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Turning a Sow's Ear into A Silk Purse

Businesses today need to make faster and more informed decisions. By creating an Analytics Center of Excellence, they can translate voluminous raw information into more predictive knowledge and automate decision making.

By Alberto Roldan

Worldwide companies are facing serious make-it or break-it challenges that boil down to a single imperative: Find ways to quickly adapt to change -- or perish. Resolving these deep-seated issues, which are typically defined by structural, cyclical or mega-industry trends, appears mind-boggling on the surface. But interestingly enough, and perhaps for the first time in modern history, the solution to these seemingly intractable problems lies less in data collection and more in data analysis. In fact, many companies already have the information they need (often housed in multiple-terabyte databases) to move forward.

The tonic to what ails them requires a bit of science, in the form of advanced analytical techniques, a dollop of modern art that applies to how humans respond to visual cues, and some fresh thinking on how digital data should be analyzed and acted upon. Once these techniques are properly aligned, companies can begin treating today's economic ailments and create a deeper analytical foundation to guide their journey in the hyper-competitive global economy.

Below are examples of the near- and long-term challenges major companies across industry are facing:

- A credit card issuer is losing fees, customers are leaving for its competitors, and the value of the company is declining because it does not have a holistic view of its customers. At issue: its fraud and abuse algorithm is not properly aligned. The risk involved is over \$1 billion per week. How can the bank stop the bleeding and increase shareholder value?
- A banking company is at risk of over \$10 billion in loan modifications and defaults. The fact that home mortgage defaults are at an all-time high is no surprise. The challenge: how to reduce default risk while proactively identifying potential loan modifications as required by government regulations.
- A healthcare payer knows that chronic diseases represent 75% of its costs, but utilization management has been unable to achieve any cost containment. Unfortunately, these costs are spiking significantly higher than its competitors. How can this payer control chronic disease costs?

What these companies have in common is the need to adapt quickly to changes in risk management, revenue stream and spiraling costs by using advanced business analytics. With techniques like predictive modeling, partition algorithms, optimization and 3D visualization for large data sets, the old saying that it is impossible to turn around a large company in the short term is no longer true. As the global recession begins to show signs of abating, the time is right for survivors to invest in new ways to remain competitive and profitable, even if headcounts remain at reduced levels.

Old-timers tend to equate analytics with Excel reports. This is a mistake. Reports generated by spreadsheets have a limited capacity to represent the full spectrum of analytics. The alphabet contains the fundamentals of writing, but it represents a very limited spectrum of the capacity to express written communication. A poem by Robert Frost

or a novel by Gabriel Garcia Marquez or J.K. Rowling can convey thousands of similar but slightly different mental pictures to different readers.

Technological and scientific knowledge has emerged to create computer systems that detect and proactively provide solutions to revenues, expenditures and profitability issues beyond the spreadsheet's columns and rows. Companies must avail themselves of proven scientific tools and techniques to create agile and resilient systems that improve profitability in times of economic turbulence. In fact, the ability to adapt proven technological advances in the sciences and other fields, such as medicine, will become a prime differentiator for winning companies.

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Business Analytics

Business analytics is the effective use of data and information to drive positive operational activities. The body of knowledge for this area includes both business and technical topics, including concepts of performance management, definition and delivery of business metrics, data visualization and deployment and use of technology solutions such as OLAP (online analytical processing), dashboards, scorecards, analytic applications and data mining.

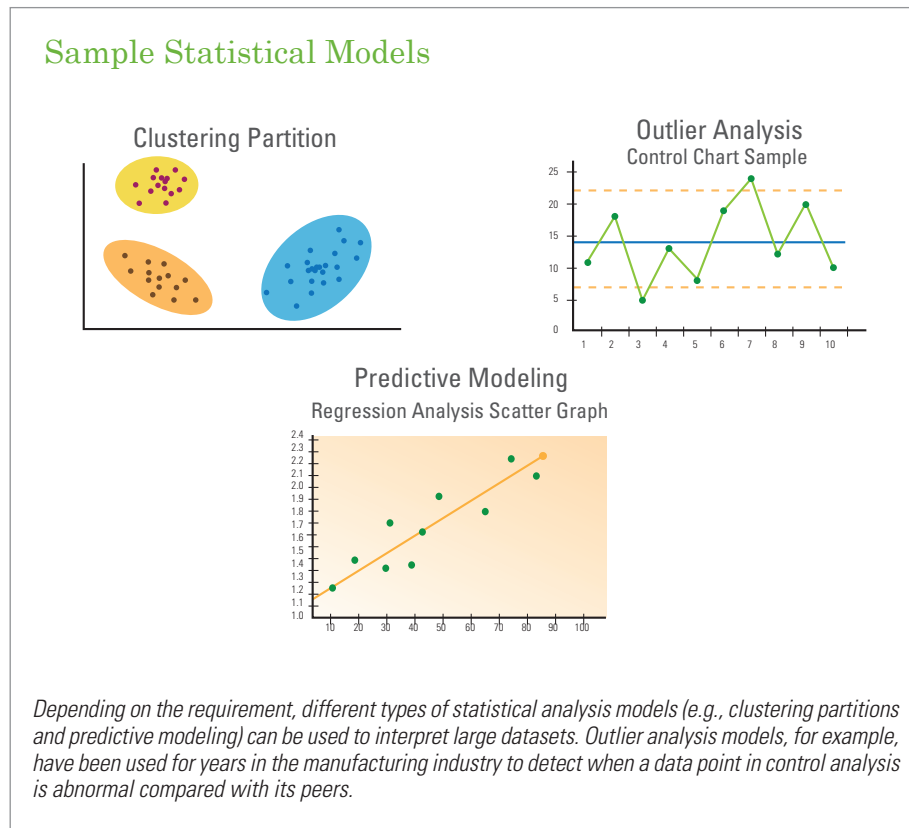


FIGURE 1

There are five different concepts that form the basis of a comprehensive business analytics program:

- **Comparative Analytics** uses basic mathematical concepts like sums, subtraction, multiplication, correlation and division to compare key performance indicators (KPI) in an organization. For example, these concepts can compare and calculate revenue, expenditures and profits during a specified time period. Also, correlation is used to assess the degree of similarity between two independent variables.
- **Outlier Detection** uses concepts like average, standard deviation and Z-scores to determine whether a determined data point is abnormal in the same classification or category. Outlier detection analytics are applied to fraud and abuse programs in the retail, financial services, telecommunications, manufacturing and healthcare industries.
- **Pattern Detection** covers the reverse side of outlier detection but applies the same methodologies. It is used in many industries to determine best practices. In the healthcare industry, for instance, it is also used for outcomes research. Also, it covers the discovery of patterns in unstructured data or text data mining algorithms.
- **Predictive Modeling** refers to the ability to create a score that determines the probability that an event will occur based on prior experience. Concepts like regression and neural networks are used to determine the relationship between different variables and the probability that a specific event will occur. Organizations use predictive modeling to do forecasting in many situations. In the healthcare industry, for example, it is used by Medicare to determine capitation payments to payers using hierarchical condition category (HCC).
- **Segmentation, Classification, Clustering and Spatial Analysis** is used to determine the different classes or categories among different variables. In retail, these concepts are used for categorization of customers, using variables like level of spending, gender, geography and products. In the healthcare industry, it is used in the analysis of different diagnoses like diabetes, cardiovascular ailments and cancer.
- **Linkage Analytics** aligns new strategic KPIs built from financial metrics to customer satisfaction surveys and employee satisfaction surveys. Using these analytics, companies can detect patterns in a three-dimensional view of the resultant data to visualize best practices that should be implemented across the enterprise or, alternatively, avoid practices that negatively impact revenues, costs or profitability.

Banks, investment banks and brokerage houses could profit or lose billions during stocks and commodities trading, if they had a one-tenth analytical advantage over their competitors.

- **Optimization** refers to the speed in which a decision support system (DSS) can correctly process key performance indicators (KPI) in a timely manner. The ability to process and analyze large data sets is the keystone for a flexible analytics solution.

Building an Analytics Infrastructure

Three additional concepts must also be considered by companies looking to apply advanced analytics more holistically. They include:

1. **The Visualization of Analytics:** It has been said that a picture is worth a thousand words. Companies, governments and organizations are challenged every day to store large datasets that contain structured and unstructured data. Science has progressed to the point that it can deliver the capacity to store and analyze large volumes of data. Advances in business, science and technology can now be combined with the capacity of the human brain to visualize and comprehend analytical data.

The human brain makes decisions using visual clues. The ability to visualize large datasets using analytics has become a cornerstone of the organization's decision support system. This is an area that is not commoditized and is continuously evolving. Some years ago, reports were simple rows and columns illustrated in pie or bar graphs. But over time, with the advent of enterprise resource planning systems, large data sets have emerged, creating a need for robust visualizations to make greater sense of the inherent reporting capabilities contained within these systems. The ability to have standard visualizations to make reports actionable is indispensable for using analytics to transform data into actionable knowledge.

Before the printing press was invented, knowledge was in the purview of a few individuals who knew how to read. Once the press was invented, knowledge and communication became available to all. With the advent of word processing software, more people could not only read but also write within their own sphere of influence. Of course, the ability to read and write does not mean that everyone will be a Shakespeare, Neruda or Solzhenitsyn. The analytics power users will not disappear; if anything, they will become more visible within an organization.

2. **Software-as-a-Service (SaaS):** In any rapidly changing economic environment, cost flexibility must be accounted for and measured against revenues, expenditures or profitability. SaaS, with its pay-as-you-go, low-cost-of-ownership and hosted model, could become the most cost-efficient analytics business model for some companies. The main issue is whether prospective SaaS vendors have the domain expertise to successfully implement analytics projects that deliver measureable results.
3. **Real-Time Analytics:** A thoughtful evaluation regarding the need of real-time analytics becomes crucial to any company, regardless of the economic cycle. Because companies need flexibility to make quick decisions, real-time analytics are often overlooked because they are time-intensive and expensive to build and maintain within budgetary constraints. This area also encompasses the ability to implement automated decisions in real-time, not just analyze data. For example, in the chemical engineering manufacturing industry outlier analysis (statistical control process) is already used in real-time to automate decisions.

For example, a healthcare payer needs to know whether to pre-approve or deny a highly experimental medical procedure that might have a favorable outcome for a member. But that does not translate into a real-time analytics system that delivers up-to-date clinical information on other patients, because the claim representative does not have the expertise to analyze this data. In certain cases involving investments, commodities and international currency transactions, real-time analytics is a must. Banks, investment banks and brokerage houses could profit or lose billions during stocks and commodities trading, if they had a one-tenth analytical advantage over their competitors. On the other hand, in most cases a near-real-time analytics system is sufficient to meet and exceed business requirements. A cost-benefit analysis is a must before making a decision to build a real-time analytics capability, since these systems are up to 10 times more expensive to build and maintain.

Launching an Analytics Center of Excellence

Finally, companies looking to more effectively deploy and leverage analytics must take an enterprise-wide approach. It is commonplace for companies to build silos of analytical knowledge. This, unfortunately, minimizes knowledge management and undermines analytics best practices, limiting knowledge sharing across the entire company. The best resolution is for a company to move toward an Analytics Center of Excellence (CoE). The advantage of an Analytics CoE is that it creates an infrastructure that leverages data governance, change management, KPIs and advanced analytics models in one centralized area, while simultaneously allowing business stakeholders to customize analytics to their specific needs.

The key to creating a successful analytics CoE is to start with small and measurable proofs of concept (PoC). Each PoC should be limited in scope, resources and timeline so as to optimize the utilization of resources. There's an old saying, "How do you eat an elephant? One bite at a time," and this stands true in developing an analytics CoE.

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Planning for an analytics CoE starts with defining a very specific problem to tackle during a PoC. For example, we recently proposed a PoC to a credit card company to examine denied customer transactions as a way to remove false positives and false negatives and improve profitability, as well as customer satisfaction. We also proposed an analytics PoC to a healthcare payer to forecast diabetes hospitalization costs and root cause analysis.

A challenge in establishing an analytics CoE is how to adequately staff it (see Figure 2). Some companies have their analytics capabilities spread across multiple business units, and if they are organized in silos, there may be little cooperation among those units. Another challenge is that analytics professionals are typically weak in soft skills, command high compensation levels, are

Anatomy of an Analytics CoE

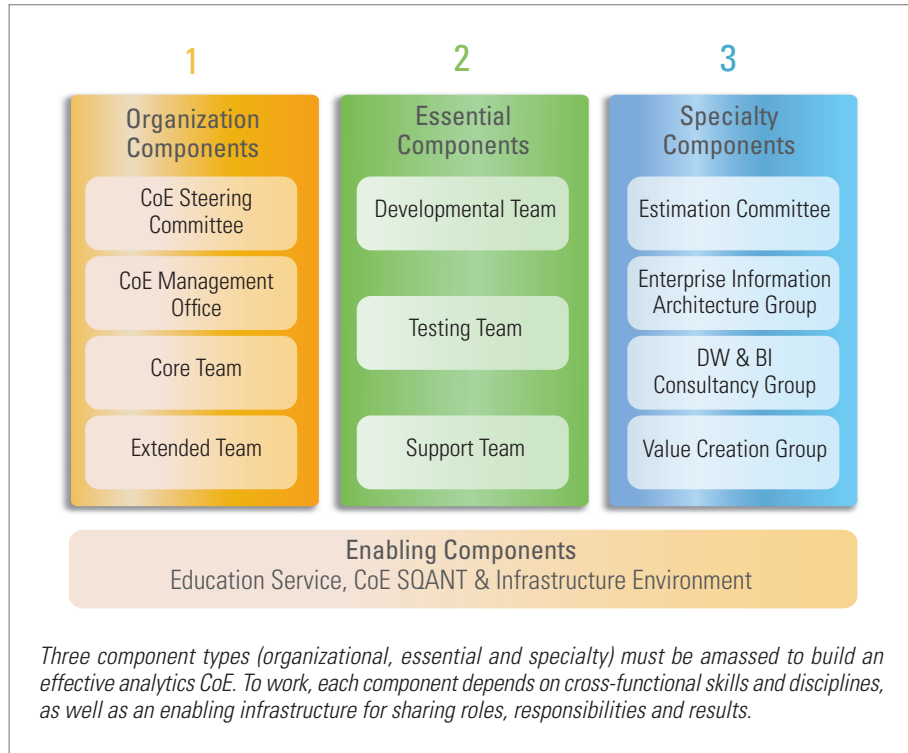


FIGURE 2

not easy to find and have a low tolerance to ambiguity. Therefore, companies should consider taking a partnership approach to analytics PoCs and CoEs to share risk and rewards. This is especially true in organizations in which offshoring is a lynchpin of the business model and has proved effective in reducing costs and accelerating time to market.

Once a company is able to successfully measure the value of two to three analytics PoCs, they are better able to transfer important business processes, statistical techniques, technology tools and knowledge gained during the PoC into an analytics CoE. The main benefits accrued include reduced costs by streamlining analytics headcount and increased revenues from using statistical modeling to gain better insights into data. Well-implemented analytics PoCs and CoEs have saved costs and generated revenues to early adopters in the realm of hundreds of millions of dollars per year.

Down the Road

Leveraging analytics to gain a competitive advantage and improve business decision-making is now the top priority for chief information officers, according to a recent global study of more than 2,500 CIOs. More than four out of five (83%) survey respondents identified business intelligence and analytics -- the ability to see patterns in vast amounts of data and extract actionable insights -- as the way to enhance their organizations' competitiveness. CEOs and heads of marketing and sales are also facing the challenge of transforming data into actionable information. This combined need argues for a holistic, cross-enterprise approach to leveraging advanced business analytics for competitive advantage.

To accelerate this journey, companies of all sizes, shapes and forms typically need a partner experienced in the ways and means of advanced business analytics. Job one for this partner is to help design and implement an analytics CoE that is cost effective, adds incremental value and delivers results that are definitive and measurable. Only then can a company begin to understand how advanced business analytics can help them more quickly adapt to change, discover hidden nuggets of gold in their data and overcome hindrances to change across their enterprise.

As a starting point, CoEs can help ensure that your company doesn't miss an opportunity to leap ahead (or, conversely, not be left behind) when the global economy truly turns around. It can also ensure that your company is working toward a knowledge-driven platform for seizing business opportunities and shielding or correcting operational weaknesses that can undermine long-term success.

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