



RESEARCH ARTICLE

CONTRIBUTION OF DATA FOR THE DEVELOPMENT OF THE REGIONS AND ITS IMPACT ON SOCIETY

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ABSTRACT

Today the needs present and future of public services are exponential, due to the increasing size of the population and the quality of services they require, derived from the above, is necessary generate proposals to collaborate with local, regional and national governments of Latin American nation. In addition to the projection of solutions that exceed the time limits of governments. In this sense, the data, and the information technology are the pillars to stimulate the solutions, because, not only is required to provide the public service but generate future strategies based on information technologies and bigdata solutions to meet and visualize properly the needs of such services. is for this, that this proposal is aimed at creating, management and use of data, information, big data to support in longitudinal and lateral strategies of governments to adequately cover these services.

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INTRODUCTION

The information is strategic for the decisions take in anywhere in the world, particularly for the governments specifically about the information about citizen and the projection of the needs in the long term. For this, they should create strategies to solve problems or needs the society, considering different variables such as population growth, economic resources, and include in the solution, the advancement of information and data technology. However, such the big data requires of analysis, classification, datamining, etc., for collaborate with the take decisions. That is why efforts are required to suggest alternatives in the use of information technologies, Big Data to accumulate the information generated continuously and serve as feedback for future decisions.

Problem Statement

Given the volume of information that every day is generated about of society like their currently and future needs, problems, etc., is important to classify and sort to collect the relevant information, however, it require techniques for manage data, otherwise, the take decisions without considering different variables and relationships in the long term generate problems, and they bring as consequences waste of economic resources, increase of new problems, among others.

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In this sense, the big data offers a range of possibilities of accumulating information and segmenting, classify and sort interact with information technology to facilitate decision-making in the long term.

Previous Studies

This research was preceded for studies about the organizational structures and their collaboration in the successful integration of information technology in local public administration. In which the was identified the great volume of information and timeliness of provide this to the citizens in large quantities but the governments do not have the infrastructure for classification and segmentation of information, leading to decision making based on past information and where missing variables that can argue the decisions taken in the short and long term. This happens in most of the municipalities of Mexico, where it has not been given the importance to information and its accumulation for collaborate to take decision.

Theoretical Framework

Theoretical context about of the proposal

It is important to argue the theoretical context of the proposal, hence presented below the theoretical foundations.

Data: The data word has its etymological origin in the Latin word "Datum" meaning "given". However, strictly speaking, in the field of research, the data are the result of a development process that is the fact must be produced. Also, it is information extracted from the reality that must be registered in any physical or symbolic support, which involves a conceptual development and, also, that it can be expressed through some form of language, has the following concepts: conceptual design, information content, registration in a physical expression of the same support in some form of numerical language or not (Gil, Javier, 1994).

Data type: Quantitative data are those that can be counted or measured. Qualitative data are those that can only be described.

Information: Data set with a meaning, that is, reducing uncertainty or increasing the knowledge of something. Information is a message with meaning in each context, available for immediate use and provides direction to actions by the fact reduce the margin of uncertainty regarding our decisions (Chiavenato Idalberto, 2006). The data are often described as discrete elements; the data are contextualized and it convert in information (Toffler Alvin and Toffler Heidi, 2006).

Big data: It a term that describes a large volume of data, both structured and unstructured, which contain data and these are stored in a database, making organizations to analyze these, to create ideas that lead to better decisions business and strategies (The power to know, 2015).

The current dimensions of the Big Data:

- **Volume:** Organizations collect a variety of data, including transactions, social media and historical information.
- **Speed:** The data streams traveling at high speed unprecedented and should be treated in a timely manner.
- **Variety:** The data come in all formats, from structured and numerical in traditional databases such as unstructured documents, email, video, audio, and other documents.
- **Variability:** In addition to the increasing speeds and varieties of data, such data rates can be highly incompatible, which requires able tools to adapt various types of information at high speed this is a big challenge for the Big data.
- **Complexity:** The data come from multiple sources, making difficult the link, debug and transformation of data across systems. However, it is necessary connect, correlate relationships, hierarchies and multiple data links, otherwise the data may be out of control

Information technologies: They are tools and methods used to collect, store, manipulate and distribute information, which is associated with decision-making (Bologna and Walsh, 1977). The Information Technologies are the technologies needed for the management and processing of information that create, modify, store, protect and retrieve that information. These technologies serve as an essential element of the Information Society, enable the universal ability to access and contribute information, ideas and knowledge. they do possible to promote the exchange and strengthening of global knowledge for

development, allowing cultural, educational and scientific equitable access to information for economic, social, political, health, giving access to information and they it is in the public domain (Fundación Telefónica, 2007).

Public services: In its most general sense, the public service is provided by an entity, usually belonging to the State or is part of this, to achieve the general welfare of society and its members. This implies that both actions as not taken (omissions) can be reviewed and sanctioned by a legal regime, administrative law, or failing that, by the common system of all citizens, choice will depend on the legal regime it regulates (Ortiz, Gaspar, 2003).

Human development Index: The United Nations Development Programmed (UNDP) defines human development as "the process of expanding the range of choices people, providing them with greater opportunities for education, health care, income and employment and even has to do with the total human choices from a physical environment in good condition to political and economic freedoms "The HDI is a composite index that considers three basic elements, two of which refer to capacity building (longevity and level of knowledge) and a third (standard of living) which is a measure linked to the material well-being and household consumption. To construct this index studies three elements: health level, represented by life expectancy at birth, educational attainment, represented by the rate of adult literacy and mean years of schooling and finally income, represented by GDP per inhabitant, after a double transformation which reflects the difference in purchasing power existing between one country and another (GDP / PPP) (United Nations Development Programmed, 2016).

Millennium Development Goals: The eight Millennium Development Goals, ranging from halving extreme poverty to halting the spread of HIV / AIDS and providing universal primary education by 2015, constitute an agreed plan for all nations of the world and all major development institutions worldwide. They have rekindled unprecedented efforts to help the poorest in the world.

- Eradicate extreme poverty and hunger
- Achieve universal primary education
- Promote gender equality and empower women
- Reduce mortality among children under 5 years
- Improve maternal health
- Combat HIV / AIDS, malaria and other diseases
- Ensure environmental sustainability
- Develop a global partnership for development

International context about the use of Big Data and Open Data

In the international context, about the use of Information Technology and strategic data. Several international organizations have spoken, such as the United Nations, which has defined a framework for development of electronic government in four levels of maturity, which served as a reference for countries to define their own models, these levels are (ONU, 2014):

- Emerging Level
- Improved level

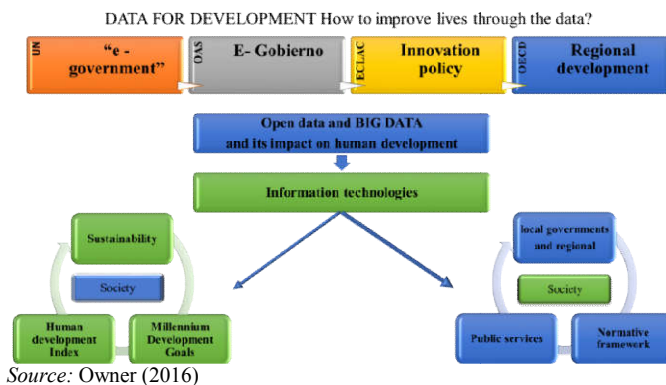
- Transactional Level
- Level connected

By other hand, in the e-government forums of the Organization of American States - OAS (2010), mention the importance of models of maturity of an Electronic Government (OEA, 2010). In this same sense the Organization for Economic Co-operation and Development - OECD (2005), conducts studies and generates proposals for the satisfactory evolution in the use of technologies and their proper implementation (OCDE, 2005). The United Nations Economic Commission for Latin America and the Caribbean - ECLAC (2006) as part of the UN, makes contributions and recommendations to efficient innovation policy in Latin America (CEPAL, 2006).

Proposal for the contribution of data for the development of regions and its impact society based en Big Data and information systems

This proposal is based on the accumulation of information in an orderly, timely and useful for strategic decision-making, taking the regulatory frameworks of each country, region and locality, besides taking into consideration international recommendations and experiences countries that have implemented this type of technology. It is presented below in Illustration 1. A sketch of the flow and the main actors.

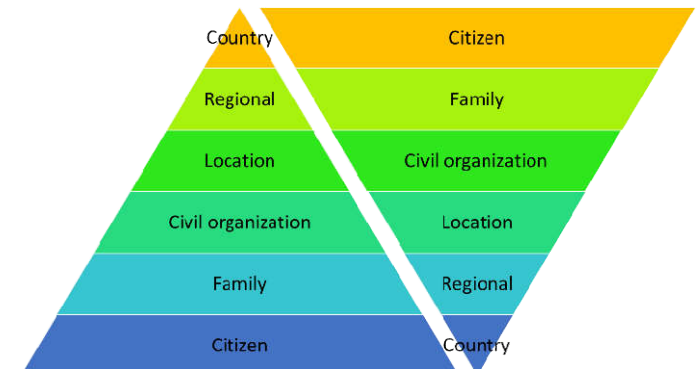
Illustration 1. Data for the development



The second pillar of these large volumes of information serve for the preparation of local development plans in coordination with regional, national and Latin American governments. The third pillar is fed by Bigdatos that are attached to public services, the Human Development Index (HDI) and the Millennium Development Goals (MDGs). It is therefore important to design algorithms, and implement mathematics / statistics to ensure the projection and strategic storage to generate projections, based on the past, present and future. This pillar is important because identify which indicator requires greater attention, as well as the area required, the cost of coverage and how long estimated duration, among other data. The use of Big data is exponential, not only to generate strategies in the care of the citizen, but to know the potential, gaps and development of citizens. The fourth pillar is to have a robust and adequate structure to care, maintenance from trained economic, technological and human resources and specialists, achieve lasting information and allow the development of the information and results expected from this. This proposal is aimed not only generate strategic information for the regions in each time, in addition achieves permanently evolve. The information generated should be free and transparent (with precautions information security), for all

involved as it will not only serve local governments, but also of citizens for their own decision-making on education, health, food, etc.

Illustration 2. Pyramid access and use of information



Source: Owner (2016)

A practical example about the information and the big data is in the educational sector:

- Students
 - Educative level
 - Age
 - Performance
 - Strength
 - weaknesses
 - Etc.
- Teaching staff available
 - Training
 - Level studies
 - Strength
 - Weaknesses
 - Potential development
 - Etc.
- Infrastructure
 - Number of schools
 - budget allocated
 - Covering region
 - Etc.
- Family
 - Per capita income of the citizens of the region
 - Number of members per family
 - Occupation of father and mother
 - Occupation of brothers
 - Etc.

From these data and information crossing, we can determine which area lacks infrastructure, and therefore requires greater financial support, skills, strengths of citizens, contemplating their environment, the resource potential, among others. It should be noted that these data will help to project not only information but possible actions to take (decision-making). These data must be generated in an orderly, immediate and classified manner, ensuring all properties of information (completeness, reliability, timeliness and transparency) to a right decision, just as through methodologies for data processing should be done crossings information to achieve support to make strategic decisions. In this example, while there is already information in each region, this in isolation, is not relevant, and sometimes the decisions made have a lag of more than one year, which no longer has the same effect

planned, hence the importance of updating, also the decisions taken must be projected government periods to long-term. So, we can talk about health, innovation, transportation, infrastructure, public security, industry etc. However, it is elementary reiterate that the information produced this volume of information must be debugged and will create, develop, ideas in these fields, ie the possibilities and collaboration in improving the lives of citizens are exponential to this information, however, the decision still fall into the decision makers themselves who should be prepared for the interpretation and projection of information. is recommend the creation of an autonomous body for the administration and operation of the infrastructure in the Big data generated, reiterating the security levels of the information they require.

Illustration 3. General process to create the infrastructure



Source: Owner (2016)

DISCUSSION

Other opportunity that opens with the information that yield the big data is that it will require research on phenomena arising from the decisions made. Hence it is exponential the opportunity to take advantage of this technology. It is equally important to note that the responsibility for decisions remains of people, who must be prepared to interpret, develop, project information and phenomena arising from it besides succor of information technology and other disciplines such as mathematics to enrich the process of generating information and decision-making. In addition to this, it works with ideas that can be realized with the aim of supporting local and regional governments, which are gradually implemented to improve the Human Development Index.

Conclusion

Given the high demand for public services for citizens, and resources invested by governments in addressing these, it is important to direct efforts to use the Big Data for the development of proposals and ideas that support to governments to implement strategies, these long-term solutions could provide services sustainable manner, maximize resources. It is therefore suggested support of this technology, "Big data" to make decisions that reflect a better standard of living for citizens and that they can meet future needs. For this reason, it is necessary to generate comprehensive proposals.

Future works

The next works in a short medium and long term are:

- Proposal of an organizational structure for the successful incorporation of information technology in local governments
- Development of an information system based on knowledge (information system knowledge), using data mining and transactional information systems and decision-making.
- Proposal of a methodology for the development of information systems in the field of public administration.

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