

# Exploring the use and effects of Big Data in Businesses

Topic: The Data Driven Economy

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01/10/2022

F27PX - Praxis - 2022-2023

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## Introduction

Did you know a personal computer usually contains 500 gigabytes of storage, 163 zettabytes (later mentioned as the expected amount of data to be created by 2025) equals 163,000,000,000,000 gigabytes or 326 trillion personal computers. This report attempts to understand the development of big data, its impact on individual businesses and its possible positive and negative outcomes. Cambridge Dictionary (2022) defines data as “information, especially facts or numbers, collected to be examined and considered and used to help decision-making, or information in an electronic form that can be stored and used by a computer”, Big data is data collected in immense volume, at a great velocity and in substantial variety (*What is Big Data?*, 2022). The IDC predicts the world to produce 163 zettabytes of data ( $1.63 \times 10^{14}$  gigabytes) by 2025 (Zgurovsky and Zaychenko 2020, p. xiv), by 2003 humans had produced only 5 exabytes of data ( $5 \times 10^9$  gigabytes) (Sagiroglu and Sinanc, 2013). All this digital information amounts to many details of one's life, specific groups of people, countries, states, genders, races, everyone's lives. When such large amounts of data are collected, it can be analyzed, individuals or groups can be understood, patterns in their behaviors, with such data, its owners can start to predict what you want, what you will do, how, when and where. The data gives deep insight on people, companies with this data can also understand exactly how to tell you what to do, what to buy, where to go, who to vote on? The data is undoubtedly useful in many directions.

### Facebook. A social network or marketing company?

A lot has been talked about Facebook throughout the years, from Facebook pages to senate hearings, to every news source. Now Meta, the company operates social networking sites Facebook, Instagram, WhatsApp and Messenger. Facebook alone is the biggest social networking site in the world, with 2.9 billion monthly active users (Statista, 2022). Meta is the 10<sup>th</sup> most valuable company in the world, with a \$449 billion market cap (Johston, M. 2022). According to Statista (2022) Meta's biggest source of income comes from digital advertising, in 2020 near 84.2 billion U.S dollars came from advertising revenue, out of the \$85.9 billion in total revenue made by the company in that year.

Facebook's data collection process can be very complicated and the timeline from data input to targeting used in ads is massive and complex. The data starts by being collected in 'Actions and Behaviors' (dynamic and continuous) (interactions, visited pages, content uploaded), 'Profile Information' (static), 'Mobile devices' (device ID, location, message content, etc.) and 'Laptop or Desktop computers', as well as through Cookies and Pixels (Andreea M. Belu, 2017). The data collected is stored in an 'Action and content store' and a 'Profile store', the data goes through a series of algorithmic processes so that finally the data can be used for targeting, other businesses choose the audience they wish to push their ads to, and Facebook with all its data does so, very accurately (Belu, A.M. 2017). Now does Facebook sell your information, or do they just use it? According to Facebook, 2022, their 'help center' says “No, we don't sell your information. Instead, based on the information we have, advertisers and other partners pay us to show you personalized ads on the Facebook family of apps and technologies.”.

## The BIGGEST retailer and company in the world

Walmart is a retail company, with a broad variety of products, with approximately 10,500 stores and clubs in 24 countries (Walmart, 2022). Walmart is the largest company in the world by revenue, with \$576 billion, (Fortune, 2022), as well as the biggest company by number of employees, 2.3 million, as of Q2 2022 (Johston, M. 2022). But how does Walmart use big data to stay ahead and be such a goliath of retail? Retailers sell millions of items every day to customers in every country, the variety and amounts are immense, thus making it the perfect place for big data. Walmart uses big data to understand demand, by being able to predict which products will be more demanded, which less, big data analysis provides Walmart with quick fixes and decision-making power, for instance, according to CIO Linda Dillman, after 2004, when Hurricane Sandy occurred, data provided insight that apart from emergency equipment, expected bad weather increased demand of strawberry Pop Tarts in several areas, extra supplies were distributed in 2012, Hurricane France, and sold extremely well (Marr, B. 2016, p. 5-10). Data is collected in massive amounts from customer behavior, analyzed and used in decision-making.

## Is Google the Big Boss?

Google's search engine is by far the leading search engine, As shown in the table below.

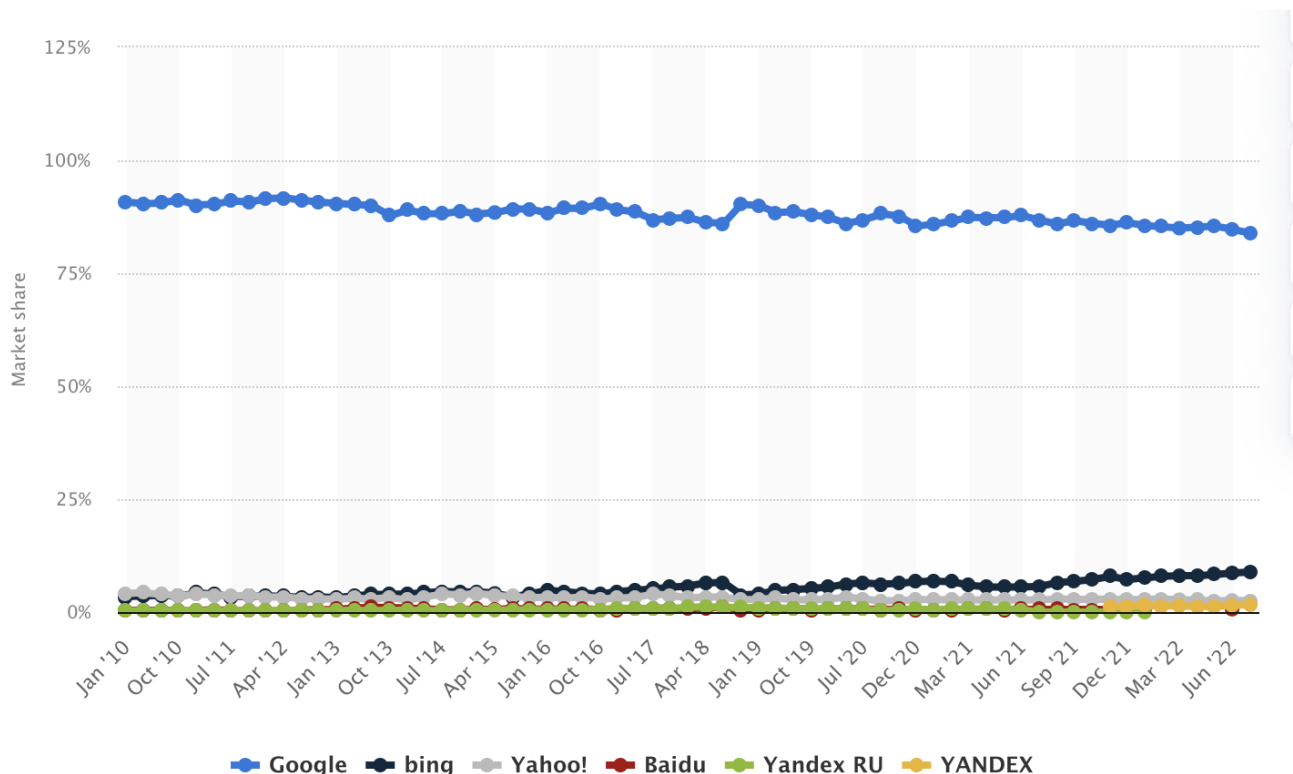


Figure 1, Global market share of search engines 2010-2022 (Statista. 2022).

Google is unequivocally at the center of big data use, its index of Web, is built by sending robots to webpages, from all texts, images, sounds and information these robots copy it as data to Google's vast archives, covering

an estimated 35 trillion webpages (Bernard Marr, 2016). Much like Facebook, Google makes most of its revenue by online advertising. In 2020, Alphabet, Google's holding company, made \$183 billion in revenue, of that \$147 billion was made of Google's ad business (Graham, 2021). It is estimated that Google holds 100 petabytes (or 100 million gigabytes) of data, the biggest data holder out of all tech companies (Marr, B. 2016, p. 243-249).

### Can big data be dangerous?

In the past three subtopics the use of big data in business has been discussed, specifically Google's, Walmart's and Facebook's. As mentioned in the introduction this was to give insight into how big data can be used in businesses, especially in some of the largest corporations in the world. However, it is important to discuss how big data can be used negatively. In most cases the issue with big data is privacy. People wonder whether their personal messages, information, thoughts perhaps, are being shared between companies, and being used against them.

A famous case is Cambridge Analytica's. The company was created around 2013 as an offshoot of SCL Group, which worked in multiple departments as a government/military contractor, with a focus on U.S elections (Ingram, D. 2019). In 2015, a research project by Global Science Research (GSR) in collaboration with Cambridge Analytica, was undertaken as a survey (personality quiz on Facebook) for thousands of people to gather OCEAN profiles (openness, conscientiousness, extraversion, agreeableness, and neuroticism, correlated with Facebook activity (likes, shares, comments, etc.)), the survey, through the Facebook Open API, also granted access to users' friend's data, as it required users to grant permission to their profile information (Isaak and Hanna 2018). Thus, giving Cambridge Analytica "5,000+ data points on 230 million US adults.". The company used all this data to target "persuasive" people and feed them propaganda to influence their vote in the 2016 political campaign and Brexit (Seadle, 2020). The company harvested data from over 87 million users (Ma and Gilbert. 2019).

Cambridge Analytica had influenced and worked with other political campaigns and movements, and on the first of May 2018, following the data scandal, the company filed for insolvency proceedings and closed operations (The Guardian. 2018).

### Discussion

During the Cambridge Analytica and Facebook scandal, many targeted Facebook as the villain of the story. However, Facebook was not selling their information to companies such as Cambridge Analytica. Nevertheless, it was still argued they were doing a poor job, ensuring users' personal information was made available for such corporations. As shown in some of the statistics, it can be easily agreed that a large sum of the population uses social networking sites, or have access to software that collects their data, but only recently there has been developments in legislation, laws and guidelines on the use and collection of personal data. Cambridge Analytica may or may not have influenced elections, however they were arguably targeted due to the wrong means of collecting and retaining personal data.

It is clear to us that data can be useful in business, for years people and businesses have made decisions based on information collected from customers, perhaps what makes the big data topic interesting is the vast amounts that this information-based decision making comes in. It is no doubt that businesses, from small local to multinational corporations, can and perhaps should use big data to become competitive, but I believe it is important to keep in mind, that big data is not limited to use only in the online advertising world, or software development, it can be found through research that big data is essentially a tool that can provide insight into every aspect of lives or a business, agriculture, manufacturing, marketing, human resources. Understanding that big data can be interpreted as simply a place to collect and analyze useful information that can help improve and innovate multiple aspects of business or life is very important.

## Conclusion

This report aims to understand the use of big data in individual businesses and how it can be used in different industries. In conclusion, from the evidence studied we can interpret that big data is firstly very present in businesses and individual lives, as seen by the number of data present in the world, it has a vast number of uses and types. It can also be concluded that big data can be used in different industries, from, but not limited to, social networks to advertising to retail. It can also be concluded that big data can be used negatively, as seen per Cambridge Analytica's scandal. Finally, it is important to note that this research is only a scratch on the surface of what big data is and how it can be used, further research and reading is imperative for further understanding of how data is used in other industries, how it is harvested, further research can also provide insightful knowledge on a big, correlated topic of how big data can be used for machine learning and AI.

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