Sustaining analytics
Deliver hindsight, insight, and foresight

Analytics: Fad or foundation?
Knowledge is power, says the old axiom. Cliché as it may be, it has never been more true, especially when it comes to the grueling effort most companies face today in gaining and maintaining a competitive advantage. Enhanced access to information can lead to better decision making, improved performance, and, ultimately, a better-looking bottom line. Such erudition doesn’t come easy, however; it takes a keen understanding of the business environment coupled with an information technology infrastructure that facilitates the timely, careful acquisition and analysis of information.

The emergence of advanced analytics over the past three to five years has been a great boon for many organizations in their quest to enhance their ability to capture information that is meaningful and actionable. However, as with any quickly emerging phenomenon, there are questions surrounding the staying power of analytics. The biggest question is: Is analytics a fad or is the mastery of analytics techniques and technology foundational to success?

The answer to that question will depend on how companies implement and maintain analytics solutions. Analytics doesn’t happen in a vacuum. Companies looking to enhance their analytics capabilities must take a holistic view of the data resident in their information systems. Effective information management is a foundational key to successful analytics. Deriving hindsight from business intelligence and performance management systems is important to understand what has happened, but insight into what may happen is even more crucial.

High strategic value — and thus higher return on investment (ROI) on information technology (IT) investments — comes from true analytic insight. Knowing what tools and technologies to apply to yield real business results is critical to an organization’s analytics journey. Deeper analytics pushes into the organization, embedding the capabilities, the outputs and inputs, at the strategic and operational levels. Knowing that, the key question then becomes, “How do we sustain what we’ve built here?”

Sustaining analytics and making it foundational to the organization’s continued success is a journey. It is an ongoing effort to excel, to make the most of the IT resources, and to harness the enormous power of analytics to better understand and grow the business. It requires a disciplined approach that will take no less than the best and brightest resources the organization can muster to transform itself and gain the power that comes with true knowledge.

Weaving analytics into the fiber of the organization
There’s no doubt analytics is on the forefront of the C-Suite’s agenda these days. According to a recent Gartner
Group study, “Leading in Times of Transition: The 2010 CIO Agenda,” improving analytics capabilities is among their top three priorities, and it’s their number one technical priority.¹

The process of delivering analytics business results is one of continuous improvement. Starting anywhere in the analytics cycle, an organization can quickly begin to address its specific needs. Deep analytics pushes insights to frontline decision makers by embedding capabilities and outputs deep in the processes of everyday work. However, that process has to be wrapped with serious change management for it to stick. Those organizations governed by a “gut-driven” information culture must instead embrace a fact-driven mentality. Intuition should be replaced by a fact-driven approach to decision making in which actions are backed by data, not instinct. It is also imperative to set and communicate an enterprise analytics strategy and integrate into operations. Predictive models must be integrated into processes, technology, and the workforce. Performance should be measured and managed with metrics and processes, via analytical applications. Finally, analytics must also be linked to high-impact processes. Business processes — especially those deemed most critical to business performance — must be driven by analytics.

The following figure shows how analytics is interwoven into high-impact business processes:

Some of the key high-impact processes are:

- Product management: product pricing, product profitability, portfolio optimization
- Customer management: lifetime value, customer segmentation, loyalty, customer experience, profitability, churn
- Service/operations management: customer experience, capacity planning/demand forecasting, capital expenditure, performance, leakage/shortfall, workforce effectiveness
- Enterprise management: fraud, revenue assurance, asset utilization, security, collections, advanced forecasting
- Supplier/partner management: vendor efficiency, contract compliance, vendor optimization
- Market/sales management: channel optimization, campaign performance, up selling, cross-selling

Linking analytics to high-impact processes can push analytics capabilities even deeper into the organization, from business executives to the front lines. No matter where an organization enters the cycle of business analytics — analytics insight, performance optimization, information management — the challenges of execution and adoption are similar.

The principles of sustainable analytics
Organizations that have mastered applying analytics to support enterprise decision making tend to focus on seven analytics principles as they strive to accelerate workforce adoption and capture more value.

Start where you are
The first principle of sustainable analytics is understanding the current state, and picking a starting point for implementation. An honest self-assessment is the first step in understanding current capabilities — and the gaps that will need to be closed to get more value from analytics investments. Think in terms of both technical capabilities and organizational depth. For example, is data aggregated and standardized? Is there an enterprise data warehouse? How robust are organizational business intelligence capabilities? Is intelligence really embedded into many parts of the business? On the organizational side, is there a data governance structure in place? Has the organization bought into data governance efforts? Is there a culture of accountability for data quality?

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Thus producing a higher ROI on IT investments. Can result in the realization of higher value from IT systems, facilitate improved awareness of real business issues, and it foresight into what may happen. That knowledge can into what happened, insight into what is happening, and intelligence that spans industry, function, and technology.

Initiative. Asking relevant questions requires collective that is based on reliable data. Getting that information isn’t always easy, though. It’s essential to know which questions to ask about the business. In fact, knowing which questions to ask — where the most relevant and valuable insights are likely to be found — is the foundation of any analytics initiative. Asking relevant questions requires collective intelligence that spans industry, function, and technology. Knowing which questions to ask will deliver hindsight into what happened, insight into what is happening, and foresight into what may happen. That knowledge can facilitate improved awareness of real business issues, and it can result in the realization of higher value from IT systems, thus producing a higher ROI on IT investments.

Ask crunchy questions
Shareholder value can be improved when activities that drive value are recognized and effectively managed with indicators that provide lagging, leading, and predictive information that is based on reliable data. Getting that information isn’t always easy, though. It’s essential to know which questions to ask about the business. In fact, knowing which questions to ask — where the most relevant and valuable insights are likely to be found — is the foundation of any analytics initiative. Asking relevant questions requires collective intelligence that spans industry, function, and technology. Knowing which questions to ask will deliver hindsight into what happened, insight into what is happening, and foresight into what may happen. That knowledge can facilitate improved awareness of real business issues, and it can result in the realization of higher value from IT systems, thus producing a higher ROI on IT investments.

Circular as it may sound, asking the right questions starts with asking the right questions. Using their overall corporate strategy and business processes as a guide, organizations first must ask:

- What drives value?
- What questions need to be asked?
- How do we measure up — against our goals, and against the competition?
- What investments will drive the required return?
- What information do we need to answer these important questions?

Once these questions are answered, then the real work starts. That work begins with asking questions with answers that matter to the success of the organization — the crunchy questions. Linking the answers to those questions to the overall organizational strategy, then linking the strategy to specific industry pressures, is key.

Most organizations — especially over the past decade or so — have been forced to operate in a volatile environment. In such chaos, those crunchy questions may change from time to time. For example, several years ago, when the capital markets were crashing and the economic situation for most companies was precarious at best, one crunchy question that many CEOs had was, “How do I re-forecast my financials to reflect such an unpredictable situation?” Another question was, “How do I adjust my workforce to meet current needs?” Still yet another was, “How is my supply chain, my inventory management affected?” Being ready for those crunchy questions — and ready for those questions to change on a dime — is essential.
Listen carefully
Understanding what signals matter most is the next fundamental principle of sustaining analytics excellence. Business is not conducted in a vacuum. Almost innumerable internal and external forces act to influence events and decisions based on those events. Each event that happens leaves an imprint of some kind, somewhere, in the business environment.

Signals are everywhere
As a hypothetical example, consider a large global conglomerate that dabbles in everything from energy to manufacturing. This company has just experienced a catastrophic incident at one of its remote worksites. A mammoth explosion has decimated multiple structures at the site, killed several employees, and seriously injured scores of others.

Management is in crisis mode, scrambling to find out what happened and — more importantly — why. The company is excoriated by the media and the international community. The company’s reputation takes an enormous hit, and it is exposed to enormous liability. Could this have been prevented, or was it just a random occurrence that was completely unpredictable?

In most accidents, there is no single cause. Instead, there are many small events that occur in precisely the right sequence or combination to create a cataclysmic failure. This is certainly the case here. These events are signals and they can come from almost any source.

Months earlier, safety issues at the site were revealed but not adequately addressed. Worker morale at the site was low due to isolation and a harsh management style. Some workers had posted comments about conditions on various social media sites. Work safety procedures were not routinely followed, and equipment was not regularly or closely inspected for damage, although it was under tremendous stress. Inspection reports that were completed were lost.

Worse, supervisors had deliberately disabled “overly-sensitive” alarm systems so the alarms would not trip at all hours of the night. Finally, executive management rarely performed in-depth analysis on reports from the site — trusting site management to deliver correct information. Early one morning, a critical equipment failure occurred, setting off a chain reaction of events that resulted in a massive, deadly explosion.

All of these seemingly unrelated events combined to create the catastrophe. Could they have been detected sooner and connected? Could the accident have been avoided? Perhaps. Each event was a signal that was recorded — or should have been — by one or more of the company’s information systems.

Asset tracking systems should have caught the equipment issues. Risk management should have been aware of the safety issues. Human resources and executive management should have been apprised of — and acted on — morale issues. These are but a few of the information systems that would have been involved. Unfortunately, there was no capability in place to allow management to combine seemingly unrelated events into a cohesive picture that may have signaled a disaster in the making — or at least made clear that multiple, critical issues needed to be quickly and effectively addressed to prevent a massive failure.

Deciphering the signals
Admittedly, most organizations rarely face this kind of disaster. However, they do face a never-ending stream of events that affect business performance, both positively and negatively. The ability to decipher and integrate these signals into a coherent reflection of performance is vital. Signals come from myriad sources, both externally and internally. External signals can come from market conditions, news media, social media, wisdom of the crowds, etc. Internal signals are captured by transactional, business intelligence, asset tracking, risk management, and financial management systems, as well as the ever-growing volume of unstructured data from e-mails, customer interactions, surveys, video — the list goes on and on.

The figure below depicts how events from multiple internal and external sources are interrelated and produce signals that must be detected and analyzed in light of other events that are occurring, or are expected to occur.
Critical information from these signals must be organized, aggregated, standardized, and accessible to answer critical business questions, provide foresight, insight, and measure success. Once the information has been processed, the next step is to apply business process analytics, asset intelligence tools, and exploratory data analysis to monitor decisions, strategies, as well as transition optimization and risk management strategies. Using these tools and techniques can facilitate the aggregation of seemingly independent events into a coherent picture of what’s really happening across the business landscape.

Accelerate insights
To accelerate the process of deciphering signals and answering critical business questions, it is essential to automate information delivery to processes and people, and to automate responses as much as possible, so that decision making is sped up and action can be taken with certainty, at the lowest cost.

Pricing — Automated
One key business function that is rapidly being automated by leading companies is pricing. There are a number of ways to introduce automation into the pricing function:

- Pricing strategy. Companies can develop price optimization models to allow for more careful and timely pricing and incorporate data from pricing agreements to allow for more granular price setting. They can then implement an enterprise-wide pricing software tool to support pricing processes and align and integrate the tool with the organization’s ERP system
- Aligning pricing optimization with compensation. Companies can also develop compensation plans for the sales organization that are aligned with profitability metrics. They can then implement those plans by revising the sales force commission structure to be based on a predetermined, but adjustable mix of volume and margin
- Field execution of pricing strategy. To train the sales team, companies can utilize a “high touch” implementation method to explain pricing and profitability metrics and how the team will be incented to meet them. They can then develop a list of performance review activities to allow for measurable progress in meeting goals

Customer communication — Enhanced
Automation can also play a role in how companies choose the most effective channels for customer communication. As an example, consider a large retailer that has an established online and social media presence and executes most of its marketing communication electronically. To facilitate more effective customer communication, the retailer has built an automated system that monitors each type of customer contact and message that it sends. Lately, the retailer has undertaken a project to understand which types of communications are most — and least — preferred by its customers. Analysts have developed an automated tracking system to analyze user actions upon receiving e-mails, or upon encountering an online advertisement.
Specifically, the system tracks whether recipients open e-mail messages or mark them as spam, or whether or not they click through an ad in order to view the advertised site. The system will help retailer’s marketing function infer the likelihood of whether a particular communication is high value, or whether it is ignored by users.

For example, if too many recipients mark a message as spam, the system would simply stop sending that type of message. In the case of advertisements, the ad developer is notified, also through an automated system, of the low click-through rate, and they can be encouraged to develop an ad that users might respond to more favorably. Utilizing this type of automation in the marketing function helps management refocus resources to more critical tasks, because they no longer need to micromanage every customer interaction.

**Enhance visualization capabilities to engage users**

Automation is key, but if users can’t interact well with the systems that deliver information, they won’t use them, and the analytics effort will ultimately fail. Accordingly, to promote sustainable analytics, an engaging user environment is essential. Well-designed data visualization capabilities and interfaces can let business users easily access actionable information, or drill down for more information.

To foster a user-friendly analytics environment, it’s crucial to involve the user community in the design process. They have the field experience to know what information they need, and further, they most likely have good ideas on how to present that information to facilitate ease of use.

As an example, consider the risk management function at a major health insurer. Analysts are tasked with gathering, and presenting information on, provider costs so that management can ferret out potential suspicious, or fraudulent providers. The choice is to present rows of numerical data, or to present that data in a graphical format. It’s not difficult to discern which format is more engaging.

The chart below is a scatter plot depicting the number of patients across the cost of a claim. There are easily visible patterns in the chart, and there are outliers that call for more analysis. In the analysis of the outlier data, there are also patterns and some clear anomalies as well.

**Figure 4: Enhanced user visualization yields clear results**

![Cluster and anomaly detection identifies health care providers that consistently claim higher charges](image)
The first question to ask of this data would be, “How do we explain the outliers?” A deeper drill-down into those results might reveal that those providers were performing special procedures that were very expensive, but necessary and, therefore, well within treatment guidelines and acceptable performance parameters. Examples of this situation could include expensive chemotherapy regimens, heart bypass procedures, or other similar treatments. However, there is still an outlier to the right of those outliers that have been accounted for. That outlier is a good candidate for analysis of suspected fraudulent activity. With the data presented in a graphical format, it’s easy to spot both patterns and anomalies that call for further analysis.

The upshot is that organizations that want to sustain analytics efforts should understand that the method of presenting information for analysis is just as important as the information itself. It must be presented in a format that engages the user and promotes digging deeper to find answers that might otherwise be overlooked.

Build a fact-driven culture

Even the prettiest chart is only as accurate as the facts behind it, however. Good questions that yield wrong answers due to inaccurate information can ruin even the most carefully implemented analytics initiative. To sustain an analytics program that provides systematic answers and facilitates enhanced decision making and performance management, it’s critical to build an organizational information culture that is fact driven.

Years ago, it was in vogue to shoot from the hip in decision making. Maverick CEO’s were all the rage and their successes were touted by pundits as a nod to “trusting your gut” and making the hard decisions based on experience and knowledge, rather than often unreliable facts and figures. For some organizations, this approach worked — for a while. Times have certainly changed. Over the last decade or so, a wave of accounting scandals, external threats, increased regulatory scrutiny, and economic adversity has put a new premium on having — and making decisions according to — hard facts.

To operate in today’s complex and cut-throat business environment, many leading organizations are building a fact-driven analytics culture to drive streamlined execution of business processes and decision making throughout the enterprise. There are several steps an organization can take to build a fact-driven culture:

- Get leaders who walk the walk. A CFO or CEO who says, “These are the inputs I use to make decisions.” will go a long way to facilitate adoption of those inputs by others.
- Practice proactive obsolescence. One effective way to make sure outdated ideas and analytics tools are eliminated is to formally forbid their continued use.
- Ask tough questions. When reviewing decisions made by others, ask to see which analytics methods were used in the decision making process. Strongly encourage fact-based inputs as well as assumptions.
- Get out ahead of change. No matter which approach to change management is deployed, training related to expectations, resources, and benefits will be critical. Plan for them.
- Adopt one version of the truth. One adoption barrier to analytics is a fear that the “facts” delivered aren’t reliable. To counter this perception, it’s often necessary to develop a system of certification to define selected reports and findings as “official” and stick with it.
- Incent adoption. Once there is a stable analytics infrastructure in place, begin to reward adoption and fact-based decision making to incentives and compensation.
- Measure what matters. Expand the enterprise data model for reporting KPIs to measure how many decisions people are making, as well as their effectiveness.
**Practice right-fit analytics**

In building a sustainable analytics environment, it’s critical to drive decision making with fact-based inputs, but it’s also imperative to get at those facts with analytics technologies that are the right fit for the organization as a whole. The proliferation of analytics tools on the market has already outrun the pool of available talent to use those tools powerfully in most organizations. This leads to two big challenges: setting the overall analytics strategy and choosing tools and technologies based on that strategy, and on challenges and constraints faced.

The figure below depicts how understanding business challenges and constraints to the corporate strategy helps in determining which analytics solutions are the right fit.

To get the right fit, it’s essential to take an in-depth look at the organization as a whole. Examine budget constraints, staffing levels, and resource availability for analytics efforts. Take a deeper look at how well management understands the business environment. Consider risk tolerance for making decisions. Develop an understanding of data privacy and regulatory issues regarding data security.

For example, if an organization is using a data-mining tool, data security is a big concern. These tools typically touch the database directly. Access to them, and to the information they gather, must be strictly controlled. There are also some countries that forbid the transfer of data outside the country to analyze it. So, if management needs...
a global view of data, analysts must figure out a method to perform in-country analysis or to legally link multinational systems to that data. The bottom line is that privacy concerns, security issues, global regulations, etc., all need to be well thought out as they relate to choosing analytics tools that are the right fit.

Finally, it’s essential to examine the various tool and technology options that meet the needs and constraints that have been determined. Looking to the future is important here. Analytics investments must focus on implementing tools that fit now, and that will be flexible and powerful enough to grow with the organization. Straightforward business intelligence tools are not necessarily good at analytics, so it might be necessary to examine more sophisticated tools and technologies to get the right fit.

Looking ahead
Sustainable analytics is a journey, not a project. If organizations are to truly sustain their analytics efforts, they must be ready for, and embrace, change. Analytics must be woven into the very fiber of the organization. Analytics tools and technologies must support, and be embedded in, high-impact areas that drive value. It’s also essential to listen to all available signals that flow into the organization on a daily basis and use information from those signals to deliver hindsight, insight, and foresight to understand what’s really happening enterprise wide.

Management must also be able to think outside the box when problem solving. They must ask the right questions, and they must be willing to use new inputs and weigh facts against gut feelings when making decisions. Finally, analytics tools and technologies must align with and support the overall organizational strategic direction and they must help the organization recognize, confront, and manage the challenges and constraints that inhibit growth and performance.

For more information, please contact:
Jane Griffin, Principal
Deloitte Consulting LLP
Atlanta, Georgia
Tel: +1 404 631 2506
E-mail: janegriffin@deloitte.com

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