What is Big Data Analytics and Why is it Important?

There is no definitive definition for big data analytics, it is more of a concept. The concept of big data analytics has been around for years. Most modern and successful companies know how to use data that enters their business can be used to their advantage. These organizations can obtain significant value once you apply analytics to these chunks of data. This idea of using data to discover trends and find insights was even utilized many years ago. They used countless spreadsheets instead of the modern computer to discover and take advantage of these trends. The modern way of reaping the benefits of big data is more efficient than ever. “The ability to work faster – and stay agile – gives organizations a competitive edge they didn’t have before” - SAS Insights.

Big data analytics is important for three main reasons: The introduction of new products and services, cost reduction and, as mentioned before, faster and improved decision making.

Companies now have the necessary tools to monitor customer habits and needs using big data analytics. These organizations can find out what satisfies the customer so they can give them what they want. This is clearly a huge benefit to the customer as well as the business. Research from Tom Davenport “points out that with big data analytics, more companies are creating new products to meet customers’ needs”. Tom Davenport is the IIA Director of *Big Data in Big Companies*, which is his report on big data analytics. Davenport interviewed more than 50 companies to help better understand how they are using big data.

Cost reduction is possible with big data analytics as efficiency is increased. Typical processes needed for production such as testing and quality assurance can greatly affect industries like nanotechnologies and biopharmaceuticals. By using big data analytics, companies can make calculated and improved decisions as they discover the many issues they may face with their product. It also goes without saying that this saves time and energy.

The speed at which an important decision can be made using big data analytics is a huge reason why large companies can be up to date and successful in their respective industries. They are able to make game changing decisions to not only increase production, but improve the quality of production. “This gives them a competitive edge and provides a more agile framework for decision making and risk handling” - New Generation Application.

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Sources:

-SAS - <https://www.sas.com/en_ie/insights/analytics/big-data-analytics.html>

-*Big Data in Big Companies –* Tom Davenport

-New Generation Application - <https://www.newgenapps.com/blog/what-is-big-data-analytics-benefits-challenges/>

How Companies Collect Big Data:

“Collecting customer data has become a major priority for businesses” - IT Chronicles. It is possible for companies to establish and take advantage of trends using data and the capturing and use of this data has become increasingly efficient as the technology for it has developed and improved.

When ever you enter or use a website online, you are usually asked to consent to something called cookies. Well, this is one way in which companies collect your data. Cookies track activity on their respective website. Think of your cookie as an ID card. Each time you enter a website, you add to your “Cookie ID card”. Companies can use the information from these cookies to learn what sites customers most frequently visit and analyse this for their benefit. Businesses can also use this method to make their websites more practical and quick to purchase products from. They do this by recording your personal information so you don’t have to enter it multiple times each time you buy. Personalized ads can also be produced using the data in these cookies, e.g. if you are consistently searching for a new pair of running shoes, your “cookie” will record this data by analysing the sites you have visited and display ads for Nike, Adidas, Asics, etc.

Most companies will directly ask their customers for their data. This happens when ever you’re asked for your name, email address, home address or other information about yourself. This usually takes place after you purchase a product or subscribe to a service when you need to fill a form out. The company uses this information to send you ads and can use your name to personalize them. As mentioned before, companies can also store this information in cookies to use in the future.

Big data analytics also comes in the form of customer reviews. Many companies will insist on customers writing a review of the product or service the company had provided. Companies can use this information to improve the quality of their product or service.

One of the easiest ways in which companies can acquire your data is by simply searching through their own records. A companies customer interactions and transactions are filled with useful data which can be analysed to be used in to make business decisions. This can also be done using social media. “If customers use, say, their Facebook account to log into a third-party application that a company may provide” - IT Chronicles. Social media is open to anyone online so any data you post or share can be accessed by companies. This method is simple and effective for large companies.

Big data analytics has become so popular amongst many industries that there have been data companies set up to find, purchase and sell on customer data to other companies. An example of one of these companies is Acxiom. Acxiom is a company with one purpose: “Collecting, analysing and selling customer and business data for targeted advertising campaigns”. Another company who operates similarly is Oracle. Both Acxiom and Oracle acquire their desired data from smaller data companies or even government cesuses. The following is quoted from Oracle’s ‘AddThis Audiences: A Buyer’s Guide’: “*Collection Methodology: AddThis aggregates the online actions taken by unique visitors on every page across their vast publisher network. Our proprietary blend of observed (e.g., arriving on site from search, content on page, reading an article, scrolling, watching a video) and declared (e.g., click, like, share, follow, print) data yields a holistic picture of the true web habits, interests, and preferences users reveal when browsing online. We deliver unmatched audience insight and unparalleled audience segment quality at scale.”*

Acxiom has a similar ‘Buyer’s Guide’ which is full of information such as data types, and other data companies.

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Sources:

-IT Chronicles - <https://itchronicles.com/big-data/how-do-big-companies-collect-customer-data/>

-Indiana University - <https://kb.iu.edu/d/agwm>

-Acxiom - <https://www.acxiom.com/>

-Oracle - <https://www.oracle.com/index.html>

The Future for Big Data:

Big data is the mass amount of data sets that are collected and gathered by companies, technology and a large amount of other sources .Big data is the future of modern businesses and marketing and will play a huge role in companies marketing plans using this data to understand upcoming trends and make a profit. A large quantity of this data is unused and unprocessed, so this area has to be developed in the future.

“The big data analytics market is set to reach $103 billion by 2023” (Petrov, 2019). This is an estimation for the future value of big data, this value will only grow as big data becomes more important for companies marketing and research. With the creation of new technology and the growth and popularity of them, like smart watches or smart home devices, more data will be generated and data will be used effectively to understand trends and consumers wants, meaning this data will become more valuable as technology increases to grow.

Due to the growth of technology and the internet big data is becoming more and more relevant and important. Big data has countless ways it can be used, with technology developing more effective and updated uses are possible. With the development of cloud computing everything is fast moving and time effective. The serverless architecture of cloud computing ensures it is possible to manage data remotely. So, for big data to move forward it is necessary to transfer storage of big data from traditional hard drives, which are unreliable and often fail and it is difficult to scale them up, to cloud storage services. These cloud services provide nearly unlimited storage with high fault tolerance. So, they are the next step as big data progresses. Unfortunately, in order for this to happen it will be required for the price of hosting this massive amount of big data on the cloud will have to come down in order for it to be utilised.

“Internet users generate about 2.5 quintillion bytes of data each day” and “In 2012, only 0.5% of all data was analysed” (Petrov, 2019). This shows us we will be generating astronomical amounts of data that in the past was not utilised or processed at all. A short-term solution to be able to process large amounts of data would be, increase the speed of the CPU, storage and network. So, the for the future of big data they will be required to replace traditional algorithms that are not able to pre-process the massive amounts of data. “Highly efficient and scalable data reduction algorithms are required for removing the potentially irrelevant, redundant, noisy and misleading data, and this is one of the most important tasks in Big Data research” (Zhai, Ong, and Tsang 2014).

Data is large and difficult for computers to manage efficiently, so in order to optimise big data management it requires an algorithm that automatically describes big data and relevant processes and generates meta data. Due to the variability of big data it is extremely difficult to generate accurate meta data and also traditional database management systems struggle with the scalability of unstructured big data. So once databases are able to handle big data and generate the large volume of meta data it will be easier for computers to efficiently manage, analyse and visualize big data.

As big data continues to grow and develop, “97.2% of organizations are investing in big data and AI” (Petrov, 2019). As newer technology integrates with the market companies will require people to fill specialized roles as the demand for Big data analytics. This will become a huge part of big data, getting people who are skilled and versed in utilising and processing the data in effective ways that will result in profits for the company.

The future of big data analytics is not set in stone, but it is evident that it is one of the major upcoming thriving industries that will be a behemoth in years to come. In order for this to happen it needs to be prioritised developed and utilised by industries so that everyone will push to improve the infrastructure around it in order to utilise all of the information to the fullest. “Every company has big data in its future and every company will eventually be in the data business.” – By Thomas H. Davenport.

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