IBM Institute for Business Value

Analytics in the boardroom

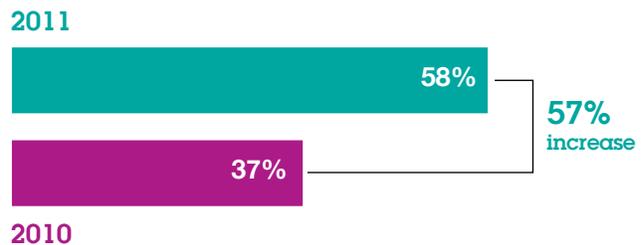*Accelerating competitive advantage*

By Fred Balboni and Susan Cook

In an environment of accelerating complexity, organizations the world over are feeling new pressures to act with speed and certainty. Three areas stand out as particularly volatile, subject to uncertainty and critical to performance: customers, risk and regulation. Leading organizations are responding with carefully targeted analytics efforts designed for maximum strategic advantage in each area. In each case, analytics can be approached with a common framework: First, lay an information foundation to facilitate speed of decision-making. Second, mine integrated data for sources of new value, and third, detect and exploit opportunity with predictive analytics.

It has long been said that Corporate Boards exist to ask the questions executives may have overlooked. For Board members, the opportunity to pose tough questions to the leaders of the business – and expect precise answers in return – will grow exponentially as organizations increasingly become data-driven. Will customer defections derail a growth plan? What risk does inadequate capitalization pose? Will new and unexpected regulations wipe out profitability? Tough questions like these can be asked and answered with precision, but to get to the stage where they can do so, Board members must first understand what analytics makes possible.

Organizations that take a wait-and-see approach to analytics are falling behind their more determined peers. As highlighted in the 2011 IBM/*MIT Sloan Management Review* (IBM/*MIT SMR)* New Intelligent Enterprise study, the number of organizations using analytics to create a competitive advantage has surged 57 percent in just one year, to the point where nearly 6 out of 10 organizations are now differentiating themselves through analytics (see Figure 1).[1]

According to the 2011 IBM/*MIT SMR* study, these organizations are also more than twice as likely to substantially outperform their peers as those not using analytics.[2] This gap has major implications for businesses seeking to make the best possible decisions in an increasingly uncertain and volatile world.

Creating a competitive advantage

2011

58%

57% increase

37%

2010

Note: Percentage of total respondents who rated the level that information and business analytics is able to create a competitive advantage for their organization within their industry or market as either substantial or significant on a five-point scale from 1= very little extent to 5= significant extent compared with the responses to the same question in 2010. N=3236. Source: The New Intelligent Enterprise, a joint *MIT Sloan Management Review* and IBM Institute of Business Value analytics research partnership. Copyright © Massachusetts Institute of Technology 2011.

Figure 1: **The ability of organizations to create a competitive advantage with analytics has surged in the past 12 months.**

Where leaders' proven experience and instincts were once their best guides, analytics can now confer laser-sharp acuity about the environment companies operate in today – and where they will find themselves tomorrow. Analytics allows organizations to identify the components of complex activities and ecosystems, understand dynamics and interdependencies, predict what is likely to occur next, and even recommend the best action to take. What once seemed impossibly uncertain is now knowable.

For many organizations, the biggest inhibitor is not technology, but culture and the lack of a leadership mandate. Twice as many companies find organizational challenges extremely difficult to resolve than technological barriers (see Figure 2).[3]

Respondents who rate these challenges as extremely difficult to resolve

Organizational challenges

44%

1.8x greater difficulty

24%

Technology challenges

Source: The New Intelligent Enterprise, a joint *MIT Sloan Management Review* and IBM Institute of Business Value analytics research partnership. Copyright © Massachusetts Institute of Technology 2011.
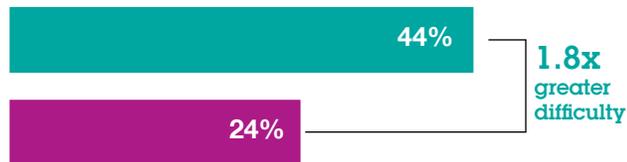
Figure 2: **Changing the way people behave and interact with one another within an organization poses a more difficult challenge than changing their tools or technologies.**

Integrating data across lines of business or functions is just one example of an organizational challenge. Getting common agreement on data definitions and standards, coaxing data owners to share, and even to trust the quality of information they don't personally control make integrating data a thorny organizational issue – one susceptible to political infighting. Yet it is a crucial first step in creating value from analytics: the 2011 IBM/*MIT SMR* study found that 74 percent of analytically sophisticated organizations do this well compared to just 15 percent of those in the early, aspirational stage.[4]

The ultimate organizational challenge is creating a culture that thrives on decisions made with facts and, consequently, is open to the new ideas and new ways of doing things they suggest. Seventy-seven percent of analytically advanced organizations surveyed have a culture in which people are open to ideas that challenge current practices, compared to 39 percent of those that have yet to apply analytics widely.[5] They do so, in part, by establishing a top-down mandate, where leaders set the expectation that decisions will be analytically derived and applied to both day-to-day operations and future strategies.

To support this, they provide access to relevant data and analytics to employees, and particularly customer-facing employees, for making decisions. In the 2011 IBM/*MIT SMR* study, *63* percent of analytically sophisticated companies said they do this well, compared to just 15 percent of those in the early, aspirational stage.[6] This tells us that analytics is not a spectator sport. It grows exponentially in value as more people in every part of the organization understand it, use it and apply the insights they gain.

Analytics allows organizations to identify the components of complex activities and ecosystems, understand dynamics and interdependencies, predict what is likely to occur next, and even recommend the best action to take.

Becoming a data-driven organization requires the right technology, tools and skills, but it also requires a leadership mandate. Board members should ask: How ready is the organization to adopt a data-driven approach and apply it daily? What steps is it taking to apply analytics to activities most exposed to the uncertainty and volatility of the current environment? Three areas stand out as particularly critical: changing customer values, accelerating risk and regulatory uncertainty. In each area, organizations can improve their analytics effectiveness by applying three principles:

1. Lay the information foundation for fast and flexible responses to the changing environment.
2. Extract value from integration by aligning high-priority business objectives with integrated data.
3. Detect and exploit opportunity through predictive analytics.

Applying this framework, organizations can prioritize their investments in areas of strategic interest, allowing them to grow profitably with reduced risk.
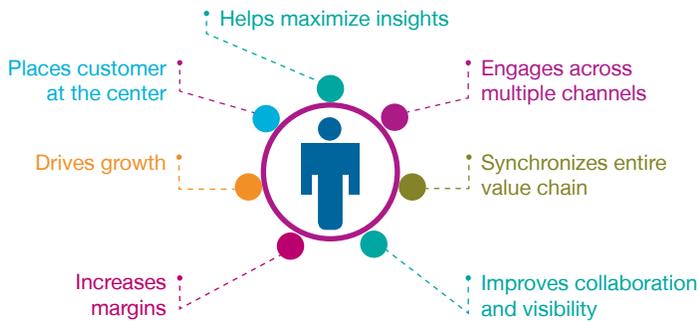
Target maximum growth through customer analytics

In recent years, organizations' customer strategies were hit with a one-two punch. The global recession and a slow-growth economy eroded assumptions and flipped growth strategies on end. At the same time, the digital, mobile and social spheres began converging, connecting customers in new ways to information and each other – essentially redefining commerce as we know it.

First, the impact of the economy. Despite efforts by established companies to maintain margins and protect customers, defection rates have risen. Newer organizations with different business models went on the attack with price-based value propositions. And in many industries such as Financial Services and Telecommunications, where growth was often made via acquisition, the pool of viable acquisition targets became nearly non-existent, forcing a return to organic growth. This combination of a slow-growth economy in developed countries and the absence of acquisition candidates created stagnant profit pools in many industries, requiring organizations to steal customer share.

Challenges to customer loyalty have been further exacerbated by the rapid rise of digital, mobile and social media. All of these have empowered customers, who value third-party or peer-to-peer information more than anything an organization has to say. These customers expect to do business on their own terms, and engage with organizations in ways they are largely unprepared for. Customers, for example, are turning to their smart phones, tablets and online communities for instant satisfaction – such as discounts and recommendations based on their current locations and available to them the very instant they decide to buy. All of this adds intense pressure for businesses to provide value that is personalized and sensitive to the moment and the location chosen by customers – and to do so continuously.

We see a new organizational model evolving – one that is truly customer-centric in the sense that it seeks and uses customer input to inform and optimize activities along the value chain. To be successful with this model, organizations need to rethink what constitutes value for customers, and have a fundamental understanding of who their customers are and what relationships they have with them (see Figure 3). In every industry, customers increasingly want to be understood as individuals, not statistical entities. But most organizations wield analytical approaches that are too crude for that.

- Helps maximize insights
- Places customer at the center
- Drives growth
- Increases margins
- Engages across multiple channels
- Synchronizes entire value chain
- Improves collaboration and visibility

Sources: IBM Institute for Business Value.

Figure 3: **Analytics address eroding customer loyalty and expanding expectations.**

Traditional segmentation uses two or three dimensions, sales and transactions, for example, or income, age and geography. Today, however, it is possible to analyze dozens of dimensions, raising customer understanding to unprecedented levels of granularity. At the same time, organizations need to forge connections with customers at every stage and get far better at "listening" to the global conversations taking place online, which in turn, requires analytics to make sense of it all.

Organizations should consider critical areas of opportunity, from laying an information management foundation for understanding customers as individuals and not markets, to applying analytics predictively to anticipate new needs.

Today, it is possible to analyze dozens of dimensions for segmentation, raising customer understanding to unprecedented levels of granularity.

Lay the foundation: *Develop a single operational and analytical view of your customers*

Most organizations don't have a holistic view of their customers. Instead, they rely on sources of information that are split across lines of business or channels. In many cases, organizations segment data by product or channel rather than customer, making it difficult to understand, let alone anticipate, behavior. To meet this challenge, organizations should:

1. *Make the case.* Can a customer service representative understand the entirety of the relationship a customer has with your organization across product lines, across interaction channels, across geographies, and over time? If not, you can often establish a direct-cost self-funding business case to create a single view of the customer based on cost reduction alone. Achievement of this goal alone will typically generate cost savings. Applying analytically-driven insights to areas like upselling and customer retention can generate, on average, 10 times more value.[7]
2. *Refresh insights continuously.* Identify the insights you need to meet your specific business objectives, such as increasing service quality, improving retention, or targeting cross-sell and up-sell opportunities. Update those insights and synch them with business processes to track changes in customer behaviors, take corrective actions when needed and seize opportunities as they occur.

Extract value from integration: *Use analytics to engage across multiple touch points*

Typically, an organization's highest-spending customers are the ones who take advantage of every channel, whether it's the web, a mobile device, or a kiosk on a showroom floor.[8] Unfortunately, these customers are most at risk for experiencing a disconnect in navigating channels that are not yet integrated. A unified multi-channel "bricks and clicks" approach can allow customers to move between website, smart phone app, or an in-store service counter with a consistent quality of engagement.

1. *Connect the dots.* Understanding and anticipating customer behavior to improve engagement requires a multi-channel approach. A customer's recent views on a website, for example, can provide valuable insight to the call center representative who engages with that customer on the telephone.
2. *Share the wealth.* Analytically derived insights need to be disseminated to the point of need, whether that's a call center, a web/mobile device or a salesperson. Research shows that the organizations most skilled at using analytics have been the most successful at disseminating both analytical tools and insights across the organization to all who need them.9

Apply analytics predictively: *Be the first to understand rapidly changing customer values*
Predictive analytics requires the right technologies and tools, algorithms and models. But the biggest dependency is maintaining a tight focus on foresight instead of getting lost in the data. Big data is getting bigger, and the temptation many companies face is to go on a fishing expedition – to collect as much information as they can, and see what turns up. The best approach is, in fact, the opposite – a tightly controlled and precise understanding of what you're looking for. [10]

1. *Start with the questions.* Too often organizations get caught up in gathering all the available data before starting their analysis – an approach that is almost guaranteed to stall in investment mode and endanger projects from ever getting off the ground. Instead, organizations should first define the precise insights needed, the questions they need to ask, and then identify those pieces of data needed for answers intended to maximize the desired outcome.
2. *Know the benefits.* Once you've selected the challenges that matter most to your customer strategy, you still must know why they matter. In order to build the right models, you will need to ensure that you have agreement on the precise benefits you expect to achieve. It is important to consider both quantitative and qualitative measures – for example, revenues and satisfaction – when assessing the value generated through analytics.

3. *Work the algorithms.* Algorithms often work well on a relatively small number of key data points. They allow organizations to make very precise predictions, from pinpointing at-risk customers to recommending specific retention strategies. And embedded into processes, they automate activities to reduce or eliminate the need for human intervention, and optimize activities with complex sets of dependencies.

Reduce your exposure to accelerating risk

In an interconnected marketplace, where one failure compounds another, risk is accelerating – outpaced only by social networks that broadcast the hit to your organization's reputation when you fail to manage risk well. And even as organizations reap the benefits of new organizational structures, with more extensive partnering as well as alternatives to traditional command-and-control management, they have grown uncomfortably aware that increased exposure to risk is not just inevitable, but likely. Even the most superior risk mitigation strategy will not prevent negative events from occurring.

Too often, risk remains the purview of the CFO, despite the fact that less than 20 percent of risks are financial, legal, or compliance-related in scope. A report from the Corporate Executive Board underscores the point. It found that strategic risks were responsible for 68 percent of severe market cap declines from 1998 to 2009.[11] Yet an IBM study with APQC found that 56 percent of the respondents admitted they were least prepared to manage these kinds of risks (see Figure 4).[12] Doing so calls for clear sight into every aspect of the organization, from events in the supply chain to changes in the marketplace. Of course, a better line of sight is not in itself sufficient. Organizations must be prescient – even in the face of what appears to be growing uncertainty.

Past   **Present**

68%
of severe
market cap
declines were
due to strategic
risk issues from
1998 to 2009

56%
of respondents
admitted they
were least
prepared to
manage
strategic risk**s**

Focus on
big risks

Risk as
an element
of every
decision

Sources: Corporate Executive Board "Organizing for Risk Management"; and IBM Institute for Business Value-APQC Study.

Figure 4: **Increased complexity and interdependencies creates uncertainty about the consequences of every decision.**

Analytics allows organizations to precisely isolate and identify the components of risk to understand what's occurring, and will probably occur, in the different parts of an organization, its ecosystem and the wider marketplace. As a result, analytics has elevated risk from a defensive play to a fundamental aspect of performance. The 2011 IBM/*MIT SMR* study showed that analytically-advanced organizations are intensely focused on balancing risk and performance, a practice virtually ignored by their less analytically sophisticated peers.

The study also found that leading organizations adopt an end-to-end enterprise approach, and with the co-operation of the C-suite, address the full spectrum of risk. Applying analytics, they can manage risk holistically across the organization to monitor events, and automate actions or detect emerging issues. Some can even drill down to activities as sophisticated as the use of risk-based pricing to create services that once would have been deemed too difficult to develop.

Lay the foundation: *Learn to isolate risk at the center, not the areas around it*

Analytics applied to risk can achieve high levels of precision. Too often, organizations use this power to uncover only the small risks. But more importantly, analytics allows organizations to identify the triggers, individual acts or activities that set off a chain reaction or signal impending risk events. Organizations should:

1. *Identify the top 25 concerns.* Get consensus across your company on your organization's biggest risks. What will curtail future opportunities or erode profitability and reputation today?
2. *Avoid reinvention.* Identifying key risks requires organizational consensus, which at first may seem hard to achieve. However, a growing body of information is available by industry to share known risks and their potential impacts. Take advantage of the information and measurements available from these risk-related best practice bodies, and focus your attention and investment on understanding the activities that are unique to your company and are potential triggers.
3. *Distribute tools and insight broadly.* Manage the risk across your entire enterprise – with up-to-date information feeding a common repository and available to stakeholders who are empowered to manipulate data to build what-if scenarios. Provide a forum for sharing insights on what's been learned, as well as a measurement and feedback loop to continue making progress.

Managing strategic risks calls for clear sight into every aspect of the organization, from events in the supply chain to changes in the marketplace.

Extract value from integration: *Consider risk management a growth opportunity*

Too often, risk is viewed as a defensive play. But analytics applied to integrated information across the enterprise allows organizations to practice risk-adjusted performance management – managing risk while achieving revenue or profit opportunities. Integrating this data can lead to surprising results. To get started:

1. *Always take an enterprise view*. With the application of analytics, organizations can identify even the smallest risks, which are frequently overlooked. These risks are often leading indicators of bigger or future challenges, and in cases where they impact multiple parts of the organization, could have a compounding effect.

2. *Segment risk into meaningful operational components*. Instead of managing risk as a big pool of averages, segment by customer types, for example, or the region, or even the type of transaction.

3. *Measure the upside and downside*. Identify, prioritize and continuously monitor in tandem those key metrics that both impact your business performance and risk exposure to understand the relationship between them.

Apply analytics predictively: *Don't just mitigate risk, identify ways to manage through it*

Too often, an organizations' approach to risk focuses solely on avoidance or mitigation. While important, it is impossible to eliminate risk. And an approach that tries to do so will often end in minimizing growth and putting new stresses on the organization to achieve profitability. Managing the risk – predicting ahead of time what will happen and what actions to take when the inevitable occurs – and doing so swiftly can preserve reputation and good will. Where risk cannot be eliminated, organizations must also strive to earn incremental

returns for accepting predicted risks. As organizations get more adept at applying analytics, they isolate risk components with far better precision and make quite sophisticated decisions. The ability to introduce new services that factor in precise degrees of risk can be a rich source of advantage.

1. *Ask "what if?"* Use predictive analytics to prescribe ahead of time the right actions to take for risks that are likely to occur. Employ what-if scenarios: An auto manufacturer, for example, might explore what would happen if its primary suppliers were hit by a natural disaster. To reduce supply disruptions, apply analytics to factor in seasonality, price and macroeconomics in determining suppliers you should switch to.

2. *Make it real-time*. For areas that are most critical to the business, and where risks are hardest to mitigate, such as an extended supply chain for a consumer products company, monitor performance as close to real-time as feasible. Utilize dashboards and automate business rules to detect and manage risk swiftly.

3. *Tap into your true reputation*. Understand the consequences of reputational risk and be prepared to engage customers, partners and stakeholders immediately. Social media, for example, is a rich source of customer opinion. Analytics applied to the "Twittersphere" and other online channels can reveal shifting sentiment early in the game.
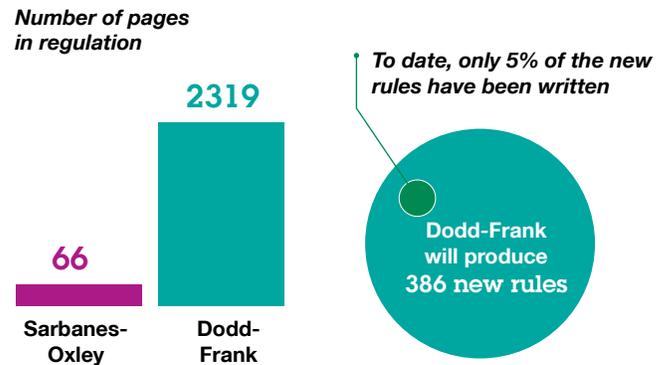
Break through the paralysis of regulatory uncertainty

As regulations multiply and morph, the complexity of managing regulatory compliance is exacerbated by globalization and the difficulty of managing cross-border, and sometimes conflicting, regulations. For years, organizations have been structuring themselves to operate as globally integrated enterprises. But, in reality, underneath that architecture lies a tangled web of legal entities. For example, some banks have as many as 1,500 legal entities as part of their operations. And regulatory bodies require that you report compliance at the level of the legal entity, not the overall organization.

Despite the need to manage regulatory complexity brought about by multiple operating entities and jurisdictions, a recent study found that 80 percent of financial institutions – an industry barraged by new regulatory expectations – had not yet integrated their governance, risk and compliance processes.[13] Most organizations face a steep learning curve just to achieve the basics that will be required, such as flexibility in general-purpose reporting platforms. Just as important – and far more differentiating – will be the need to identify and act ahead of the sudden and seemingly constant changes introduced by regulations.

Organizations view regulations as an enormous challenge, because so many of them are yet to come. For example, in the U.S., the Dodd-Frank Wall Street Reform and Consumer Protection Act that became law in 2010 consists of 2319 pages and its content is still being widely analyzed. It is expected to result in 386 new rules, requiring 67 studies;[14] only 5 percent of these rules have been written to date (see Figure 5).[15] Uncertainty such as this is unlikely to be adequately addressed through approaches that rely on experience or best practices alone. In the face of uncertainty, analytics help surface the facts necessary to make sound decisions.

In addition to using analytics predictively to better understand the regulations that are likely to emerge, organizations can also apply analytics to foresee the shape they will take as they are codified, and their overall impact to the business. Armed with such knowledge, organizations can proactively explore changes to their operations, strategy, products and services well in advance. They can even seize the opportunity to create new products or services – far ahead of their competitors. In this way, analytics creates a platform for the speed and agility needed to keep up with and even stay ahead of pervasive regulation, and becomes a source of competitive advantage.

Number of pages in regulation

2319

66

Sarbanes-Oxley

Dodd-Frank

To date, only 5% of the new rules have been written

Dodd-Frank will produce 386 new rules

Sources: IBM Institute for Business Value; Regulatory Reform Bulletin No. 1, State Street Global Services (see endnote 15 for URL).

Figure 5: Regulations can transform markets, government and industries; focus on opportunities created.

Lay the foundation: *Ensure flexibility first*
The foundation of any regulatory endeavor is a more uniform structure to create flexibility and speed in reporting. Standards, order and discipline are needed to integrate data into an agile cross-company platform that allows companies to report information in as many ways as current and future regulations require.

1. *Establish an integrated platform.* Reporting flexibility is dependent on data integrated across a common platform, with consistent standards or definitions applied to every piece of data. To enable speed and flexibility, establish uniform but customizable structures for reporting. Analytics can then be used to verify data across different regulations, including both existing and future requirements.
2. *Govern data for certainty.* Robust information governance managed through a center of excellence is critical to any endeavor, but particularly important to analytics applied to regulations, where even small errors can be costly.

Extract value from integration: *Shift the view on compliance as a cost center*

Take the opportunity to be strategic. New regulations inevitably require you to collect new types of information. How can you put that information to use to detect and leverage future opportunities or challenges? Some leaders in the insurance industry, for example, responded to EU Solvency II regulations by creating new services from the data they were required to collect.[16] In your planning, consider how your competitors will fare under new conditions. What new patents or products are they developing in response to regulations? What are their likely pricing actions?

1. *Understand market dynamics.* Instead of viewing regulatory issues in isolation, ask: How does the combination of new regulations, potential risk events, changes to demographics, economies, laws and customer preferences coincide to create an environment favorable or unfavorable to your business? Will it create a competitive advantage or disadvantage for you? For your competitors?
2. Get intelligent. Monitoring a diverse array of factors from unemployment to patent laws lays the foundation. But understanding which factors prevail, influence or set off a chain reaction requires optimization techniques and scenario planning to model the trade-offs and outcomes. This frequently requires historical data and a model to associate disparate data with outcomes.
3. *Sweat the small stuff.* Identify and model the most significant challenges to your business, but don't neglect small changes that have outsized effects because they impact multiple parts of your business.

Just as important as flexible reporting platforms – and far more differentiating – will be an organization's ability to identify and act ahead of sudden and seemingly constant changes introduced by regulations.

Apply analytics predictively: *Identify business dimensions that matter most and are likely to spark regulatory intervention*

Too often, organizations fall back on the excuse that future regulations are largely unknowable. Nothing could be further from the truth. The sources of future regulation in any industry typically align with well-known societal and governmental interests, be they health and dietary issues for a consumer packaged goods company, environmental impacts for the automotive industry or consumer protections for financial services.

How well do you understand the concerns of the broad set of people, governments and communities you depend upon? A proactive and predictive approach to anticipating regulations and taking action beforehand is heavily reliant on external information. To get started:

1. *Get smart on basics.* Identify your stakeholders' primary sources of concern, and break those areas down to manageable components. For example, in the packaged foods industry those areas might involve dietary health, such as fat or salt content. Use analytics to create world-class intelligence radars that monitor specific areas of concern, the intensity of sentiment, new breakthroughs in R&D, and the like.
2. *Scan the globe.* Monitor regulations that are emerging in other parts of the world. Understand demographic and economic changes that can impact sentiment and increase likelihood of the regulations reaching other regions, or becoming more sweeping.
3. *Get ready to change.* Consider what you would do if these regulations came about. Are there viable alternative approaches you could adopt now to get ahead of regulations and take a leadership position in your industry?

Conclusion

Senior executives want businesses that run on data-driven decisions. They want scenarios and simulations that provide immediate guidance on the best actions to take when disruptions occur – from the entry of unexpected competitors to an earthquake in a supply zone, to a customer signaling it may switch providers.

These expectations can be met, but with a caveat. For analytics-driven insights to be *consumed* – that is, to trigger new actions across the organization – they must be closely linked to business strategy, easy for end users to understand, and embedded into organizational processes to enable action at the right time. That's no small task. It requires painstaking focus on the way insights are infused into everything from manufacturing and new product development to credit approvals and call center interactions.

To assess the extent of your organization's progress, ask these questions:

1. How can leadership establish a mandate to apply analytics to support business strategy and operations?
2. How is data shared and integrated across the organization's lines of business and functions?
3. To what extent do employees have access to the information they need to make decisions?
4. What is your plan to develop analytics to expedite and automate your regulatory compliance?
5. How are analytics embedded into processes to automate and optimize activities?

The path to value is set by the expectations and actions of senior executives. They must be as assiduous in understanding and removing organizational obstacles as technological ones. And they should approach the task strategically. One common characteristic distinguishing companies that have successfully applied analytics to transform their organizations from all others is their approach to selecting analytic projects: Nine out of ten have established a rigorous and structured prioritization process, compared to 5 out of 10 of all other organizations.[17]

The benefits are widely understood. Analytically sophisticated organizations are also far more likely to approach analytics with a focus on risk and regulation as they relate to performance. Such organizations are focused on understanding customers – to attract them and retain them – and grow organically. They have learned that the best response to increasing uncertainty and volatility is straightforward: Successful enterprises attack it head on. They develop an enterprise view of all things important to a sustainable performance that outpaces their peers. They apply analytics to understand and predict what's next. And when they ask questions, they have confidence in the answers.

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