

Big Data Analytics and Its Transformational Effect on Global Business

“In their capacity as a tool, computers will be but a ripple on the surface of our culture. In their capacity as intellectual challenge, they are without precedent in the cultural history of mankind.”¹ Big data analytics is considered the technology that stands the greatest chance of delivering transformational value according to ISACA's new research on digital transformation,² decisively topping other alternatives such as artificial intelligence (AI), machine learning, public cloud, the Internet of Things (IoT) and blockchain. The research also shows big data analytics is the leading technology for which organizations have conducted pilot tests and research and development (R&D).

Thus, big data is not just another technology. Beyond digital computing and internetworking, big data is a third phenomenon that is set to alter human and corporate evolution.

Big data analytics is all about huge data entering and flooding organizations globally. Big data is data that exceeds the processing capacity of traditional database systems. The word “big” in big data should not be confused with sheer size. It is a term given to large data sets containing a variety of data types. Big data is operating within the paradigm of the three Vs:³

- **Volume**—The size of the data
- **Velocity**—The speed of new incoming data
- **Variety**—The variation of data formats and types

With the advent of big data, there arises the necessity of processing and analyzing the data—data analytics.

Data Analytics may be defined as the science of examining raw and unprocessed data with the intention of drawing conclusions from the information thus derived. It involves a series of processes and techniques designed to take the initial data

*and, having sanitized the data, removing any irregular or distorting elements and transforming it into a form appropriate for analysis, to facilitate decision making.*⁴

Compelling Reasons to Implement Predictive Analytics

The benefits of predictive analytics include:

- **Optimum usage of data**—Business competition is fierce and organizations worldwide are taking all steps possible to survive and increase their revenue while minimizing costs. Predictive analytics is a business enabler and it helps the organization to process the wealth of data in its possession and convert it into valuable business insights which, in turn, will lead to competitive advantage in the market.
- **Increasing customer satisfaction**—Customers increasingly expect high-quality products at low prices. Therefore, organizations try to arrive at a balance between the right quality and affordability, at the right time to the right buyers through the right channel. This knowledge input for the organization can be given only by predictive analytics, not only to enable the organization to better understand its customers, but also to increase positive customer experiences and, eventually, increase its customer base. Predictive analytics can also help focus on identifying significant segments within the customer base and making accurate predictions about their future behaviors.⁵
- **Clarity in decision making**—Studies have shown that organizations that use effective data analysis as a basis for decision-making are

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more productive than those that do not.^{6, 7} A commercial from IBM makes the point that one would not cross the road if all one had was a five-minute-old snapshot of traffic at the location.⁸ Predictive analytics enables greater accuracy in business decisions and predicting future events, as well as in promoting the automation of certain business decisions.

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- **Savings on cost and increased return on investments**—Respondents to ISACA's digital transformation survey identified anticipated cost savings as the top motivation for organizations to implement an emerging technology. Big data analytics is the clear winner on this point. As predictive analytics clearly indicates what the customer preferences are, an organization can model itself based on the market requirements and, thus, all its expenses and investments will be more fruitful and cost effective.

- **Big data analytics and innovation**—Big data analytics can reveal insights previously hidden by data too costly to process, such as peer influence among customers, revealed by analyzing shoppers' transactions and social and geographical data.⁹ Thus, if the new insights are approached with curiosity, they can lead to business innovation.



The publication *Big Data, Big Innovation* proposes an excellent model:

Generating innovation from big data is straightforward, if not necessarily easy. It starts with an operating model that:

- *Encourages and rewards a culture of creativity, curiosity and ownership*
- *Translates the innovation cycle into a practical process*
- *Prioritizes effort and investment based on value creation, not activity*

Get those right and while not guaranteed, innovation and invention at least becomes achievable.¹⁰

Prerequisites for a Successful Predictive Analytics Implementation

Predictive analytics can solve many business problems effectively, but the most important step is identifying specific business goals. This enables an organization to choose appropriate analytical tools to achieve those goals.

In addition, the organization should know what type of data is required and how the data should be put to use in the analytical model.

Though big data analytics has promising and positive consequences, its implementation is a process and a life cycle.

The book *Understanding the Predictive Analytics Lifecycle* shows the entire cycle for big data to turn into valuable and actionable information, which is:¹¹

- Problem identification and definition

- Design and build
- Data acquisition
- Exploration and reporting
- Analysis
- Actionable analytics
- Feedback

Enterprise IT governance and big data analytics can best complement each other through:

- **Strategic alignment**—Identify the business priorities and define the business problems to be solved within a specified time frame, with measurable and achievable outcomes. The tools and objectives of predictive analysis should be aligned to those of strategic business objectives.
- **Benefits realization**—Management should be supportive of fact-based decision making. Identify champions for consumption of data analytics and ensure that benefits realization happens from various reports and statistical models.
- **Performance evaluation**—Ensure business effectively uses analytics to arrive at better business decisions. Ensure that investment is made in the right type of analytics and in the right type of people, process and technology.
- **Risk management**—Although investment in big data analytics technology is not very expensive, an appropriate risk management mechanism should be present to manage and optimize risk and opportunities.

Big Data and Data Science

The emergence of big data analytics has brought the new field of data science and the role of data scientist into the limelight. The consulting firm McKinsey & Company estimates that:

...There will be a shortage of talent necessary for organizations to take advantage of big data. By 2018, the United States alone could face a shortage of 140,000 to 190,000 people with deep analytical skills as well as 1.5 million managers and analysts with the know-how to use the analysis of big data to make effective decisions.¹²

The Future of Data Analysis

There is no doubt that more and more data will be generated considering the exponential growth of handheld and Internet-connected devices. Enterprises worldwide need a data analysis mechanism to develop criteria for rational decision-making, not only for prospering, but also for survival.

The future of data analysis can involve great progress, the overcoming of real difficulties and the provision of a great service to all fields of science and technology. Will it? That remains to us, to our willingness to take up the rocky road of real problems in preference to the smooth road of unreal assumptions, arbitrary criteria and abstract results without real attachments. Who is for the challenge?¹³

Author's Note

The views expressed in this article are the author's views and do not represent those of the organization or the professional bodies with which he is associated.

Endnotes

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