

# Information data management in big data.

## Case study: E-Albania government portal.

Valma Prifti<sup>1</sup>

<sup>1</sup>Department of Production and Management, Faculty of Mechanical Engineering,  
Polytechnic University of Tirana, Tirana, Albania  
E-mail: vprifti@fim.edu.al

**Abstract:** Big Data is becoming one of the most important technology trends. It presents a potential that is radically changing the way organizations use their information to be closer to customers by organizing in a way that benefits from the customer experience and transforms their business models.

Although Big Data is an ever-climbing trend in terms of industry, its meaning is still hidden by many conceptual ambiguities. The term is used to describe a wide range of concepts: from technological ability to storage, aggregation, data processing and finally their generation. In this paper the focus is at Big Data, because they are the technology of the future and in one way or another, they are affecting every field of industry. Furthermore, companies are increasingly trusting the possibility of using data as a valuable business asset to benefit and bring a competitive advantage compared to other companies. In the paper is presented also a SWOT Analysis that is conducted about Big Data information showing the strengths, weaknesses, opportunities, and risks that they carry. Also are presented the challenges of Big Data Technologies for the future. At the end of the paper, there are conclusions and recommendations about the topic.

**KEYWORDS:** TECHNOLOGY, DATA MANAGEMENT, BIG DATA, INNOVATION, BUSINESS MODEL

### 1. Introduction

Nowadays, digital technologies are transforming the social and economic aspects of public and private institutions. It would be simpler to think that any innovation in data management is a new beginning and detached from the past. However, most of the new phases or flow of data management is built on their predecessors. Data management should include advances in technology in hardware, storage, networking, and computer models such as virtualization and cloud-computing. All these technological factors are transforming the way we manage and utilize data and for this reason Big Data is the latest trend emerging due to these technological factors. Big Dates are important because they enable organizations to collect, store, manage, and control data, to gain the right knowledge. They serve to control this data at the right speed and at the right time. The purpose of this paper is the analysis of high-capacity data otherwise known as Big Data and further their classification by also analyzing real cases. Great importance is also given to the areas that this data affects in business or industry and the challenges for the future. The paper gives information about the Big Data concept and their management, and a case study for the e-Albania government portal and the potential for using Big Data. Also, the importance of Information Data Management in Big Data, where the impact of this data in businesses or industry is also studied. E-Albania portal generates large volumes of data and the collection of various data such as time spent on the site, frequency of visits, number of transactions performed per visit, location of users and so on is very important.

### 2. The Importance of Information Data Management in Big Data

The Big Data Architecture is designed to cope with processes such as: obtaining, processing, and analyzing data that are too large or complex for traditional database systems. The threshold at which organizations can enter the Big Data field depends closely on the capabilities of users and the tools they own. For some this limit may be hundreds of Gigabytes while for other hundreds of Terabytes. To better understand Big Data we need to understand the features they carry otherwise known as Big Data Vs. In the period of the creation of Big Data three were the most popular features that personified these types of data. The potential that data carries must be understood, along with the most challenging features, before embarking on a particular Big Dates strategy. For an optimal strategy it is best to pay attention to each feature of Big Data, as each of them affects in one way or another in business. Attention should always be paid to the value that the business receives from the use of data. [1]

The importance of Big Data does not depend on how much data we have, but what we do with that data.

They include data from every source which must be analyzed to find answers that enable:

cost reductions, time reductions, new product development and optimized offerings.

When Big Dates are combined with powerful analytics, business-related tasks such as:

- Identify the root causes of failures, issues, and defects in near real time.
- Generating coupons at the point of sale based on the customer's buying habits.
- Recalculation of risk portfolios in minutes.
- Detect fraudulent behavior before it affects the organization.

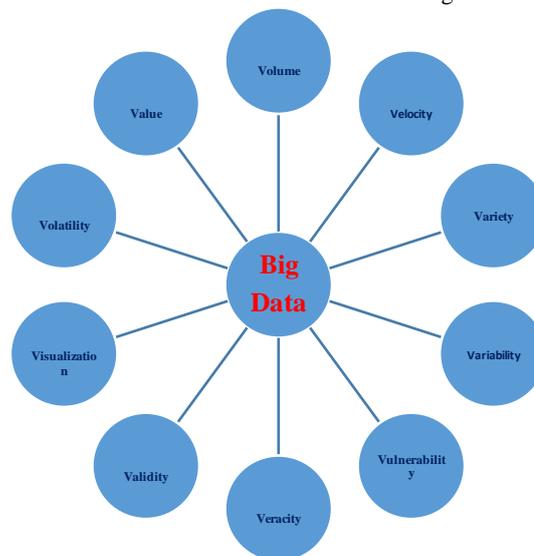


Fig. 1. 10 Big Data Features

The figure presents the most important areas where Big Data Analysis is needed.



Fig. 2. The most important areas where Big Data Analysis is needed

### 3. SWOT Analysis of Big Data Technology and Challenges expected in the future

#### 3.1. Strength

- Big Data is the technology of the future.

Organizations are incorporating Big Data into their processes and are reaping the benefits of this decision. Numerous market and data analysts are of the opinion that the use of Big Data and their analysis (Big Data Analytics) would double the chances for the business to be more profitable in any kind of market that exercises its activity.

- Big Data manage the feedback that customers have about the company [2]

Another strength that Big Data has is the ability to manage the large amount of data that comes as a result of the appreciation that consumers have about the company (customer feedback). This flow of data has come as a result of social networks (social media) as their customers are more free to express their opinion.

- Big Data can also be presented as a form of Marketing for companies

Social networks have a direct impact on the marketing of companies. In the case of Facebook and Instagram, data is generated about the behavior of users depending on the likes they have or the people or sites they follow and then ads are suggested depending on the results obtained. This is a mutual benefit between companies that create ads and sites in internet or social networks.

#### 3.2. Weaknesses

- Big Data technology requires high additional costs

Big Data Analysis is becoming more and more popular and a standard part even necessary for modern business processes. For this reason, for small and medium enterprises there will need to be more training and knowledge transfer, so that they be able to analyze the data they collect to gain a better insight into what their customers want and need.

- Technology that is closely related to data quality and analytics capability. [7]

Another weakness of Big Data is the risk that the conclusions and information collected from the data will be of poor quality. With the vast amounts of data available in this type of analysis, data analysts can mistakenly create false connections between data sets of the opportunities they represent. So, understanding the available data and the quality of the data being analyzed can be a major weakness, especially if analysts do not have much experience in the field from which the data set was collected.

#### 3.3. Opportunities

- Big Data Analytics is a very good career opportunity

The possibilities from the point of view of a professional specialized in data management with high capacity (Big Data) are numerous. Big Data Analytics is not limited to a single language or a framework. It combines advanced statistical skills with programming skills, and there are many potential languages that can be specialized. Furthermore, a data analyst career will require the use of Excel to clean, organize, manipulate, and visualize data. Excel is one of the essential tools for data management, so some knowledge gives priority to performing an analytical data job.

With the provision of data, finance, sales, marketing and Business Intelligence (BI) as the most popular areas of work for Data Analysis specialists, the opportunity to use skills in multiple industries increases. Students and young people who have a penchant for computers and are excellent communicators looking to make above average revenue, should see a Big Data Analytics as a very good career opportunity.

#### 3.4. Threats

- Big Data technology can cause many concerns about the privacy of social network users or company clients.

As data collection becomes more and more common, there is a risk that some of this data may be misused. For example, in the field of healthcare, if a third party was analyzing data, the data should be

clean with certain identifying information. Allowing someone's name or other personally identifiable information to a group Data sent outside the company can not only endanger the client, either from identity theft or fraudulent scheme, but it can also have an impact on the company that releases the information.

- Big Data is presented as intellectual property.

Third parties may have rights to the databases, software or algorithms used to analyze the datasets. The business must ensure that they have adequate licenses not to infringe on the intellectual property rights of another party.

### 4. E-Government and the potential for using Big Data, Case Study: e-albania portal

With the latest development of information technology, governments are increasingly relying on computer information systems for monitoring and decision making. Information and Communication Technologies (ICT) play an important role in achieving a strategic goal for a more efficient government. E-Government refers to the use of modern technology resources, such as the Internet, mobile, etc., to improve the electronic services provided to citizens and businesses. The main benefit of e-Government technology systems is seen in the construction of a society where information is easily accessible through the public online services provided. [4]

E-Government is an instrument of a pro-information society built in the form of governing principles, strategies, systems and tools that enable the use of ICT in the interaction between key elements of society - government, citizens and businesses - to strengthen democracy. and support development.

#### 4.1. Government portal e-albania.al

E-Albania is developed as a multifunctional portal and is considered as a stop where citizens and businesses are provided with electronic public services. Services are provided 24 hours, 7 days a week. The portal started as an investment of the European Union in 2009. In the early stage, it was very simple including 6 electronic services and 4 systems connected to the government interaction platform. The portal connects to the Government Interoperability Platform, which is the basic architecture that combines hardware, software and services that enable interaction between all connected systems of government institutions.

Interoperability platform: enables the exchange of data between systems in state institutions. The aim is to increase the number of institutions that are part of the interoperability platform, to improve the current services for the exchange of data between institutions and to develop new services for the exchange of data between institutions. The uninterrupted flow of information through the interoperability platform reduces the time required for the transfer of information between state institutions which facilitates the flow of electronic information which is necessary to provide the necessary public services to citizens and businesses.

- The e-albania portal already lists more than 600 services that government institutions currently provide to citizens and businesses. Some of these services are transactions and are offered through various online systems.

- Now, in 2022, there are 240 institutions connected with e-government portal. This is not just a number, but a clear indicator that reflects the usefulness of this portal how Albanian institutions provide online services to citizens and their businesses.

E-Albania is offering hundreds of electronic services to citizens and businesses as well. Many of these services like certificates and health cards have made their lives easier by saving users time and money. Many public institutions that are responsible for providing these online services interact and exchange real-time data with each other using the interoperability framework. During 2018, over 50 million transactions were conducted through the official interaction platform. The existence of this platform is the reason why today in Albania over 30 different documents can be downloaded directly from the portal equipped with a digital stamp. The impact of this

development has been tangible and significant in reducing paper use.

The e-Albania portal provides analytical data on a regular basis for each month, which better serve the transparency of the work done for the portal, the enrichment of the menu, its maintenance and functionality; various institutions that are represented in e-albania with their services, but also different media and NGOs for different work, study, etc. needs.

**Table 1.** The most used services of the e-albania portal (Source: AKSHI)

Visit to the portal
New registered users
User in mobile application
Total number of uses of electronic services
Services

#### 4.2. E-albania platform and the need for advanced analytical methods

This information constitutes a national asset and should be managed and analyzed in a way that can be used not only to ensure government transparency, but also to increase national economic benefits. Access to the e-albania platform generates large volumes of data and the collection of various data such as time spent on the site, frequency of visits, number of transactions performed per visit, location of the user and so on. Analyzing this information and simultaneously analyzing the web, policymakers can develop metrics to monitor the effectiveness of the e-albania platform. There are a total of 74 state databases, of which 45 are registered as state databases, while others are in the process. Despite the fact that many government institutions in our country have digitized their systems, in many cases, these systems have been developed without a communication strategy between them, with the sole purpose of meeting the internal information needs. Current technological transformations and the need for fast, accurate, transparent and up-to-date information for citizens and businesses, require these systems to interact with each other sharing large volumes of data. Not all pieces of data in e-Government can be processed using traditional analytical methods due to their characteristics, large volume, processing speed and diversity.

### 5. Conclusions

1) Why is the study of Big Data technology important in theoretical terms.

- One must understand the potential that data carries, along with the most challenging features, before embarking on a particular Big Data strategy.
- For an optimal strategy it is best to pay attention to each feature of Big Data, as each of them affects in one way or another in the business.
- Attention should always be paid to the value that the business derives from the use of data.

2) Conclusions drawn from the case studied: Government portal e-albania

- Using Big Data, governments can significantly improve decision-making, based on the information available and the analytical techniques used to gain real-time knowledge from fast information processing.
- Albania lacks adequate infrastructure for Big Data generation and management. Policymakers in Albania should consider Big Data as a step towards moving towards development.
- Although the e-albania government portal has not yet reached the level where high-capacity Big Data are managed, we can say that the first steps are being taken towards this Data Technology as it is e-albania manages high levels of data being closer to the users the citizens of Albania.

3) Conclusion drawn after the realization of the SWOT Analysis in relation to Big Data Technology

a) Big Data combines modern advances in information technology to collect, store and analyze volumes of data in a very fast time. However, as long as the amount of data available and the technology allow for unenforceable applications, care must be taken to ensure that the analysis is well done with appropriate safeguards to safeguard the client's privacy.

4) Recommendations for the use of Big Data Technology in Albania With the rapid growth of data that Albanian institutions manage to produce and collect, the time has come to record and implement various projects in Big Data. These projects can be adapted to the conditions of our country and are not claimed to be the size of completed projects in technologically developed countries. Also, the way of managing these projects and the final result they will give may not be on the same level with technologically developed countries, but this does not mean taking the first steps around this direction.

Some recommendations for initiating Big Data Projects in Albania:

- Creating a database or register where all information assets are located
- Improving the cyber research infrastructure that enables innovation in Big Data
- Implementation of various pilot projects in the field of Big Data
- Realization of all these stages focusing on privacy, security, and ethics
- Close reciprocal relationship between the public-private sector and academic institutions for education and training of young professionals or those who want to develop their career around Big Data Technologies.

### 8. References

- [1] M. Menaka, K. Meenakshisundaram, "An enhancement role and attribute based access control mechanism in big data", *International Journal of Electrical and Computer Engineering*, 8 (5), 2018, pp. 3187-3193.
- [2] J. Starren, M.S. Williams, E.P. Bottinger "Crossing the ornic chasm: a time for ornic ancillary systems", *Journal of Medical Association*, 309 (12), 2013, pp. 1237-1238.
- [3] H.E. Pence, "What is big data and why is it important", *Journal of Educational Technology Systems*, 43 (2), 2014, pp. 159-171.
- [4] J. S. Hurwitz, A. Nugent, F. Halper and M. Kaufman "Big Data for Dummies", 2013, *John Wiley & Sons*, New Jersey, ISBN: 978-1-118-50422-2.
- [5] R. Akerkar, "Big Data Computing", 2019, Chapman and Hall/CRC Press, Taylor & Francis Group, Florida, USA, ISBN 9780367379117.
- [6] E. Bonson, S. Royo and M. Ratkaj, Citizens engagement on local governments, An empirical analysis: The impact of different media and content types in western Europe. *Government information quarterly*. 32 (1), 2017, pp. 52-62.
- [7] V. Prifti, I. Markja, K. Dhoska and A. Pramono, "Management of information systems, implementation and their importance in Albanian enterprises", *Journal IOP Conference Series Materials Science and Engineering*, Vol. 909, 2020, pp. 1-11.
- [8] J.C. Bertot, U. Gorham, P.T. Jaeger, L.C. Sarin, H. Choi "Big Data", 2014, Open government and e-government issues, policies and recommendations, *Information Policy*, 19 (1,2), 5-16.
- [9] N. Vurukonda, B.R. Thirumala and T. R. Burrumukku, "A secured cloud data storage with access privileges", *International Journal of Electrical and Computer Engineering*, 6 (5), 2016, pp. 2338-2344.
- [10] Sh. Yu, X. Lin, J. Mistic and X. Shen "Networking for Big Data", 2019, Chapman and Hall/CRC Press, Taylor & Francis Group, Florida, USA, ISBN 9780367377533.