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TQ Data Preshow

Hi. Shail Jain here, and welcome to the Data TQ Topic. Everyone knows that data is a part of every computer system we have used in the past or the apps we use on our phones today. We may even have been taught this as a small child. So you're probably wondering, why are we spending an entire TQ topic on data? In short, we believe that data has the ability to completely disrupt entire industries, much like software companies started to do that about a decade ago. In fact, we think data may be more important than software. If businesses learn how to use data effectively, it can create tremendous business value and even create new business models. But why now? What's different? Well, there are three reasons why data is more important now than ever before. Firstly, explosion of data. Literally everything we do now is generating data. Every text message you send, every time you use GPS, every time you do a search on your phone or computer, every time you watch a movie or buy something, data is created. There's so much data being collected today. It is estimated that 1.7 MB of data is created every second for every person on earth. Let me repeat that; 1.7 MB of data created every second for every person. That is a lot of data, but you know, an interesting fact: Only about 1% of today's data is analyzed, presenting a tremendous opportunity. Technology advancements is the second reason. There is so much more computing power available now than ever before. When you combine that with the advancements in machine learning and artificial intelligence, the ability not only to store but also to do something with that data becomes even more important. The third reason is that digital native companies have created radical disruptions, meaning with data, you can change, reinvent, or create entirely new business models, causing massive disruptions to an entire set of industries. The traditional brick and mortar companies are realizing this and becoming very

interested in capitalizing on data. This is why we call this new era Data in the New, and this is why we believe that data is more important than software. Every company now aspires to be a data company, which grants them intelligence that leads to new business value. In essence, data is feeding the world. That is, nearly every technology is using data to make itself smarter, and data has the potential to help the world in unimaginable ways. For example, the CEO of Novartis asked a very profound question. What if we can design a new drug from data that is already available? That takes on much more meaning today, doesn't it? Well, what if that is true? There are new companies springing up today, such as Insilico and Berg, with the sole focus of using data to find new therapies. This is what our data practice does for our clients. We help our clients become data-driven, intelligent enterprises so they can ask these big questions and, more importantly, be able to answer them. And, of course, we have frameworks, the right tech partnerships, and advice on how best to do it. Yes, the right data platform needs to be in place as well, but it's more about how best to use the data. Reinventing an enterprise isn't as simple as slapping a user-friendly digital front end on a database. It needs to happen from the core, from the inside out, not the outside in. This is what we call data-driven reinvention. The only way to make businesses more intelligent is data. Data is the only thing that gives you the ability to make your business processes adaptive. People need to be able to read, write, and comprehend data, meaning they need to think about data and use data in every part of the organization. This is what we call data literacy. We also need to think about the ownership and privacy of data and the ethics and biases in the data. This is where we need data governance and data management. Of course, all of this needs to stem from a comprehensive enterprise-wide data strategy. So there you have it, Data in the New. I hope you will join us in watching the rest of this content and digging in deeper to the topic of data. And remember to grow your TQ and grow your impact. Happy learning.

Data: Executive Briefing

Introduction

Here's what usually happens in a course about data. I'm supposed to begin by telling you some statistic, like a typical Fortune 500 company now generates more data every 24 hours than in all the books published in the last 100 years. And you go, okay. Then I'm supposed to say something like, if you tried to watch all the videos uploaded to YouTube just yesterday, it would take you 17 years to do that. And you think, I had no intention of doing that, but if you say so. I might even then list off a bunch of very impressive, very specific numbers, like we have gone from an average of 11.3 terapetahexabytes of corporate data to an average of 21.9 terapetahexabytes of corporate data in just the last 18 months. And you wonder, am I supposed to be doing something with this information? And, no, that's the problem with these kinds of examples. They don't matter. Because you wouldn't have done anything differently if that last number I just told you was 21.9 or 257.6 or 2. And I'll admit those examples, I just made them up. I didn't research any of that. So the quality of those data points? Not good. But we'll talk about data quality in just a few minutes. For now, how about we pretend that I've

gone over a bunch of cliched statistics about how incredibly massive data is these days? You can pretend you are fascinated, and we can move onto something more useful and actionable. This is a short course about data in the business world today, what's important right now and where it looks like things are headed. And yeah, okay, a course where the subject is just data, that's a little vague. I mean, Executive Briefing: Data can almost sound like Executive Briefing: Stuff. Because although we use the word data all the time, it's usually along with some other word like database, big data, data warehouse, data lake. We talk about data literacy or having a data strategy. We need data governance. There are job roles like data scientist and chief data officer. And we're going to touch on all of these terms in the next few minutes, because here we're going to look at that higher level of, well, all of it, how to think about data more generally, and particularly what's changed in recent years. And for those of you who are perhaps a little bit skeptical about the business world's recent obsession with data, where we suddenly have huge numbers of books and articles and publications about it, and they like to use words like deluge a lot, well, I sympathize with anyone who's thought, this isn't new. We've been seriously dealing with data for decades. All right, there might be more of it these days, but really, what's the big deal? Well, I'm going to talk about what is different these days. As a personal note, I began software development in the mid 1980s, and after 30-something years of doing this, I admit, I had gradually internalized some beliefs about data, some assumptions about how we get it, what data to keep and what data to throw away, how we're supposed to manage it, who should be allowed access to it. And those assumptions had started getting in my own way, and I had to make an effort to widen my perspective and adopt some more useful ideas. And I'm going to point out a few of those places so that even if you don't have those mental roadblocks around data, you might understand why others do and even how to get over them. And I'll talk about what skills are most important to build right now, what you should be doing for yourself and for your team, and what the companies you work for and work with should be thinking about. Along the way, we'll see some of the real-world tools, the commercial services and platforms that have helped drive a lot of this new approach. Welcome to the executive briefing on data.

Data to Information—and Beyond

I said we're going to go over a bunch of different terms, so let's just begin with this one, data. I'm using the word in its most wide-ranging and generic sense, any and all facts, statistics, values, all the individual pieces of information, and we'll talk about that word in just a second, that we have. Now data could be numbers, could be dates, words, sentences. It could also be documents or images, audio, video. Now the words data and information are often used almost interchangeably, but there is a worthwhile distinction, which is here's data. And for those of you coming from an English or journalism background, in computing, we don't tend to worry about saying data when it's plural and datum when it's singular, It's all just data, even if it's just one piece of data. So this is one piece of data a specific value, 73. But what is 73? What does this mean? This could be an age or a temperature or a house number or a quantity of eggs or a really bad credit score or the speed of a car. It could be any of these things and a thousand others. Now this piece of data, that could be somebody's surname or somebody's profession. Or is it the name of the street where a famous fictional detective resides? Without any

context, it's data, and we often say raw data. But when we can provide context, some explanation of what it is, it becomes information. But let's be honest. In common usage, we don't always make that distinction. We'll use the word data and information almost interchangeably, even when we do know what it is. So this data versus information distinction isn't that useful in conversation, but it is useful as an idea. Because we do need to begin with this basic raw data and move it through different levels of meaning, not just, we have some value, data, to, what is it, information, but from that we need to take it to, so what? What can we do with this? What could this effect? Now there is a model that's been around since the 1950s called the DIKW pyramid. And the idea here is that we begin always with this base of data, and we need this data so that we can get to information. It's the next level up of understanding. But having information can get us to knowledge of how that information can be understood or applied. And having knowledge can eventually take us to wisdom. Now let's dial it back a bit. In a short course, I'm not going to talk about dispensing wisdom, but we do want to think about going from data to information and then from information to some kind of deeper understanding, insight, or business value. And okay, talking about the business value of data, it's another one of those dull phrases that you hear all the time. But we can kind of split it up and talk about that business value as roughly falling into three different categories. We can work with data to make things cheaper or make things better or make things smarter. Cheaper would be using the data to identify, say, efficiencies in a supply chain or in purchasing, reducing time and reducing expense. Now better, we could be using data to reveal improvements and products or services, or identify new products or services. Or just smarter, using data to make better decisions, to understand more about our customers, about our business, about our employees, or even our own abilities or our own health. Now sure, these three benefits can overlap, but they don't have to. For example, we could just look at data to identify efficiencies in an existing business process without changing anything else about the services we offer or the products we provide. But still, we think about what we're doing this for, because if we're making all these efforts to capture data, to store it, to analyze it, if that isn't going to lead to some kind of change in behavior, then what's the point? Well, here's the thing. Sometimes there is a benefit to just capturing more data without being totally sure what you'll do with it. And that is an attitude about data that's not always been true.

The First Phase of Data

My first job as a programmer was at The General Register Office for Scotland, which was in charge of all the public records of births, marriages, and deaths. Now that information had been attentively recorded for hundreds of years. We had church ledgers going back to the 1500s. Now when you looked at those oldest records and, yes, it was very difficult to understand the handwriting, but for the first, well, let's say, 200 years of this recordkeeping, the information that was being written down but was often very freeform. It was just kind of a journal of a bunch of stuff that happened. These people were married. And then that crop burned down. And then that person died. And then someone's donkey got sick. And then this family had a child. This page has a birth record for some very distant relative of mine, Effie Allardice in 1661. But it's hard to tell because apart from the handwriting, this is buried in with a bunch of other stuff. There's no formality, no easy, readable structure to

this. You might even call it unstructured data. And as the years went on, these records did slowly become more and more structured, more formalized. First, they were split into different books. We'd have one book for births, another one for marriages, and so on. You'd also start to see even more separation within those, like having columns, so it was easier to go back through them and find specific dates or names. And by the mid 1800s, it had become very well defined. There were printed numbered sheets with rows and columns of specific required information. If you're recording a birth, it is first name, surname, time, date, location, mother's name, father's name, occupation, and so on. And this is all still a hundred years before computers would be involved in any of it. But when we did bring computers on board, it was kind of only natural to think, well, we've already well defined this, so of course we're going to store exactly the same information we've been storing on paper for hundreds of years, but now we'll have an electronic, faster and more reliable way to keep all of it. And that was kind of a common, phase one approach of how an organization would use computers to manage data, to begin by simply replicating what they already had. Now I need to be careful. This can see sound like I'm minimizing it. I'm not. I don't want to underplay how much better even that approach was than the prior option. Because if I wanted to know, say, the top 3 most common causes of death between 1750 and 1850, well, the data is there, but if I have all that information in some kind of database, it might take me a few minutes to write a suitable query and get an answer. But if I don't have any kind of database, if all I have were those physical ledgers, then just answering that one question becomes an expedition and a full-time job. There's the shelves. Here's your magnifying glass. Get to work. We look forward to your answer in about 6 months. So even that basic approach to data was still incredibly valuable. But we needed to move beyond just looking at data storage as this formal repository of our most important archival records and also start using it for the day-to-day operations of a business. But that brings its own set of problems.

Sidebar: Data and Databases

A quick sidebar. You see, it's difficult for me to talk about data in the corporate world without saying the word "database." And here I want to avoid getting too deep into that because I do have another executive briefing on databases where I do go more deeply into those specific concepts, the terminology and skills, and talk about the product marketplace. But here, let me just say that the most fundamental benefit of any database, it's not about having just a place to put your data. Because if that's all you wanted, well, you could just make a folder on your desktop and just dump everything in there. Now, a database is about having some kind of organized system that we put our data into, which will then help us with a bunch of other needs. Keeping that data organized, keeping it secure, having reliable access to it, sharing the data between hundreds or thousands or more people, and managing any conflicts that happen, and being able to get to very specific parts of that data very quickly. So databases, or to be more specific, database management systems, or DBMS, software, that's the software that wraps around and manages our databases, this is one of the few technology areas where the products that were released 30 or even 40 years ago are still completely relevant today. That first job of mine that I mentioned, well, in it, I used IBM's DB2 Database Management System. That was first released in 1983, and it's been a viable

product and a relevant skill ever since. And it's not the only one. The Oracle database management system was released in 1979. Microsoft's SQL Server database management system was released in the 1980s, as was PostgreSQL, which is a popular open-source database management system. These products have all been improved and updated and refined, but they've also been continuously relevant for decades. But the products I've just mentioned were all built on a very similar set of ideas. They share the same basic characteristics about what a database should be. And they're all considered not just database management system software, but a particular type of database management system called a relational database management system, or RDBMS. And although they've been incredibly successful and long lasting, there are certain things that these relational database management systems aren't great at. So in the last few years, we've seen different kinds of database products arise to deal with some of the demands that just didn't exist 40 or 30 or even 10 years ago. But we're going to get to that. End sidebar.

Data in Silos and Warehouses

In the early days, most organizations didn't have any kind of corporate data strategy. Instead, you'd just see different solutions start to appear department by department, various new computer systems, all with their own copies of their own data, their own databases, to support the day-to-day operational and business processes that existed for that department. So it wasn't unusual to end up with one system in accounting and another system in marketing and a different one for sales and another one for human resources. And they were very often completely independent and disconnected. You'd hear them described as silos, or data silos, because they're so self-contained, separate, and walled off from each other. If you had access to one system, it didn't mean you had access to another. And they were often built on incompatible technologies, so even if you wanted to integrate them later, it would be incredibly challenging. Now the problems with this siloed approach lead to a move towards more holistic organization-wide corporate databases to support business intelligence. And it's okay; each department does still need a way to manage their own runway-level day-to-day operations, but what could we learn if we had a way to access all of that information? Now, one way to approach this is the idea of a data warehouse, and with a data warehouse, even if you kept all those existing disparate systems, you'd also have a central repository of integrated data, both current and historical, that was pulling data in from multiple sources. But a data warehouse wasn't used to replace those operational systems, and it wasn't used for day-to-day operations. Rather, a data warehouse is intended for analytics and reporting across the entire organization. And the benefits from doing that led to a focus on, let's get more data, where we weren't just storing the very specific data to support an existing old business process. But we were actually starting to generate additional data, our own data. It could be data about customer behavior. These days it might be website analytics and marketing responses, information about how people are using our mobile applications. We might also be generating data to support machine learning. But beyond this, it's not just about what data we want to store and what might be useful in the future, but also thinking about what data our customers might want from us because it's becoming more and more common for customers to expect to get to their data in our

systems, sometimes directly and sometimes through a third-party application. Just think of someone using a budgeting application on their laptop. They often want it to connect directly to their bank and download all their recent banking transactions. Or a healthcare app on a phone. They expect that if they want it to, that app can connect to their medical provider and securely download their own information. And this kind of thing is becoming more and more prevalent, more and more expected. So what might your customers expect from your organization over the next few years, and are you building systems that can support that?

Structured and Unstructured Data

Now anyone who's worked with data and databases, perhaps even going back to the 1970s or 1980s, they'll know it was a normal expected part of the process that you always had to spend a lot of time and effort getting very specific about the data. First, to filter and reduce it, to narrow it all down to the minimum so that we'd only need to store the most efficient amount, and that we only cared about the data that we knew was vital, where we could say exactly how each piece of data was useful and important. But these days, particularly because the cost of storing data has reduced so much, we also try and think about all the data that might end up being useful or important in the future, and that is a subtle but important shift., that we can encourage and support efforts to capture and store more data without knowing exactly what we're going to do with it. But another aspect of the process, particularly with those classic relational databases, was that we'd always need to define it, to specify a structure, what's often called a data model or a schema, where we say, what exactly is this data? What does each piece of data mean? Are we dealing with a name or a date or a number? If it's a number, is there a minimum and maximum values that we're going to allow for that number? Are we going to require that data, or is it optional? If that piece of data is meant to be a name, then are we going to make sure it's always text? And so on. Now this is great, if the data you're dealing with is something that is naturally well defined, perhaps like those birth records from the 1800s. It's repeated entries where each entry has very specific pieces of information. These days, there are many situations where we just don't or can't define everything to that level. And we need to be more flexible about what we store. We have more unstructured data or at least semi-structured data. As just one example of semi-structured data, think of an email. Now parts of an email are well structured. We have a from address and a to email address. There's a subject for it. There's always a date and time It was sent. Now all of these pieces of data are very specific. The date and time sent should always be a date and time and never a cat emoji or a checkbox. But there's also the body of the email. It might be short, it might be incredibly long, it might be text, it could be plain text or richly formatted, or there may be no text in the email at all, it's just a pasted image or an attached audio file or a video file. So we often need a way to store that kind of flexible, unstructured, or semi-structured data where we don't have to define everything about it up front. We just want to be able to store it so that later we can ask questions about it.

What About Big Data?

One of the most well-publicized technology terms of recent years is big data. It's another place where you'll find a lot of books and articles and lots of different products and services all pushing this term. Now one difference between data and big data, as it sounds, is just having lots of it. Now some people will tell you that it only counts as big data if you have at least a petabyte, which is 1 million gigabytes in size. I'm going to say that while the amount of data is of course important, it's also the least interesting aspect of big data. There's a lot to be gained from this new approach and all the new tools and products and services, even if you have relatively modest amounts of data. You see, this all started because there were more more situations that were either stretching the ability of the older, classic relational databases to deal with, or at least making it very cost prohibitive to do so. But what was more interesting about big data wasn't just that it was like a normal relational database only bigger, but instead it was different types of data and data that was unpredictable and data that was coming at us from multiple places and at speeds we just didn't have to deal with before. And it's quite common to hear about the three "V"s of big data, volume, variety, and velocity. Volume is the easy one, just the size of this. But variety and velocity speak to this aspect of, we have more sources of data, more kinds of data. And it's not on some predictable fixed schedule, but unpredictable times, potentially 24/7 from all over the world. We have data from phones and wearable devices. We might get a lot more data from our partners and vendors, sometimes where we pull it from them and sometimes where they push it at us. There's data from social media and online publications, and much of this can be unstructured or at least this semi-structured data we just talked about. And some people have added a fourth V to this list, veracity, the reliability or the quality of the data that you have coming in. But apart from volume, all of these things apply to data in general, the variety of it, the speed of it, the quality of it, the reliability of it, and why this isn't just about big data. Because we don't need a petabyte to engage with these issues. And for some businesses, that's never going to happen. Most B2B businesses won't ever have millions of sales transactions to analyze. But we still need some kind of approach, some kind of strategy for dealing with all of this.

Your Data Strategy

These days, it's important for any organization to have some kind of data strategy, an overall approach, policies and guidelines around capturing, storing, and working with data. And whether you're involved in defining a data strategy or dealing with one that already exists, or perhaps even dealing with the lack of a data strategy, it is something we hope exists at the organization level. Bow you may have to work at the team or project level, but yes, some overall guidance is best just to avoid all those data silo problems. Now, one thing that can be an issue is if there's any perception of, oh, data, well, that's just an IT function, so any policies and procedures are over there. And that somewhat outdated attitude can come from that history, where data was first seen as recordkeeping and logistical support. It's kind of a electronic version of what we had on paper. It's basically very expensive office supplies. It is a cost center that needs to be optimized. But no, it has become far more useful to recognize data is an asset. Data is an asset, however you might like to phrase this. You'll see comments in business publications like data is the new oil, data is the new currency, data is the new capital. It's an incredibly

valuable core element of your business. And like any other asset, you should be able to ask, how do we obtain that asset, how do we build it, how do we protect it, and how do we make the most of it? So any data strategy is fundamentally a business strategy. It's driven by the larger goals of the business. And it needs that board-level support and involvement. And many organizations now have a chief data officer, or CDO, with an enterprise-level perspective on that information as an asset, how we capture it, how we manage it. And in many cases there's not just a single data strategy. It has at least three different aspects of it. First is what we decide to capture or collect. And again, in the past, it was very common to focus on efficiency, to define and store only what was necessary, to constrain every piece, to avoid any redundancy. But these days we look at a more wide-ranging and broad data capture approach where we try to be a bit more predictive or even experimental about what data might be useful in the future. As just one example of that, if we sell products online, well, then it's obvious we need to store information about our products and about our orders and about our customers. Say we store a customer's order details, what they bought and when. But did we also save how long it took them to make this purchase? Do we know how many visits this customer made before purchasing, or what other items she looked at before buying this one? Where are we storing that information, and how can we get to it? And beyond that, what additional data could we start to capture for the order fulfillment and inventory management area? Can we identify issues in our stock or in our supply chain? And many businesses are also finding sources of external data to import and incorporate into their own business intelligence. And that's where we also need to think about the veracity, or the quality of any data that we import. Now, after capturing, or collecting, the data, well, I was about to say that one of the most important aspects of data is cleaning it, but let me correct myself. It is not one of the most important aspects; it is the most important aspect of data. And it's more important than it's ever been, particularly because we're often capturing lots of unstructured data where we might not be filtering and curating and organizing all that data up front. But at some point, we will need to look at it a bit more closely. Now if you have data scientists in your organization, people whose job it is to be looking at that data, diving into it to extract value, well, it's really easy to think of a data scientist as spending most of their time in that deep data analysis. But the typical estimate is that data scientists spend 75 to 80% of their time in the curation, capture, preparation, and cleaning of data before they do any analysis. And particularly if any of that data is going to be used for machine learning, it is vital that there's a lot of effort spent on curating it, cleaning it, preparing it, before all that happens to make sure that it's valid, to make sure it's useful. Now data scientists have a lot of tools that can help them do this, and modern tools can do a wonderful job of helping us to store and access this information. But they're not going to understand the data for us. So any data strategy needs to be explicit about how you're expecting to obtain value from all this. How do you capitalize on it? What kind of analysis and reporting do you support? Who has access to this data, internally or externally? Do we sell or trade any of this data? But any data strategy must be conscious of governance and compliance as well. First, do we have some clear internal policies and guidance on allowed and disallowed use of data, not just for our employees, but perhaps for our vendors and our partners, but also to consider the various legal or regulatory requirements? So if you're dealing with an industry like finance or healthcare, they'll have their own sets of rules about data access

and storage and auditing, as well as more general regulations about privacy and consent, like GDPR. And this all needs to be part of your data strategy. Data is not just an IT function anymore.

The Culture Around Data

One of the ways we're starting to realize more value from our data is just simply allowing more access to it. Now in the past, most organizations would default to automatically imposing very strict controls. where the data was only accessible to a select group of individuals or specific applications. But these days there is a move towards providing more wide-ranging access to internal data and to support this idea that maybe you don't need to define in advance exactly how people are going to use it, and indeed that you support more experimentation and more discovery. And yes, of course, there is still things like permissions. There's aspects of privacy and confidentiality to consider, particularly if you're in an industry with sensitive data, healthcare, finance, or other personal information. But a more open data culture is something to encourage, even if it might take a considerable amount of time to implement. Because in addition to the technical aspects of how do you allow more general but still managed access to the data, it's also important to have a culture of data literacy, where the skills of being able to connect to data isn't limited to just developers and IT staff, but it's far more accessible to a wider set of business users, perhaps even providing some self-service education for those who need that support about how to use these tools to connect to and begin exploring the data. But one benefit of a supportive data culture is people and helping them develop those technical skills that your existing employees who already have very valuable business knowledge and context need. But even if you have the right tools, and even if you have the culture of experimentation and exploration, if you can't make the results understandable by non-technical stakeholders and decision makers, it'll all seem like a waste of time and money. And one very important skill is data visualization, or data. viz, being able to provide the right graphs, visual elements, to tell a data story, and helping in that transformation from data to information to knowledge and potentially even to wisdom. Now it's true that the tools are getting better and better, making it easier to deliver professional-looking results. But still, making the right choice of what data to display and how to display it is very much down to an individual's ability and knowledge of what points are most important to communicate. But while we talk about a data strategy and a data culture, also consider the impact of this, not just on your employees but also on your customers. Because having some very broad and all-encompassing data capture strategy, while that might be useful for one aspect of your business, but these days there is an ever-growing public awareness of how much data is being captured and then used and possibly abused by corporations. So there's both the real ethical issues here and the perception of those issues. Because if your customers think that you're capturing all this additional presumptive data about them with the intention of monetizing it or manipulating their behavior, well, that's going to have a major impact on trust. But it is also very likely that in the future we will need to deal with more regulatory requirements about who owns the data that is generated by a customer or user. And that's why this culture aspect is an important part of your strategy, because this is about people. It's about your employees

and their technical skills and their ability to communicate and how they feel supported in this, but also your customers and what they think about you.

Data Platforms and Data Lakes

Whenever we read about data, it's very common to see words like "deluge" and "overwhelming" and "unprecedented." But if we want to get away from that kind of intimidated mentality and support a culture where data is seen more as accessible and understandable and useful, we do need good tools. And even if you don't have a wide-ranging data literate culture, well, even your data scientists or your business analysts still needs some kind of data platform. While this is something that could be developed in house, there are also multiple commercial services and third-party tools to provide a data platform. And okay, I'm not going to push any one particular product, but it is worth talking about the general characteristics of them. First, you'd expect any data platform to have strong authentication and permissions built in, often using a single sign-on approach to make it simpler for users to log into one place and get to different sources of data, and controlling who's allowed to access each source and where you can automatically audit and log anybody accessing the systems and what they've been doing. Data platforms can do really simplify your data governance strategy by allowing you to manage and report on what data exists, what is being collected, and to take into account data protection and data privacy requirements, things like GDPR. A typical data platform will often provide reporting and dashboards and give you other ways to automatically deliver information to people. In addition to that, many of them provide a centralized way that you can access that data, not just by having a user interface for people but also providing an API, an application programming interface, to allow other computer systems to get to that data. Some of the platforms will provide more substantial data visualization options, allowing you not just to generate different types of graphs and charts, but even interactive and animated visuals to better communicate the story around that data. One term you'll see in several of these platforms is data lake. And there can sound like some similarities between a data lake and the data warehouse I talked about earlier, and that they're both centralized repositories of data. But the intention is different. A data lake lets you store all your structured and unstructured data. The main point of it is you don't have to worry about structuring the data first. You just pour everything into the lake, and then you can use it as a general repository, a sandbox to run different types of analytics and experiments, whether that's visualizations or dashboards or different kinds of reporting. Not all data platforms provide a data lake, and not all organizations need it, but it is a useful option to have. Now whether you have a formal data platform or not, it is still a useful perspective to think about what that would look like in your organization. That's far more useful than just talking about how many petabytes of data were uploaded to YouTube last week, or how many tens of thousands of tweets were sent in the last 5 minutes. Those don't actually help us figure out real business value, but there is a lot of value to be found here. We already talked about those comments that you see more and more these days: data is the new oil, data is the new currency, data is the new capital. Data is an asset. It may take some effort to see it that way, but it's why there is value in having that different mindset, that different culture, and even different tools. And even though we've been

dealing with data for a long, long time, things have changed. There are new skills. There are new expectations around this, but new benefits as well. I hope you found this useful. Thanks for joining me. I'll see you next time.

TQ Data Aftershow

Data Introduction

Data. It is literally all around us everywhere we go, and these days it feels like everything we do, we say, or we touch is a data point being collected by someone somewhere. But who are these someones, and what are they doing with it? Well, today we're talking all about data and why you should care about it. This is the TQ Aftershow, and it starts now. Welcome to our virtual TQ HQ. Hey, Shail! Thanks for co-hosting with me today. And welcome back, you are a repeat guest today on TQ HQ. -Hey, Sarah, how are you? -Good. Well, I'm glad you're back with me. Last time we got together, it was a little bit different. It was, remember, back to those days we were actually all together in a room? But today we're still going to do it, and we're going to do it all virtual. And Shail, I mean, you and I, I consider us old pals now, so I thought I would be honest with you. When I saw the topic for this TQ HQ Aftershow, I thought, really, data? I mean, I thought we were going to be talking about really exciting tech topics, like Cloud and AI, so, I don't know, is this show going to be a bit boring? -No, not at all. So, I'm joined here with some of my colleagues and friends to hopefully put all the doubters, like you, at ease, that data is very, very important and very critical to how we operate, how we go to businesses. -Awesome. And I heard you might be taking a new approach today on the show with us. What do you have up your sleeve? -Well, this is a show where I think you're going to see something that you've never seen before, which is, we're going to do a data jingle. -Really? A jingle? -Yes, a jingle. -Whatever you do, you know it's true. Data feeds the world. -Okay, wow. Well, that was something. I mean, who knew we could make up a jingle about data? But I loved it. Okay, so we're just going to move on over now and introduce our other guests that we have joining us today. Of course, we all know Shail Jain now, apparently our data jingleaire, jingler extraordinaire, I think that's a new title, and our global data lead. But we also have Sanjeev Vohra, who is our global lead of Applied Intelligence, and who I also hear may be known as the Accenture Godfather of Data. So we'll find out more about that. I'm also happy to introduce Chaka Serrant, who is our North America data architect, and we have Tom Johnstone, who's going to join us from our North America Data and Applied Intelligence lead. So, Shail, Sanjeev, Chaka, Tom, welcome to the TQ HQ, and thanks for joining us! -Glad to be here, Sarah. -Yes, I'm excited. That jingle got me excited about this topic even more. -I know, right? It really set the stage. So, I think we're just going to embrace that, and we're going to really embrace pop culture for this Aftershow. I mean, we always do something a little crazy on the TQ Aftershow, and today we're going to have some fun. So we're going to use a meme to introduce all of our topics today. And as our guests, we'll see if you can maybe guess the topic based on the meme. What do you guys think? Are you all in for that? -I'm a little scared. -We'll make it through, we'll make it through.

What is Data?

Okay, Sanjeev, let's start off with you. Here is your first meme. -All right. Well, that's good. That's simple, actually. -Okay, well, I'm sure many of our viewers can relate to this meme, and I am glad that you think it's simple. It's all about the definition of data. So Sanjeev, as our eccentric godfather of data, I would like you to tell us what you think about this meme, I mean, this question. And while you're talking to us, I think this might seem simple, but is data a singular or a plural noun? Maybe you can answer that for us. Well, that's again simple question. I think it's always plural in my mind. It's a lot of data. It's variety of data. It's a lot of volume of data. So it's always plural. It's tons and tons of data, and it's increasing so fast that we can't even imagine. And that's exactly the point that you mentioned earlier. We are using so much of sensors, so much of smartphones right now, everything is getting data on every millisecond. So the amount of data created on a daily basis is much more than it ever used to be done earlier. So it's plural, definitely. And let's answer the question that you just asked. I think we all have been working for multiple clients for many years and been helping them to generate value through building software, building applications, deploying big systems, processing data. But if you see from the lens of a customer, I think we---one of the easy ways to explain data would be that there are a lot of transactional data that sits inside the system, and we all have seen the systems like SAP, Oracle, everything else, with a lot of transactional data. Which is, for example, just relate to all of us in our environment, the work we do for our clients, that's a sales order, the sales orders are all transaction data. It's setting, like purchase orders in the company, so those are also transactional data. Then they have a lot of other data which is there in the company, which is a bit unstructured data, and tons and tons of that unstructured data, like documents, like contracts, like pictures, like scanner pictures, and you know, and that's increasing much, much more now, because of the technology that we're using in our in our ecosystem, in our environment. You also have a lot of data which is coming from sensors, which we call OD data, operational data, which, again, is data which comes from, which is coming from machines, which actually looks a little different than what we see otherwise in our structured data, which is things like the the sales order number or the raw material or what we're ordering and so and so forth. Those are very---those are the classifiers which we're sed to. But these data are different data. But all these data actually comprised of a certain set of data which company possesses. Now we also have a concept called as external data nowadays, which means they are not data which is possessed by the company, but data which you can acquire from the market. And that can enrich datasets, which can make it more holistic. So we have internal data, we have external data, and then we take that data in. So that's the kind of data we deal with in our system right now. In our simple language, which we call as our data supply chain, we always say capture, curate, consume, the three Cs of data, and we use a lot of this data on the capture side of our supply chain to process it further and generate more insights, which could be really useful for the businesses to generate the value that they're looking at. So in simple terms, that's what is our supply chain, that's a different kind of data that we process. I hope that answers your question, Sarah. -Yeah, and I love this concept of the three Cs, so capture, curate, and consume. And I think I'm already starting to understand the tremendous amount of data that's available. And I hadn't even thought about the fact of all the data external to the company that we can now access. So I think we're going to get into the show like, what do we do with all of that data? So thanks, Sanjeev.

Data Driven Intelligent Enterprise

Okay, Shail, we're going to get you in on this game as well. So let's look at this next meme. What do you think this topic is going to be about, Shail? -Sarah, this one's easy. This meme is referencing the famous quote by Marc Andreessen, who is known as one of the fathers of internet and is a famous entrepreneur in the Silicon Valley. He once stated, "Software is eating the world," meaning that companies are using software to disrupt industries and create entirely new business models. This is the story of Uber and Netflix. I like to say that while he was right about software is eating the world 10 years ago, now data is feeding the world. Many of us may not realize, but data affects our daily lives in almost every way you can imagine. Take online shopping, for example. What products are recommended to us is based on our purchase history. This is nothing but data. Entertainment. We watch TV, movie streaming. What is recommended to us is based on a watch history. This is data. Health care. Personalized medication is based on our clinical history and our claims history. And contact tracing in the world of Covid, this is all data. Fighting crime, tracking crime statistics and criminals. This is data. Social media. I think we all know that just about every click we make on social media is tracked in some way. This is data. And businesses are learning that to become even more successful, they need to get into and master the data game and become data-driven organizations. They need to become intelligent enterprises. By doing so, businesses can, number 1, make better and smarter decisions for their businesses, Number 2, understand customers better, and, by this, create better customer experience using human-centered design, and, third, create better or more innovative products and services. And in some cases, it can save lives or greatly improve lives. Essentially, businesses can now use data to create new business models, just like Uber and Netflix used software to create new business models a few years ago.

Client Stories About Data

-Now let me ask Chaka and Tom to bring these reasons to life with some clients stories they are seeing. -Sure thing, Shail. So recently a CAO of a healthcare payer client really had a vision to disrupt the norm for analytics, and he knew that data was a key factor. We were able to stand up a cloud platform for the Advanced Analytics team to leverage data to make smarter decisions for the enterprise and also understanding their members better. Housing the data in this new platform would not only allow the business to gain deeper insight that could reduce costs and improve member experiences, but it also became an innovation incubator for the enterprise. One use case I want to highlight is around fraud, waste, and abuse. What we did here was we took some data that was internal, we blended it with some data from Google Maps, and we were able to pinpoint certain positions that had some questionable numbers when it came to procedures and prescriptions that they filled. The Advanced Analytics team was then able to partner with the FWA department, who then furthered that investigation to track down those fraudulent funds. Another use case we actually built out and tested was for growth analytics, and this is in reference to the members, right? The business was trying to figure out a way to improve membership retention, as well as provide customer service support. So with the data, we were able to bring information about the member while they were on a call to the customer service rep. What does this really

do and why does this matter? Well, a lot of their members were really in disadvantaged neighborhoods. They were unable to access medical care and often suffered from PTSD. This healthcare payer was now able to streamline their services and even offer things like the Mediband, where they brought the appointments directly to the member. Like Peter Parker principle, with great power requires great responsibility. Data is not only feeding the world, but it can also save lives in the process. -Wow, Chaka, I love that. That is a really amazing concept. I mean, I know at the beginning of the show I thought this was going to be boring, but this idea that data can save lives, I honestly would have never guessed that. So I love this concept of great power and great responsibility. I think there's probably a ton more that we could dive into there. So, Tom, maybe you could continue and give us a more examples in this space. -I'd love to, Sarah, thank you. And you may have read the recent press release from Takeda, AWS, and Accenture about the power of three, and this is very exciting because we're collaborating to leverage the AWS cloud and data-driven insights to accelerate drug development, increase operational agility, reduce technology costs, and ultimately develop the workforce of the future. And per Shail's point a little bit earlier, we're specifically working with Takeda as part of this program to help them bring drugs to market more quickly by doing things like identifying patients who fit the profile for their products or predicting protocol feasibility. And for me, if there's one good thing about COVID, it's great for pharma data nerds like me that people actually understand what a clinical trial is and how data dependent that process is. But it's not easy, right, and Takeda has made this decision to embark on what we call data-driven reinvention. This is an effort to put data at the center of their business and use it to drive change and opportunity identification throughout the enterprise. Now certainly establishing the cloud infrastructure, the data platform, and the AIML capabilities are a part of that journey and a very powerful enabler of that data-driven reinvention. But ultimately, they are rendered powerless unless the client truly embraces data and analytics as a culture at every level of their organization, and they use that data to truly impact how folks are making decisions and how they're executing processes. So you need to focus not only on the technology, but also on a couple of critical elements that need to permeate throughout the organization. - Wow, I love it, that's powerful.

Why Data Now?

What we have seen in the last few years, companies have invested a lot of money into this area. They still haven't realized the benefit of the investment they have made. But right now, I keep saying we're just entering into the era of intelligence, which means all the technologies are mature enough for us to generate that value that companies are looking at and empowering them to become an intelligent enterprise. And the three things which have really changed, this, one is there's a lot of data available now, which was not there earlier. So we just have volumes of data. So if we have raw material, we can actually produce a crop. And the second is the cloud has been a boom in this world of building intelligence and is a foundation for us to scale out, scale out intelligence at an enterprise-wide level because of the flexibility it provides for compute power. That was discussed in TQ earlier with Paul. That's all available. The flexibility is available. You can pay per drink, so you can increase the

compute power depending on how much do you need. And that's exactly what companies need right now. And the third piece is around what's happening in the world of digital natives, which is creating that trigger and that urgency for large companies to become like them and be the disruptors themselves rather than being disrupted. -Yeah, thanks Sanjeev, thanks Tom. A lot of great ideas and principles. And I love how you both did a great job about bringing other subjects that we've talked about on previous TQ shows. And we always say, none of this stands alone. So we think about data. But we also have to continue to think about Cloud and AI and how they all work together. So thanks for highlighting that. I think, Tom, the other point you brought up, which I found really interesting, is how things have changed now that we're in this COVID era. I mean, it really seems that it's been more of a wake-up call for businesses. You can really start to think about data in a totally different way, and perhaps businesses realize they need to take it more serious, and they can use it to their advantage and really think about how they can strengthen their position in the market or maybe just survive the COVID era.

How To Become A Data Driven Intelligent Enterprise

Let's look at one more meme here. -Wow. -That's quite a meme -That's the meme. And I want it now as well. -Yeah, I mean, given how COVID's changed the world for everyone, I think this meme is kind of appropriate. So I'm sure many businesses are feeling this sense of urgency, needing the data now and needing to know how to use it and getting the right data solution for them. It's the time to do that. So how are we advising businesses? How did they go about truly becoming this data-driven, intelligent enterprise? -Sarah, data is essential for businesses today in this post-COVID world to not only thrive but in some cases just to survive. In other words, data has become the new capital. Earlier, Sanjeev stated that businesses who can figure out how to capture, curate, and consume effectively will be the most successful businesses. To me, there are four elements a business needs in order to become a truly data-driven, intelligent enterprise. First, enterprise-wide data analytics strategy. This is to make sure that you have the right choices, the right business rationale. Second is to build a data and analytics platform which is serving the need of the enterprise but also takes into account the fact that you need to democratize data and analytics. Third is data governance, which is to make sure that the platform that you build is is of high quality, high veracity, and is easy to use and is available to all. Last is data culture and literacy. Now, what we find is that some clients are good and they make good investments in the middle two pieces, that is a data platform and data governance and management. But they struggle to get the value out of the data programs if they do not spend the effort on the bookends. What I mean by that is that they need to spend the right amount of time and focus on data strategy up front then building a data culture as the last mile. Right data strategy is about getting the business rationale, the investment priorities, and technology choices right, right at the start. And data culture is about getting the executive sponsorship from the top and right change management and data literacy at the ground level. -I love it. It seems simple, four simple things, but I know there's a lot behind all of that. And as a change management lead myself, I love this idea of talking about culture and literacy. So I think we're going to dive a little bit more to each of these.

Data Strategy & Platforms

So Sanjeev, we've got another meme for you, and we're going to go with our theme of Willy Wonka for now. So based on this theme, what do you think is going to be the first of those four topics that we're going to talk about? -Strategy, the data strategy. -I think you're right. Tell us more. -So this is a favorite topic around right now because we are discussing with this topic with C-suite mostly. And this shift has happened in the last year and a half, which we have been watching very carefully in the marketplace. So every company has a business strategy. But many of the companies, I think, I would say when we did a survey last time, more than 70% of the companies do not have a data strategy or well-articulated data strategy. And I would say data in AI strategy now because they're using a lot of artificial intelligence as well. But they don't have a very well-articulated data strategy, which is linked to the business strategy. Now what does it mean by linkage? And that's a question which everybody is asking right now. And it is very fundamental, as Shail said, which is one of the side of the bookends where you have to start from top down to realize the benefit and value from what you can get from the investment that you make in technology and all the platform and everything that you do with building an intelligent company. -Awesome! Thank you for bringing that to life. It sounds like, as always, we're leaning in this area as we think about data and helping our clients. So thanks, Sanjeev. Okay, we're going to move to another meme. I think this one's a little easier. But, Chaka, let's throw this one to you and see if you can talk about the next topic we're going to focus on. -Thank you for giving me an easy one. But for bonus points, I'm going to tell you that this is Bob the Builder. -Yeah, you're right. -So Sanjeev just mentioned data and analytics strategy, and businesses, really about 70% of them, don't have one in place. But guess what? For an analytics platform, an astounding 80% lack the right platform. So, honestly, in my opinion, my humble opinion, that is, the most important investment a company could consider is building a complete data and analytics platform, and I know that's a bold statement, but what does it really mean? It means a fully integrated data and analytics platform, preferably cloud based, because you really want to have the power to create analytic reports, train your artificial and machine learning models, really to refine your predictive capabilities. Data is useful information when it can actually help you make decisions, and we want to make it in a way that is easily consumable and the business can gain deeper insights. And with it being on the cloud, it's almost at the rate of the speed of light.

Data Governance

Okay, Tom, it's time for you to get into the meme game now. So we've got the next meme for you. What do you think the next topic is we're going to talk about? -Ooh, my favorite, Yoda. I'm going to say it's data governance and quality. -Yeah, you're right. -It's kind of the Empire Strikes Back theme here, right? -Yeah. -Now, do you know that two-thirds of businesses can't trust their data? So to Shail's meme, they don't just want data now; they want clean data now. This is a persistent issue in the companies that we that we work with. And, oh, by the way, what percentage of those two-thirds, of the 66% of customers do you think overlap with the ones who don't have a data strategy like Sanjeev said or don't have a data platform like Chaka said? There's a high degree of correlation between those three areas. So we're going to talk a little bit about the ideas of data governance and data

management and how data governance and management help clean up that dirty data. Dirty data is a term that we've we've crafted to define data as being bad, which is inaccurate, incomplete, or inconsistent. And most of the time data gets this way because it's not managed appropriately, either from a systematic perspective or from a manual perspective. But we know based on experience if a company has a good data strategy and if they develop consistent and clear data governance policies, procedures, and approaches that they can achieve high quality data all of the time. Now, it's not just the CEO, the chief data officer, or data architects that need to be focusing on data in order to ensure high quality. As we talked about earlier, everybody in the organization needs to become data literate, and they have to understand how data can be improved, fixed, cleansed, as part of the business processes that occur at the grassroots level of the company. We call this being a good data citizen. For example, we just completed a program like this for a major luxury retailer, and we helped increase their online sales by 73% through better higher quality customer data in more targeted customer offers and analytics. So clean up that dirty data and you can reap enormous benefits. -Wow, I love that. Another great example. And it doesn't sound easy. I mean, we've been talking about all along the amount of data. And this idea that you present around companies have it in so many different pockets, and really aligning that, ensuring that you can trust it. I'm sure it's not easy, but that's a great example of why it's worth doing that and cleaning up the data. And I know, Shail, when you're on the show earlier, we talked about being a data citizen. I love that concept. There's something that all of us, each of us can do to be a part of this initiative and really think about data.

Data Culture

I think it's time to move on to another meme, and Shail, this one's going to come to you. So let's take a look at this one. -Oh, it's got to do with data culture. It's got to do with data culture. -I think you're right. Talk to us a little bit about what that really means, a data culture. -So, basically, rather than do a consultant speak, I'm going to try to demystify it. And having a data-driven culture and data literacy means that everyone in the company really needs to understand the importance of data and taking it one step further, becoming data literate, meaning they need to be aware of what data can do, how it can improve businesses and business processes. So back to Tom's point, people have to become data citizens, and they have to learn to read, write, comprehend, and communicate with data. But also, more than that, it's not enough to have the tools and the platforms to drive data analytics and governance and the processes. Companies really need change management to make a data-driven culture stick. Changing the mindset of how an entire enterprise and company thinks really needs to permeate through every fabric of the company. This is where the real power of change management can help. So to illustrate this, one of our clients where the CEO had declared a strategic intent to become data driven, we implemented actually a three-pronged approach to enable the change management required to become data driven. First was the the CEO and board-level sponsorship. The second was a coalition of top business leaders to embrace the change, and third was define a major corporate-wide initiative to drive the data program and get everyone involved like a vessel. And in their case, it was a merchant integration with another large firm. This drive factor not only ensured success, but also enabled them to become a truly data-driven organization from inside

out like way talked about before. -Well, Shail, I mean I didn't even plant that. But as the Global Change Management Lead for CIO and all of our internal technology across Accenture, this is definitely right up my alley. I love this idea that in order to be successful, we have to think about change management. I think I'm going to just, like, take that clip of what you just said, and I'm just going to replay it for all of my stakeholders as well. So thank you for doing that. I think anyone knows when you're talking about changing human behavior and changing a culture, it's an ongoing, constant process that you really need to pay attention to. So I think that's a great last step.

Key Data Takeaways

So I think we can, we are close to the end here. We have really dug really deep into these key four pillars. So if we think about what it takes to be a data-driven, intelligent enterprise, we talked about having the strategy. That's the first part in the bookend that you talked about, Shail, and then making sure that we have a data and analytics platform and helping our clients understand the importance of that. And then along with that, the data governance and management, and then that last piece, all about change management and culture and really making that stick. So four great areas for all of us to understand. Okay, we've covered a lot. I think we would love to keep talking about data forever. I am now a true believer. I've been converted, but I think we're going to have to wrap it up. All right. Well, you've all done a great job explaining data in real terms for everyone out there watching today. So let's just go one step further, and let's make sure as people leave this Aftershow, let's talk about something they can maybe do differently. Or how can they be a better data citizen? What can they do every day in their work and their daily lives? So I'd love to hear one point from each of you. So, Tom, maybe you could get us started. -Great! Thanks, Sarah. And I don't think I'll ever stop talking about data. It's been my life for 20 years now, and I'm happy that the world is really waking up to data. Businesses are coming to a full grasp of its power to impact growth and profitability. And as you think about one thing you can do, I would really encourage you to study what our MAAG partners are doing, AWS, Microsoft, and GCP, in the data space. These are three of the larger, more profitable companies in the world. And they are investing a significant amount of money in bringing innovative data services to the market that are a part of those platforms, and they're doing it with the intent of consolidating clients' existing siloed disintegrated data estates into these enterprise data supply chains that have high-quality data that's contextual and fast. And they all want to host these data supply chains on their platforms, so they're investing a lot of money, great and innovative services. So spend some time with the MAAG partners. Spend some time on their websites. Get demos of the capabilities that they're releasing. It'll really open your eyes with respect to the amount of technology innovation that's happening in this space. -All right, I love it. So helping our clients really leverage that power and thinking creatively about those partners that we have. Thanks, Tom. Okay, Chaka, how about you? -It's funny that my meme earlier was Bob the Builder because I have a little toddler at home. So everything that I reference is about some child in some way. So the term that really permeates to me is "it takes a village." So for data, everyone in the organization needs to be data literate. Data is everyone's problem. It's not just a C-suite thing. We all have the responsibility to understand what data at work

produces, where it comes from, and who really needs it after us. When we understand the value of data we produce and manage and how it impacts the rest of the organization, we have a responsibility to ensure its quality. So one action for you is, regardless of where you sit in the organization, get to know your data and the value it brings to the company at large. Become data literate. -I love that. I mean, I bet most of us, I can speak for myself, I don't really think about the data that I put out there in the enterprise, but like you said, we're all producing data. So that's a great takeaway for everyone to really think about the data that they're creating and putting out there and being data literate. So, thanks, Chaka. That's awesome. Great! And, Sanjeev, how about you? What would be your takeaway that you would leave all of our audience with today. -The takeaway, in my view, I think we spoke about all the critical elements. Shail talked about all the things that are important for becoming intelligent enterprise. The key takeaway would be the last mile. The key takeaway is don't underestimate the last mile. It is the hardest of all. You can start a strategy. You can build the platform. You can get the quality in place with governance and management. All of them are very difficult. Everything is difficult. Nothing is easy in this world, especially in the world of data, but it definitely has a much higher level of fruits when you get this right. But the last mile takes a lot of time. So a disproportionate effort has to be required and just making the change in the culture and adoption of the technology in terms of changing business behavior, business user behavior to use this new artificial intelligence technologies on their day-to-day basis. That's what I would say is the key takeaway. And that's a sweet, sweet spot for Accenture. That's what Accenture is known for, and I think it's going to be a great, great area for us to invest in the future as we think about end-to-end or cross services, cross services offering a structure around taking our clients on a journey of becoming an intelligent enterprise. -I love it. You're speaking my language, Sanjeev. It's all about that behavior change and really changing the culture. So great! Thank you. Okay, Shail, let's have you wrap it up. What would be your last action that you would give everyone. -I would say I think the points that Tom and Chaka and Sanjeev made are really good points. But what I like to do is to aim my lessons to the CEOs of corporations. And the two messages that I would give to them is, number 1, data strategy is important, but the one aspect of data strategy that's most important is the look at how data can change their business. And the best way to do that is to really have, for any data projects that you're funding as the CEO, a look at a business transformation agenda behind that project. So if you are going to the cloud, for example, and you're moving data on cloud, look to see, rather than just looking at infrastructure savings and agility, how can you bring about fundamental business transformation? And the best thing you can do is learn from some of the disruptors as to how they're using data fundamentally to change themselves, evolve themselves, grow themselves. Learn from your peers, and this is one area where Accenture can help you as well because we have a bird's eye view of what's happening in the industry, how companies, our clients and your peers, are changing their world through data. Second message is that what data brings is really a process change, and what we're talking about is the decision process change. So with any process change in the past, anytime you implemented a new SAP system, ERP system, or you brought digital front ends to the systems you had, it caused a process change. And guess what? You remember, the biggest challenge with that was not the technology. It was sociological. It was the culture change. It was the change management. So data is no different. It's actually, if anything, even harder. We've seen projects go to waste, sit on shelves because the

automation, the insights they generated, people were not willing to change themselves to think that a computer can think better than they can. So I think it requires a significant effort and emphasis on change management right from the very beginning. So those two are my key takeaways that I like to convey to CEXOs of corporations. -Perfect! Well, I think that is the best note to end on. So thank you everyone. This was a great show, and I think we are ready to wrap our Data TQ Aftershow. So thanks, Shail and Sanjeev and Chaka and Tom, all of you. Great insights, great data that you shared with all of us.

Wrap Up and Data Jingle

We know we never stop learning. There's so much to learn out on the TQ HQ, so you can learn more about data. You can keep the conversation going. Go to the Go Deeper section on the TQ homepage. You can find links to lot more materials and even case studies, so there's always more that you can explore. So, everyone, we will see you next time. This is Sarah Dugan signing off from our virtual TQ HQ. -When the enterprise lives and breathes it, you got a data culture. When your people can write and read it, it's data literacy. When you know who owns all the data and why, that data governance and management. And all this stems from your comprehensive data strategy. Because data feeds the world. When you shop online, that's data. Data feeds the world. When you stream your shows, that's data. When you reserve a space or post your face or do your banking or check a ranking. Whatever you do, you know it's true, data feeds the world.

Data In Review

What is Data?

What is data? In simple terms, data is captured information, information in any form, on any subject. We generate data in all of our daily activities. For example, the number of times your heart beats per minute can be data. However, that data is only valuable if someone is capturing and analyzing it. That's why more and more businesses are gathering, compiling, and tracking as much data as they can. They are hoarding it, hoping they can translate it into valuable business insights. Because of this explosion of data combined with recent radical advancements in technology, especially machine learning and artificial intelligence, you see the FAANG effect. This is when companies like Facebook, Apple, Amazon, Netflix, and Google build their entire business models on the data you generate when you use their services. Data is a still largely intact resource that is changing not just companies, but entire industries. It can power self-driving cars, allow huge leaps in rocket innovations, and even predict what you will purchase and how you will behave. This brings up big ethical questions about how data should be used and secured. To address these issues, countries are passing laws governing data use. In 2018, Europe passed the General Data Protection Regulation, GDPR, a set of laws governing how data is collected,

stored, and used. It asserts that data privacy is a fundamental human right. Many other countries are passing similar legislations. Data is the greatest untapped value opportunity for organizations today.

What Does Data Do?

What does data do? Data doesn't do anything. It's only information we can look at. It might have value, or it might not. A question to ask is, what do we do with the data? That's a much more exciting question with a more powerful answer. We use data to understand the present and shape the future. To have value, the data needs to be trustworthy, high quality, and quickly accessible. Just like any other critical asset, data needs to be protected and secured and governed throughout its life cycle. When it's not, data can become a liability that leads to serious losses and regulatory issues. Here are a few examples of what we can do with data. Use data to save lives. Pharmaceutical companies get life-saving drugs to market faster by reducing clinical trial timelines using data analytics. Use data to combat corruption. It gets analyzed to recognize financial patterns and relationships to help fight money laundering. Use data to protect supply chains. It's used to build predictive data models that calculate millions of predictions a day to help prevent unplanned events that might cause problems in the supply chain. Use data to boost human corporations. When organizations work together to share information, you make discoveries faster and avoid repetition, which should benefit of all of humanity. That's what we can do with data.

Why Does Data Matter?

Why does data matter? Because it's a matter of survival. Since the year 2000, over half of the Fortune 500 have either gone bankrupt, been acquired, or cease to exist, primarily as a result of digital disruption. Digital disruption is powered by data. If businesses don't harness the power of digital and data assets, they simply cannot compete. Data is more important now than ever before. It is at the forefront of our clients' minds for three main reasons. Data is exploding. Literally everything we do generates data. Every text message you send, every time you use your GPS, every time you do a search on your phone or computer, data is being collected. Technology is advancing. The computing power available now is better than ever. That, combined with advancements in machine learning and artificial intelligence, makes data even more important. Digital native companies are changing the landscape. They are using data to reinvent or create entirely new business models, causing massive disruptions to the entire industries. Traditional brick and mortar companies must decide if they will be the disruptor or the disrupted. To survive, businesses must become data-driven intelligent enterprises.

How Is Data Applied?

How is data applied? Many businesses collect data, but do not know what to do with it. They don't apply their data. That's because they need a solid data analytics strategy. Businesses that have a data analytics strategy can accelerate their performance by up to 20%. They grow their business, mitigate their risks, and reduce their

costs. A data analytics strategy is a road map to help businesses realize these benefits. A solid strategy will include plans to, number one, establish a solid data foundation. Define and build a flexible and scalable data platform that lets you capture data from a variety of sources. Make sure your plan allows data to be processed, curated, and analyzed. Define where the data will be stored and how it will move across the business. Number two, manage and govern your date assets. Define a governance model that establishes policies and procedures to manage how data is captured and managed. Keep the data trustworthy, safe, secure, and compliant. Number three, generate insights from data. Convert data into insights you can act on by using analytic tools and capabilities. Then make sure the right data gets to the right people within the business. And number four, realize value from your data. Develop data-driven use cases and business models that leverage the power of your data. Then, track and monetize the value that data application brings to the business.

How Does Data Work?

How does data work? Your data only works if you do. New data is exciting, if you are able to tap into its potential. Most businesses are using only a small portion of their data effectively because they can't transform it into meaningful insights. Establishing what we call a new data value chain will give you the ability to do the three C's: capture, curate, and consume. Capture data in any format and volume and at any speed in near real time. Curate data quickly to clean, integrate, and transform the data so it can be consumed. This will establish the veracity of your data and give all stakeholders one trustworthy view. Consume data at the point of need in ways that you never thought possible before. Analyze it to derive insights, and serve it up for visualization and decision support. Besides the data value chain, there are three other components that come into play when we come in a data-driven business. First, data strategy and architecture. Businesses need a strong plan for how its data will be captured, curated, and consumed. In order to define a strategy, the business must understand its goals and needs. A data architecture is a system blueprint. It outlines the best platforms and technologies to use based on the business needs. The plan also includes the selection of the right technology and consistent partners to help bring the blueprints to life. All these components are completed in a phased approach. Second, data on cloud. With data exploding in volume and variety, companies cannot not think of data on cloud. It spans a broad spectrum that can be scaled up to meet the needs of every data consumption pattern. Data is migrated from old systems, which are typically on-premise to the target environment in cloud. Data migration involves extracting, transforming, and loading the data for the business to extract its value. Third, data governance, management, and security. To harness the power and complexities of new data, it must be managed and governed as a true business asset. This means establishing a governance framework that includes an operating model that outlines roles, policies, and standards, intelligent tooling to ensure that AI and machine learning are used, and change management, a proven, structured approach to planning, designing, and implementing data governance without disruption to the business.

What is Accenture's Role with Data?

What is Accenture's role in data? When we partner with our clients, we help them determine what they can do with their data assets. We challenge them with a simple question. If you had an unlimited checkbook and all the data in the world, what is the one question you would ask where the answer would change your industry forever? It's shocking how little value businesses are getting from their data. But it's not surprising when you realize that only 23% of businesses have an organization-wide data strategy. This is where Accenture comes in. We designed a prescriptive approach for creating and using data. It helps our clients move from stating their goals to implementing the data transformation plan. Our approach includes developing an enterprise by a data analytics strategy that will help them understand what data capabilities they will need to become a top tier data-driven business. Building a foundational data analytics platform to pull cross-functional data and maximize its value. Implementing clear data governance and management guidelines to make sure that data is used securely, consistently, and ethically. And creating a culture of data literacy based on the commitment to be a data-driven business. Accenture has strategic partnerships with most of the leading solution providers in the data space, including many where we are their number one strategic partner. This is important, as we work with these partners to shape the direction of their product and develop new solutions for our clients together, bringing them a strategic advantage.

How Does Data Combine with Other Technologies?

How does data combine with other technologies? Data is the heartbeat of almost every technology. For most technologies to work, they need data. Let's focus on the field of the major ones, data and artificial intelligence. Data is the lifeblood of AI. AI relies on the analysis of data to recognize patterns, predict outcomes, and take actions. The more data and the more variety of data you have that's available, accessible, and accurate, the more likely that AI will be successful. That's because AI is only as good as the data it receives. The data doesn't have to be perfect, but it needs to have enough quality and consistency for useful patterns to emerge. Data and security. When a company collects data, it needs to be done securely. There will always be threats and bad actors looking to steal and disrupt personal and business data. Companies that handle data are responsible for keeping it safe. New global privacy laws are holding them accountable. Two of the most well known being the General Data Protection Regulation, GDPR, and the California Consumer Privacy Act, CCPA. However, it's about more than just the data breaches we hear about on the news. Securing data from manipulation and bias is also essential. Companies need reliable data to help them decide where to invest, what to produce, and who to trust.

Course author

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