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# Data Science Predicts a Bright Future

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**Big Data insights provide a key analytical step to recognizing customer trends and transforming businesses. >>**

**T**oday, our entire life is digital and intricately connected to a digital economy. For instance, we conduct online transactions from our mobile phones or find a ride-share from our smart watches. Even our cars tell us where we can find a filling station before the fuel runs out.

How is it that we have access to all of this information? It all starts with connectivity, followed by data collection and analysis. For businesses, the bottom line depends on monetization that uses the science of Big Data analytics.

## Connectivity First

More than anything else, our world has been shaped by connectivity that enhances our lives. Thanks to Wi-Fi connections, your smart thermostat sets the temperature in your house to ensure energy efficiency when you are away, and the settings can be adjusted on a mobile App before you return home. Better yet, these intelligent products now learn your habits so that the lights will turn on when you enter the house without having to access an App.

A similar kind of data collection ensures that online advertisements and marketing efforts for your business only appear to people in your target market. Automation based on predictive analytics will remind your clients when they need to make a follow-up appointment, when they are running low on a particular product, or when it's time for more services. In other words, gathering data — when done right — makes people's lives easier while improving sales and customer loyalty.

## Improved Forecasts

The benchmark for the effective use of data is to find accurate and actionable context and correlation. To do so is to gain insight into customer buying trends, marketing strategies that work and don't work, or approaches that better engage target audiences. All these advantages demonstrate why data science has an incredibly lucrative future.

Across the technology sector, companies are searching for technical staff with the talent to develop complex algorithms able to make accurate

assessments. Employers need data scientists who understand how to mine Big Data in order to determine the precise recommendations that need be offered for businesses and individuals alike.

From improving recommendation algorithms for services such as Netflix and Amazon to reducing website bounces and increasing flow based on analysis of website traffic, data science is a burgeoning field. In fact, technical institutions around the world are paying more attention to Big Data every day, with academic programs in the U.K. at Lancaster University, Imperial College London, the University of Kent, and the University of Westminster, as well as in the U.S. at the University of California Berkeley, Columbia University, Georgia Institute of Technology, and Carnegie Mellon University. With the world's top educational institutions backing data science and turning out data experts, the career field for Big Data looks promising well into the next decade.

## Big Vision for Data Insights

Until recently, people were talking about what the analysis of large data sets could do for businesses; however, the technology really had not reached the point where businesses could do anything but analyze historical data. The cost of processing, storage, and network transport was a big obstacle, as was the collection of data directly from customers.

Today, it is routine for businesses and their customers to store terabytes, petabytes, and exabytes of data across multiple devices all the time. The explosion in the number of devices connected to the Internet of Things will add still more orders of magnitude of information requiring pre- and post-processing to monetize the insights generated from data analytics.

Historically, Big Data was considered a solution for improving customer satisfaction. In contrast, the



latest trends point to Big Data as a key tool for opening doors into entirely new solution markets. If you are not using fast data analytics and Big Data technology to stay up-to-date with your customers' needs or are not looking for other customer-centric approaches to improve customer service, then you're already behind the curve.

As this new market for solutions-driven technology and strategy continues to grow, we expect to see the majority of businesses increase their investment in analytics, data warehousing, and everything that affects data movement and insights within the next few years.

## Linking Non-relational Databases to the Digital Economy

Some of the biggest challenges facing Big Data involve real-time methods for moving information. With the rise of streaming data, businesses are now obligated to implement Big Data strategies and solutions to meet the demands of an up-to-the-second market environment.

Older relational databases required structured, pre-formatted data to be stored in rows and columns which, in turn, made access to different data types effectively impossible. With unstructured, non-relational databases, data can be stored in its raw state in flat architectures until needed. Access to these 'data lakes' is easier, and data analysis is significantly faster compared with previous data management techniques.

As the vision of Big Data continues to create new marketplaces, keep an eye on technologies that provide mechanisms for storage and retrieval, such as NoSQL,

Apache Hadoop, Apache Spark, and other tools, that are focused on improving the ease of access and usability of large data warehouses.

## Real-world Applications

Big Data is indeed big news. It's what our governments use for surveillance; it's how social media platforms target us with advertising campaigns; and it's the next big thing for increasing your company's sales.

Depending on who's talking, Big Data is either evil or a wonderful guiding beacon for marketing and sales — or both. Big Data offers profitable uses and unparalleled transparency on a global scale.

To take best advantage of the opportunities unlocked by Big Data, you must concentrate on measurement and analysis. A logical place to begin is by looking into the details of how Big Data moves strategies forward.

### • Data-driven Decision Making

Essentially, in today's business world, the guesswork has been removed regarding who your audience is, where they hang out online, and what ads they will respond to. Much of this information is freely available for building a data-driven marketing strategy. Direct marketing efforts can be organized using automated research and trends analysis mined from your customers' demographics and locations.

Do a quick Google search on the best days and times to post to Facebook, Twitter, or Instagram, and see how much information you get. That information was gleaned from Big Data sets of user frequency statistics collected at various times of the



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day on different days of the week. The data by itself may not appear very interesting but, with a small amount of analysis, you find that Friday is the best day of the week to post to Facebook, and weekend tweets on Twitter get 17 percent more engagement than tweets made during the week.

### • Analytics Add Strategic Value

Through site analytics, opt-in surveys, and other transparent data collection means, Big Data can optimize your marketing and production strategies. Up-to-date information allows you to make adjustments that improve the quality of engagement with your online audience by recommending better targets for products and services. The best outcomes are increased incremental revenue, as well as your customers' confidence that they are seeing media that best suits their desires and preferences.

Access to Big Data alone won't do anything for your business unless the right technical talent is on board to implement analytical processes. As the tools for predictive analysis and data visualization improve, it is reasonable to expect the discovery of business values that allow you to forecast consumer trends with improved precision. Using a data-driven marketing and production strategy, you will be guided by actionable insights toward the goal of increasing the profitability of your business. ▲