

BEYOND THE BIG DATA BUZZ

HOW DATA IS DISRUPTING
BUSINESS IN EVERY INDUSTRY
IN THE WORLD

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Introduction: beyond the big data buzz

‘Big data’ is a massive buzz phrase at the moment and many say big data is all talk and no action. This couldn’t be further from the truth. Data, both big and small, is already making a huge, **practical difference** to our world. Data has the power to transform pretty much every industry and business, and even how we go about our daily lives. But when you strip away the hype and buzzwords, it boils down to this: data can help businesses of all sizes add real value and drive competitiveness. Yes, this often means a corporate giant working with data on a massive scale, but it can just as well mean a smaller local business harnessing the power of social media data to better understand its customers.

The explosion in data

Back in 2010, Google’s Eric Schmidt announced that we had reached the point where more data was being created every two days than in all of human history up to 2003. Since then, companies of all shapes and sizes, across a wide range of industries, have been getting to grips with new ways of handling and leveraging the incredible volume of information that’s being generated every day.

For example, Facebook users upload billions of pieces of content to the social network site every day. In industry, machines and vehicles are fitted with sensors and trackers that record their every move. Our phones, too, are increasingly equipped with a range of sensors. Often when we call a call centre, an audio recording of our conversation is made. And whenever we go online, we leave behind a digital footprint: a record of the websites we visit, the products we view, even how long we hover the cursor over certain areas of the screen. The online behemoths like Google, Facebook and Amazon collect huge amounts of data on individuals and use this information to determine exactly what people want, as well as sell targeted advertising services.

The term ‘big data’ refers to these huge data sets we are building, as well as the practice of interpreting, analysing and acting upon insights gleaned from this information.

But harnessing data isn’t just about the big players and their armies of data scientists crunching through massive data sets. Data, whether it’s small or big or a combination of the two, matters to every single company in every industry.

To cater to this huge demand for data, many companies have sprung up offering services that enable other businesses to launch data initiatives and harness the power of data without investing in expensive technology or hiring analytic staff. Companies including Amazon, Google and IBM offer big data solutions and support, meaning a wider range of companies across all industries can now benefit from data-based insights.

The importance of the Internet of Things

Part of the reason for this explosion in data is the Internet of Things (IoT), sometimes known as the Internet of Everything (IoE). The IoT refers to devices that collect and transmit data via the Internet, and covers everything from your smartphone, smartwatch, Fitbit band, even your TV and refrigerator. The IoT has seen enormous growth in recent years, and it's only just getting started. Today, there are about 13 billion devices that connect to the Internet. By 2020, that number is predicted to rise to over 50 billion. Smartphone users alone are predicted to number over 6 billion by 2020.

Smart devices are transforming our world, our cars, our homes and our businesses. By 2020, a quarter of a billion cars will be connected to the Internet, allowing scope for a whole host of in-vehicle services including automated driving.

'Wearable' technology is a crucial part of the IoT, and the global market for wearable devices (things like smart watches, fitness trackers, etc) grew 223 per cent in 2015. One in six consumers currently owns and uses wearable technology in one way or another. All of these devices create a wealth of data, and many businesses are only just starting to realize the implications of this now.

Connected devices can not only connect to the Internet, they can also connect and share information with each other. In fact, machine-to-machine connections will grow to 27 billion by 2024. So, in the near future, it's not unreasonable to imagine your refrigerator knowing when your milk is out of date and automatically telling your smartphone to order more in the next online shop.

All this means that the amount of data we're generating is not going to slow down anytime soon. Far from it. I strongly believe that businesses who learn to harness this data are the ones who will survive and thrive in future.

Three ways businesses can benefit from data

To me, it's very clear that we're well past the time when businesses should be wondering if they have to worry about data. The real question is, can they

afford not to? As we'll see in this book, data is already revolutionizing just about every industry. Those businesses who aren't on board risk getting left behind.

But how can businesses best use data to their advantage? There are three core areas where data really matters to business: improving decision making, improving operations, and monetizing data.

First, big data enables companies to collect better market and customer intelligence. With the ever-increasing amount of data available, companies are gaining much better insights into what customers want, what they use (and how), how they purchase goods, and what they think of those goods and services. And this information can be used to make better decisions across all areas of the business, from product and service design to sales and marketing and aftercare.

Second, big data helps companies gain efficiencies and improve their operations. From tracking machine performance to optimizing delivery routes to even recruiting the very best talent, big data can improve internal efficiency and operations for almost any type of business and across many different departments. Companies have even started using sensors to track employee movements, stress, health, and even who they converse with and the tone of voice they use, and are using that data to improve employee satisfaction and productivity.

The IoT plays a huge role in improving operational performance. A big part of the IoT isn't so much about smart devices, but about sensors. These tiny innovations can be attached to everything from yogurt cups to the cement in bridges and then record and send data back into the cloud. This allows businesses to collect more and more specific feedback on how products or equipment are used, when they break, and even what users might want in the future. For example, Rolls-Royce aircraft engines contain sensors that send real-time data on the engine's function back to monitoring stations on the ground. This information can be used to detect malfunctions before they become catastrophic, and possibly to investigate – and hopefully prevent – the causes of aircraft disasters.

Third, data also provides the opportunity for companies to build big data into their product offering – thereby monetizing the data itself. As we'll see later in this guide, John Deere is an excellent example of a company that is using data not only to benefit its customers, but also as a new product offering. All new John Deere tractors are equipped with sensors that can help the company understand how the equipment is being used, and predict and diagnose breakdowns. But they've also put the sensors to work for the farmers, offering access to data about when to plant, where, the best patterns

for ploughing and reaping, and more. It's become an entirely new revenue stream for what was seen as quite a traditional company.

Regardless of the size of the company or the industry in which it operates, the key to getting the most out of data is having a clear, robust strategy that relates data to the business's long-term goals. *Data Strategy: How to profit from a world of big data, analytics and the Internet of Things* helps business leaders successfully create and implement their data strategy, allowing them to make better business decisions, improve their operations and exploit opportunities to monetize data.

The power of data: industry by industry

Historically, when new technologies become easier to use, they transform industries. That's what's happening with data right now; as the barriers to implementation disappear (cost, computing power, etc), more and more industries are putting data to use. Let's take a look at some key industries and explore how data is driving performance and competitiveness.

Healthcare

Big data in healthcare is transforming the way we identify and treat illnesses, improve quality of life and avoid preventable deaths. With longer lifespans and an increasing world population, the healthcare industry is experiencing rapid change, both in the challenges it faces and the delivery of treatment. Many of the decisions related to these changes are being driven by data. The drive now is to understand as much about a patient as possible, as early in their life as possible – hopefully picking up warning signs of serious illness at an early enough stage that treatment is far more simple (and less expensive) than if it had not been spotted until later.

Data is positively disrupting almost every aspect of healthcare, from **cancer diagnosis and treatment** to caring for premature babies. In one specialist premature and sick baby unit, big data techniques have been used to monitor the babies' heartbeats and breathing patterns. Using this data, the unit was able to develop algorithms that predict infections 24 hours before any physical symptoms occur. The computing power of big data analytics already enables us to decode entire DNA strings in minutes, rather than days or weeks, enabling us to better understand and predict disease patterns.

Companies like Google, Apple and Samsung are investing billions in developing new biometric sensors and wearable technology that tracks

health and fitness. In fact, wearable health trackers are now mainstream to the point where health insurance providers are encouraging individuals to share the data from these devices in return for rewards. Just imagine how incredible it will be when all the individual data from smart watches and wearable devices can be applied to millions of people and their various diseases.

Machine learning is already making a dramatic difference in healthcare, helping to improve diagnostics, predict outcomes, and introduce a new level of personalized care. In one example, California-based cognitive computing firm **Apixio** mines data from medical records, as well as billing and administrative data sets, to help improve healthcare decision making, reduce healthcare costs and improve patient outcomes.

What's more, big data analytics allow healthcare agencies to monitor and predict the development of epidemics, and is currently helping in the **fight against the Zika virus**.

Retail

The way we buy and sell is evolving fast. Both online and offline, those retailers that are embracing a data-first strategy towards understanding their customers, matching them to products and parting them from their cash are reaping huge rewards.

Data analytics is now being applied at every stage of the retail process – working out what the popular products will be by predicting trends, forecasting where the demand will be for those products, optimizing pricing for a competitive edge, identifying the customers likely to be interested in certain products and working out the best way to approach them, taking their money and, finally, working out what to sell them next. It's even being used to **tackle surplus food stocks in supermarkets**.

Things have moved on greatly from early big data retail experiments, such as Target's infamous attempts to work out who was pregnant and send them pregnancy- and baby-related offers – inadvertently letting one father know that his teenage daughter was pregnant before she'd had the chance to tell him herself. Today, retailers are constantly finding **cutting-edge ways** to draw insights from the ever-increasing amount of information available about their customers.

While retailers have been reaping the benefits of analysing structured data (such as customer databases and transaction records) for years, they have only recently begun to come to grips with unstructured data. Now, social media data, customer feedback comments, video footage, recorded

telephone conversations and even locational GPS data can all be used to understand how customers behave and better target them with appropriate products. Data now plays such a key role in retail that some of the larger retailers like **Walmart** are hiring armies of data scientists and coming up with **new and interesting ways** to attract the very best talent.

Manufacturing

Data plays a hugely important role in modern manufacturing processes. Advances in robotics and increasing levels of automation are dramatically changing the face of manufacturing. Adidas is one big name investing heavily in **automated factories**. Such technology allows manufacturers to bring their manufacturing back to the United States, Europe or wherever they're based, without the high wage bill.

Even in a more traditional manufacturing environment, where humans work alongside machines, data is still making its mark. Data is commonly used for quality control purposes, helping to identify faults in products before they hit the market. It is also helping to eliminate waste and drive continuous improvement processes, and can even help increase product yield. In fact, **one study** showed a biopharmaceutical manufacturer was able to track the nine parameters that most affected yield variation for their vaccine. Based on this data, they were able to increase yield by 50 per cent, leading to significant manufacturing savings on that product alone.

By embedding sensors into manufacturing equipment, manufacturers around the world are capturing valuable machine data that helps them monitor the health and efficiency of those machines, thereby increasing operational efficiency, minimizing downtime and boosting productivity. Sensors are also increasingly being installed into a wide range of products, from jet engines to yoga mats, allowing manufacturers to gather valuable data on how those products are performing and being used. **Rolls-Royce** are the prime example of a manufacturer leveraging sensor data to their advantage. Car manufacturers like **Volvo** are also embracing data analytics, benefitting from the huge amount of data that modern cars – and their drivers – generate.

Financial services, banking and insurance

We know that computers are already being used to make stock trades faster than humans ever could and they're even used to predict how the market will react and make recommendations on whether an investor should buy

or sell. But the applications of data go far beyond high-tech, big-money trading.

Citigroup, one of the largest financial services providers in the world, has adopted a **data-first approach** to driving business growth and enhancing its services for customers. Likewise, Royal Bank of Scotland is leveraging data to get closer to its customers, in a strategy it calls ‘**personology**’. Data is also helping credit card companies like American Express **detect fraudulent transactions** and expand into trend analysis services for businesses. Data is also helping banks and lenders predict which applicants are high- and low-risk investments for personal and business loans.

The **insurance industry** has been particularly quick to adopt big data practices. Predictive, statistical modelling basically means working out what will happen in the future by measuring and analysing what has happened in the past. Using predictive models, it’s possible to predict what is likely to happen in the future. Formulas have been used for decades to determine how much insurance a person is qualified for and at what rate, but data helps to automate this process and make it far more accurate. As insurance companies build their business on ‘what if’ scenarios, this makes data incredibly valuable to any insurance company. Data is already being used to help insurers set fairer and more accurate policy premiums, identify fraudulent claims and improve their marketing efforts. Companies like Aviva or Progressive are taking data collection a step further by offering discounts to drivers who use an app on their phone or a monitoring device in their car, allowing the insurer to monitor how safe a person’s driving really is.

Education

With learning often taking place via a laptop or tablet, even when the student is in a traditional classroom environment, increasingly large amounts of data are being generated about how we learn. Education establishments are now beginning to turn this data into insights that can identify better **teaching strategies**, highlight areas where students may not be learning efficiently, and transform the delivery of education.

There are some really exciting **cutting-edge uses of data and analytics in education**, all of which are enabling schools to run more efficiently, help teachers impart knowledge more effectively, and ensure that fewer children slip through the net.

For example, in Wisconsin’s Menomonee Falls School District, data has been **put to use** for everything from improving classroom cleanliness to planning school bus routes. Another US school found that the number of pupils

being sent to the principal's office had grown by a worrying amount. On examining the data, they realized that this had coincided with a reduction in school excursions, such as ice skating. When these activities were reinstated, behaviour among students improved, leading to a noticeable reduction in the number of pupils being sent to see the principal.

Schools are also finding themselves armed with new technologies aimed at cutting down on exam cheating and plagiarism among students. The **Proctortrack** system aims to prevent cheating by using webcams and microphones to monitor students while they sit for exams.

Of course, these days, not all education takes place in the classroom. The boom in online courses is providing a wealth of insights into the ways that people learn, and is leading to huge advances in personalized, adapting learning.

Transportation and logistics

Many applications for data analysis have already been found in **supply chain management**, logistics and transportation. In warehouses, digital cameras are routinely used to monitor stock levels and the data provides alerts when restocking is needed. Forecasting takes this a step further – the same camera data can be fed through machine learning algorithms to teach an intelligent stock management system to predict when a resupply will be needed. Of course, supply chains have for a long time now been driven by statistics and quantifiable performance indicators, but advances like real-time analytics of huge, rapidly growing data sets are revolutionizing the industry. In the not-too-distant future, warehouses and distribution centres will effectively run themselves, with very little need for human interaction.

Clearly, many factors can impact on transportation and logistics, from the weather to the condition of vehicles and machinery, and data analytics enables businesses to drive significant efficiencies in these areas. One bus and coach company that I worked with is collecting and analysing telematics data from its vehicles and using this data to improve driving behaviour, optimize transport routes and improve vehicle maintenance.

In the world of public transport, Transport for London (TfL) is using data to **provide a better service** to the millions of passengers who use its vast network every day. Running all those buses, trains, taxis, roads, hire bikes, cycle paths, footpaths and even ferries gives TfL access to huge amounts of data – and the company is using this data to plan services and provide better information to customers.

And, let's not forget that **driverless car technology** already exists, with Google's driverless car racking up more than 1 million miles. Self-driving vehicles are likely to have a big impact on the future of transportation, from driverless cars to driverless buses – even driverless lorries hauling goods up and down the country, drone ships crossing our oceans and self-flying planes connecting continents.

Agriculture and farming

Even very traditional industries are embracing the power of data. US agricultural manufacturer **John Deere** has enthusiastically adopted big data practices, launching several data-enabled services that let farmers benefit from crowdsourced, real-time monitoring of data collected from its thousands of users. Myjohndeere.com is an online portal which allows farmers to access data gathered from sensors attached to their own machinery as they work the fields, as well as aggregated data from other users around the world. It's also connected to external data sets including weather and financial data. Another John Deere service is Farmsight, which allows farmers to make decisions about what crops to plant where, based on information gathered in their own fields and those of other users.

And these advances aren't just for farmers in the United States. Agricultural data company Springg recognized that farmers in developing nations could benefit from the same data farmers in developed nations have access to, such as soil quality data. But in rural and underdeveloped areas, the practice of taking a soil sample and then sending it off to a lab for analysis can take weeks. As a result, there wasn't really any data available for farmers to work with because no one was bothering to gather it. So Springg developed **mobile test centres** with IoT-enabled devices that could test the soil remotely, give results almost immediately, and then send the data back to a central repository for further analysis alongside all the other soil samples. This 'guerrilla data' approach is not only exciting from a data technology point of view, it's genuinely revolutionizing the way farmers in developing countries can work their land.

Energy

The oil and gas industries are facing major challenges – the costs of extraction are rising and the turbulent state of international politics adds to the difficulties of exploration and drilling for new reserves. In the face of big problems, the energy industry is turning to data for solutions.

Royal Dutch Shell, one of the ‘supermajor’ energy companies and the world’s fourth-largest company by revenue, has been developing the idea of the ‘**data-driven oilfield**’ in an attempt to bring down the cost of drilling for oil.

Surveying of potential sites involves monitoring the low-frequency seismic waves that move through the earth. Probes are put into the earth at the spot being surveyed, which will register if the pattern of the waves is distorted as they pass through oil or gas. In the past, this would involve taking a few thousand readings during the typical survey of a potential drilling site. But now technology has advanced to the level where it’s possible to take more than a million readings – vastly increasing the amount of data gathered during exploration.

This gives a far more accurate image of what lies beneath. Data from any prospective oil field can then be compared alongside that from thousands of others around the world, to enable geologists to make more accurate recommendations about where to drill.

On a smaller, but no less important, scale, data and the IoT are disrupting the way we use energy in our homes. The rise of ‘**smart homes**’ includes technology like Google’s Nest thermostat, which helps make homes more comfortable and cut down on energy wastage.

Government and public sector services

Data is used to improve many aspects of our cities and countries. It allows cities to optimize traffic flows based on real-time traffic information as well as social media and weather data. An increasing number of cities are currently piloting data analytics with the aim of turning themselves into ‘**smart cities**’, where data collection, analytics and the IoT combine to create joined-up public services and utilities.

My home town of Milton Keynes is one that’s already using smart, connected, data-driven technology to help **improve public services**. For example, a sensor network has been rolled out across all 80 of the council’s neighbourhood recycling centres to help streamline collection services, so wagons can prioritize the fullest recycling centres and skip those with almost nothing in them.

Big data is also applied heavily in improving national security and enabling law enforcement. By now, most people are aware of the revelations that the National Security Agency (NSA) in the United States uses big data analytics to foil terrorist plots (and maybe spy on us). Other agencies use big data techniques to detect and prevent cyberattacks. Police forces use

data tools to **catch criminals** and **tackle gun crime**, and credit card companies use it to detect fraudulent transactions. ‘**Predictive policing**’ may have some sinister Minority Report undertones, but it has proven highly successful when used carefully. In one example, algorithms were used to predict demand for police presence in New York City on New Year’s Eve, and the results were striking: 47 per cent fewer random gunfire incidents, and a \$15,000 saving in personnel costs during the eight-hour period.

Big data even plays a critical role in modern **election campaigns**, particularly in the United States.

Hospitality, hotels and restaurants

The hotel and hospitality sector caters to millions of travellers every day, and each one of them checks in with their own set of expectations. Meeting those expectations is the key to getting people to return and, increasingly, hotel and leisure operators are turning to advanced analytics solutions for clues about how to **keep their customers happy**. Caesar’s Entertainment, owner of the famous Caesar’s Palace hotel and casino in Las Vegas, was an early adopter of **data-driven marketing and customer service**.

Data is particularly helpful in identifying customers who have a higher lifetime value to hotels. For example, a high-rolling customer spending money like it’s going out of fashion in the hotel casino may be on a ‘holiday of a lifetime’ and may never visit the hotel again. Meanwhile, a frugal business customer taking an economy room and spending very little on extra services may return frequently if the hotel meets his needs, making him a higher-value customer than the high roller. Data analytics helps make this distinction.

Another common use of analytics in the hotel industry revolves around ‘yield management’. This is the process of ensuring that each room attracts the optimal price – taking into account troughs and peaks in demand throughout the year as well as other factors, such as weather and local events, which can influence the number (and type) of guests checking in.

Of course, the traditional hospitality industry is also facing stiff competition from completely data-enabled services like **Airbnb**, which helps travellers find unique accommodation all around the world.

Restaurants are also starting to cotton on to the power of data, from **optimizing pizza delivery** to **improving decision making** in a chain of barbecue restaurants.

Professional services

When you read or hear news stories about the imminent takeover of robots and algorithms that will **eliminate jobs for human workers**, many times the first examples given are blue-collar jobs like factory workers and taxi drivers. But even highly skilled professional services – like accounting, law and architecture – are seeing massive change thanks to advances in data, analytics, machine learning, robotics and artificial intelligence. Increasing automation and massively increased computing and analytic power allow professional service providers to deliver a smoother, faster and more efficient service, whether that service is designing a building or preparing for a big law case.

In **accounting**, software can automatically import transactions, keep track of digital receipts, automate payroll and keep track of taxes. But even more complex tasks like auditing, regulatory compliance and trend analysis can be carried out by computers these days.

The **legal profession** is also on the cusp of some important data-related developments. In the discovery phase of a lawsuit, lawyers and paralegals may have to sift through thousands, even tens of thousands, of documents. Sophisticated databases can now use big data techniques, including syntactic analysis and keyword recognition, to accomplish the same tasks in much less time. In fact, the technology exists for computers to accomplish even more complex tasks like reviewing precedent and case history, and even drafting legal briefs. The ability to predict the outcomes of major cases is another area in which data, particularly predictive analytics, can play a significant role; in fact, a statistical model created by researchers at Michigan State University and South Texas College of Law was able to **predict the outcome of almost 71 per cent of US Supreme Court cases**.

In the world of construction, building designers, engineers and construction firms are already starting to move into arenas such as real-time, cloud-powered analytics. Not only do these methods help to drive innovation, speed up the design process, reduce waste and reduce costs across major projects, they also help foster collaboration between the interested parties: the architects (who want to unleash their creative energy), the engineers (who have to try to make it all fit together and stay standing), and the owners (who are usually desperate to keep costs under control).

Telecoms, too, is seeing huge benefits from data analytics, particularly when it comes to uncovering critical insights about customers, markets and sales. US telecom company Sprint has access to vast amounts of user data,

thanks to its huge network of users. Three years ago, it formed a subsidiary, Pinsight Media, to help capitalize on that data and inform advertising decisions. In the three years since Pinsight was established, the company has gone from serving zero to six billion ad impressions per month.

Data is also dramatically changing the nature of **call centres**. Natural language processing (NLP) is what allows an automated system to properly direct your call when you speak into the phone. It used to be that you had to use the exact word or phrase, saying ‘accounts’ or ‘operator’ in order to be routed properly. But with the growing sophistication of NLP algorithms, systems can now interpret long strings of words, like, ‘I have a weird charge on my bill I want to talk to someone about’, and route that caller to the correct department. Speech analysis goes beyond what you say to understand how you say it, analysing the caller’s tone, vocabulary, sentiment, and even silences to gauge emotion and satisfaction.

Finally, software providers like **Microsoft** are increasingly gathering and leveraging user data and using this information to better understand how people use their products and, sometimes, provide targeted advertising. Software providers are also increasingly moving away from a product-based model towards a cloud-based software-as-a-service model, allowing them to gain a far more accurate picture of when, how and why their product is used. These insights are helping companies like **Autodesk** create a better product and provide an improved service for customers.

Sports

Most elite sports have now embraced data analytics. Of course, we have the high-tech world of Formula 1 and NASCAR racing, where teams **compete on analytics** as much as engineering and speed. And we have tools like the **IBM SlamTracker** for tennis tournaments, which give professionals and fans greater insight than ever before. But data is becoming immersed in every aspect of sport, far beyond the obvious high-tech and stat-geek angles.

Video analytics is used to track the every move of soccer players on the pitch. The NFL has installed **sensors in shoulder pads** to gather data on players’ performance. Analytics helped British rowers **row their way to Olympic gold** in 2016 and the underdog **US women’s cycling team** win silver in 2012. Data has even unlocked the secrets of the **perfect golf swing** and can also help improve your **yoga postures**.

In fact, it's hard to think of any area of sport that isn't embracing data and analytics these days. Many elite sports teams go so far as to track athletes outside of the sporting environment, using smart technology to track nutrition and sleep, as well as social media conversations to monitor emotional wellbeing.

Businesses built on data

Increasingly, data is becoming a key business asset in its own right, and platform businesses that are entirely fuelled by data are among the most successful companies in the world. A glance at the 10 most valuable Fortune 500 companies proves this; in 2016, four of the top five most valuable companies have either built their entire business model on data, or are heavily investing in data: Apple, Alphabet (Google's parent company), Microsoft and Facebook are all in the top five. Amazon also joined the top 10 in 2016, jumping to ninth place from its previous ranking of 19.

While all five companies can be loosely lumped together in the 'tech' basket, they operate in different fields and with different business models: Microsoft is a software giant, Apple manufactures some of the most iconic products in the world, Amazon is a retailer, Facebook is a social network platform, and Google (despite its many different strands) is, at its heart, a media company. What unites these companies is their ability to gather and harness huge amounts of data to their advantage.

These industry-dominating behemoths have all been pioneers – not simply in collecting vast quantities of data, but finding innovative ways to put it to use. Facebook and Pinterest are taking data analytics and machine learning to new and exciting levels with **innovative image-recognition techniques**. Apple is using data right across its business to **drive success**. Google arguably knows more about us than our loved ones, knowledge it uses to provide a highly personalized service and to help other businesses target customers effectively.

Data is also at the heart of the **sharing economy**, including ridesharing apps like **Uber** and the homestay network **Airbnb**. These companies don't just represent a new way of thinking or new services, but a new way to use data effectively to provide services to people when and where they want them.

As the technology advances and the ability to gather and interpret increasing amounts of data improves, platform businesses that are founded in data are likely to continue climbing the list of the world's most successful companies.

Conclusion: every business should be a data business

There's no doubt in my mind that data is becoming a key business asset, central to the success of every company, big or small. As the world becomes smarter and smarter, data (and the ability to turn data into insights) becomes the key to competitive advantage. This means every business, regardless of size, in every industry, must now become a data business.

And if every business is now a data business, every business therefore needs a robust data strategy. Those without a clear data strategy risk being left behind. To find out how to create and implement a successful data strategy, check out *Data Strategy: Preparing for a world of big data, analytics and the Internet of Things*. It's designed to help business leaders harness data in their organization, make smarter business decisions, improve operations and performance, and become more competitive.



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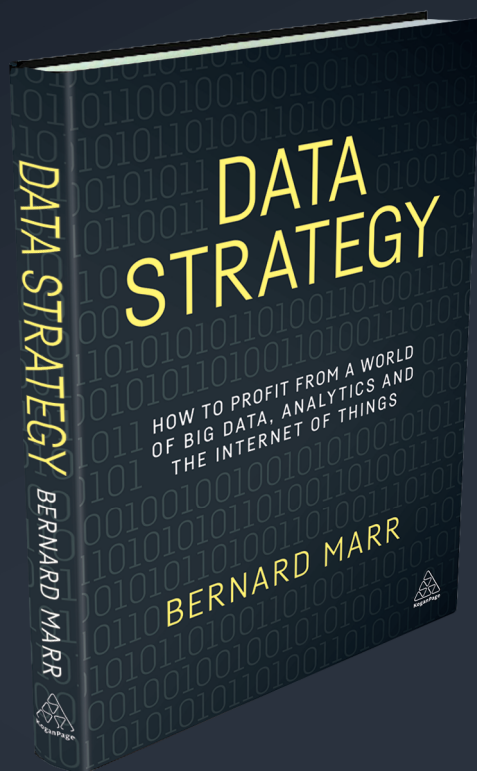
Bernard has worked with and advised many of the world's best-known organizations including Accenture, Astra Zeneca, Bank of England, Barclays, BP, Cisco, DHL, Fujitsu, Gartner, HSBC, IBM, Mars, Ministry of Defence, Microsoft, NATO, Oracle, The Home Office, NHS, Orange, Tetley, T-Mobile, Toyota, Royal Air Force, SAP, Shell, the United Nations, and Walmart, among many others.

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