

Innovation and opportunities of Big Data: promote business Intelligence

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Abstract:

New uses linked to the proliferation of the Internet (social networks, smartphones, mobile applications, etc.) and advances in technology (use of sensors, GPS, RFID chips, etc.) contribute to an avalanche of data produced on a large scale in an unstructured way. This is the Big Data phenomenon. For companies, the real challenge in the age of Big Data is to be able to process and analyze in real time large data flows from different sources in structured and unstructured form in order to extract value and to obtain a competitive advantage. In other words, a big data project puts companies face technological challenges since a suitable architecture to be set up, to organizational issues to decide the strategy and the data flow organization to be treated and as economic issues in terms of value creation. In this article, we present an overview of these issues for companies. According to IDC (International Data Corporation), the volume of digital data created in the world surpassed 2.8 zettabytes in 2012, and will be multiplied by 50 in the next decade. We talk about data deluge, mega data, big data. The data are of various types: text data, images, videos, links in social networks, bank data, and public data (open data), IDC predicts an annual growth rate of the technology market and Big Data services in the world of 26.24% in 2018.

Keywords — Big data, Data scientist, data analysis, Business Intelligence.

1. Introduction :

Every day, 2.5 terabytes of data are generated in the world. By 2020, it is expected that the size of the data will multiply by 50 times. Google received 40,000 requests every second, 72 videos were put in lines every minute on YouTube and 217 new Smartphone users are counted every minute [1]. Today the information comes to us from all sides: geolocation sensors, data from smartphones (connection logs calls), Data posted on social networks, video and digital images, Transactions customers, sensor forms or movement of the connected objects. The development and access to these data represent what is called the phenomenon of "Big Data." This phenomenon impacts especially companies that are required to handle terabytes or even petabytes of data requiring specific infrastructure for their creation, storage, processing, analysis and retrieval. In other words, it is the real time development of a voluminous mass of data which exceeds the capacity of the processing tools and traditional analysis (relational database, SQL queries). Big Data is an evolution of Business Intelligence (BI). While traditional BI is based on data warehouses (data warehouses) limited in size (a few terabytes), difficulty managing unstructured data and analysis in real time, the Big Data era opens new technological architectures and offering period advanced infrastructure for sophisticated analyzes

taking into account these new data integrated into the ecosystem of the company[2]. The "Big Data phenomenon" for companies and two realities: first the explosion of data continuously, on the other hand the technological capacity to process and analyze this large amount of data for profit. With big data, companies can now manage and process massive data to extract value, decide and act in real time. The main challenge for her is to "improve the efficiency of decision making by operating protean information" [3]. They thus become more responsive and competitive. In fact the ability to process large amounts of data, to build relationships and correlations between heterogeneous information and to communicate with each structured data or not paving the way for probabilistic treatments that improve operations and managerial design of products and innovative services for customers.

Also, today, Big Data is correlated with the competitive advantage of companies and represents for them a considerable advantage. According to studies, the big data market is expected to grow annually by 26% and reach 46 billion in 2018. The challenge of big data for business is as technology solutions with capabilities of semantic analysis and statistical increasingly sophisticated multiply on the market. Moreover, the training of "datascientists" able to analyze and process this mass of data are increasing. The Big Data phenomenon opens up numerous opportunities for businesses, but their enthusiasm

for Big data can also be explained by the profound economic and social changes it generates. These changes begin to take effect in different sectors (finance, health, criminology, automotive industry, road traffic, marketing and business services). They fascinated by the future potential they suggest to improve lifestyles and simultaneously awaken fears about addiction to technology and the protection of privacy [4]. Also for companies, the deployment of a Big Data project is difficult to carry out on several levels. Big Data led companies to confront the problems of processing and analyzing data volumes more and more abundant. Data management systems deployed today in most companies is unable to handle all of these flows. The technological infrastructure must be redesigned to adapt to it. In this technological challenge adds an organizational issue on the nature of the data to be processed for business, the appointment of qualified staff, budget to allocate and change management to implement. Finally the issue is also economic. This is to define how to create strategic value to the body of data now accessible to every business and this without offending the customer and without creating fear [2].

The objective of this paper is precisely to understand the organizational and economic technological challenges that come support the Big Data phenomenon for businesses. The scientific literature became interested in the subject but is still limited. Hence the motivation of this work which offers a perspective of the Big Data phenomenon, its foundations and its challenges for businesses. The rest of the paper is organized as follows. The first part defines Big Data phenomenon, its origins and its foundations. In the second part, we focus on the challenges of Big Data for enterprises and the changes it induces. Finally, we identify the contributions of this work in terms of scientific and managerial implications to open on the prospects for future research.

2. The phenomenon of "big data" Definition issues and uses:

The term "Big Data" refers to technologies, processes and techniques for an organization to create, manipulate and manage large-scale data [5] and to extract new knowledge to create economic value. In the literature, the concept of Big Data is defined through the 3V theory (Volume, Variety and Velocity of Data). The volume corresponds to the size of the data stream which continuously come in an exponential size ranging petabyte to exabyte. These flows are varied and come from sources protean between internal company data (CRM, internal IF ...) external data (social media, email, mobile devices ...), structured data (documents, pictures) Or unstructured (tweets GPS data, sensors ...) and are difficult to handle through conventional data processing tools.

Finally, the third characteristic is the velocity corresponding to the data production speed. The true wealth of a Big Data

project is to cross heterogeneous data in real time and to imagine possible combinations and correlations [4]. This allows one hand to refine the knowledge of the situation of the client or market, secondly to deliver previously inaccessible knowledge and profit. These analytical advances that take into account all available data to better understand the upcoming events through predictive models. It is now possible to predict scenarios and adjust consequently the actions (predicting the weather, the price of flights, the epidemic ...).Figure 1 shows schematically the evolution of analytical models to predictive models with the advent of big data [6].

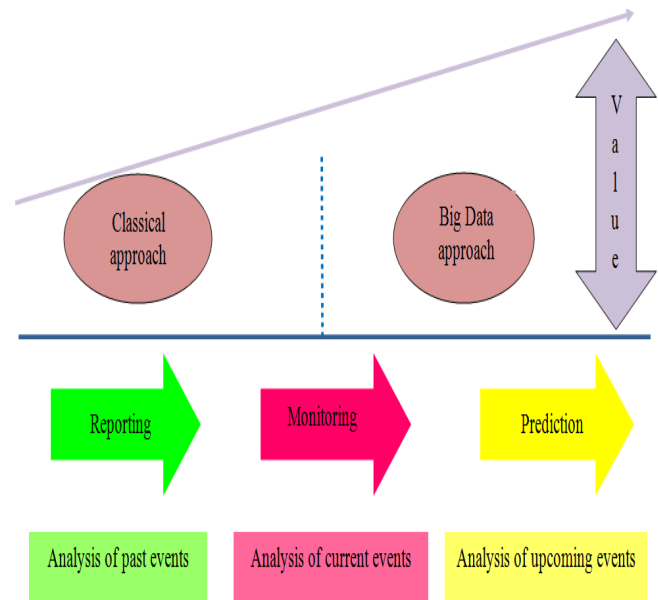


Figure 1: Evolution towards a predictive model

This is generally part of a changing technologies and approaches to decision support (Business Intelligence). Traditional Business Intelligence decision-making systems are characterized by a slow processing time, whereas Big Data makes it easier and cheaper to process masses of large data [7]. Moreover as evoke traditional BI managing data content mainly structured around data warehouses and relational databases.

After technological developments for managing unstructured content generated especially on the web, the technology now used to manage any type of mass structured and unstructured data including from connected objects [5]. The variety of sources and the data processing speed advantage precisely refine the understanding of the situation and improve the efficiency of the decision by the prediction.

Table 1: Evolution of BI & A (Business Intelligence and analytical) to the big data era.

Business intelligence and analytics 1.0	Business intelligence and analytics 2.0	Business intelligence and analytics 3.0
Structured Content	Unstructured Content Content focused on the web	Content from mobile (phones and tablets) and the Internet of Things
<ul style="list-style-type: none"> -Relational Database. -Data warehouses. -Data mining and statistical analysis techniques. 	<ul style="list-style-type: none"> -Web Analytics and Web Intelligence. -Social Network Analysis. -Social media analysis. -Spatio-temporal analysis. 	<ul style="list-style-type: none"> -Analyzes centered on individuals. -Analyzes mobile interfaces, visualization and Human Machine interactions.

Different sectors already enjoying the contributions of a Big Data strategy and the first performance and the first results are beginning to be observed. One of the most striking examples of the use of a Big Data strategy is that election campaigns [3]. Advanced data processing techniques can be used to gather previously disparate information into a common database. The team could then access a maximum of information on potential voters and limit their outreach approach only to still hesitant voters and push them to vote in favor of a candidate without wasting time with those who are already committed to do it. Recently, we are beginning to see the fruits of these technological advances in the corporate world. [7] cite the example of the company UPS (global delivery company) that by installing sensors on certain parts of the vehicle to identify problems of overheating and vibration and correlating these data failures that these pieces have presented in the past was able to anticipate failures and replace defective parts in the garage instead of on the side of the road and improving the productivity of delivery. In the building industry and energy, smart meters can take readings every hour on electricity and water consumption pave the way for the creation of new human services and many projects are underway to develop new revenue with this mass of data developed naturally and continuously. In the automotive, embedded intelligence should serve manufacturers to offer new security services and remote diagnosis [8]. Through analysis technologies and processing of these data operations management and business efficiency can be improved, but new services or products can also be custom designed patterns increasingly customized for customers opening way to new markets. For companies, Big Data is clearly positioned today as a vector of differentiation and competition. Nevertheless, the establishment of a Big Data project remains a perilous journey and punctuated by technological, organizational and substantial economic.

3. Big Data and its challenges for companies:

According to many studies in 2012, Big Data is "an emerging reality in French companies." The strategy "Big Data" has become one of the major issues related to development of new technologies within the organization [9]. It is regarded as the engine of innovation, customer satisfaction and achieving greater profit margins. It enables increased productivity when decisions are taken from analysis and data crosses. A study by [10] showed that companies that have adopted advances in data analysis techniques achieve better rates of productivity and profitability than those of their competitors. It also allows better information management in terms of operation and information classification by priority. A study conducted by [11], 91% of European companies surveyed feel threatened by information overload, "increasing the amount of data to be processed is the factor that most affects their ability to manage sensitive processes within Their company". A big data strategy can be preventive in relation to a possible information overload. According to [12], managers do not need to acquire more information to make better decisions, but rather better organization and better use of information in their possession.

Faced with this overabundance of data, reflections on Big Data are now "more qualitative" questioning their quality in terms of reliability and integrity (correct information sources identified, cleaned duplicates, etc ...) to ensure the value of the result after the processing of such data. In this context, the company is faced with several challenges such as data fragmentation across multiple systems, the coexistence of Big Data with classic architecture of data management, good governance data and the recruitment of qualified staff. Companies must therefore deal with technology issues to ensure the necessary means for the processing and analysis of data volumes. Organizational issues are also taken into account to carry out the big data project in deciding the nature of the data to be processed and how to proceed. Such a project is thus an opportunity for businesses to make their strategies "Big Data" a vector of differentiation and growth (see Figure 2) by seizing the economic challenges they represent. The challenges and requirements of these issues are detailed in the following [10].

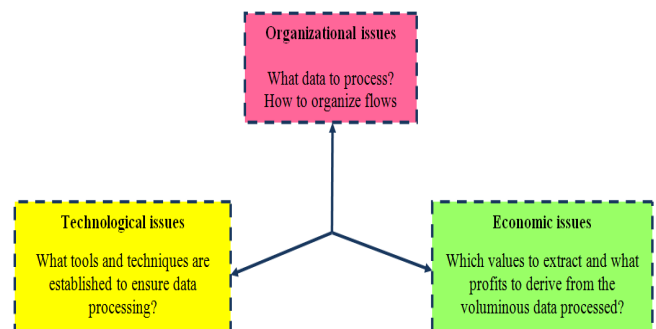


Figure 2: Issues of Big Data for Companies

3.1 Technological issues:

The advent of Big Data impacts the whole of the company's IT. First it will be to adopt new technologies, "the real-time analysis of needs, operating large structured and unstructured data as well as the BI (Business Intelligence) operable require Directions Systems Information on application architecture and infrastructure of a level of demand that may seem quite high." A study by [9] shows that the complexity of a big data project is summed up in the construction of a data analysis platform bringing together different heterogeneous components and to run smoothly and accurately in order to produce " splitting aggregated hourly reports, update data products every three hours, to generate new workbooks models daily. " A Big Data project involves the acquisition of business analytics tools providing advanced and predictive analysis of massive data. Big Data is carried by the innovations of technological breakthrough (in-memory, massively parallel) to linearize the performance of predictive models based on data crossing, internal and / or external [8].

Table 2: Technological issues related to massive data

Aspect	Main issue
Extensibility	Infrastructure flexibility to interact with a large volume using various data formats.
Integration	Management cost and compilation of data use on platforms and various systems.
Deployment	Choice of solutions and custom devices or cloud computing services.
Analytical	Transition legacy systems to new technologies.
	Extensible algorithms that do provide explainable results.

The storage tools, transmission processing and visualization will be impacted by the large data size. On a small scale, on the order of Tera byte, data can be stored on hard drives. In the case of Big Data, the data volumes can exceed the Petabyte, far more than is manageable by a single computer [6] . The data is then stored in specialized sites: Datacenters. Different technological solutions, often open source, begin to emerge. A summary of all of these technologies is presented in a table identifier their strengths and their weaknesses (see Table 2).Some platforms are related to the Hadoop architecture considered the technology Big data open source reference. Others scale to any big data software solutions such as NoSQL database . For the storage of big data, Hadoop is based for example on system files to spread data across different systems.This allows them to optimize their management by exploiting multiple networked servers (cluster of machines). For the treatment of these data, Hadoop is a widely mobilized platform that provides the MapReduce algorithm, the distributed file system HDFS, HBase NoSQL base. The

MapReduce system is suitable for distributed processing, and benefit from the power of each machine to distribute the processing then collate the results in a single comprehensive income. Thus, the response time when large data processing is very small.

The work of [13] propose a method of faster data processing. This is the self-adjusting computation method based on the MapReduce system to dynamically power the real-time data. The researchers highlight the achievements of the method in terms of processing speed despite the limitations it presents in terms of cost of memory usage. A NoSQL architecture provides bases which are automatically compressed for more flexibility in the optimization of the storage space. This architecture also provides an ergonomic environment for data visualization and can be easily used for reporting and dashboards [5].

The Big data has strengthened the use of cloud computing. Cloud computing can store large volumes of data and provide services on demand. The use of cloud computing for data storage is especially a path studied by companies. Storage is expensive in both server spaces capital but also in energy consumption. The use of certain Big Data Cloud Computing solutions can be a path to explore. Especially since a second technological problem quickly emerges is that of integration with other existing SI.

Table 3: strengths and weaknesses of technological solutions, equipment level (Cloud Computing) at the structural level data (SQL, NoSQL)

Network Cloud Computing	
High-lights : <ul style="list-style-type: none"> Dematerialization of the customer's IT equipment computer maintenance easier More efficient use of resources Different levels of services: infrastructure, platform, software Weaknesses : <ul style="list-style-type: none"> Security of customer data Problem of control and use of data transmitted to a third party 	
Framework Hadoop	
High-lights : <ul style="list-style-type: none"> Open source Exploits the parallelism of calculations Volumes very important manipulated data Management of performance data Robust (data loss in case of incidents is limited) Weaknesses : <ul style="list-style-type: none"> Not adapted to real-time calculations 	
MapReduce	
High-lights : <ul style="list-style-type: none"> Deemed easy to use Adapted to many situations Exploits the parallelism of calculations Weaknesses : <ul style="list-style-type: none"> Not adapted to real-time calculations 	
Database	
Relational-SQL	No-relational-No SQL
High-lights : <ul style="list-style-type: none"> Allows manipulation of important data volumes Weaknesses : <ul style="list-style-type: none"> Representation of complex data 	High-lights : <ul style="list-style-type: none"> Allows manipulation of important data volumes Deemed easy and more flexible than SQL Weaknesses : <ul style="list-style-type: none"> Loss of data consistency against SQL

Not only an IS project will require adopting new technologies but it will also need to integrate these technologies into the existing application pre mapping. Work on the data formats and writing components necessary for interoperable systems. This will lead to work on "the truth" or data integrity and reliability [14]. The error rate of the data collected by companies is estimated at between 1 and 5%. This has significant impacts particularly on the quality of decision making. Another challenge in this area than the data security: both technical security (systems they are robust enough to be integrated into corporate applications?) And secure in terms of access rights (which the right of access to these tools for Big Data? How to manage access rights?). However if technological challenges are numerous and size, they are often considered less important by project managers Big Data compared to the organizational and economic issues.

3.2 Organizational issues:

Formerly, competitive differentiation was limited to the ability to collect the best data that allow a detailed knowledge of the market, the product and the customer. With the advent of the Internet and big data, the data of any type become available in large quantities and easily managed and manipulated through dedicated tools. The challenge for companies is then to make good use of these massive data, assigning a qualified team, to allocate a substantial budget to extract strategic value and support the change related to access to data massive [8]. The identification of the most relevant data and that only a small percentage of the amount of data available to the company is a major organizational challenges of deploying a big data strategy. Due to the multiplicity of data sources into business, it is difficult to control this information overload. Within organizations, there are no clear and elaborate strategies to locate and extract new knowledge of this body of data. The major concern for companies is deciding how to exploit this wealth of data, "on average an advertiser would have fifteen different analysis tools to process data. These come from internal sources (via commercial services, CRM tools, website ...) or external (via third-party tools) ... then it seems difficult to make them talk to each other and thus to correctly process information ". The study of [15] was interested in the management of information in dozens of companies operating in six different areas. Their study showed that most companies do not know how. They do not know how to make good use of all the amount of data they have to improve their decision making. Some companies do not fully understand the data they have, or invest in data warehouses that are not aligned with their overall business processes to provide an overview that can be exploited when making decisions. Another study was conducted by [16] with 760 business managers around the world. Managers are attached to different departments ranging from the operation of computer services, marketing and legal

departments to customer service. The results of this survey showed that half of executives do not know how to take advantage of the large amount of data and how it is then necessary to organize.

Table 4: Organizational issues related to massive data

Aspect	Main issue
<i>Data quality</i>	Maintaining the quality when a large amount of data is external or unstructured
<i>Governance</i>	Evaluation of internal and external data policies, standards and regulatory environment
<i>confidentiality</i>	Issues relating to confidentiality and security related to the input data and results

It is therefore to establish a comprehensive governance strategy data to classify, prioritize and decide priorities for analytical and data combinations of crosses to do to extract strategic value. This questions the profile of the players who has the responsibility of this governance. A big data project requires good data governance approach but also new expertise in handling large-scale data. These specialists are rare and are called "data scientists". They need to be sensitive to the technological dimension but also managerial data to be creative in the crossing of data. In other words they are actors who are both competent in mathematics (for the control of statistics), computer (for a good exploration of virtual machines and servers) and strategic consulting in order to give meaning to the raw data and identify high-impact indicators for senior management[10]. On the labor market, the demand for data scientists profiles exceeds the available supply. Companies decide to form themselves their experts. Also, the web's leading fund analysis of massive data training and academic programs of forming future data scientists are increasingly offered by international universities and sometimes in partnership with companies. The profile of a data scientist also helps to bring different business functions (marketing department, IT department, finance) . This project cross is often put forward as an organizational issue size. For many leaders of Big Data projects, this type of project is a business transformation project that requires support the specific change. According to [16] , the real problem is the management of change since the real challenge for organizations is how to make the necessary changes in processes and human resources to implement analytical initiatives That requires a Big Data project. "Big Data is a component of the transformation of the company, it is transversal and affects all businesses. In this sense, Big Data is not an IT project: it is a new way of thinking and understand the information. So this is more of a cultural and technological

revolution as a new topic SI ".The sensitive issue of sharing data between departments arises quickly. It should then be understood that it is not changing the information, but to analyze it without breaking integrity. Furthermore it is necessary to train users in the techniques of handling and analyzing data but also to new approaches to decision making. This does not automate the decision but to help improve decision making. It is therefore necessary to explain and develop the data processing of context so that a good decision can be made [14].

3.3 Economic issues:

Overcoming organizational and technological issues ensures for companies a return on investment in a Big Data project. The very purpose of such a project is to implement an appropriate strategy to take advantage of the exponential glut of data at all company functions. The table below (Table 5) identifies the benefits of big data to different business functions (marketing, HR, finance ...).

Table 5: Big data inputs by business function

Function	Big data contribution
Marketing	Evolution of mass marketing to customized marketing targeting more efficient. A segmentation and prospect of customers thanks to a behavioral analysis of the consumer on the social networks.
Human resources	Mobilization of social media for more effective recruitment and anticipation of departure wishes.
Finance	High Frequency Trading. Better anticipation and fraud risk.
Logistics	Better regulation of traffic to optimize real-time transport stream.

Marketing services were the first to benefit from the advent of Big Data. Taking advantage of all available on the consumer, targeting techniques are more accurate and are spending Mass Marketing hyper Personalized Marketing .The arrival of big data, coupled with mobile technology now allows this kind of ultra-precise targeting [17]. All the systems we use daily (mobile technologies, GPS, social media, online transactions, etc.) are a wealth of information that helps commercial departments and marketing departments better understand the consumer to the point of anticipating needs. By following in real-time the behavior of the consumer, the behavioral and product evolution, and companies can then be reactive and adjust their actions according to the trend. In Finance, the Bank and the Insurance Big Data projects are also numerous. These projects, for example to help in making decisions concerning the data to keep in the regulatory framework [15]. The volume of data makes this type of arbitrage manage

customer confidentiality and therefore delete data after a certain time and preserve this data to the regulation agencies. Also in the business of trading these projects are also designed to identify the movements of suspect funds. This is the case for example for the Bourse Direct business. This can also be an opportunity to create new services for customers. Banks such operations often have historical over several decades. The use of this data can be useful for the bank but especially today for the bank's customer. Representative 5 billion records, the database supports complex research services can cross multiple criteria (dates, amounts denominated operation ...). "They allow to know his income on a particular period, its tax payments, or its total spending.

4. Big data is the vision of large companies:

An increasing flow of heterogeneous and often unstructured information generated by internet via all "sensors" of daily life within companies and outside. What to do with this data? How to manage? Store them? Use them? Treat them? What value do they have for the company and trades? Traditional methods of information processing were previously powerless to make sense of the volumes of information "stagnant". But today, complex computer algorithms coupled with the computing power and storage computers and the ability of certain profiles to "speak" the data by developing statistical analysis (Data Analysts), open up new fields Promising studies for many companies [12]. The purpose of Big Data to improve the efficiency of decision-making and make the entire chain more efficient value. The impact of big data on the economic model of business can be key because it can be challenged or threatened by some pure players (potential entrants) who have all the data, will invest new business tomorrow (Google, Amazon ...).

4.1 The BIG DATA decides the relevant sources and kinds of information for the company:

The Cultural Revolution digitally driven promotes the emergence of new business models, based on the sharing of information and knowledge within and outside the company. This collective intelligence developed in the extended company is a source of value creation and innovation, in a context marked by the speed and acceleration of the production of transactional and organic links. It invites men and women of the company to share a consistent vision, based on trust, central value of good governance [18]. The business transformation issues in the digital world are multiple presence in new areas of value creation, taking into account emerging practices in the social sphere, agile structure and open innovation processes, flexibility of the chain Value, governance and leadership. These mutations, which underlie the expansion of value production areas, represent a growth opportunity for

businesses, and induce rethinking of corporate strategy, and therefore the business model around three key areas:

- The customer experience,
- The organization of resources (and labor) and managerial practices,
- The data (resources, information flow and retention over time), the information being carried by the data and by the stream.

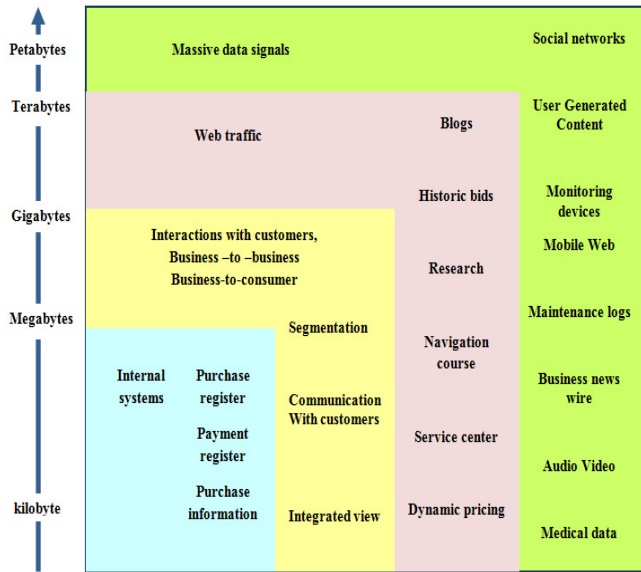


Figure 3: Data flows are becoming every year more and more numerous, important and complex.

This transition is not just about business, it affects the entire ecosystem and the wider society, "the value of production space now extends to the stakeholders of the company, social spaces, mobility and Personal time ". The interdependence of firms with their ecosystem (customers, suppliers, civil society, ...), in a global context where information literacy is central, is a reality that digital strengthens.

4.2 Key points of BIG DATA:

Why are we talking about Big Data today? Because new information fields appear, are accessible and usable. From this information, economic actors can devise new business models [19].

1. Offer Big Data is now part of the landscape of data processing solutions. This market is changing, with the emergence of many new players particularly from the Open Source - around Hadoop3 and its ecosystem.

2. What is new with Big Data, it is the huge amounts of data related to diversity and multiplicity of sources that are now available, and whose treatment can generate information with

high added value for the whole 'business. The purpose is to help decision making in a context where information has become a major strategic asset for companies.

3. Companies in BtoC4 seem more engaged on the steps of Big Data by their proximity to the end consumers. And while some companies BtoB5 still wonder about the ROI of Big Data for them, others tend to implement this type of approach in a BtoC6 approach.

4. Big Data is a component of the transformation of the company; it is transversal and affects all businesses. In this sense, Big Data is not an IT project: it is a new way of thinking and understands the information. So this is more of a cultural and technological revolution as a new topic SI.

5. To implement a Big Data approach within the company, the first step is to raise awareness of business on the hidden value of their information assets, the need for breaking down barriers between business and the value of external data, new field data with strong potential for the company.

6. On the concept of Big Data, ISD has an evangelistic role for Trades and accompanying them in the overall approach (show the process value by producing "pilots" from existing information or created from a crossing data). Processing must also take place internally ISD who must work on the technical prerequisites (development and opening of the SI) and organizational (governance, new skills, training in new technologies) Big Data, and consolidate its own standards accordingly.

7. Big Data is an iterative process that requires flexibility and agility: think big but start small and fast forward (policy of "small steps").

8. The quality of the information resulting from a big data approach is directly related to the quality of input data sets, they come from both inside and outside the company.

9. Big Data requires a contribution of specific skills (analysts, statisticians, data of lawyers, ...), but also infrastructure and specific technologies.

10. Ethically and beyond regulatory issues, Big Data is the question of trust and the transparency in the use of information.

5. Big Data is a company approach:

Making use of this term as much as a "marketing ploy", "disguising" offers existing storage than a true technological breakthrough, suppliers have taken big data. Difficult, amid the abundance of divergent definitions, to get an idea of what recent phenomenon. Big Data is a process of extracting the relevant information from a data set, the data set is characterized by Volume, Variety, Velocity and Veracity [20]. The volume itself is not a real problem, already being a key concern of many companies long ago. Only the combination of

two or more of these axes corresponds to an approach to Big Data. These "4V" appeared with the evolution of the web in recent years: social networks, the Internet of Things, the explosion of online video ... Huge amounts of data (volume) are published continuously (Velocity), in structured or unstructured formats from various sources (variety) and whose legitimacy is not always verified (Veracity).

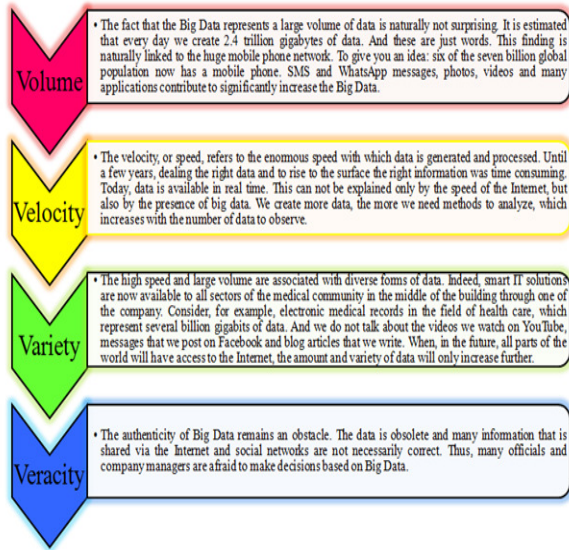


Figure 4: The Four V Of Big Data

Like cloud computing, implement big data into business is a process, not a project in itself. A "project" Big data does not exist. Big Data is a transverse process, which aims to optimize decision making on existing issues, but also on unidentified queries: One of the challenges of Big Data is to provide answers to the question "what information I do not have today would be likely to allow me to improve my business performance?". An approach to Big Data helps to highlight information, structured or not, to build and develop its base of strategic knowledge [21]. This approach thus enters a true enterprise decision-making practice.

5.1 Valuing the data to create new opportunities:

Big Data poses new challenges as the volume of data available and accessible now can be exploited to make sense of the data so far ignored. This is to enhance the data and create new opportunities for businesses, which must then imagine the potential impact of this repository in each of their trades. Some companies have, through their core business, a strong appetite vis-à-vis the data: analyzing the use that customers make offers available can help to structure the categories of consumption and make driving forward the Performance for example[22]. For others, use the information stored in databases is interesting to make a more efficient customer service, more

quickly detect an incident on a distribution network (water, gas, electricity), or to improving the fluidity of an internal process (act on the supply chain for example).

Tapping a big data approach can also help to offer new services: improving the information transmission chain can create a new form of pro-activity ISD vis-à-vis businesses to improve their processes and reduce thereby the internal costs. A Big Data approach needs to better understand the business environment in a world that goes faster is a decision support, and a way to measure and analyze the usage and consumer behavior, employees and all stakeholders. This type of approach can also lead to the creation of new business models, notably through the Open Data [20]. Contrary to popular belief, it is not necessarily to free publicly available data sets: Open Data can be a viable business model, in which the company is producing data.

6. Big Data in Morocco, a mixed evolution:

An unpublished survey on "The maturity of Big Data in Morocco," carried out on a panel of 300 companies of different sizes representing different sectors, was presented at the Med-It show. It shows that companies in Morocco have a great interest to Big Data projects; However, the passage intentions into actions seems to take a little more time. According to the study, nearly 71% of respondents have no current project in the area of Big Data, and almost all is not planning to launch the project before 6 months. This is explained by the fact that companies do not want to take risk for projects whose benefits are still poorly understood by most actors. Nevertheless, we find that Moroccan companies have realized the importance of Big Data in value creation and unavoidable aspect of the operation of this vast reservoir of available data [23]. From the responses received, it notes a rate of "wait" quite large: nearly 45% of the companies that responded to the survey do not expect short-term or not to launch such projects. Moreover, 24% of companies with a Big Data project into production deliver encouraging results. It still should put these results. Indeed, although all sectors are not yet involved in such initiatives, those who bet on Big Data have done on areas where there is a return of sizeable global experience. This trend seems to be confirmed with the companies planned to consider the launch of a project. It includes large areas of applications ie Customer Relationship Management (CRM) or optimization of operations, including the supply chain [17].

The High Commission for Planning (HCP), the official institution in charge of statistics, is working on a study of big data to adapt national statistics to "technological change". The Minister of Higher Education announces the partnership with Moroccan universities five multinationals, always around big data, but this time to train Moroccan experts of tomorrow. Banks, insurance companies, telecom companies and all the major national companies, including OCP, eyeing the new

strategic sector. Reflecting the growing interest in the topic on 11 April 2016, at the headquarters of the General Confederation of Enterprises of Morocco (CGEM), they were there: dozens of industrialists, researchers and entrepreneurs to follow for four hours, screwed to their headquarters to take part in the seminar "big data, business and industry." Assistance drank the words of Emmanuel Bacry, researcher at the CNRS (National Center for Scientific Research in France) and professor at the Polytechnic of Paris, who presented a lecture on "scientific and societal challenges of big data", followed by a discussion with manufacturers that offer solutions to companies. The opportunity to take stock of the growing power of big data and search the economic opportunities that it provides [20].

"Data is the new black gold, it is crucial for Moroccan companies to tackle this issue for the future that which has been represented in 2016 a worldwide turnover of 24 billion dollars," noted President Apebi (Moroccan Federation of Information Technology, Telecommunications and Offshoring). "We throw a net, and they gather the data": It's a bit that the spirit of Big data, as summarized in the Director General of the Moroccan group Medtech. To simplify, much data is accumulated at first, then an algorithm, a mathematical model, gives it meaning. The first Big data applications have been on the Internet search engines. "It started with a need, with Google, which has created a new branch of computer trying to index all content of the Web" says CEO of Digital Morocco Cluster, public structure / private gathering, including, sixty Moroccan businesses new technologies. Specifically, this can be a search engine but also the use of a customer database of a company that would seek telecom, for example, to determine when to send promotions to its customers. In short, a predictive system and the emergence of a discipline to which experts give a name: predictive analytics. Finally, the survey revealed a real commitment in terms of innovation, although there is still much to do, from the Moroccan companies to integrate new technologies into their business plan [24].

7. Our future approach:

Cases of application of Big Data are as numerous as the issues they raise. For health services, Big Data helps refine the quality of supported and patient monitoring, but what limits fixed are we are on the subject?. In education, it will improve the monitoring of educational pathways: the education sector is upset with the MOOC (Massive Open Online Content), videos, social networks.

Each student generates data (way to learn, memorize, method, results ...). The impact in terms of evolution of learning and teaching practices is huge [25]: that will innovate in education? Banks and insurers can adjust their offerings and adjust their prices according behavior of their customers, but also perform

predictive studies on changes in consumer behavior,... And if tomorrow the data used by banks became a commodity sold more expensive than the financial products? Or in the car: with the connected car, the car becomes a source of new data. Tomorrow, each key component will communicate with the rest of the car, which generate billions of interactions [26]. These data may be of interest in terms insurers, motorway companies, the State, and probably a few pure play digital already working on the car without a driver. Finally, retain that there were four great epochs in the evolution of humanity: agriculture, industry, services and information. The business models of the new economy emerged in 1990, then had it right too early, saying that information would become a key strategic asset for businesses and anticipating practices that seemed so improbable at that time and yet are now Reality? The limits are those that are fixed: between "letting go" and everything regulate is probably an acceptable medium ... It remains to find it.

8. Conclusion:

Big Data is now seen as the digital revolution facing the world for two decades, with massive data recovery technology. It is actually primarily a more global upheaval, including an industrial revolution whose technology is only the weapon used to move on the chessboard of stability. Many countries considering this phenomenon in a posture analysis of technology trends and potential market. Yet these are all actors must mobilize around this great subject, including the State itself, so that the risks of Big Data are transformed into opportunities. It must set an example in this area, and conditions both academic and legal must be met. Morocco has undergone this holistic digital transformation of the world, with a civilian population as the first player uses the public Internet, social networks and mobile lately, upsetting models and hierarchies. Morocco has "suffered" in the sense that the economic models came afterwards, with more or less success, especially in telephony and business applications such as off-shore and near-shore. This success has also allowed the entry of Morocco in broader diversification of its industrial markets, which made it a model in relation to the ecology or the efficient management of port strategies among others, suffering the effects of uberisation of global actors, as in the tourism, with travel agents to platforms such as Booking.com or Expedia, while telecom operators have seen the economic value of their infrastructure to be captured by the digital giants.

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