Speed and sophistication: Building analytics into your workflows

Thinking about business decisions in terms of speed and sophistication can help you get data and analytics right.

Scientists at the Large Hadron Collider in the Swiss countryside had a challenge most business executives understand. They wanted to discover an invisible and elusive presence – something that didn't even exist in a physical sense – and the only way to succeed was to watch the collisions of atomic particles travelling at a tick under the speed of light. They used an algorithm to focus on the right data and eventually showed that a theorised elementary particle called Higgs boson was there, unlocking new insight into the nature of the universe.

Business leaders are also searching for an ineffable *thing* – deep insight and awareness about their markets and customers that can seem invisible and elusive. Like scientists with a theory, they have massive amounts of data and need to frame problems in ways that help them gain new insight. But in business, a new insight alone isn't enough. Companies must use data to make better decisions.

In our latest research, we started with the idea that organisations are becoming more data-driven and we asked executives how this is changing decision-making. We specifically asked about two core dimensions of decisions: speed and sophistication. Speed is how quickly an organisation moves – the time it takes to answer a question, make a decision, take action, and measure the value created as a result. Sophistication is the breadth and accuracy of analytics used to inform decisions, which these days may not mean the lengthy cycles some executives have been used to, due to progress with data platforms and the ability to generate meaningful insights from them.

More than 2,100 executives gave us coordinates for where their company's decision-making capabilities are today and where they need to be by 2020. Their responses show great ambition for change. Yet many have a tempered view on the likelihood that their organisations will get to where they need to be.

"Most executives see the possibilities that analytics creates, especially when combined with advanced techniques like machine learning, natural language processing and intelligent agents," says Anand Rao, innovation lead in PwC's data and analytics practice. "What we're seeing with perception here is some tempered ambition. There's a desire to make better and faster business decisions, but often a lack of clarity on how to get from here to there."

Questions to ask

"Data and analytics have benefitted us a lot," says Barbara Wixom, principal research scientist for MIT Sloan Center for Information Systems Research. "But the more we see opportunities, the more unsatisfied we are with our ability to take advantage of them. We are becoming increasingly aware of all that can be done and that we can't do it all – at least not all at once. The key to moving forward is prioritisation," she says. "That means thinking through what battles to fight and being strategic in our choices."
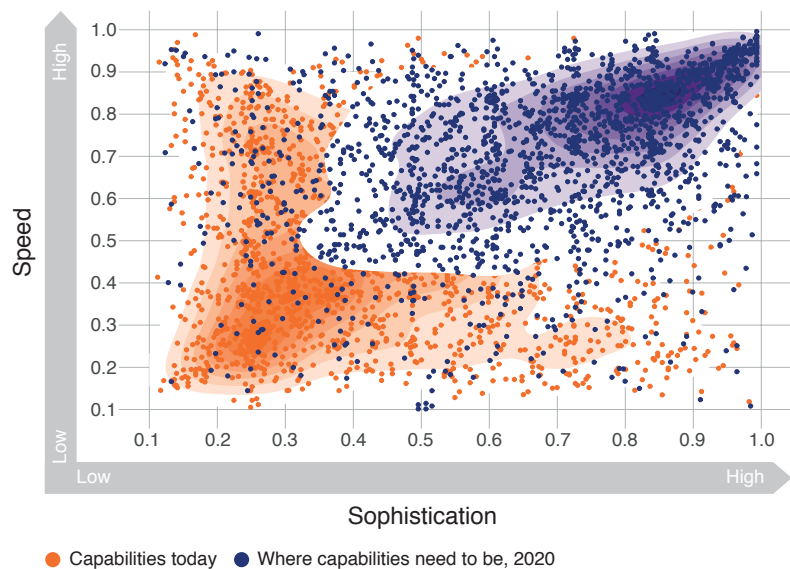
As an executive, you might ask yourself why different combinations of speed and sophistication in company decision-making are important. Thinking of decisions in this way can help you prioritise how to use company skills and resources and improve workflows where it matters most.

Consider what might happen if you thought about decision-making capabilities in terms of these dimensions:

If your company provides 3D navigational maps to improve traffic routes, for example, you will need both speed and sophistication. Layering and combining information from panoramic cameras, traffic conditions, and driver feedback all in real time is a truly sophisticated task – one that would require very accurate information, true *intelligence in the moment* and learning loops to help you continually refine your representation of the world.

Company execs say decision-making needs to change
Where organisational decision-making capabilities are today and where executives say they 'need to be' by 2020

● Capabilities today   ● Where capabilities need to be, 2020

Base: 2,106 senior executives.

Question: Position the ball to a location that best describes existing and anticipated decision-making capabilities in your organisation.

Source: PwC's Global Data and Analytics Survey 2016: Big Decisions ™

On the other hand, if your company lives and dies by fast-moving consumer preferences, you'll prioritise *accelerated agility* over lengthy data cleansing and more advanced analytics. Mining unstructured feedback simply and quickly gives savvy staff a rapid analyse-decide-act feedback loop.

You may decide that what you really need is to *cover the basics*, where analysis of fairly simple data provides the right level of information for managers with the right vision and incentives to use it effectively.
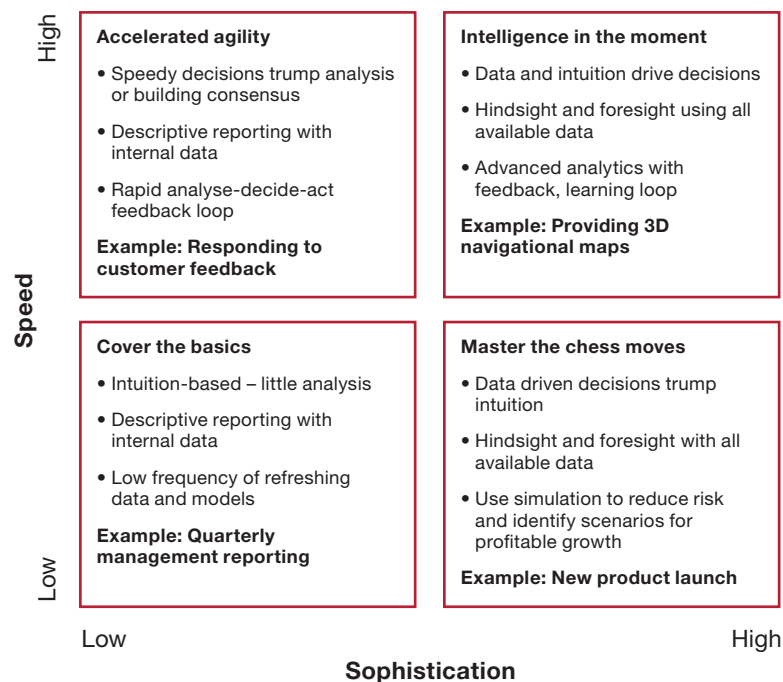
Yet, many companies face high stakes complex decisions that require comprehensive and careful analysis. Think about determining how to accelerate market adoption of a new product; how fast you act is not as

important as how you go about analysing the problem. It's more akin to strategy in 3D chess. If you hope to *master the chess moves*, it is important to look at numerous data sets that best represent the entire problem so you can build more comprehensive simulations. In the case of market adoption for a new product, this may include collecting competitor pricing data, modeling consumer switching behavior, and anticipating competitor reactions. It would also include understanding how seasonality or economic conditions of local geographies impact demand. Opportunities for companies to expand their capabilities here are great, considering the size of economic impact associated with these types of decisions.

Thinking of decisions in this way can help you prioritise how to use company skills and resources and improve workflows where it matters most.

Four models for data-driven decisions
You can model your program after four basic needs

Accelerated agility

- Speedy decisions trump analysis or building consensus
- Descriptive reporting with internal data
- Rapid analyse-decide-act feedback loop

Example: Responding to customer feedback

Intelligence in the moment

- Data and intuition drive decisions
- Hindsight and foresight using all available data
- Advanced analytics with feedback, learning loop

Example: Providing 3D navigational maps

Cover the basics

- Intuition-based – little analysis
- Descriptive reporting with internal data
- Low frequency of refreshing data and models

Example: Quarterly management reporting

Master the chess moves

- Data driven decisions trump intuition
- Hindsight and foresight with all available data
- Use simulation to reduce risk and identify scenarios for profitable growth

Example: New product launch

(Vertical axis: Speed — High / Low. Horizontal axis: Sophistication — Low / High)

Source: PwC 2016

Process and data evolve together
Finding the right approach in your own company or unit is one of the great challenges in applying data and analytics today. "The big art in this game is to reduce the huge amount of noise," says Michael Feindt, the physicist who wrote the algorithm that detected Higgs boson and the founder of Blue Yonder, a firm that offers predictive and prescriptive capabilities to business. "What one wants is a simple answer immediately, of course, and there is always a compromise in speed and sophistication. Many companies ask what more they can do with the data they have – so they need a process that folds the data they have into their workflow, from data entry on up."

Too often, executives feel frustration because their data collection or their people (or both) are out of sync. Processes may have gaps, people may need training, or accountability may need to be put in place where it previously didn't exist. "You have to know your desired outcome and its associated metric from the start," says Paul Blase, a principal and global and US consulting analytics leader at PwC. Once you know that, he adds, you can embed data and analytics into the right places in your workflow and create the right levels of skill and accountability.

A client in the consumer packaging space, for example, wanted to augment a process to improve its demand planning by using intelligence from its representatives in the field. The hard part was establishing a practice where, instead of the reps working on their hardcopy charts, they digitized their workflow. "Once an algorithm is in a rep's handheld device, you can increase the sophistication of your data collection and analysis all day long – and you can build upon the model, changing the algorithm to improve the accuracy of demand planning."

Feindt stresses the importance of process and the importance of continually adapting to change. "Once it is clear to people throughout an organisation that there is value in data, the quality of the data becomes better quite fast," he says. Process and data evolve together. "The environment changes as the data changes – as it grows and improves – and so should the algorithms. Being data-driven means you won't use the same algorithm you're using now in two years."

"To me there's a tremendous advantage and value in getting the equation right," says Blase, who talks of building a data-driven organisation by structuring decision-making around process muscle. "It takes a long time because you're dealing with people, culture, organization and change, but the companies that are starting now, when some of the real promise of AI and machine learning and automation is taking hold, will have a much easier time getting it into workflows where it can matter in ways we haven't anticipated yet."

PwC's Global Data and Analytics Survey 2016: Big Decisions™

To get a clear understanding of how business leaders approach decision-making in their organisations, PwC used a narrative-led methodology to see experiences that otherwise wouldn't be captured in standard survey instruments.

As of May 15, 2016, PwC and Forbes Insights have collected micro stories and other signifying data from more than 2,100 C-suite leaders, business unit heads, and SVPs across ten major countries and 15 industries. We asked these leaders about decision-making in their organisations: The degree to which they see themselves as data-driven; their reliance on machine learning versus human judgment; their needs around decision-making speed and sophistication; and the limitations they face.

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