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“St. Paul the Apostle”, Macedonia²Belarusian State Technological University**COMPANIES CHALLENGES AND OPPORTUNITIES WITH BIG DATA**

Big Data, a concept that means many things for many people, has ceased to be limited to the world of technology. Today it is a question of priority given its ability to profoundly influence trade and economic relations of an integrated economy on a global scale. In addition to providing solutions to old business challenges, Big Data inspires new ways of transforming processes, companies, entire sectors and even society itself. Even so, the broad coverage media that it is receiving does not allow us to clearly distinguish the myth of reality: what is really happening? In our last investigation we have discovered that companies use Big Data to the client, take advantage of internal data and create a better ecosystem of information.

Nowadays, a concept has emerged that has been very important for many people. That a limitation to the current technology has been removed. This term is called Big Data and it has been born to mark the next great step that will give the world of the smart technologies development.

Key words: Big Data, smart technologies, large volumes of data analysis, project, decision making.

Introduction. Anyone with or without technological know-how asks how all the information generated in the world is stored: on Facebook, Twitter, Smart cities or how Google is able to handle all the transactions that are done daily. Since Big Data reaches all areas: bag, climatology, astronomy, the amount of data that is currently generated is overwhelming and only the fact of knowing how it is achieved to capture and analyze this information seems a reasonable justification. Also when one became aware of this technology, it resembles the technology of data warehouse along with the use of Data Mining and Business Intelligence in large organizations using software as complex as SAP and that gain competitive advantage [1]. Seen this and knowing that we come from the business branch to figure out how organizations used Big Data and why.

Main part. Due to the great progress that has been made over the last few years in the technologies, more specifically in the world of information and communication technology, which is commonly referred to as ICT, companies have had to adapt to different challenges, but there is one that has gained great importance over the last few years. This challenge consists of how to manipulate, manage, store, search and analyze large volumes of data. With the Big Data we refer to this great challenge of companies consisting in the treatment and analysis of large data repositories [2]. Therefore the first question to be answered will be: What is the Big Data? Other issues such as where do all of these data or information come from? How are they processed? What kind of software is used? These are questions whose answers are clearly stated in this document in order to show the importance of Big Data in June 2011 there were several attempts to emphasize the concept. Define

Big Data as the data set whose size goes beyond the capacity of capture, storage, management and analysis of the database tools.

The term Big Data refers to the trend of the advancement of technologies that have opened the doors to a new approach to understanding and decision-making, which is used to describe huge amounts of data that would take too long to load into a database relational for later analysis. Therefore, Big Data will apply for all that information which can't be processed by traditional methods. A database is a set of interrelated data. When talking about database relational reference is made to the relational data model theory by the IBM researcher Edgar Codd in 1970 and has a strong mathematical base. The relational model is characterized by very large features to provide that all the information that should be contained in tables and the relations between data must be explicitly represented in the same way. What you get with this model is to always work on related tables. Avoiding duplicate records and ensuring referential integrity, i. e. if a record is deleted, all records related issues are deleted. The big disadvantage that presents is the time necessary to handle large amounts of data, but this is achieved thanks to Big Data. On the other hand what you get when working with databases is to combine different types of data and in a formalized way.

Nowadays, a concept has emerged that has been very important for many people: that a limitation to the current technology has been removed. This term is called Big Data and for innumerable technologists has been born to mark the next great step that will give the world of the ICTs. This paper tries to explain this term and other terms closely related with the term Big Data, as currently the meaning of this term continues to generate confusion

among the users: analysis of social networks, analysis of data Real-time, analysis of large data repositories. But really what is Big Data?

It's all this and more. To think about Big Data, one has to know that we are currently living in the information age, with a mobile phone in each pocket, a laptop in each backpack and large technology running daily sending data and data every second. It is clear that the world has more data than ever, but this is not all, as day by day grows even more. An example of this is the Sloan Digital Sky Survey telescope built in 2000 in New Mexico. During the first few weeks this telescope collected more information than those who had accumulated in the entire history of astronomy, but this is only a small example of the great avalanche which we suffer today. Thanks to this, Big Data is revolutionizing the world, organizations, people and technology [3].

However do not forget the disadvantages of Big Data. Being the main one of them is the process of adoption of Big Data: necessary software and hardware and its cost. But there are also many others of smaller weights as for example:

- 1) rejection by staff;
- 2) training expenditure;
- 3) collaboration needed by all departments.

The so-called "Passive decision making", this refers to companies which, before the installation of Big Data, first wait for their competitors to install it to see their mistakes made with the belief that they can adopt it much faster:

- cost;
- privacy issues;
- problems of outdated information;
- filtering (not all data is information) [4].

Apart from these, it is necessary to consider a great inconvenience before realizing a project of Big Data and that is as simple as knowing this: Is it really useful for the organization? Has the company need Big Data? Do you have the resources to handle a Big Data project? How much will it cost? That is, does my company really need Big Data? Despite all the benefits it can provide me. If the answer is "YES" the disadvantages should not matter since the advantages obtained will be much greater [5].

A strategy of evaluation means extensive, encompassing viewpoints on evaluation. Depending upon the object that is being evaluated there are different types of assessments. The most important types of evaluations are formative and combined evaluation. In formative evaluation it fortifies the object that is being evaluated but summative evaluation evaluates the effects as well as outcomes of an object. Like in this paper collaborative learning program is being discussed to enhance the learning capabilities of medical students.

When it comes to data analytics, companies need a custom-tailored strategy. But far too often, teams find themselves constrained to cookie-cutter solutions already on the market. Feeling pressure to pull stats, report progress, and demonstrate growth across performance markets, they choose numbers for the sake of reporting figures.

But are your metrics really capturing the key performance indicators (KPIs) that are most important to your business? There's a simple test that can help you answer this question.

Step 1: Create a list that includes the metrics needed to do job better, in addition to the metrics currently tracking.

Step 2: Create a list of metrics to monitor using the tools available at hand in business.

How wide is the gap between the two lists? How would analytics capabilities become stronger if there was an access to more information?

As it turns out, many companies struggle to answer these two questions. According to a recent Harvard Business Review study, Big Data strategies have arrived at a new juncture, "emerging as a corporate standard" with a focus that is "rapidly shifting to the results it produces and the business capabilities it enables". But companies need to make sure that their tools and processes align with their established goals.

Develop a Long-Term Strategy. Big Data isn't about the trends that are observing now. It is necessary to focus on reinvesting this information into core business processes. The tools, workflows, and software implemented should tell a story about business's growth trajectory and anticipated evolution over time. According to Randy Bean, CEO and managing partner of consultancy NewVantage Partners and author at HBR, goal-setting for Big Data requires three steps.

1. Choose the Right Metrics. According to Bean, one of the biggest challenges that executives report involves the immaturity of Big Data implementations. Systems are falling short in creating a complete data picture, leaving software end users struggling to accurately assess the ROI of the strategies that they have in place. Companies are taking their biggest steps forward through trial and error with early successes of Big Data only measurable through non-financial benchmarks.

Stakeholders should take the time to determine exactly what business success looks like. Choose metrics that can articulate this story.

2. Identify Opportunities for Innovation. Bean points out that innovation is still the bread and butter of Big Data. "The speed and agility it permits lend themselves to discovery environments such as life sciences R&D and target marketing activities within financial services". The success stories of Big Data-enabled innovation are still few and far between, focusing primarily on operational cost savings.

For instance, according to Bean, financial firms have improved their credit risk capabilities, and other companies have created logs of back-office operations. The next frontier? Forward-thinking companies will improve customer experiences and disrupt traditional ways of doing business.

3. Prepare for Cultural and Business Change.

New tools and approaches are “displacing whole data ecosystems”, says Bean. Data professionals who previously relied on advanced statistical techniques are finding themselves needing to adapt to new workflows and processes that have emerged with the support of new technologies.

Companies need to factor change management into their software implementation strategies. Prepare for cultural shifts, emerging needs for training, and mechanisms for new habit reinforcement. The system that should be implemented now will be the foundation for the data strategy that you build into the future [6].

Execute Sooner Rather than Later. When choosing an analytics solution, it’s easy to get bogged down with endless planning cycles. For instance, many decide to incorporate feedback from multiple stakeholders into their evaluation process. Before coming to a shared conclusion, it is necessary to be engaged in lengthy debates and hypothetical “what-ifs”.

Conclusion. Data analytics is transforming the way companies do business by deriving value from large data sets. Uses range from applying insight to life-saving research in healthcare to revolutionizing online retail and digital marketing by providing human data intelligence. This has created opportunities across a broad spectrum of sectors including energy, automotive, financial services, agritech, entertainment, security, government, export potential and etc. In this article steps for analyses using big data analytics were described. These steps can be applied to all areas including export potential.

References

1. Lohr S. The age of big data. *New York Times*. Available at: <https://www.nytimes.com/2012/02/12/sunday-review/big-datas-impact-in-the-world.html> (accessed 01.02.2017).
2. Manyika J., Chui M., Brown B., Bughin J., Dobbs R., Roxburgh C., Byers A. H. Big Data: The next frontier for innovation, competition, and productivity. Available at: https://www.mckinsey.com/~media/McKinsey/Business%20Functions/McKinsey%20Digital/Our%20Insights/Big%20data%20The%20next%20frontier%20for%20innovation/MGI_big_data_exec_summary.ashx (accessed 02.02.2017).
3. Marz N., Warren J. Big Data: Principles and best practices of scalable realtime data systems. Publisher: Manning Publications Co., 2015. 328 p.
4. McAfee A., Brynjolfsson E., Davenport T., Patil D., Barton D. Big Data: The management revolution. *Harvard Bus Rev.*, 2012, no. 90, pp. 66–67.
5. Provost F., Fawcett T. Data science and its relationship to big data and data-driven decision making. *Big Data*, 2013, no. 1, pp. 58–59.

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