

Instinct has its place in business, but no one can guarantee that all of their employees have good instincts all of the time. For this reason companies have gone to great expense to gather and warehouse as much data about their company, customers and competition as possible. Colin Magee of Insightful Corporation reports.

# Predictive analytics for competitive advantage

**T**o report on that data, these same firms have invested even more money in business intelligence (BI) systems. At first glance, these investments make sense: the more you know about your business the better you can measure whether your instinct is pointing you in the right direction. There is one problem with this: BI systems base all of their metrics and measurements on the past. You wouldn't drive your car by only looking in the rear view mirror, so why would anyone try to run a company by only looking at the past?

Traditional BI reporting is historical.

Companies are making decisions based upon what happened yesterday without incorporating present day circumstances or future probabilities. Predictive analytics help companies look forward. According to the IDC study, 'Predictive Analytics and ROI: Lessons from IDC's Financial Impact Study' by Henry Morris, the use of predictive analytics yields a median ROI of 145 percent, which is almost double the return of non-predictive analytics alone. By leveraging sophisticated statistical models organisations can test strategic and tactical options using historical and current data while accounting for the risk associated with probable future events and/or circumstances.

In deploying predictive analytics and reporting solutions companies provide comprehensive decision support for all of their employees. Organisations can now deliver to every decision maker's desktop the ability to assess and prioritise alternative courses of action, and understand the potential risk associated with any decision made. Management can now evaluate likely outcomes and choose the best-case scenario supported by the data. In every industry there is a competitive advantage to the regular and disciplined use of predictive analytics. That advantage is multiplied when businesses ensure the delivery of this information on demand across their enterprise.

## Easier than it sounds

While most business executives are comfortable with the application of simple

statistics like averages, medians and means to measure their organisations' past performance, predictive analytics are believed to be a bit of a mystery. There is nothing mysterious about the creation and application of predictive models. All it takes is data, some assumptions, statistical expertise and a good analytics solution. There is no magic 'button' that can take your company data and create a reliable forecast for the future. However, the expertise of a quantitative analyst who understands your data and your business needs incorporated with the right predictive analysis and reporting solution is the key to competitive success.

Unlike BI applications which merely present summaries of historical data, predictive analytics focus instead on the prediction of future outcomes of events not yet observed in data. These predictions are made by creating a model from the observed data using statistical techniques. These models can range in complexity from simple linear equations to powerful techniques such as neural networks.

A predictive model can predict new events that have not been observed in the past. A predictive model can predict not only likely outcomes, but also the range of likely outcomes. But while no forecast is guaranteed perfect, predictive models also indicate how accurate the forecast is likely to be. The ability to predict specific outcomes, and predict the risk associated with the outcome, is an enormously useful aid in decision making.

Last, predictive models are much more powerful at prediction than BI techniques that simply look at summaries of historical data. Because predictive models automatically look at all combinations of the data to create their predictions, they can detect complex interactions and behaviours that could not be detected by looking only at cross-tabulations or drill-downs. Of course, the power of a predictive model is often related to the complexity of the underlying statistical techniques used by the analyst to create the model. But even small improvements in forecasting accuracy, or better estimation of risk, can mean the difference between profit and loss. Investing in the development of





better predictive models is the route to competitive success in today's marketplace.

### On every desktop

The successful implementation of predictive models lies in their integration with existing business processes. While the underlying models can be complex, the application of those models to business data must be streamlined and simple. The person applying the model will typically not have the expertise necessary to create the model themselves. Provided the results of the model can be integrated into day-to-day business processes, the value of the model can be realised for competitive advantage almost immediately. For example, a marketing manager should be able to load a customer database within their everyday mail merge application and run the model from within the application interface. The results should then be presented back to them within the same interface. Although the underlying model is complex, the marketing manager can simply and easily take action on its results, by mailing to as many prospects on the top of the sorted prospect list as the budget allows. In this example the model becomes part of an existing process and is available for use on a daily basis. Decisions based upon that model are recorded as part of the process and resulting metrics are then added and the model refined.

While the underlying predictive models can be complex, presentation of results must not be. It is important that the selected predictive analytics and reporting solution has comprehensive, high-quality graphics. Statisticians need to create and deploy models and their reporting formats without requiring ongoing involvement from IT. Business users need the ability to run their what-if scenarios on demand and present their results clearly to their non-technical audience.

Deploying a predictive analytics and reporting solution is, thanks to technological advances, a relatively easy and cost-efficient process. To ensure the best possible technology fit, companies should look for tools that are platform independent, provide remote administration, are statistically rigorous yet flexible and allow for a wide variety of high quality output reporting.

Organisations have already distributed processing capability across their organisations and provided access to centralised and local data warehouses. Predictive analytics can either be embedded into existing solutions such as BI dash boards or set up as stand-alone systems to complement current decision making processes.

Either way, the organisation can optimise business processes by leveraging predictive models for making their decisions.


Finally, organisations can track decisions made along with the corresponding results to further refine predictive decision support. With the addition of predictive analytics, companies can now close-the-loop for their decision making processes. This closed loop process enhances a company's ability to learn from the past and provides the knowledge to act with an eye towards the future.

### Face the future

With the proliferation of traditional business intelligence systems and data warehouses, companies have already made a significant investment in making better decisions. While BI systems may have put a historian on every decision maker's desktop, predictive analytics puts an analyst on every desktop. Predictive models deliver expert analysis of multiple probabilities pointing to the best possible outcome and enable important decisions to be made with defensible information rather than intuition.

The application of data, reasonable assumptions, statistical expertise and an understanding of business requirements are the foundation of a sound analytics solution. Rather than simply summarise the past, the ability to predict outcomes and the likelihood of those outcomes is provided. Though more complex than BI solutions, predictive analytics improve forecasting accuracy and provide better estimation of risk. They are vital to competitive success in a constantly changing market.

The underlying technology and infrastructure is in place for most companies to take advantage of predictive analytics and reporting solutions. Whether integrated into existing systems or as a stand alone for current decision making processes, the use of complex statistical methods and continuous validation of predictive models will allow companies to be proactive in creating and executing business strategy.

Looking forward, companies can now anticipate and improve their chances of being the first to market with new products and opportunities. The addition of a rigorous, yet flexible predictive analytics and reporting solution is the final piece in enabling business to employ statistics across the enterprise for competitive advantage. 

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