HOW BIG DATA CAN OFFER AN OPTIMIZED REALISTIC OVERVIEW IN MARKETER RESEARCH

Gheorghe Orzan[1]
Andreea-Larisa Boboc[2]
Ioana Burghelea[3]
Luana Diana Stupu[4]

ABSTRACT: Nowadays, we can access big volume data a lot easier than it was possible at the beginning of the decade through a system with a high computing power. However, in order to obtain a higher realistic value of the research, using big data is need adequate tools to caption and organize a huge variety of data types from different sources. These instruments should be able to easily analyze huge volume of data in a contextual system. The purpose being to find new perspectives and the subtle relations between unstructured existing data. This type of analyze it would be almost impossible to achieve a while ago because of the tremendous work, time, resources needed and costs. More and more companies are interested to include and integrate non-traditional data with high potential value with the existing traditional data of the company to achieve business intelligence analysis or data mining. Because of the quick decision maker that this solution is bringing, our current paper aims to demonstrate if marketer research is improved by using the solutions provided by a big data platform in analyzing information and if it can provide a quick and realistic decisions based on the information that it has access to. In order to do this, were analyzed a series of literature specialty papers and the latest technologies that big IT companies are using, which helped in demonstrate that indeed big data systems are bringing a new way to approach information and to puzzle up series of trends in order to provide a quick and a better decision.

Introduction

Big data is a new area that is receiving a lot of attention from different domains. Basically this is happening due to the opportunities and the help that it brings, with the amounts of data generated on one hand and stored on the other. Because of the continuously expanding digital world we are operating in, this approach eliminate the tremendous work and costs that the predecessors were unable to meet few years back. This is why IT and academic communities are more and more interested into it (Yaqoob et al, 2016).

In few words, big data can be described as a large, diverse, complex, data sets generated from instruments, sensors, emails, and videos available today and in the future. The references are not entirely appointed to the size but also to the quantity, movement, unstructured form and unusable way that appears in the systems. Practically, Big Data flow system and the so-called value

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[1] Professor PhD, The Bucharest University of Economic Studies, 6 Romana Square, Bucharest, Romania; orzang@ase.ro

[2] PhD Candidate, The Bucharest University of Economic Studies 6 Romana Square, Bucharest, Romania; 0724266215; boboclarisa17@gmail.com

[3] PhD Candidate, The Bucharest University of Economic Studies 6 Romana Square, Bucharest, Romania; 0742026879; ioana.burghelea@yahoo.com

[4] PhD Candidate, The Bucharest University of Economic Studies 6 Romana Square, Bucharest, Romania; 0740019922; luana.stupu@yahoo.com

chain is including: data capture, data curating, data analysis, data visualization and in the end make decisions. (Wang et al, 2016)

The three V's also describing big data are: volume, velocity and variety. When talking about big data you refer to a big volume of data, process this big volume of data almost at a real time level and nevertheless the presence of structured, semi-structured and non-structured data. However being able to have this type of tool and manage in a useable way this amount of information is not enough. This is when Business intelligence is stepping in bringing an added value to the Big Data concept. These application and tools allows you to create knowledge and helps in decision-making process. It also include a life cycle that goes from data acquisition to analysis of results – the main objective being to improve the quality and relevance of the information by providing useful knowledge (Portela et al, 2016).

Big data it become an essential component of management due to the continuously moving environment of enterprise adding a qualitative value in the decision making process. It also allows companies to have a real competitive advantage. Help individual enterprise to take faster and more adequate decisions that are cost effective, optimized tenders and emergence market trends, automation and simplification of the process inside of the enterprise (Koscielniak et al, 2015).

Big data acting domains

Because of its perks, Big Data is used in almost any domain, especially in healthcare and a lot of big companies are interested in this area and are looking for new ways in solving this century enigma in what concerns medical treatments. One of the challenges of medical decisions is to scan through the hugely voluminous structured (data base) and unstructured (text) data sources and present a list of alternatives (Winters-Miner et al, 2015).

IBM is an iconic corporation who build its reputation in over 100 years on the market, from the founder – Thomas Watson and the current CEO the company managed a huge volume of data, first reference to cognitive solutions and a cloud platform company (Spohrer, 2016).

It's one of the companies which invested in cognitive computing technology - called Watson, this include medical literature, patents, genomics, chemical and pharmacological data, he has also been developed with a comprehensive terminology so he is able to make connections in millions of texts – a lot of pilot test were conducted and he proved his merits (Chen et al, 2016).

As it was mentioned above, big data is not used only by industries, business, and healthcare but also in marketing in order ease the researcher tremendous work to store, structure, analyze and use information in order to predict trends and offer improvements. Many researchers brought through Big Data lens benefits and opportunities in decision making systems such as new statistical methods through a soft computing techniques and a new statistical tool to evaluate people's thinking- the old measurement system had difficulties in dealing with the non-real valued information (Lin et al, 2016).

Of course, the exponential growth of big data and the evolution of Internet of things played an important role also in the initiative of smarter cities. The two are working together and are helping the city to withdraw valuable information from itself. Either if big data is working to obtain insights from large amount of information collected through many sources. Or if the Internet of things is using Bluetooth and radio frequencies in the real lives through networked services; the combination is bringing the answer to the challenges that nowadays we are facing, from smart transportation to healthcare or governance. (Hashem et al, 2016)

Information is playing a very important role in general and is a key success factor in this case, being able to influence the performance of decision makers, emphasized on the quality of their decisions (Hashem et al, 2016).

When working with information, in general it is assumed that the accuracy needs to be on a higher level in order for the results to be correct. And the phrase, garbage in – garbage out will create an outstanding representation. Beside this, there are some factors that are influencing

decision-making based on big data, such as: manipulation of data, heterogeneity and constantly changing data sources (Janssen et al, 2016).

Surfing through big data, is necessary to have at your disposal a lot of tools, techniques and application. One of these is data mining – which has a great potential in extracting useful knowledge from large amount of temporal data for decision-making. If adding to it visualization (so called visual data mining) empowers the human ability of exploration with the analytical processing capacity of computers for a better solving of the problem (Ltifi et all, 2016).

The decision maker instruments needs to be tested in order to verify their performance. It was observed that not all results of this kind of tests were followed by an improvement initiative. In cases like this one, there were created decision support systems (Vera-Baquero et al, 2014).

As it was mentioned earlier, big data is used in any domain, especially in the consumer phenomenon when companies are more and more interested to know what the consumer needs and anticipate this before he even knows (Erevelles et al, 2016).

Big data is not entirely about data but also about raw and processed data, storage, ways of managing data processing and analytics (Merino et al, 2016).

In order to create a qualitative, long-term informatic infrastructure which is able to generate secure and stable functionalities of the system but also to offer a realistic report regarding costs versus obtained benefits is very important to create a data base platform which can allow you to store an enormous volume of data and in the same time be optimized to process and use in real time the information stored.

This way using advanced concepts regarding captioning, store, quality and securing data of physical storage units and nevertheless procedures and process of exploring and analyzing these information became each and everyone of them critical elements for an robust, reliable and efficient actual informatic system.

Decreasing advanced technologies utilization costs of the systems and informatic infrastructure – in general – determined an exponential growth of possibilities of accessing big database of large areas for users in various domains.

Is not important of which domain we are referring at when talking about big data it will be clearly visible that the advantages are present. As any technology has its limit but this leave the place of improvements and perfection of it.

Combining big data with data mining, business intelligence, internet of things and cognitive computing technologies will create an environment customized per need, desire and easiness of it users, either if we refer to a consumer, a researcher, a citizen or manager.

Artificial intelligence will come soon to gather together all these technologies and generate a real life assistance and recommendations, but this will be the subject of a future research.

Dig data and online enviroment

As new technologies have emerged, channels, and consumption approaches, the challenge of anticipating thecontemporary consumer behavior is becoming more complicted. In the same time, the fast development of technology permits marketers to acquire massive consumption data with greater volume, celerity, and diversity. (Erevelles et al, 2016)

Analyzing "big data" offers marketers new and unique opportunities into better understanding user behavior. The Internet provides unmeasurable amount of unstructured data which, decoded with the help of given instruments and systems, could prove to be a really high competitive advantage.

Big data represents an amalgam of different types of unprocessed data. The most common sources of producing comprehensive amounts of data consist of namely Internet of Things (IoT), self-quantified, multimedia, and social media data. (Yaqoob et al, 2016)

Eventhough that the interpretations of Big Data are not homogenous, all of them touch in the point of the three main aspects (3 V´s of Big Data), that separate them from the regular data.

Essentially, it is the amount of the data itself, then it is the momentum what is the periodicity of developing new data and ultimately, variety as the format of the data. Additionally aspects can be included because the science of understanding the Big Data is only at the starting point. (Kubina et al, 2015)

Marketing intelligence brings up the idea of developing comprehension the data offers for marketing decision-making. The research techniques can help to accomplish this objectivel by drawing out models or anticipating customer behavior from considerable databases. (Fan et al, 2015)

Nowadays the distinction is made by the remarkable quantity , rapidness , and assortment of initial data available from distinct consumers, effecting in the commonly named Big Data revolution; probably, an inovation that will generate to wholly new ways of apprehending consumer behavior and defining marketing strategy. (Erevelles et al, 2016)

In an online environment, big data can come as a result of various interactions, especially social ones. From an user point of view, social media impacts the way people gain access to information, how they communicate to one another, how they take their purchasing decisions. Social data analysis is the one method to extract meaning from all the above interactions through "social network analysis, multimedia management, social media analytics, trend discovery, and opinion mining". (Xu et al, 2016).

The increasing use of social media and the data interchanged in this environment has created severe issues for traditional data analysis algorithms and techniques (such as data mining, statistics, machine learning, etc.) due to their limits in managing complex and large datasets. The downside of these types of methods is that they do not manage to properly keep up with the increase of data. For this reason, the algorithms and methods used to unveil the knowledge behind big data are increasing in popularity in various domains. (Bello-Orgaz et al, 2016)

With the rise of Big Data, new techniques for getting better understanding from it emerge, such as Web Analytics. Opposite to the traditional research methods such as surveys, interviews, which are bound to be still interpretable, Web Analytics proves to offer a more objective view, by following the client's behavior per say in the digital world as well as the business results that derive from those interactions. An interesting case study in this area is the business to business industry in which, even though most of the transactions are in the end being handled by Sales, Marketing can still measure through Web Analytics how many of the clients were attracted through digital tactics, which were the most successful ones etc. (Järvinen and Karjaluoto, 2015)

According to Leeflang et al (2014), digital marketers face three very important challenges that they need to pay special care to: "the ability to generate and leverage deep customer insights; managing brand health and reputation in a marketing environment where social media plays an important role; assessing the effectiveness of digital marketing".

However, analyzing Big Data also has its limitations. One of the most important ones refers to the fact that this information mostly refers to past activities, behaviors, whereas, in order to stay ahead, predictions for the future prove more useful. These kind of predictions can be provided through models, therefor, in the sense of efficiency, the analysis of Big Data would need to be accompanied by them at all times. (Hofacker et al, 2016)

The increased use of web and mobile impacts both the lives of consumers and companies, empowering them with new opportunities on both sides. Building on this and the ground of the Big Data derived, personalized mobile advertising has also developed on a rapid pace (Eastin et al, 2016).

Research studies using big data

A lot of researchers tried already to convince by themselves or to find how big data works, as an alternative method in marketing research. The present paper illustrates some examples of studies and brings an objective standpoint.

The first study analyzed belongs to Marshall et al. (2015) and the main purpose of it was To understand how the organizations adopted and use big data and analyzing tools in order to innovate, and take the best marketing decisions. There were investigated 341 respondents asking them about innovation goals, which are innovation barriers, innovation metrics, and the most important the main role of big data in innovation process. The results shown that are three groups emerged: leader companies, striver companies and strugglers companies. Leader companies act totally different to the other two categories. They always tries to innovate using big data and analyzing tools and concentrate on particular consumer's need (behavior, skills and culture).

The study found leaders higher interest to the use of big data and analytics tools in order to benefit in creating new products and services. The study did not reach the security and the privacy of using big data considerate a limit from this point of view.

The study of Chong et al (2016), addresses to the online reviews, online promotional and feelings can help to anticipate the product sales. This study appeals to the big data analyzing, in order to obtain information. In fact, different from other papers who are discussing strictly theoretical regarding the sense of big data and the area of using big data, on this time, the study purpose a practical usage of this modern method, part of marketing research, called big data. So, the researcher developed node.js, for scraping the Amazon.com pages using key words as input/output calls for examining which variables are can anticipate the product sales. The results found that online viewers, online promotional and online expressions, feelings can contribute to future product sales. The validity is bigger if all variables are taken into consideration all together not separately. The paper offers an overview of activity from online environment and highlights the available instruments from there who can help a company to observe the trend sales.

The study of Matzner (2014), approaches a different side of using and analyzing big data. His paper highlights the privacy norms issues in the context of big data. The findings of this study reflect that information obtained through big data mining represent a big warning privacy of users. It is recommended to be very careful as researcher in investigating big data even if they are indirectly collected and processed, because these new technologies must be evaluate first to a social and political level. For further researches is proposed the concept of data minimization in terms of quality. This scientific paper comes with an advice of using big data in marketing research area, presenting the well-known weakness: the security and privacy of consumers from internet.

The scientific work of Woodard (2016) present a brief overview of using an agricultural platform named "Ag-Analytic.com" concentrating on big data of broad communities, especially in the area of agricultural finance. More specifically, it is presented some examples of the API's tools. The main scope of Ag-Analytics platform is to help researchers in documenting and processing big data who can grow the transparency in research, the validation and bring concrete results. The study concludes that adoption of this system should be a valuable method for researching in domains like economics, environmental or agricultural finance spheres.

Saxena and Sharma (2016) purpose a paper about integrating big data in e-government in Oman, named "E-Oman" where big data can have a better management for real time challenges. The study describes the e-Oman's platform, and come with the idea of integrating big data to this platform across ministerial activity and public or private partnership. Both, Saxena and Sharma (2016) prove the opportunities of including Big data of different sectors in order to establish a collaboration between them for a better issues management. Also, it brings into discussion a social implication of the paper, linked with the privacy and confidentiality of data available for the government.

Another paper, who underscores the integration of big data processing platforms belongs to Chang et al. (2016). The study gives some examples of platforms like "Apache Hive", "Couldera Impala" or "BDAS Shark" that can be optimized using SQL commands and cache memory incorporated, searching information rapidly. In fact, the paper purpose to reduce the retrieve time

for getting a data from a big warehouse. The limit of it is about support versions of the platform which can have some errors and can unable to run.

The last study analyzed is about the potential of big data in the rural British context (Hillyard, 2014). It was used two case studies, regarding online community of rural activities specialists and online community of firearm legislation. Through big data it can be found a lot of information and validating a conclusion regarding some topics like access, establishment and general use of online communities' platform.

In the end, the concept of big data started to become a frequently subject approached in researcher's papers. They analyzed or purposed big data as a modern research method in order to obtain valuable results. Also, they specified the most important weakness, called privacy. Furthermore, is recommended to search and discover new findings for big data's concept, to become a valid instrument for getting valid results.

Limits

However, analyzing Big Data also has its limitations. One of the most important ones refers to the fact that this information mostly refers to past activities, behaviors, whereas, in order to stay ahead, predictions for the future prove more useful. These kind of predictions can be provided through models, therefor, in the sense of efficiency, the analysis of Big Data would need to be accompanied by them at all times.

The limit of the paper was represented by the fact there are a part of analyzed studies, and reflects general aspects, but are other particular perspectives of using big data and which were not discovered yet.

Conclusion

This paper presented a series of literature specialty papers and the latest technologies that big IT companies are using, which helped in demonstrate that indeed big data systems are bringing a new way to approach information and to puzzle up series of trends in order to provide a quick and a better decision.

Marketing intelligence brings up the idea of developing comprehension the data offers for marketing decision-making. The research techniques can help to accomplish this objectivel by drawing out models or anticipating customer behavior from considerable databases.

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