

How advanced analytics can drive productivity

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Companies have more data than ever at their disposal, but are they doing enough with it? Taking full advantage requires tackling legal, regulatory, and talent challenges.

To make data and analytics more than just buzzwords, companies need to think about whether they're following best practices, hiring the best talent for their needs, and getting what they want from their data. In this episode of the *McKinsey Podcast*, McKinsey senior partners Nimal Manuel and Bill Wiseman talk with Cecilia Ma Zecha about how more companies can make the best use of the data they collect and what the potential is for advanced analytics to help both business-to-consumer and business-to-business companies.

Podcast transcript

Cecilia Ma Zecha: Hello, and welcome to this edition of the *McKinsey Podcast*. I'm Cecilia Ma Zecha, an editor with McKinsey Publishing, based in Singapore. Organizations have more data than ever at their disposal, but actually deriving meaningful insights from that data and converting knowledge into action is easier said than done. Today we're talking to Nimal Manuel, a senior partner in McKinsey's Kuala Lumpur office. We also have Bill Wiseman, a senior partner normally based in Taipei, but who joins us today in Kuala Lumpur. Thank you both for being here.

Bill Wiseman: Thank you.

Nimal Manuel: Thank you.

Cecilia Ma Zecha: What is the potential of data and analytics to transform how companies organize, operate, manage talent, and create value? These are words that we hear all the time, but what's the real potential?

Bill Wiseman: When you just look at some basic statistics, like the fact that half of the world's data was created just in the last ten months, meaning that half of the world's data, in the history of mankind, was created in less than the last year. It's just truly shocking. The pace of change that we're seeing is completely radical. I serve primarily industrial companies, and the way that I see companies taking action and using that data really is to drive another wave of productivity.

You had the wave of lean, you had the wave of outsourcing, and now we're seeing the wave of productivity driven by data and analytics, enabling organizations to refine the way that people work together, the way that processes perform, and the way assets are productive. If you think about an oil well, for example, you've got more than 300 sensors downhole that are spewing out data at the rate of about a gigabit a second, in some cases.

Cecilia Ma Zecha: So what's the potential, Nimal?

Nimal Manuel: I want to build on what Bill said because there are two important steps here. There's a lot of data being generated. A, not all of it is being captured, and then B, of what's captured, a fraction is being used.

The cost of storage has gone down, so I see many of my clients storing more and more data but still struggling with how to best harness this data. Now at least we've got more and more of the relevant data to be used. Bill serves a lot of the B2B industrial-type companies. I serve more of the B2C, consumer-oriented companies, mostly in emerging markets.

There's an increasing awareness that to compete and to be sustainable, they've got to go beyond gut instinct for doing business. It's got to be data driven, it's got to be analytics oriented, and that's how business decisions have got to be made, on the commercial side as well as the operations side. The interesting thing is we are starting to see more and more use cases and applications of this data, but it's nowhere near at scale.

Cecilia Ma Zecha: And why is that? What are the challenges that organizations face in adopting analytics? Bill?

Bill Wiseman: The biggest thing I see actually has nothing to do with data science or mathematics or data storage, it has to do with legal and governance frameworks. Most of the clients I work with are multinational. They're dealing with different legal domains across countries. They're dealing with different issues of consumer protection, different levels of employee protection.

Just having a legal framework around what data they can use and what they can't, and how they can process it and what they're allowed to do with it—it's a massive challenge, just getting your head around the legality of what you're allowed to do with the data that you have, what consumers are allowing you to do with it, what employees are allowing you to do with it. Generally, when you're signing someone up for a subscription service, or when you're collecting subscriber information or customer information, there's an implicit or even an explicit promise of trust that the information is going to be secure, and you're going to do with it only what you need to do with it. You hear a lot of times from companies, "Oh, we anonymize everything." That still gets people a little bit scared, and they have that inclination to protect some information from you.

With employees, it's even more explicit. If you go to some of the Scandinavian countries or some of the more mature European countries, you have a lot of works councils and labor unions. The whole idea of being able to use communication information—when are you

badging in and out of work, what files are you collaborating with colleagues on—being able to use that information somehow to manage performance and potentially even establish performance-management paradigms is not allowed by a lot of the unions. So just getting people comfortable with, “Here is how we’re using this information,” and explaining that to them, it takes a lot of overhead and a lot of time to get that right.

Nimal Manuel: The other angle in this is more the regulatory angle. And here the onus is on policy makers to make it clear in terms of where those boundaries are. In many markets, there are, increasingly, data-protection laws and confidentiality laws, and this is appropriate. But the law is not clear in all countries. So companies, especially multinational companies (MNCs), struggle with where is the white versus where is the gray.

Cecilia Ma Zecha: Are there organizational barriers, Bill?

Bill Wiseman: Let me take a step back. One of the terms that you hear used in advanced analytics is the concept of a data lake.

Cecilia Ma Zecha: A data lake.

Bill Wiseman: A data lake. And what that basically means is pulling data out from all of the siloed systems across an enterprise, pulling it and linking it all together so that you can look at that in any one of 50 or 100 dimensions. It enables you to find massive amounts of insight because none of this data has really been linked before.

That comes with political cost a lot of times for business units because if you think about five executives, all vying for the next CEO job, they all want to retain as much of their own personal capital as they can to be able to succeed. Sharing what they would perceive as proprietary information with some of their so-called competitors, which are obviously business units in the same organization, why would they want to do that? I’d much rather retain control of my own information for my own benefit. You also run into challenges of data spillage. So, “Hey, I have this data on my customers. If I put it in the lake and the IT system leaks that out somehow, it’s no longer in my control.”

That creates a new category of risk that executives never really wanted to face before. Sure, there are organizational barriers. We’re going to have to get over that.

Cecilia Ma Zecha: Nimal, do you agree with that? You have to really put in the right incentives to encourage silos to create this data lake and make it operational.

Nimal Manuel: Data and proprietary data is power. You need to find ways to motivate and incentivize people to share that because it’s often not in the interest of any particular executive to do so. Now, that’s one dimension. There’s another very interesting organizational dimension, which is how you then decide what to do with the data.

If you think about it, any organization, you could conceive of 50 or 100 different use cases.

When I say use cases, I mean ways to apply this data to benefit the organization. It could vary from commercial-type use cases—like up-sell, cross-sell, retention, migration—to more operational ones like call-center optimization or asset optimization.

So there are multiple different use cases that are relevant to an organization. Another aspect of organization, and maybe this is more governance within the organization, is ensuring there's clarity of focus in where the data and analytics are going to be purposed toward.

Bill Wiseman: I've seen clients implement this in a couple of different ways. One way is to start with the plumbing. You look at this from an IT perspective. Let's get the plumbing in place as best we can. Let's create a central team that is supposed to mine that for insights and be able to publish that out to the businesses. That approach tends to not work very well. We would call that kind of an IT-led approach. Because you've got a bunch of people that are looking at a bunch of data and maybe coming up with insights that aren't that interesting or aren't that believable. Trying to sell those into a business and convince the business to take advantage of those is sometimes a hard sell.

The alternative way of doing this is being business led, which is going to a business leader and saying, "Hey, I'd like to pilot some ideas of using advanced analytics to drive your business," and letting a business executive shape how he or she wants to deploy that and what kind of insights to go and pull out and use. That kind of business-led approach does tend to be more effective, at least in the experience that I have. Nimal, is that in line with your experience?

Nimal Manuel: I fully agree. Let's take a commercial example, right? It needs to be business led, by the chief marketing officer (CMO) or the CMO equivalent. But then again, he needs the chief information officer (CIO) to be working with him. I call this a marriage of the CMO and the CIO.

For a commercial use case, it needs to be CMO-led, business-led, in terms of directing where the value is and what I want done, but then working hand in hand with the CIO on what needs to be put in place in terms of what data I need in the data lake. What analytics I need applied to the data, what IT stacks need to be upgraded to automate a lot of this, are all anchored on the business priority put forth by the business-unit head or the CMO.

Cecilia Ma Zecha: It sounds to me like there are connections to the talent question. How do you look at the issue of talent in making analytics work for companies?

Bill Wiseman: Talent issues are myriad. If you think of the new roles that these opportunities create, you've got the plumbers of the data lake. I like to call these people data engineers. These are the folks that are breaking data out of those silos, putting it in the lake, and making sure that they've got real-time feeds set up so that this can be kept fresh over time.

Cecilia Ma Zecha: Is there a shortage of people with that expertise?

Bill Wiseman: There's a shortage of good ones, that's for sure. That shortage depends on where you're looking. If you're looking in a place like the United States or somewhere in Europe, there's a huge shortage of these.

I would say there are great talent sources. India's a great source of talent for data engineers. It's all a question of global mobility.

The second role that people always point to is the role of the data scientist. These are the mathematicians who understand how to do complex algorithmic and model-building tasks and can make something out of that data—a descriptive model or a prescriptive model or a predictive model.

Then probably the least appreciated, but the most rare and most important individual, is the person who links the business domain with the data science. Understanding what's in the realm of the possible, what can be digested by the business, and, frankly, how to close the last mile between the insight that the data scientists are coming up with and the predictions they're making, and how to go out and drive business impact with that. That's a very rare individual.

Nimal Manuel: At McKinsey we call those the translators, the folks that can bridge between the technical and the business. These are people who can roll up their sleeves and can understand the statistics, can code in R/SQL on the one hand but have sufficient business evidence to be able to apply that to a business issue, as opposed to getting lost in the technical duty of the solution. That's very hard to find.

You either find folks who talk a good talk on the business side, but can't really roll up their sleeves, or folks who are a bit too immersed in it and can't elevate themselves and look at the business challenges. You can find the pure technical data scientist. It's not easy, but you can find them. Finding these translators is the biggest challenge.

Cecilia Ma Zecha: So we've talked about a host of challenges. What, then, is the business case or the best-case scenario? Share with us some impact stories that you may have seen.

Nimal Manuel: We'll take pricing. How do I set pricing in an effective, segmented fashion? Both for what we call above the line, meaning pricing that everyone sees, mass kind of pricing, as well as for more targeted, segmented pricing.

As you can imagine, there's a ton of value to being able to deploy analytics to understand different segments of consumers, their willingness to pay, what extent of that surplus companies are leaving on the table today, and how you can price in a more segmented fashion to capture all that surplus. On the one hand, it's very simplistic saying it that way. But the amount of analytics that go into understanding the elasticities of individual segments—it takes quite a lot of work.

Now many organizations get it wrong and lose a lot of value to pricing. So it's low-hanging

fruit in the sense that it's a very strong and easy lever to pull, but it's challenging to get right, and analytics can really help inform the decision.

Cecilia Ma Zecha: What about you, Bill? Where have you seen analytics really work and take off for companies?

Bill Wiseman: I've seen it in a few cases. To stick to this commercial theme for a little bit, one of my favorite applications that I've seen is large, complex sales transactions. Let's think about a commodities space like chemicals.

A lot of times, you get large account teams that have an account manager, many technical sales reps, and maybe some technical support reps that are there to service a particular account. The company might have thousands of customers that it is trying to service. Being able to figure out what good looks like from an account-servicing capability is very interesting.

The problem was framed as, "Hey, I have hundreds of technical sales reps. I don't know what my returns on those technical sales reps really are. Would it make a difference if we didn't have any? Would it make a difference if we doubled the number of them?" This means going in and being able to use account-by-account analytics and figure out which account managers leverage technical sales reps, how they do that—being able to unpack that and get down to the level of account by account, what is the impact that a technical sales rep is having, and on average how big is that? It allows companies to figure out, "Do we have the right level of technical support staff? Do we need to double that? What kind of return are we going to get on that?"

In this particular case, I would say we have two outcomes. One was that educating the account managers that were not making adequate use of technical resources was a big lift. These were account managers that just didn't see the value in that or didn't know how to use them. Being able to retrain those folks to effectively use technical sales resources was a good thing. Then we recognized that we had about half as many as we needed. We needed to scale the total number of technical sales resources that we had.

It was very interesting because the hypothesis going in was, "These people really don't add a lot of value. We might want to just get rid of them." That was totally the opposite of the outcome. Another counterintuitive insight that I saw some clients get to was when we were looking at large engineering forces. A lot of times in a product-development organization that's churning out hundreds of products a year, engineers are staffed in pools.

You have a pool of software engineers, a pool of mechanical engineers, a pool of electrical engineers. If you're going to design a product, you pull a team of engineers together, and that's who is assigned to that project team. It's always a question of, "Do I dedicate resources to a project? Do I fragment them across a certain number of projects?" Oftentimes that's not managed.

So you get an engineering chest-thumping culture, where a software engineer wants to be on seven different projects, or an electrical engineer says, "No, I really want to

focus and shut my door and get work done.” By going through and mining years of real experiential projects, you can get down to answer the question of what is the right level of fragmentation that you want in your engineering workforce.

It’s quite interesting that you find, by domain, it’s very different. You would think it’s different by individual, but in reality it’s not. At one company, and this probably is not something you could extrapolate, we did not find the limit to which you could fragment software engineers. We got up to 12 projects. We were fragmenting software engineers on a given week across 12 different projects. Their productivity was continuing to increase.

We never did find that limit. We found the limit with mechanical engineers. The limit was two projects. If you span them across more than two, their productivity started to drop. This was very counterintuitive, and it led to building almost a smart staffing tool, so that when you’re dealing with a 7,000-person pool, you’re able to much more intelligently deploy resources across projects.

That led to massive lifts in productivity. They were able to get products out in 20 percent less time, with over 20 percent less engineering hours of input. That leads to either better product-velocity output, which leads to better pricing, or it leads to a better cost position. The impact is definitely there, when you’re talking about top-line growth or you’re talking about cost to develop.

Nimal Manuel: One of the things Bill said just now was focus on the business, not the technology. That’s critical. The first thing is creating alignment within the organization of where the business value is. What are the two, three, four, five use cases I’m going to prioritize? That’s so important because that then allows the whole organization to engineer the analytics engine behind those use cases, those three to four priorities. That’s very important.

Number two, Bill and me were talking just now about this concept of how you architect the big data or the analytics journey. And, again, you’ve got to be pragmatic about this because you need momentum up front, which means you need a few quick wins. You don’t want to be in a position where you’re trying to pull together a big data-scientist team or a big IT infrastructure and then two years down the road, start thinking what to do with it.

You want to be in a scenario where you use what’s available. You beg, borrow, steal, get some early wins. Once everyone’s a bit more convinced that there’s value here, then you make the bigger investments and scale up and automate and all that good stuff. But get a few wins early in the game.

Bill Wiseman: I think that’s completely right. The only thing that I would add to build on what Nimal said is getting that couple of use cases right, where business leaders in your organization can see the impact—it’s going to generate a lot of pull.

The other thing I like to see CEOs doing with their top teams is really drawing inspiration that’s new and a bit farther away from their business, so they can, again, see what is

truly possible out there. You can look from business. But I wouldn't limit yourself just to business. I would look at sports. *Moneyball* was a fantastic story about reshaping the game of baseball using analytics to bring down the cost of developing teams. If you look at Formula One sports racing, if you look at basketball or Premier League soccer, these are very data-driven businesses now.

When you're talking about athlete-injury prediction, you're seeing teams that are actually saying, "I believe this athlete is going to be injured in the next two weeks because he's not showing the right level of strength and flexibility. I'm going to bench him because that athlete is a multimillion-dollar investment, and if he gets hurt, he can't play anymore."

I would look at security applications. Some of the ways that intelligence organizations are being able to isolate and hunt for terrorists are very interesting when it comes to applications of fraud detection. Having executives look to analogous areas where I would say the use of analytics and the use of big data is light-years ahead of where it is with business really is a great source to draw inspiration and figure out what that road map looks like. So get the quick wins to build a business case for the teams, but then really be inspired by what's possible out there.

Cecilia Ma Zecha: Well, thank you for speaking to us today and sharing your insights, and thank you for listening to our conversation. If you'd like to find out more about our research on data and analytics, head over to [McKinsey.com](https://www.mckinsey.com).

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