



"Big Data" Makes Smart Living Come True

Ya-ling Kao *

Market Intelligence & Consulting Institute (MIC), Institute for Information Industry (III), Taiwan

(Received 26 February 2013; Published on line 1 March 2013)

*Corresponding author: ylkao@micmail.iii.org.tw

DOI: [10.5875/ausmt.v3i1.194](https://doi.org/10.5875/ausmt.v3i1.194)

The invention of the personal computer, the Internet and cloud technology has bound computers and people closer together. A dynamic new concept every three to five years, and is embraced by the world while bringing the market new business opportunities. Between 2008 and 2012, the large amount of digital data being produced and used resulted in the term "big data" coming into the spotlight.

The total population of Internet users around the world surpassed the 2 billion mark in 2011. There are now more than 4 billion mobile phone subscribers and over a trillion inter-connected devices. Such an environment has led to digital data growing at unprecedented rates. "Big data" refers to not just the "Volume" of data but also its "Variety" and "Velocity". People are now using different applications and analytical software/hardware to identify clues, trends and business opportunities through different kinds of data.

Digital Tsunami Driving Industry Upgrade

The development and penetration of computer technology together with the increasing prevalence of social networking platforms, mobile phones, surveillance cameras, production lines and sensors means data is constantly being generated by an ever-increasing array of channels. Existing technology can no longer keep up with the sheer volume of data. According to the market

research firm IDC, global data is growing by 50% every year. By 2020, around 35 zettabytes of data will be generated annually.

The emergence of big data means a revolution in the ICT industry is inevitable. National governments around the world are all launching programs targeted at different types of data in order to take control of the relevant technologies and market opportunities. The purpose of these projects is to improve the standard of industrial technology, realize industrial transformation and develop new business models. Examples include the U.S. and Singapore.

On March 29, 2012 the U.S. government announced the "Big Data Research and Development Initiative". Six federal government departments and agencies will invest over US\$200 million on research into the acquisition, storage, analysis, sharing and visualization of big data. The effort will be headed by the Office of Science and Technology Policy (OTSP).

Singapore has been the most proactive nation in Asia when it comes to promoting the development of big data technology and industry. The Infocomm Development Authority of Singapore (IDA) oversees big data developments and is actively cultivating experts in data analysis and application. Top international big data vendors have also been encouraged to set up factories or research labs in Singapore, including Oracle, Revolution Analytics and others.

Digital Tsunami Boosting Business Analysis

In its 2011 report "Big Data: The next frontier for innovation, competition and productivity," the McKinsey Global Institute explicitly stated that big data will become the cornerstone of competitiveness in the future, and will be a pillar of the next wave of productivity improvements, innovations and consumer value creation.

In April, 2012, Splunk, a leading big data enterprise, reached a market value of US\$3.28 billion on the day of its IPO, and re-ignited interest in big data analytics. Undeniably, big data is an emerging technological field in western countries. Much depends on the ability of businesses to fully master and apply this promising technology.

Even though it is widely believed that big data could bring new innovations and breakthroughs for industries and businesses, statistics from Forrester Research show that businesses are currently only effectively analyzing and utilizing 5% of the available data. The biggest problem with analyzing the other 95% is the excessive cost. Gartner, another well-known research firm, also noted that in 2015, 85% of the Fortune 500 companies will remain unable to effectively leverage the massive amounts of data generated around the world to their business advantage. In other words, businesses that are better at using their data will enjoy a greater competitive advantage.



Figure 1. Business Analytics Categories (Source: Harvard Business Reviews, "Davenport: Competing on Analytics", compiled by the MIC, November 2011)

Ya-ling Kao's research areas include industry technology screening and evaluation, blueprint planning of industrial technology development, and policy planning of traditional industries. Ms. Kao has participated in the project "Research of 2015 Taiwan Industry Development and Technology Integration" and "2020 Taiwan Industry and Advanced Technology Research Project" that commissioned by the Ministry of Economic Affairs, responsible for strategy analysis of traditional industries and technology analysis of aging disease diagnosis and treatment. Prior of MIC, Ms. Kao has worked for a biotech firm and a food products corporation, responsible for product marketing. Ms. Kao holds a Master's degree in management from Fu Jen Catholic University.

Digital Tsunami Creating a Better Life

In the age of big data, every step you make, every place you visit, every thing you see and every product you purchase is being "collected and recorded" without your knowledge. The proliferation of sensors and data flows is making life not only more convenient but also "smarter" as well. Unlike ordinary corporate machines and factories, data analysis and application do not suffer from depreciation. In fact, the effectiveness of the data grows as it is used more and more.

In the energy and power industries, big data analysis helps to cut costs and improve efficiency. For example, probes used for oil exploration can be equipped with sensors and real-time data transmission and analysis capabilities. Experts on the surface can then quickly determine the shape of the underground oil well and choose the optimum drilling site, thus cutting drilling time and costs. Retailers can also track people's movements in supermarkets, to learn about their shopping behavior and adjust the display shelves accordingly. The peak hours for certain products can also be predicted and the shelves re-arranged to maximize profits.

Big data can be used for quality of life improvements. In neonatal and intensive care units at hospitals, monitoring and analyzing a patient's physiological data in order to identify early signs of infection or changes in the patient's condition will help improve patient survival rates. In the future, it may even be possible to use road cameras or car sensors to analyze traffic flow and reroute drivers, thus relieving traffic congestion and helping drivers finding parking spaces.

In a future of ubiquitous big data, businesses must become even better at tracking customers' passive (e.g. age, gender) and active (e.g. shopping history) information. The data can then be mined in order to predict the customer's preferences, allowing the company to provide the best promotions at the best times through the best channels, and offer the services that the customers truly need. Those that know how to analyze the data and extract business insights will have the opportunity to achieve something that was not—and could not be—done in the past. They will have a more comprehensive understanding of all the facets in an issue, make better predictions of future risks, master consumer preferences and requirements, and discover new business opportunities.

