The Next Arena For Analytics

Data-driven decision making has the potenstial to revolutionise governance, say experts gathered in Singapore for the Workshop on Analytics for Business, Consumer and Social Insights (BCSI 2015).

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AsianScientist (May 21, 2015) - By Rebecca Tan - In the relentless drive to gain a competitive edge, companies have been among the first to actively adopt data analytics to guide their business practices. From gaining a better understanding of their customers' needs, to making their supply chains more efficient, analytics have proven useful in a wide range of business applications. But can the benefits of data analytics experienced at the firm level be extended to cities or even entire countries?

Participants at this year's interdisciplinary Workshop on Analytics for Business, Consumer and Social Insights (BCSI) certainly think so. Held at the Singapore Management University (SMU) on 14 and 15 March 2015, the third edition of BCSI showcased the latest research on how data analytics can inform policy making, drawing on presenters from both academia and industry.

The importance of an interdisciplinary perspective

In his opening remarks, SMU Professor Steven Miller, Dean of the School of Information Systems (SIS) and Vice Provost of Research, emphasised that the university was uniquely positioned to capitalise on the interdisciplinary research required in data analytics.

"What is distinctive about SMU is that we are probably the only university in the world able to focus on the three fields of Management, Social Science and Computing with 100 percent of our

attention," he said. "Our mission is to figure out ways to build stronger connections and a deeper integration across these three areas."

The need for an interdisciplinary approach was further highlighted by Associate Professor Thomas Weber from École Polytechnique Fédérale de Lausanne in his opening address. Noting that both theory-driven and data-driven researchers have faced limitations in their ability to make accurate projections, he proposed a dynamic approach as a potential resolution between the two.

Using the real-world example of a credit card company trying to decide on the level at which to settle outstanding customer debt, Professor Weber showed how a dynamic scoring approach can be used to determine the optimal level repayment intensity to maximise the amount collected.

Explaining that this reduced the risks faced by credit card companies, he suggested that his model could be used to inform policy, such as the new international capital accord of Basel II, which stipulates how much capital banks need to hold in reserve to guard against financial and market risks. In turn, he said, implementing such policy to reduce the capital requirements of banks would ultimately benefit the country's economy by putting capital to more productive use.

Applying analytics everywhere

Banks, however, are far from the only institutions to use and benefit from data analytics, as the research break-out sessions showed. Covering diverse topics that ranged from urban planning to social media studies, the researchers shared how they were applying the tools of analytics to practical problems in their individual areas of expertise.

Demonstrating how analytics can be used for marketing measures, Associate Professor Kapil Tuli from SMU's Lee Kong Chian School of Business and Associate Professor Lu Xianghua from Fudan University presented their work on the first day of the workshop.

Investigating the relatively poorly understood effect of marketing on operating costs, Professor Tuli found that increased customer satisfaction reduced the firm's cost of both selling and producing. Focusing instead on maximising the positive effects of marketing, Professor Lu shared her research findings from a study of one of China's leading grocery e-commerce platforms. Analysing how an online campaign giving out free samples influenced the decision to make purchases, she was able to identify which customers should receive the samples.

Representing SMU's latest research partner, the Laboratoire d'Analyse et Modélisation de Systèmes pour l'Aide à la Décision (LAMSADE) at Université Paris Dauphine, Professor Jamal Atif presented his work on using machine learning in smart city applications on the second day of the workshop. Keeping in the vein of new beginnings, his talk was followed by one from Associate Professor Steven Hoi, SIS' newest faculty member. Also a machine learning expert, Professor Hoi's talk showcased his research on online learning as applied to web search, data mining, computational finance, and computer pattern recognition.

Challenges and changing cultures

However, reaping the benefits of data analytics is not without its challenges and requires profound change in culture, according to a panel chaired by SMU Visiting Professor Pulak Ghosh. The panel, which included the Director of the Fujitsu-SMU Urban Computing & Engineering Corp Lab Professor Lau Hoong Chuin, Singapore University of Technology and Design's Professor Costas

Courcoubetis, and Deputy Director of the Living Analytics Research Centre (LARC) and School of Information Systems Associate Dean (Interdisciplinary Research) at SMU Professor Robert Kauffman, highlighted the difficulty in getting access to data for research.

Recalling how the companies he initially approached assumed that he was more interested in consulting for a fee, Professor Ghosh called for researchers to better explain their research goals and to take the time to understand the problems from the data holder's perspective.

"In my experience, it is very hard to solve an empirical analytics problem by sitting in the office. You have to reach out the companies and governments to first understand the problems they are struggling with and then convince them to share the data to solve it," he said.

Apart from access to data, ensuring the security and privacy of data was identified as another big challenge. With increasing international regulation being formulated by agencies such as the United Nations and a local scene being shaped by legislation such as the Personal Data Protection Act, the panelists stressed that researchers should keep up to date and maintain the trust granted to them, especially when it comes to personal information held by the government.

"There has been a heightened awareness for making the university the repository of choice for research data," said Professor Kauffman, the founder of BSCI Workshop and this year's BCSI co-chair. "If you're not mature in the area of data privacy, you will have some catching up to do as an institution. These changes could be costly and face resistance, but they are absolutely essential."

The unique needs of policy analytics

Rounding out the discussions in his closing address, Director of LAMSADE Professor Alexis Tsoukiàs gave a succinct summary of what makes the use of analytics in the realm of policy distinct from business purposes. While recognising that there is a huge demand for evidence to inform policy decisions, he stressed that data alone is insufficient but should be understood in the broader context of societal values. Giving the example of how using an average air pollution reading was useful for setting air quality guidelines but setting a maximum level for each reading was more useful in health settings, he said that different types of data were relevant depending on the purposes they are to be used for.

The use of data analytics in policy also differs from its traditional applications in business because the time horizons are so vastly different, Professor Tsoukiàs said. While businesses evaluate their data each financial year or even on the microsecond timescale for high-frequency trading, policy makers have to consider the long term impact of their decisions, looking at timescales of up to hundreds of years for issues such as nuclear waste.

"If we want to work in public policy, we need to expand our notions of analytics," Professor Tsoukiàs said. "This will be challenging but expanding this border will improve the field of analytics as a whole and feed back into business practices."

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