Big Data and Digitization Integration: Between Benefits and Risks

تكامل البيانات الضخمة والرقمية: بين الفوائد والمخاطر

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Abstract

Big data a technological pillar of real-time access to giant digital databases. It is also a dual technical system that does not derive rules from all technologies; it brings financial benefits but can also generate remarkable disadvantages. Being a complex polymorphic object, no precise or universal definition can be fixed to Big Data. The article summarizes a literature review of the concept on the one hand, and to assess the integration of digitization in economic activities in Algeria on the other hand, which however represents a weak dynamic in the field of This is mainly due to a significant lack of support and funding mechanisms, as well as a weak development of innovation activities.

Key words: Big Data, Digitization, Accompanying Devices, Innovation, ICT.

Jel Classification: L86, L84, M55, O32, O14.

ملخص

البيانات الكبيرة ركيزة تكنولوجية للوصول الفوري إلى قواعد البيانات الرقمية العملاقة. إنه أيضًا نظام تقني مزدوج لا يستمد القواعد من جميع التقنيات ؛ أنه يجلب فوائد مالية ولكن يمكن أن يولد أيضا عيوب ملحوظة. نظرًا لكونه كائنًا متعدد الأشكال معقدًا ، فلا يمكن تحديد تعريف دقيق أو عالمي للبيانات الكبيرة. تحقيقًا لهذه الغاية ، يلخص المقال مراجعة الأدبيات للمفهوم من ناحية ، وتقييم دمج الرقمنة في الأنشطة الاقتصادية في الجزائر من ناحية أخرى ، والذي يمثل مع ذلك ديناميكية ضعيفة في مجال ويرجع ذلك أساسًا إلى النقص الكبير في آليات الدعم والتمويل ، فضلاً عن ضعف تطوير أنشطة الابتكار.

الكلمات المفتاحية: البيانات الضخمة ، الرقمنة ، الأجهزة المصاحبة ، الابتكار ، تكنولوجيا المعلومات والاتصالات.

Jel : O14, O32, M55, L84, L86 **تصنيف**

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1. INTRODUCTION

Big Data is considered a source of profound upheaval in society. It involves examining the large and varied data set for hidden models, unknown correlations, market trends, customer preferences, and other useful information to help businesses make more informed decisions. This concept was popularized in 2012 to reflect the confrontation of companies face data volumes (data) to be treated more and more considerable in the context of the management of their managerial, commercial and marketing activities.

The purpose of this course is to understand the challenges of massive data processing, and to shed light on the basics of designing and deploying Big Data applications. The article summarizes a literature review of the concept on the one hand, and to assess the integration of digitization in economic activities in Algeria on the other hand, which however represents a weak dynamic in the field of This is mainly due to a significant lack of support and funding mechanisms, as well as a weak development of innovation activities.

2. Big Data: literature review

2.1. Definition of Big Data

"Big", "Data", these terms literally mean "big data", that is, big data or "big data". They refer to a very large set of data that no conventional database management or information management

tool can really work. Web giants, first and foremost Yahoo, Facebook and Google were the first to deploy this type of technology.

Big data does not derive from the rules of all technologies; it is also a dual technical system. Indeed, it brings benefits but can also generate disadvantages. As a complex polymorphic object, no precise or universal definition can be given to Big Data.

Its definition varies depending on the communities that are interested in it as a user or service provider. A transdisciplinary approach makes it possible to understand the behavior of the various factors: the designers and suppliers of tools (computer scientists), the categories of users (managers, managers of companies, policy makers, and researchers), the actors of health and users.

2.2. Types of Big Data

- ✓ The information that Google obtains by following the car journeys;
- ✓ The complete set of results of local and national elections of a country, insofar as records have been kept;
- ✓ What health insurance companies know about which treatments are dispensed in which hospitals;
- ✓ The types of purchases and places that appear on credit cards
- ✓ What people are watching on Netflix, when, where and how long.

- ✓ Tweets stored on Twitter's servers;

2.3. Big Data: mass data analysis (the 3 V)

Big Data is a solution for real-time access to giant databases. It aims to offer a choice of classic database and analysis solutions (Business Intelligence platform in SQL server[1]…).

- According to Gartner, this concept brings together a family of tools that respond to a triple problem called the 3V rule .These include:

-A considerable "Volume" of data to process of all types, which are counted in terabytes or even petabytes.

-A large "Variety" of information (from various sources, unstructured, organized, Open ...). This is the complexity of several types of data and structured or unstructured schemas.

-A "Speed" or a certain level of "Velocity" to achieve, in other words frequency of creation, collection and sharing of these data.

- Some definitions, however, add two more V :

-Volatility (Volatility) is a related notion of Speed. This is the "lifespan" of the generated data, that is, how long are they valid. Depending on the area, the volatility of Big Data differs a lot. This tends to make it an important element to take into account from an operational point of view, but which does not define them from a theoretical point of view.

-Last "V", Big Data, to be exploitable, must be "clean". This is the concept of "Validity". But again, this V actually refers to a preliminary stage of Big Data management rather than to their

definition (Margaret Rouse, [2018]).

3. The benefits of Big Data

3.1. Big Data in the medical field

There are areas where big data makes the difference. One is the field of integration. Insurers and providers try to combine data from different sources, such as claims, rays, doctor's notes and prescriptions (Bertel King, Jr, [2018]).

3.2. Big Data in Finance

The finance industry is based on the idea of making decisions based on computer analysis. The Wall Street flashes are due to automated trading, with machines that sell quickly without human intervention, depending on what is happening on the market. This is called high frequency trading.

Now, financial data scientists are using big data to predict which stocks will succeed and when new accidents may occur. Banks also see Big Data as a way to increase their revenues.

3.3. Big Data in E-Commerce and Marketing

Credit cards and loyalty cards, surveillance cameras, or even telephones, as well as account creation, promote consumer and producer interest in e-commerce applications based on demographic information and information.

4. The risks of Big Data

The increasing openness to the manipulation of individuals and corporations may create risks of abundant passwords and credit card numbers or to vote for candidates we would not otherwise support.

This creates more targets for the attack. Data breaches are now commonplace and what happens to these data is out of control (Bertel King, Jr,[2018]).

5. Technological developments behind Big Data

The technological developments that have encouraged the development of "Big Data" can be divided into two categories: Storage technologies, driven particularly by the deployment of Cloud Computing. Adjusted processing technologies, including the development of new unstructured data databases (Hadoop) and the development of high performance computing modes (MapReduce). In order to optimize the processing time on giant databases, namely NoSQL (such as MongoDB, Cassandra or Redis), the server infrastructures for the distribution of processing on the nodes and the storage of data in memory, three solutions have been proposed by the researchers:

- ✓ **1st solution:** The implementation of storage systems considered to be more efficient than the traditional SQL for bulk data analysis (key / value oriented, document, column or graph).
- ✓ **2nd solution:** is massively parallel processing. The Hadoop Framework combines the HDFS distributed file system, the NoSQL HBase database and the MapReduce algorithm.
- ✓ **3rd solution:** The acceleration of the query processing time.

6. Trends in Big Data Technology [2]

IT leaders are struggling to fully integrate big data into their current operations. Three major data trends each company should have on its radar are:

6.1. Big Data in Machine Learning

Machine learning is a type of artificial intelligence that teaches computers to behave more like humans. It allows computers to learn new things without explicit programming. A machine learning application can analyze large data and draw its own conclusions, which changes the behavior of the application.

6.2. Big Data in cybersecurity

While machine learning is attracting science fiction fans, big data trends also have major implications for cybersecurity.

Keeping hackers at bay is a full-time job. Cybersecurity remains a major IT concern for businesses in 2018. Apart from the obvious financial problems and the loss of private data, an attack can forever tarnish your public image.

7. Increased demand for data roles

With the proliferation of big data, companies are looking for skilled employees with the technical capabilities to turn large amounts of data into useful information. Data analysts will need to play a more active role in key business initiatives.

In the United States, an estimated 2.7^{3} million job advertisements for data analysis and scientific roles by 2020 (New Horizons Worldwide, LLC, January, [2018]). Today, 59% of demand comes from the finance and insurance, professional services and IT sectors.

8. Digitization and Big Data in Algeria

Digitization then causes an acceleration of the growth of the world economy. However, according to his research sources, during the transition to a digital economy, there is a risk of an increase in the asymmetry of skills and long-term unemployment.

To successfully manage the transition to the digitization and generation of Internet networks in Algeria, the economy must have the capacity to adapt; that companies are brought by positive properties of the market to be flexible; that economic gains are widely distributed.

Thus, in order to solve the imperfections of the "digital" domain, it is essential that "the various Algerian educations, education, apprenticeship and employment programs combine well with the new information and communication technologies. Communication and new business processes.

The results of recent Canadian studies suggest that technological change is contributing to the declining share of national income paid to the labor force[4].

Increasing the digital divide in a precise way is a real threat that negatively affects the economic environment, so digitization in general causes financial influence combined with "inflation": According to researchers (like Mendes); digitization could lead to increased productivity and growth in potential output. All other things being equal, a higher potential growth rate of growth must be combined with a rise in the neutral interest rate for the inflation target to be reached (Mendes, [2014]).

In addition, Algeria's commitment to the digitization of the administration prompts us to reflect on the direction of Algerian

monetary policy as the economy becomes more focused on digital technologies and services. Indeed, digital technologies influence and transform the functioning of Algerian telecommunications companies by facilitating tasks that are highly dependent on connectivity, use of information, forecasts and collaboration.

It should be noted in this regard, the opportunities of the Internet Market in Algeria can enrich the new structure of the economy, and this when the productivity gains at the scale of the Algerian economy could be realized that 'At the deployment stage, a stage where new technologies and new business processes are ubiquitous. So to minimize the threats; and that tools (statistics, taxation, competition and industrial relations policies) and related institutions that manage the economy are current and able to fulfill their mandate.

9. CONCLUSION

As technology evolves, Big Data has become a necessity for data processing and storage more deeply, along with recent technology and digital applications. However, given the evolution of technology, Big Data is a turning point for organizations that is at least as important as the Internet in its day, so they need to get started right now. Among other things, the constraints of the fierce competition they faced in the future. Governments and public agencies are also addressing the issue through open data.

We conclude by noting at the international level that digital technology and networking technologies not only improve the economic efficiency of financial institutions and businesses, but also present a new type of fictitious and digital market that could be more

vigorous re-examination of the assumptions and economic results provided by the studies conducted in traditional markets.

Besides, it is a significant development potential in the digital sector in the coming years, it represents a weak dynamic in the digital domain, which is in fact mainly due to a significant lack of support and financing schemes, as well as a weak development of innovation activities. Finally, we hope that our country will be able to catch up with much of the gap in terms of value added by ICT.

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11. Appendice

[1] Microsoft SQL Server. Microsoft SQL Server is a database management system (DBMS) in SQL language incorporating inter alia a RDBMS (Relational DBMS) developed and marketed by Microsoft.

[2] Trends in technology have been proposed in an article written by: "Computer Learning Centers (New Horizons Worldwide, LLC). January, [2018]. This element has been summarized and translated by ourselves.

[3] (New Horizons Worldwide, LLC). January, [2018].

[4] Chris D'Souza et David Williams, [2017].