

Advanced analytics: Nine insights from the C-suite

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Conversations with hundreds of business leaders reveal nine ways that they are—and are not—adapting to the analytics revolution.

Data and advanced analytics have arrived. The volume of available data is growing exponentially, with more added every day from billions of phones, sensors, payment systems, and cameras. Machine learning is becoming ubiquitous, but organizations are struggling to turn data into value.

The stakes are high. Those who advance furthest, fastest will have a significant competitive advantage; those who fall behind risk becoming irrelevant. Analytics cannot be the sole province of the chief information officer (CIO), as is sometimes the case. The CIO may not understand the business as a whole well enough to spot opportunities and threats, or be influential enough to ensure that the company addresses them appropriately. While the expertise the CIO brings is of course essential, business-unit leaders and CEOs must be in charge of analytics to accelerate the pace of change and to ensure intelligent investment. This is beginning to happen: McKinsey has found that more than 50 percent of CEOs consider themselves the primary leader of the analytics agenda, and that figure has been growing steadily.

With this in mind, we spoke to more than 300 top executives of major companies. Here we offer nine insights based on these conversations, and suggest actions for business leaders to take.

Analytics can create new opportunities and disrupt entire industries. But few leaders can say how

“Where do we want to be in five years as a result of advanced analytics? What are the implications to our business model, culture, portfolio mix, and value proposition?” CEOs all over the world

are asking these questions—for good reason. Analytics has the potential to upend the prevailing business models in many industries, and CEOs are struggling to understand how. The need is urgent.

Beyond reorienting the existing business models, analytics leaders are also learning how to create and capitalize on new opportunities. Organizations are moving from hoarding data to sharing it. Some are pooling data as part of industry consortia, increasing their comprehensiveness and therefore their value. Product-based organizations are adding data and analytics to their offerings as value-added services. Some have gone further, charging for the analytics-enabled service rather than directly selling the product. For example, some jet-engine manufacturers now sell flight hours instead of the engines; this is only possible because sensors provide the data that help them understand usage and required maintenance.

Recommendations

There are two areas to explore. First, to understand how analytics can disrupt existing business models, set aside the time to focus on the long term. What can be learned from other industries that are farther along? What customer needs can be better met through new business models?

Second, to capture new opportunities, start with the data, analyzing what they are worth, how distinct they are, who would find them valuable, and how they can be combined with other sources to increase their value. Then, think through the business model. A simple way to get started is to conduct a market scan of the data and analytics players, as well as a competitor scan to understand

what others may be doing. Identify where and how to play within this ecosystem.

Surprisingly few companies know where and how analytics can create value

Analytics create value when big data and advanced algorithms are applied to business problems to yield a solution that is measurably better than before. By identifying, sizing, prioritizing, and phasing all applicable use cases, businesses can create an analytics strategy that generates value. For example, a CEO of a global consumer-packaged-goods company told us that the application of advanced analytics and machine learning to business functions such as revenue-growth management and supply-chain optimization uncovered as much as \$4 billion in benefits.

Few executives, however, have such a detailed view of value across their business units and functions. More typical is this kind of comment: “Sometimes I feel we are doing analytics for the sake of doing analytics. We need to have more clarity on what business value we are trying to create,” one senior executive said. Most have experimented with a handful of use cases, but lack a comprehensive view. Even fewer have considered how analytics can create new sources of revenue. Lacking an enterprise-wide view of opportunity, business leaders struggle to make a considered business case for analytics. They may also struggle to communicate why analytics matter—and that is essential to get the organization committed to change.

Recommendations

Start a rigorous process with the executive team to decide where the most promising sources of value exist. To start, identify which functions or parts of the value chain have the most potential. For consumer-goods companies, for example, it could be product development or inventory optimization; for insurance companies, it may be risk models. Then come up with possible use cases—as many as 100 for a large company—and how new data and

techniques could be applied to them. Using outside benchmarks can be useful to get a sense of how valuable a given use case might be. Finally, decide the order of priority, considering economic impact, fit with the business, feasibility, and speed.

Data science is the easy part. Getting the right data, and getting the data ready for analyses, is much more difficult

As data science enters the mainstream, commercial analytics platforms and code-sharing platforms are providing algorithm libraries and analytics tools. For most organizations, this simplifies the practical application of data science. But that still leaves the matter of what to do with it. In our conversations, we heard a familiar refrain: “The majority of our time is spent getting the data,” said a senior executive at an advanced-industries company. “Once we have that in a good place, the modeling is quick.”

Each data set is unique, and it takes time to prepare it for analyses. One major issue is that it can be difficult to agree on a “single source of truth,” because different departments often use different ways to measure the same metric. For example, the sales function may measure the volume of goods sold by transaction, while operations may measure by inventory movement. Most companies have not yet incorporated real-time data into day-to-day business processes. Many also struggle to identify what data are needed to improve competitive advantage, and therefore what they need to create. Other common challenges are implementing a unique identifier to link different data sets (such as transaction data and customer profiles) and filling in gaps to increase quality and usability.

Recommendations

The sea of data is vast and growing exponentially. To avoid drowning, executives must connect the data strategy to the analytics strategy. When exploring new data sources, it helps to have specific use cases in mind and to reflect on how data are

acquired—whether through commercial vendors or via open sources. Know what data the business owns; this can become an asset to monetize. To continuously improve data quality, put in place governance and processes, and ensure that the rightful owners have direct access. Mandate good data and metadata practices and build automatic data-reconciliation processes that constantly verify that new data meet quality standards. To drive new insight, interconnect different data sets, potentially in a centralized repository (or “data lake”). Resist the temptation of complexity. Rather than building a data lake for all legacy data—a project that can take years—fill the lake gradually. Start with data required for priority use cases, and gradually add to it. Get started with what you have, and don’t let perfection be the enemy of the good.

Data ownership and access needs to be democratized

The most common excuse that businesses roll out for refusing to adopt counterintuitive analytics insights is that the underlying data are not valid. This claim is much more difficult to make if accountability for data quality rests with the business, and if business leaders have ready access. Successful analytics organizations give as many people as possible access to the data, while making sure there is a single source of truth, so that employees can play with them and come up with new ideas, or discard old ones that are past their prime. “The way we are thinking about eliminating the finger-pointing between business and IT on data,” said the CIO of a large pharmaceutical company, “is by making data available to everyone.” By doing so, a data-driven decision-making mind-set gets infused throughout the organization.

Recommendations

Design effective data governance, specifying who is responsible for data definition, creation, verification, curation, and validation—the business, IT, or the analytics center. Embrace the dual principles

of business ownership and broad access. Hold the business accountable for data, even if the IT department houses and supports them. Create data-discovery platforms, such as web-based self-serve portals that allow frontline staff to easily extract data. Host data-discovery sessions to build data literacy.

Embedding analytics is as much about change management as it is about data science

Old ways of working are deeply ingrained, especially if there is an underlying distrust of analytics. Another question, then, that executives are asking is how to influence frontline staff to use the insights delivered by analytic tools to change how to make decisions. The CEO of GE, Jeff Immelt, told McKinsey: “I thought if we hired a couple thousand technology people, if we upgraded our software, things like that, that was it. I was wrong. Product managers have to be different; salespeople have to be different; on-site support has to be different.”

There are some success stories. One common and essential factor is that leadership has to commit to analytics, visibly. One executive told us how the head of a business unit used analytical tools to crunch the numbers regarding stock levels. He then presented the results to the weekly leadership meeting and required each channel manager to take action.

It is also essential to integrate insights into the daily work flow. Another executive spoke about how the sales staff resisted using leads generated by the analytics model, preferring to rely on their instincts. His team was able to engineer the work flow so that the recommendation engine was “invisible”: the sales team was simply presented with leads, and then acted on them—successfully.

Recommendations

People buy into change when they understand it and feel they are part of it. The design of analytics solutions therefore needs to be user led and

have business-process participation from the start. Have a “translator”—someone who not only understands the data science but also how it can be applied to the business—lead use-case development from start to finish. Match the talent to the task. The business identifies the opportunity, the data scientists develop the algorithm, the user-experience designers shape the user interface, the software developers run production, the process engineers reengineer work flows, and the change agents do the implementation. Develop a playbook for each use case, making sure critical adoption elements such as training and communication are not neglected. Beyond individual use cases, design a broader change program that builds analytics literacy and shifts the organization toward a data-driven culture. Organizational change management is generally well understood; it is a matter of applying these principles to analytics.

Learn to love metrics, and measure, measure, measure

“How do I know that the investment I’m making in analytics is worth it? What are the metrics? How do I attribute value to analytics versus all the other things my teams are doing?” These questions, from a senior executive at a large insurer, are typical. What’s also typical is that few of the executives with whom we spoke can answer them.

If the value of analytics is not explicitly measured and then communicated, it will be difficult to build support and thus justify investment. This is not always easy, because analytics is often used to support decisions, and therefore the value cannot always be isolated from other initiatives.

In a successful measurement strategy, the metrics are detailed and logically connected to business outcomes. For each analytics use case in production, review the associated outcome metrics, and ask how they contribute to business outcomes. If the use of analytics decreases customer churn by 2 percent, how much savings does that translate into?

Recommendations

Create a dashboard that incorporates all performance indicators of interest and features automated data feeds, so that it is easy to stay on top of what is going on. Then, trust the message that the data tells. “By relying on the statistical information rather than a gut feeling,” said a CEO of an investment bank, “you allow the data to lead you to be in the right place at the right time. To remain as emotionally free from the hurly-burly of the here and now is one of the only ways to succeed.”

With automation and digitization, it is possible to see changes in real time, rather than waiting for the end of the month, quarter, or year. And because it is possible to measure more often, there is no excuse not to do so. Numbers only have value when they are put to work. Businesses should decide what the best cadence is, and do it.

There is no universal way to organize an analytics operating model

There are, however, two general truths. First, there should be a central function to maintain best practices and capitalize on economies of scale for hard assets. Second, accountability for value capture rests with whomever owns the bottom line. Once solutions are developed, with business input, business leaders need to be held accountable for capturing the value.

What is the best operating model for analytics? The tension is between what the center of excellence (COE), a central function for data science, should be responsible for, versus where the business units are. Each model can work, if used correctly. Recent McKinsey research has found little correlation between how analytics is organized and how successful it is. What matters is that the operating model should be consistent with the business model, so that it can take advantage of the successful elements of the existing culture and practices while still promoting the cross-functional practices that any analytics effort needs to succeed.

Recommendations

Leaders should assess where the decision-making power sits in their organization—in the center or in the business units—and then design an analytics organization model that leverages the strengths of existing structures. If there is already an analytics COE, it is important to assess its effectiveness. Among the questions to consider: How fast can decisions be made? Is there sufficient business input into analytics solutions? Am I capturing the expected value from these solutions?

The talent challenge is not only to find data scientists but also to groom ‘translators’

While the talent market is still tight, most CEOs we spoke to said their companies already employ data scientists. What they need is more business experts who are also proficient in analytics—translators who can spot opportunities, frame a problem, shape a solution, and champion change. “I have lots of people who speak the language of business, and I have no problem finding software engineers who speak the language of technology,” one CEO told us. “But I can’t find translators who speak both languages.” The key is to find people who can take the numbers, and then work them for the benefit of the business.

Recommendations

Identify high performers with a quantitative background, such as statisticians and econometricians, then design a capability-building program to extend their analytics skills. The curriculum should include not only data science but also the leadership skills required to lead the identification and implementation of a use case end-to-end, and the change-management skills required to spur culture change. Make use of adult-learning principles when designing these programs, combining methods like on-the-job training, in-person learning, and online refresher courses. Consider designing formal certifications to those who successfully complete these courses.

This provides recognition and creates a common language and set of standards.

The fastest way to a big idea is to cultivate a data-driven, test-and-learn culture

Every company is happy to celebrate success, which is fun and easy; but many are not so keen to communicate bad news. Many companies also have a hypothesis bias, shaping data to an existing agenda.

In many start-ups and other agile businesses, on the other hand, there is a data-driven, test-and-learn culture. Once the high-level vision is set, employees are encouraged to identify where the opportunities are, quickly develop proofs of concept, and then let the data speak to the situation. The emphasis is on generating counterintuitive insights and new ideas swiftly, testing them, and then either going ahead or tossing them out. Bad news is communicated early and without shame because mistakes are seen as sources of improvement for the next iteration. While not all parts of the organization may need to fully adopt this culture, analytics centers of excellence, as well as business units and functions that need to stay on the cutting edge, do.

Recommendations

The sandbox is a place of playful creativity in which what is built can also be quickly torn down. That is the atmosphere to aim for: provide the right tools, technology, and computer power needed to discover new features, run correlations, and perform analyses. Then, make it possible to tear it down as new information and needs supersede the old, without having to go through a lot of data security, compliance, and cleanup.

This is all part of building a culture in which data, not guesses, are brought to bear on problems, and where people are comfortable with constant change. Delivering, and hearing, bad news has to be seen as part of business as usual. Set clear stage

gates for investment, even while accepting that most efforts will fail, and then increase investment size as milestones are achieved. Emphasize the need for speed. “We fail more often than we succeed in analytics,” noted the leader of a business unit at a consumer-goods company. “But we are trying to move more quickly in learning from failures and moving to the next iteration.”



Many sectors are not getting the most out of data and analytics. Doing better requires bringing a sense of urgency to the challenge, and then a willingness to do things differently. The executives we spoke with, on the whole, understand this.

Completing a full transformation means aligning the business around a common strategic aspiration, establishing the fundamentals, and generating momentum. This typically takes two to three years. Organizations therefore have only a narrow window in which to work. Otherwise, they will fall behind—and may never catch up. As one CEO mused, “It’s no longer the big fish eating the small, but the fast ones eating the slow.” ■

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