

## **CSIRO analytics will drive supply-chain optimisation**

By Bruce McCabe

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The January issue of *Harvard Business Review* published an essay by Thomas Davenport entitled *Competing on Analytics*. In it, he argues that all firms should be learning from the leaders in exploiting data assets, companies such as Amazon, Capital One, Marriot International, UPS and Proctor & Gamble. Sophisticated analysis of data in sales, finance, operations, pricing, quality and human capital functions have moved on from being merely useful to becoming a universal competitive necessity.

I could not agree more. It has been three years almost to the day since this column first discussed the monumental untapped opportunities in this area and the message has only become stronger in the intervening period: we can still expect extraordinary increases in business value to be driven, over the next decade, by emerging computer science, powerful new sources of business data and the application of these technologies to entirely new business scenarios. I have to say, however, that Davenport's essay makes the point far more eloquently than I ever could and is nicely underpinned by a study of 32 organisations that stand out for their commitment to quantitative, fact-based analytics within their operations. It should be mandatory reading for every senior manager.

I was reminded of all this the other day, when I met with Dr Mohan Krishnamoorthy, the Research Leader for Decision Technologies at Australia's CSIRO.

The research conducted by Krishnamoorthy and his team will play an important role in the future of business analytics. Their focus is on optimising decision chains by making the anticipated broader consequences of decisions more visible to the local managers making them, as opposed to modelling complete systems and then trying to optimise them from the top down.

Decision-chains, in this context, are extended business systems with many decision-points and where actions taken at one point will change outcomes at others. Examples that spring readily to mind exist in transportation, airports, fresh food distribution, fast moving consumer goods and manufacturing supply-chains, but they are to be found in every industry.

This 'bottom-up' approach is of particular interest. By exploiting many rich data sources in the chain (such as real-time product, pallet and truck location data) and equipping each front-line person to play a role as an optimisation 'agent', a business system can be vastly improved without first having to generate a global model for that system. This approach is inherently more adaptable and better suited to adverse events, changeable conditions and to supply networks that are less structured. It also means local agents (a warehouse manager or transport agent, for example) remain empowered to make their own decisions.

Many heavyweight supply-chain analytics solutions today are limited precisely because they are too structured, having been built around generic business models, and managers can often be heard complaining when their organisations are forced to adapt business processes to the software instead of the other way around.

The CSIRO research effort appears to be based on a realistic appreciation of what is required to make such technologies work in real world businesses. Part of the research is directed at building trust and negotiation mechanisms to go with the decision-support functions. This is important to mitigate against one decision-maker engaging in exploitative behaviour and seeking to optimise local conditions at the expense of others in the supply network (a very real risk in supply chains that cross organisational boundaries). Krishnamoorthy is also keenly aware of the need to package solutions in a form that is simple and easy to use for decision makers on the front-line of business operations. Furthermore, he views the ideal outcome as software that bolts onto installed supply chain management (SCM) and collaborative planning forecasting and replenishment (CPFR) applications rather than attempting to displace them.

The technologies are at a relatively advanced stage and are being developed in close collaboration with industry. The CSIRO has already put them to work in wine, coal and automotive manufacturing firms. Krishnamoorthy confirmed to me that he is seeking to expand this collaboration with firms in other industries, and is also currently looking for commercialisation partners.

There is no doubt that his work has a very high commercial value indeed. New online channels, emerging technologies such as RFID and greater interoperability between enterprise applications are all combining to exponentially increase the data available to the modern organisation. In 2006, plenty of businesses are generating massive data volumes but only using it in very simplistic ways. In coming years, exploiting data assets in an adaptable way at local decision points will vastly improve operational efficiency and customer outcomes.

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