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# How big data analytics drives competitive advantage

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*This report underwritten by: Oversight Systems*

a cloud report

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In these lean and mean times, enterprises are turning to third-party specialists in the big data analytics industry to help them find the proverbial needle in the data haystack. After all, few companies have the time or the analytics expertise to apply statistics and complex data modeling to regular or even daily business decisions and operations. In addition, people who really know what they are doing when it comes to data analytics are in short supply. A company can try to hire as many data scientists as possible, but chances are that Facebook or Google got them first. Another option is plugging in outside expertise as it's needed, but that's a costly route to travel.

Now, however, an ecosystem of big data analytics companies is emerging to fill this need. This research paper will examine the evolving big data analytics market and ecosystem and the avenues available to those businesses seeking insight gathered from big data analysis, or what is often called "Insight as a Service."

Key points examined in this report include:

- Big data as a differentiator to traditional enterprise data warehouses (EDW)
- Insight as the key to unlocking the power of the data and information within an enterprise
- How an enterprise can combat the shortage of big data analytic skills
- The value of actionable analytics
- How emerging big data analytics stores or marketplaces empower business decision makers to make better decisions more quickly
- How Insight as a Service enables end users to leverage the cloud for insight-driven analyses while improving the time-to-sight model

## Another look at big data

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An enterprise creates innovation and value — and derives competitive advantage — by understanding its customers and the market in which it operates, including its expenses and the supply chain. But to be innovative, an enterprise needs decision-support systems that can provide reliable insight and recommendations. Ultimately, data and information form the basis for these insights, so having as much data available as possible can result in the most insightful and considered innovative decisions.

Obtaining reliable insights can be expensive, with costs coming from various sources:

- Cost of acquiring relevant data sets
- Cost of sorting through the data sets
- Testing and piloting algorithms
- Finding and hiring relevant skills
- Investing in the necessary infrastructure

The primary goal is getting from data to innovation quickly, effectively, and cost-efficiently. That's where big data comes into play.

Big data is a set of technologies that creates strategic organizational value by contextualizing complete internal and external data sets. Often big data is described using three variables: volume, variety, and velocity, the three Vs. However, because these variables are highly relative, they do not provide a definitive measure of big volume, big variety, or big velocity.

Another way of looking at big data is to see it as a differentiator to traditional enterprise data warehouses (EDW). In traditional EDW, the data that is used has been acquired by the enterprise itself. It might be regulatory compliance data or data created from day-to-day data processing. With the commoditization of data-storage infrastructure, data storage (and more of it) is now more economical. However, big data extends the concept of data warehouses beyond the four walls of the enterprise and incorporates external data sets that help enrich the internal data and provide improved granularity to the analysis. With big data analytics, we are now able to examine details and create insights that ultimately optimize the operations of an enterprise in real time.

Commoditization is also occurring with the server and networking infrastructure. Combining the improvements in CPU technologies (such as multicore and multisoocket designs) with the availability and affordability of detailed analysis of the operations of an enterprise makes big data an economically viable exercise for enterprises, large or small.

## Big data: “If you’re not doing it, your competitors are”

Although some players in the business and IT community have questioned the necessity of big data, the move to engage with big data is not an if but a when. We extend that concept to the trademarked saying, “If you’re not doing it, your competitors are.”

Using the Neuralytx Information to Innovation model as a framework, when an enterprise moves from the information and infrastructure foundation by gaining insight into its data, the result is truly the opportunity to innovate. The result of this innovation is usually dramatic: new revenue streams, new products.

**Figure 1. Neuralytx “Information to Innovation” model**



*Source: Neuralytx*

The key to unlocking the power of the data and information within an enterprise is insight. Insight is gained and generated through the integration of internal and external data sets, as well as by analyzing the complete data set to provide an output that can be immediately acted on. Combining this actionable output with intuition and experience can fuel better tactical and operational decisions across an entire enterprise.

Enterprises in many industries are already enjoying innovation and value. Among the top verticals that have seen meaningful innovation as a result of big data are retail, telecommunications, financial services, health care, and government. In each of these verticals, the degree of analysis has allowed enterprises to create improvements to the loyalty of customers, the interaction between themselves and customers, and the experiences for individual customers.

## Insight as a Service

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Insight comes from analysis. Good analysis reduces the time required to gain value from data. Communicated properly, this analysis yields better decisions. However, not all enterprises have the needed people, process, or technologies in-house so that they can gain insight. This is where Insight as a Service flourishes. It enables end users to leverage the cloud so that they can subscribe to a set of insight-driven analyses targeted at their enterprise needs, all the while improving the time-to-insight model.

All enterprises claim differentiation in products or methodologies, but the underlying business processes are likely to require repeatable analyses that can be leveraged across multiple verticals or industries. Big data technologies enable optimization of revenue and cost structures by examining historical and predictive patterns within the enterprise. Most enterprises have not done this yet or even considered it because of the necessary skills and perceived related expenses.

This is where Insight as a Service shines. Studies have shown that regardless of industry, many cost-efficiency and revenue-optimization processes are correlated across various verticals, so the practices of one industry can be adapted to another. Thus, by leveraging a combination of the affordability and accessibility of the service provider model and augmenting it with the economies of scale of the internet, enterprises are now able to integrate cost and revenue optimization directly into their CRM, expense tracking, and even their websites in a seamless and economically viable way.

Consider another argument for using Insight as a Service. For most enterprises, the outcomes and recommendations from analyses on revenue and cost models are the critical concerns. They are not as concerned about the “how” of the revenue and cost modeling and optimization. This is somewhat analogous to the ownership and maintenance of a car. Modern vehicles do not need as many tune-ups because the onboard computers are constantly tuning the car to allow it to operate at its maximum efficiency. Most car owners are far less concerned about understanding how the car can tune itself than about the fact that it does.

Ultimately, data collected could be used to design a better car; but until then, maximizing efficiency on a constant basis helps to improve the longevity of the vehicle, minimize fuel usage, and maximize customer experience, all of which are equally important when considered in terms of customer retention.

## Combating the big data analytic skills shortage

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The traditional relational database management system (RDBMS) is about ordering collected data into a structured set of prescribed fields and records. But much of the data used in big data analytics is likely to be unstructured. DBAs spend a lot of time querying or searching for data in a predictable prescriptive manner. Big data, on the other hand, is often about machine learning or pattern matching; time — as well as statistical or analytical skills — is necessary for authoring algorithms and then programming the systems and processes. So the skills of existing DBAs are not necessarily transferable.

A new type of human resource is required: the data scientist. The data scientist combines four personae into one role: businessperson, people person, statistical person, and IT person.

Finding someone with all four of these attributes is very difficult. So while the technology-infrastructure costs of big data have gone down dramatically, the new barrier to entry for an enterprise moving from data management to information and knowledge discovery has increased in other ways, including finding and hiring a data scientist.

Among other skills, a data scientist must:

- Understand the operations, strategic direction, and culture of the enterprise
- Ask the right hypothetical questions
- Look to optimize the benefits of the analysis across all stakeholders in an enterprise
- Evolve from exploratory and discovery-oriented analysis to actionable analysis

But these attributes are not easy to find, nor are they inexpensive. Enterprises still realize that there are ways in which the operations optimization is necessary, but they may not have either the skills or the time to find it.

Instead of looking for a data scientist, these enterprises should leverage the availability of Insight as a Service. Why? Insight as a Service can crunch the data that allows the enterprise to take action on the recommendations that are, themselves, the output by the analysis.

Although this type of analysis does not generate the kind of fanfare the discovery of new revenue opportunities or understanding where to open a new office would, it does allow enterprises to optimize operations and improve profitability. Both are valuable. The former is strategic, while the latter is tactical.

## Actionable analysis

Actionable analysis is particularly important, because it is the actionable nature of the analysis that makes it insightful and valuable. In the past, much of the analytic work focused on data exploration and discovery. Someone else interpreted the outcome. However, this abstraction introduces inefficiencies and often fails to optimize operations properly. Big data technologies must go beyond reporting the exploratory and discovery outcomes so that they can take into consideration actionable recommendations and outcomes.

The 2012 presidential campaign for President Barack Obama presented a good example of actionable analysis. While Obama's opponents were busy exploring the data for patterns, his analytics team leveraged the technology to generate actionable outcomes that included recommending supporters to reach out to their friends via social media to increase exposure.

The campaign did not rely on individual judgment or guesswork regarding which voter to target; instead, as campaign workers started their shift, they were armed with an understanding of each specific targeted voter. Thus, they had the necessary knowledge to judge which voters they should encourage to get out and vote, which they needed to discuss specific issues with, and which particular voters were not worth spending time with, given that they were staunch supporters of the opposition.

Arguably, the focus of the "Obama for America" campaign could have been attributed to its strategic (insight-driven) competitive advantage. However, with insight gained from the data, the campaign workers were able to optimize their time and effort. The insights helped mobilize a workforce for which the question "what if every worker could make a better decision every day" was answered.

Operational optimization or excellence can be achieved by examining revenue generation and cost-efficiency. On the revenue side, understanding what to sell and when to sell it are equally important. For many enterprises, the timing is left to individual sales reps (or districts), which predominantly use personal experience and intuition to decide when to sell a product.

While the human aspect is critical in any person-to-person engagements, using heuristics and demographic information from historical sales and predictive sales patterns can help the sales rep to optimize opportunities. Most sales organizations know this but do not execute any formal technology-driven insight program, typically attributing this to lack of time or skills. At the end of the day, through the use of actionable analysis, sales reps and the enterprise can at least get a fair share of the wallet, if not an optimized share of the wallet.

At the same time, cost-efficiency is equally critical to optimizing profits for an enterprise. The basic principles of analysis used by individuals shopping for the best prices can be extended to an enterprise's purchasing to seek the best prices for raw materials and supplies. Using technology-driven insights to examine proposals from competing vendors who may offer similar products that are bundled or packaged



differently could result in significant savings to an enterprise. The enterprise could also leverage analytics to identify requisitions that may be extraordinary in nature, perhaps resulting from human error.

Most enterprises understand that this is the most efficient and optimal approach, but many are not comfortable — or capable — of investing in both the necessary infrastructure and personnel needed to engage in data analysis.

## Conclusions

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Technology is an enabler but not the ultimate means to an end. A balance of people, processes, and technologies are all necessary if a competitive advantage is to be achieved. While the benefits of analytics are now more affordable and accessible than ever, leveraging this technology requires highly skilled people who can put the processes in place to gain insight. This necessity means that the application of technology (in this context, analyses) by the relevant and qualified people can be a barrier to entry for big data.

However, reducing the time to insight and improving the time to innovation will yield an optimized competitive advantage. End users wanting to achieve these two goals can use Insight as a Service to leverage the availability of the internet, thus helping themselves find a solution to their enterprise's analytic needs.

Properly applied, Insight as a Service will optimize the outcome of an enterprise's analytics effort and lead to improved revenue and profit.

## About Benjamin S. Woo

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Benjamin S. Woo is the managing director of New York–based Neuralytix, a bespoke tech strategy consulting firm. During the course of his career, Woo has advised clients whose collective market capitalization is over \$1 trillion. Prior to founding Neuralytix, Woo was the Program VP of IDC’s Worldwide Storage Systems Research, where he led a team of analysts responsible for advising clients on the evolution and trends related to data storage systems; the impact storage systems have on adjacent technologies including servers, software, cloud, and virtualization; and best practices in go-to-market strategies related to the storage industry. In addition to authoring thoughtful and provocative insight on the storage industry, Woo is a frequently sought speaker at IDC industry and customer events worldwide and is frequently quoted in the leading business and technology press. Additionally, he advised Wall Street clients and other stakeholders interested in the storage industry. Woo also initiated big data research at IDC. He has keynoted big data conferences worldwide. In this role, Woo advised leading and emerging vendors across the technology spectrum on how they can exploit the big data opportunity. His advice includes messaging, product strategy, and partnering.

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