

Big Data - A Revolutionary "Space" that Changes the Way Business is Done

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Abstract

In the context of more and more digitized information flows and a growing amount of data, almost every action we perform is recorded. Especially, organizations register each activity what is happening within them, mostly on electronic support. The "explosion" of the data volume needed by a company and the ones it has access to, requires a permanent adaptation of the enterprise to the environment in which it operates. Starting from the principle of changing the way companies do business, Big Data has developed.

Since the collection of data expressed as a result of business activity is not a major issue, the challenge arises when it comes to analyzing, storing, transferring, querying and securing information-bearing data. Companies continuously seek to find software products that allow them to analyze these data and help in obtaining relevant information in decision-making.

Key words: Big Data, Predictive Analytics, Cognitive Computing

J.E.L. Classification: M1

1. Introduction

A field that many people do not talk about, but which has the greatest strategic importance in the future of all businesses is a space called "Big Data". After all, the ultimate goal of all companies is to have more customers, higher sales from each customer, higher profits. Here Big Data appears on the scene.

Viktor Mayer-Schönberger, professor at Oxford University, and Kenneth Cukier, a business writer from The Economist team, sum up this phenomenon in an original way: "Data stored and processed in huge quantities due to storage media Cheaper, faster processing methods and more performing algorithms. " The two of us put us in front of the image of a world almost completely quantified and recorded in colossal databases, in which there will be data about almost everything, with which almost everything can be done. Promising, thrilling and overwhelming, the phenomenon has many faces and, like all the human creations, is a mixture of good and bad. The way each human being operates - biologically, mentally, socially - can be translated into data. The same way - the way a device works, or a set of devices or an entire company (Russel, Stuart J.; Norvig, Peter, 2003).

The Big Data concept refers to a huge amount of data that results from a business activity, whether it's a business or not. What needs to be said about this concept is that although the amount of data is large, it does not mean that they also have relevant information content for those who own it (Hutter, Marcus, 2005).

Technology is therefore needed to collect, store, and process data through real-time analysis, and if we are considering a company's business, we should consider the behavior of our customers, the risk the company undergoes through the business, the performance, its productivity and its market value.

But one of the major difficulties in scientific research is to collect these data; Many times, the possibility of doing so is fatally limited drastically by the insufficient resources. A scientific study - in the field of health, say - must be based on samples of the largest participants, so that the results are valid, valid, statistically significant. In practice, however, limited resources often lead to the limitation of the sample; Researchers typically strive to make a representative sample of the group of people they are studying in order to obtain as much relevant data as possible (Luger, George; Stubblefield, William, 2004). But even with a sample of 1,000 people considered representative, the results thus obtained may differ from those that would have been achieved if 10,000 people were studied. The difference in size reveals shades that the study of only 1,000 people had no way to surprise them, and which might be important to outline a trend, to clearly establish a correlation, to confirm or to negate a hypothesis (Nilsson, Nils, 1998).

This is where Big Data intervenes. If we store everything we can in terms of data, we will have a huge amount of information that we can then research in a whole new and more efficient way. Instead of formulating a hypothesis and then testing it through experiments or small group surveys (a need), a classic but predisposing procedure, scientists will resort to the miraculous advantages offered by Big Data: performing algorithms With great precision and power, will "scatter" enormous amounts of data gathered and will quickly discover trends, correlations, etc (Hubert B. Keller, 2000).

2. Big Data has 4 main features

Volume

The volume of data is growing. Experts predict that the world's data volume will increase to 25 Zettabytes in 2020. The same phenomenon affects every company - data are rising at the same exponential rate. But it is not just the volume of data that is growing, the number of data sources is also growing.

Velocity

Data is created at increasing speeds. Companies move their applications from "batch" apps to real-time applications. And business requirements have grown the same - from answers next week or tomorrow to a response in a minute or a second. And the world is also increasingly instrumental and interconnected. The amount of streaming data on these instruments is exponentially higher than it was 2 years ago.

Variety

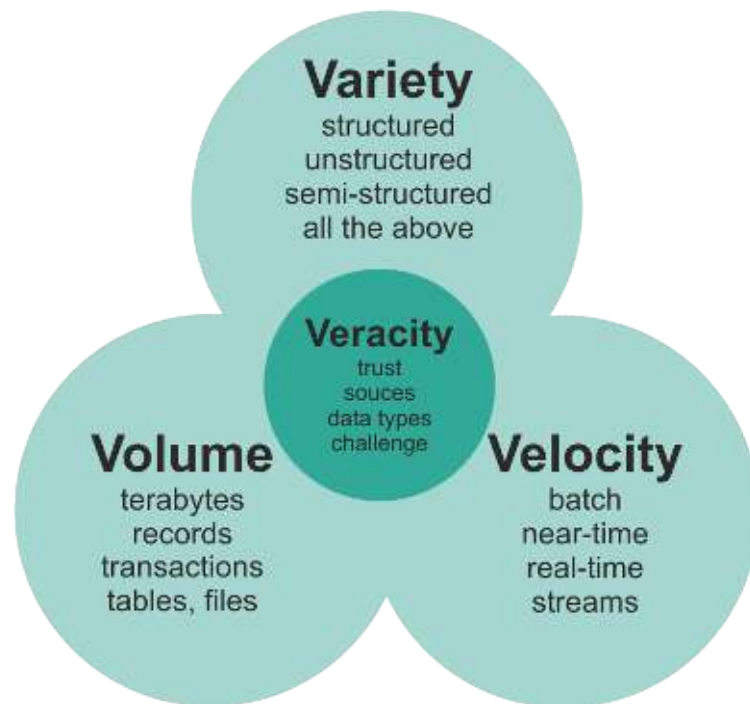
The variety of data presents an equally difficult challenge. Increasing data sources has also fueled the growth of data types. In fact, 80% of the data generated in the world is unstructured. However, traditional analysis methods only apply to structured information.

Veracity

How to act on this information if you are not trusted. Establishing confidence in the data that any company uses is a huge challenge with increasing data sources and types.

Another reason why Big Data is a hot topic today is the new technology that allows an organization to benefit from internal data resources. What's new is the technology to process and analyze this data at the desired volume and speed. The purpose of Big Data technology is to analyze all available cost-effective data. Any data, as it is. It can analyze structured data, video, audio, spatial data or any type of data.

Data can come from our traditional systems - billing systems, ERP systems, CRM systems. They also come from machines - from RFID tags, sensors, network switches. And the data comes from people - website, social media, etc. This makes it very difficult to analyze social data - extracting content ideas in the form of text in a very short time.



But to create a machine that "thinks" and "analyzes" all data, it is necessary to define the "intelligence" of such a machine. Machine intelligence is the result of several years of research, testing, success and failure. The machine was meant to learn, understand the user's language through countless interfaces, and refine its sensory perception. British researcher Alan Turing is of the opinion that a computer can be intelligently called if, in relation to a man, it causes him to believe he is in contact with a human being. To meet a human test, the computer has to store a huge amount of information from all fields.

Intelligence and information can not be separated from one another. People are able to provide useful information, show intelligence, competence, but are limited in knowledge. Computer systems built around databases embody this kind of competence but do not have the native reasoning of man. The difference lies in the properties of electronic equipment that multiply that skill thousands of times, providing implicitly multiplied intelligence. This intelligence, so created, is much cheaper and more accurate than the human one, and can be reproduced mechanically indefinitely (Hutter, Marcus, 2005).

In the beginning, the creation and research of artificial intelligence took place in the field of psychology, with emphasis on linguistic intelligence, such as the Turing test. This test consists of a conversation in natural human language with a machine (computer) that has been programmed specifically for this test. There is a human jury who talks with this computer, but also with a man, through a purely plain text channel (without seeing or hearing). If the jury can not figure out which computer is and which man then the artificial intelligence (computer program) passed the test (Ioan Georgescu, 1985).

Turing predicted in 1950 that by the year 2000 there would be machines (computers) with 10⁹ bytes (1 GB) of memory that could "trick" 30% of human juries into a 5-minute test. But while the technology even surpassed Turing's predictions, artificial intelligence is still far from being achieved.

3. The future of online commerce = Big Data + AI

How AI and Big Data can help us improve a business.

1. Products

When thinking about products we can consider the following optimization directions:

- Product offer

We do not always have a complete offer, and the larger the number of products we manage, the harder it is to figure out what's missing.

What is missing can be a permanent product or a seasonal product. Most of the time, until we realize what's missing, the competition already offers that product.

- Product Recommendations

There are multiple ways to recommend a product. We can talk about building a custom homepage for each customer, we can talk about a product page where we can bring forward different product recommendations for each visitor (accessories, supplies, supplies, etc.).

- Relationships produced

Product relationships can be built dynamically and differently depending on user behavior.

- Product Classification

Letting an AI handle the product classification, even at least partially, will save us a long time invested in this activity.

2. Prices

The entire pricing policy can be left to an AI that takes into account, in real time, the following:

- Base product price (purchase, storage, operation, etc.);
- Campaigns are active or not; Which is the cost per product;
- What is the state of stocks;
- What is the state of competition (availability, prices);
- What is the requirement for the product in question.

3. Customer support and logistics

An AI-based system can detect changes in the way activities work and may suggest changes or even make decisions such as:

- Proactive activation of a new call center during periods of many calls and deactivation when no longer needed;
- Providing relevant information to the operator when a customer appeals to support;
- Changing delivery priorities based on customer history and importance;

All these converge to a singular objective: **customer satisfaction**.

4. Conclusions

Technological developments, and especially business developments, marked by the growing need for real-time, real-world information from growing data volumes, have made such a segmentation on the business solutions market start to fade. Clear boundaries. Obviously, we can not speak at present about an integrative solution that includes all the sub-segments of this market. Such a fully integrated solution would be extremely expensive and perhaps too rigid to meet the needs of all market players.

The Future Big Data seems promising if we look at the big figures that appear in the study. The digital environment has become the most targeted environment for companies, representing a sector of the future. In 2014, Big Data was the most ambiguous number one and searched for the term between IT companies, according to Gardner.

In the future, Big Data is expected to create 4.4 million IT jobs globally. In addition, it expects \$ 220 billion Big Data projection and market size analysis by 2015.

By 2020, the digital universe is expected to grow to 9.5 trillion DVDs, equivalent to 40 zettabytes.

Besides many others, AI and Big Data, for example, create many jobs globally, a very good job, taking into account the demand for jobs.

In recent years, IT has become the most sought-after in the faculties, ranking first among the preferences. Besides the big wages they have IT, they are also very much sought after, Romania being a country in need of such specialists. However, IT is not for everyone, so even qualified ones are not numerous.

The future still sounds good for this area, and even promising. We can say IT will be the job of the future.

5. References

- Russel, Stuart J.; Norvig, Peter (2003), *Artificial Intelligence: A Modern Approach* (2nd ed.), Upper Saddle River, New Jersey: Prentice Hall, ISBN 0-13-790395-2
- Hutter, Marcus (2005). *Universal Artificial Intelligence*. Berlin: Springer. ISBN 978-3-540-22139-5
- Luger, George; Stubblefield, William (2004). *Artificial Intelligence: Structures and Strategies for Complex Problem Solving* (5th ed.). Benjamin/Cummings. ISBN 0-8053-4780-1
- Nilsson, Nils (1998). *Artificial Intelligence: A New Synthesis*. Morgan Kaufmann. ISBN 978-1-55860-467-4
- Poole, David; Mackworth, Alan; Goebel, Randy (1998). *Computational Intelligence: A Logical Approach*. New York: Oxford University Press. ISBN 0-19-510270-3
- Ioan Georgescu, *Elements of Artificial Intelligence*, Publishing House of the Academy of Socialist Republic of Romania, Bucharest, 1985
- Hubert B. Keller, *Maschinelle Intelligenz - Grundlagen, Lernverfahren, Bausteine intelligenter Systeme*, Editura Vieweg, Braunschweig/Wiesbaden, 2000, ISBN 3-528-05489-1
- https://ro.wikipedia.org/wiki/Big_data
- <http://ideideafaceri.manager.ro/articole/afaceri-online/cum-arata-viitorul-big-data-11363.html>
- <https://academiadeantreprenori.ro/de-ce-sa-investesti-in-big-data-domeniul-cu-cea-mai-mare-importanta-strategica-pentru-toate-afacerile/>