.

Qlik's Julie Kae says her company routinely shares ESG metrics with partners, working closely with public sector organisations including the UN. In a recent partnership with the Nature Conservancy in Brazil, Qlik brought together a common set of data on water availability and use in the Amazon that contributed to sustainable water management in the region.

"This non-profit collaboration invited the private sector to the table to discuss how we can better conserve water for everyone. That conversation would not have happened without a fully

transparent data platform that everyone had access to," says Kae. "With the right data environment, we can foster those kinds of collaborations so we can make the right decisions going forward."

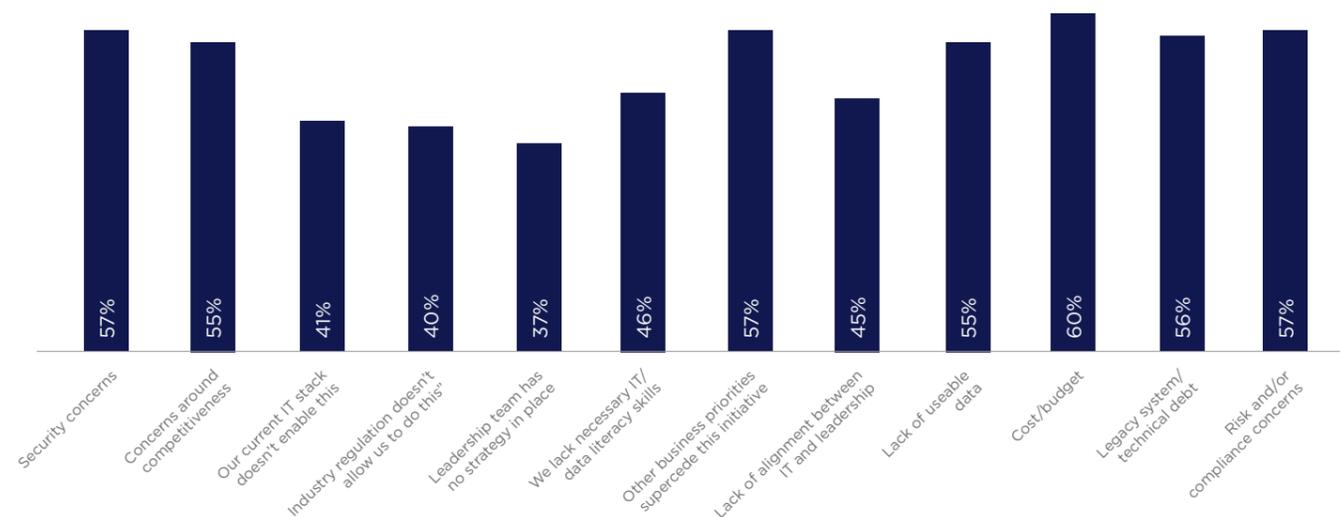
What is stopping companies from participating in data partnerships and ecosystems? Cost is the biggest barrier (60%) followed by security concerns (57%).

Many companies are not collaborating enough

Reluctance to share data is familiar to Costain's Matthew Higham, who believes that in some companies it simply comes down to a lack of incentive.

"It's too easy to hold on to all your data and just try to monetise it yourself, because the only value metric we attach to it is monetary," he says. "We need new value metrics that are exponentially greater when you start combining multiple access data together and are able to measure that. And that is really only going to come from a shift in culture and regulation."

The research suggests that organisations are ambitious about data, but many are not equipped to achieve their goals. Nearly a quarter are concerned that they are lagging behind their competitors in how they use data - and it is easy to see why.



Percentage of respondents who say that the following barriers prevent them from sharing data to 'a high extent'



Section 3.

Using data for good: How to create a brighter future

Companies that want to follow the Data Leaders' example need to know what sets this group apart.

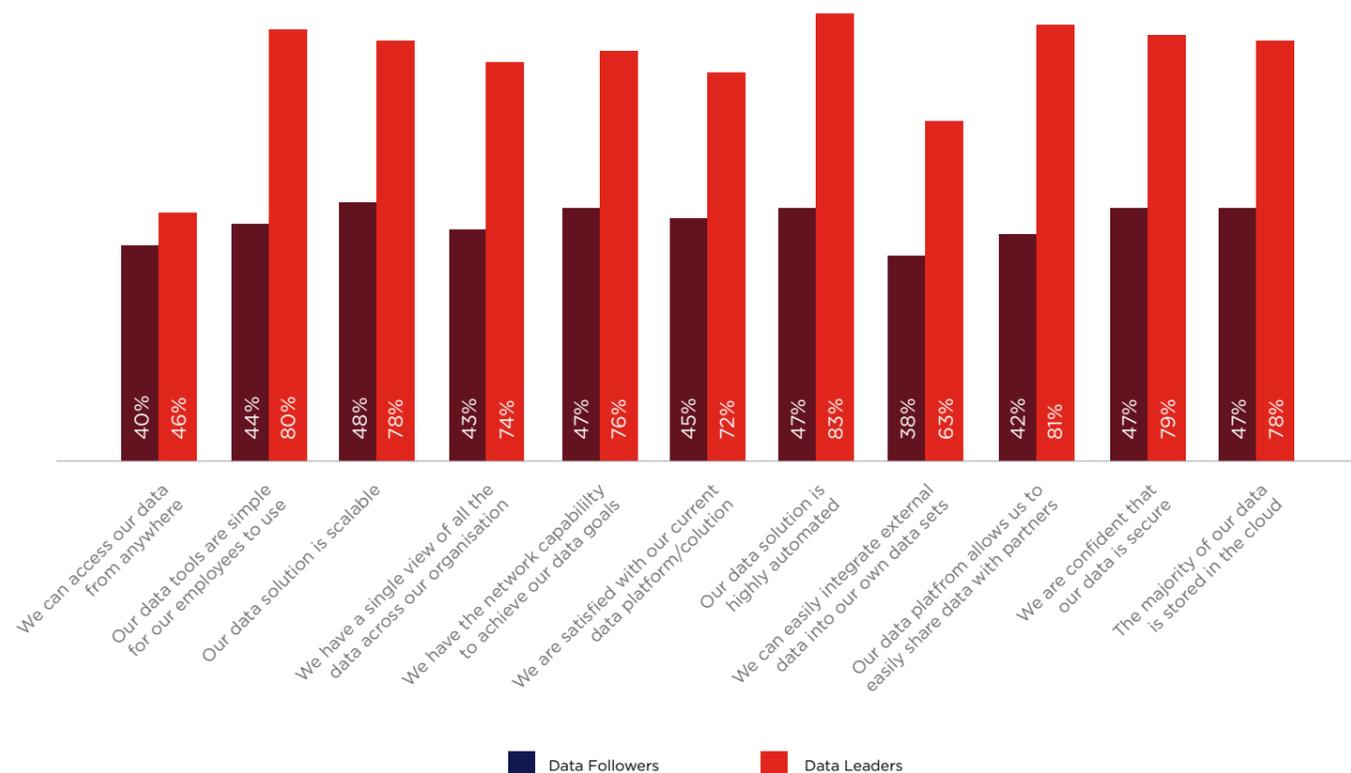
Technology

The biggest gulf between the Data Leaders and the Data Followers is technology. The Data Leaders are further ahead in their adoption of leading-edge technologies, which makes them more effective at using data across business functions.

The majority of the Data Leaders store their data in the cloud (78% vs 47%), using platforms that are secure (79% vs 47%) and enable them to easily share data with partners if they wish (81% vs 42%).

78%
The majority of the Data Leaders store their data in the cloud

Data Leaders are using technology to pull ahead



Strategy and culture

The Data Leaders tend to show a more mature approach to strategy and culture. They take time to develop a robust data strategy that focuses on how data can be used to benefit their customers, their communities and the planet. And they are more likely to have clear guidelines and processes for the ethical use of data, for securing their data and for measuring the human impact of their data use. Critically, they embed a strong culture of data across all areas, working closely with their IT team: 40% of the Data Leaders say their IT team works in partnership with the business to deliver data-led initiatives, compared with just 24% of the Data Followers. This strong partnership with IT is demonstrated in the following ways:

- **Capabilities:** 52% of the Data Leaders ensure that their business has the relevant skills to deliver its data strategy, compared with 29% of the Data Followers.
- **Communication:** Only 13% of the Data Leaders agree that there is a communication gap between the team responsible for purchasing data analytics technologies/platforms and the rest of the business, compared with 39% of the Data Followers.
- **Collaboration:** 32% percent of the Data Leaders say their IT team regularly advises on data strategy, compared with 25% of the Data Followers.

When it comes to data, talent should not be siloed within the IT team: all employees should be empowered to use data effectively. AXA's UK businesses, for example, recently invested more than £800,000 in a data academy to upskill its workforce.

"The data academy has been very successful," says Group Chief Data & Emerging Technology Officer Roland Sharrer. "It helps our employees to make the transition from data, to information, to decision-making, and ensures everyone knows how to manage data effectively. Ultimately, this enables us to make better decisions and provide a more seamless customer experience."

By taking a coordinated approach to data that unites strategy, culture, people and technology, businesses can ensure they embed their data within their daily operations.

One benefit of this is to avoid what Qlik's Julie Kae calls "rear-view mirror" thinking - when companies compile their ESG data and analytics for the sole purpose of publishing a report that looks back, rather than ahead.

"We don't leave our data locked inside a silo - we bring it into the analytical environment that we use every day," she says. "Everything we do from an ESG reporting perspective, whether it be environmental, DE&I community programmes or governance factors, we work very hard to integrate that into our daily decision-making systems. We make sure that our progress is something that is monitored every day, and not just for a report that we publish.

"Through data, you can not only look to reduce your footprint or your environmental impact in the future, but you can bring your people together," adds Kae. "And when you bring your people together, everyone feels a part of that mission."

"The data academy has been very successful," says Group Chief Data & Emerging Technology Officer Roland Sharrer. "It helps our employees to make the transition from data, to information, to decision-making, and ensures everyone knows how to manage data effectively. Ultimately, this enables us to make better decisions and provide a more seamless customer experience."

How Lenovo is helping clients on their journey to becoming a Data Leader

Lenovo is committed to creating smarter technology for an ethical digital future.

Tikiri Wanduragala, Lenovo's Senior Consultant for Infrastructure Solutions, explains how we're helping our customers make that a reality.



“Lenovo has established its reputation for reliability, innovation, best-in-class service and future-proofed technology solutions. In particular, Lenovo offers a full range of enterprise server and storage hardware and software solutions that put data management front and center for the rapidly evolving IT infrastructure.

Integration is a key factor as you will have multiple data pools in your organization. Lenovo data management solutions seamlessly link with leading public cloud platforms including Microsoft Azure, Amazon AWS, IBM Cloud, Google Cloud and Alibaba Cloud, as well as with major enterprise applications and workloads, regardless of whether they reside on premises or in the cloud.

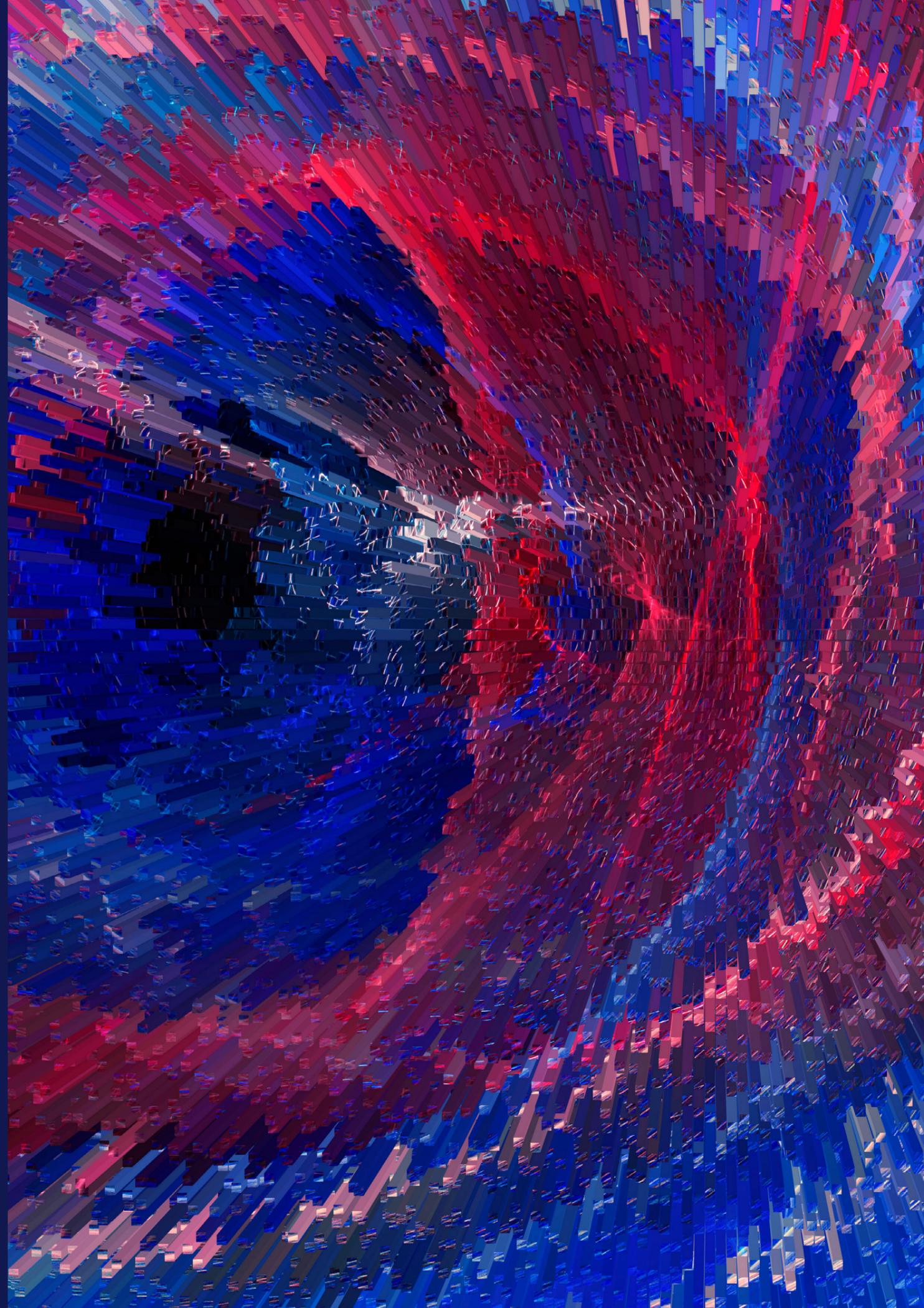
Businesses and public sector organizations clearly face a challenge when it comes to managing their data, now and into the future. They may not want to move entirely to the cloud, but still want to take advantage of it when necessary. This means their on-prem infrastructure needs to be cloud-friendly. But it also needs to offer them the security, resiliency, and manageability which was previously reserved for top-tier on-prem enterprise storage systems. Lenovo's DM Series of data management solutions is designed to bring enterprise class data infrastructure and features to medium sized organizations, providing simple starting blocks that can be scaled up easily, and which have built-in integration with cloud-based storage services.

For example, cold data can be automatically tiered from a DM5100's SSDs to lower cost object storage in the cloud, to maximize on-prem performance. Critical data can be replicated to the cloud using Cloud Volumes, further enhancing data protection and security, in case of a disaster such as a ransomware attack, without the need for a separate on-prem site.

Finally Lenovo TruScale provides an as a service model that transforms procurement from a CapEx to an OpEx model, providing predictable costs and removing the headaches of extended, successive procurement cycles.”

Get the most from your data with **Lenovo** technology

The biggest gulf between the Data Leaders and the Data Followers is technology, and business leaders believe that targeted technology investments are key to getting value from their data. Lenovo creates a variety of smart solutions to deliver transformative outcomes.



Servers

With our Lenovo server series, the hassle of legacy servers becomes a thing of the past. Our servers have low setup costs, reduced complexity, and easy scalability for large data centres and small businesses. We offer an improved approach with a range of server options.

Storage

Lenovo's Enterprise Storage server is one of the fastest on the market and can connect to multiple storage devices simultaneously. This makes it ideal for high-performance computing environments. It can be easily integrated into existing infrastructure and scaled up as needed.

Edge computing

Harnessing data from edge to cloud marks a shift to a data-centric environment. Lenovo's ThinkEdge portfolio has purpose-built devices designed to be networked on-premises or embedded in solutions to give you the advantage in performance, security, and scalability.

Hybrid Cloud Enablement

Relying on an on-premise solution can reduce your organization's ability to grow quickly. Lenovo's hybrid cloud provides the security of a private cloud or on-premise computing, with the flexibility and accessibility of the public cloud.

Analytics & AI

Many enterprises have started to adopt AI, but the process is challenging. Lenovo offers proven, ready-to-deploy infrastructure solutions designed for any size or scale. We help you extract knowledge from your data to build tangible benefits.

Infrastructure-as-a-Service via TruScale

Our IaaS model provides a cloud-like experience with on-premise security and control that can be tailored to your needs. Lenovo Infrastructure Services is on hand to provide technical expertise and support across the globe.

