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Big Data for Big Impact

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Introduction:

The World Telecommunication and Information Society Day (WTISD) is celebrated worldwide on May, 17th. Each year, a different theme related to information, telecommunications and technology is selected to inspire global debate, discussions and agenda-setting in and around the ICT domain. To serve this year's purpose, "Big Data for Big Impact" was adopted as the running theme by the International Telecommunications Union (ITU). This is in line with ITU's focus to involve and gauge the impact of big data analytics on development. The union believes that the involvement of big data can greatly improve the effectiveness and efficiency of development programs and therefore drive the reform process forwards towards attainment of the 17 goals espoused under the Sustainable Development Goals (SDGs) to be achieved by 2030.

Through this note, we wish to define and introduce the various dimensions, components and utilities of big data

and also dwell on the reasons why it has experienced the recent exponential surge in popularity, especially amongst the leading transnational corporations of the world.

To put things into perspective, big data refers to large and colossal amounts of data being created by people, tools and machines. Every day, around 2.5 quintillion bytes of data is created - so much that 90% of the data in the world today is a product of the last two years alone³. The majority of this data is generated from the internet-enabled devices with sources of data like sensors used to gather climate information, posts on social media networks, digital pictures, and videos and banking transaction records. Around a year ago, the World Bank organized a Big Data Innovation Challenge that brought forward ideas to apply big data techniques as tools to estimate poverty and for climate smart agriculture, user focused identification of road infrastructure condition, etc.⁴

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³ IBM's Smarter Cities Challenge: Syracuse. Dec. 2011;
http://smartercitieschallenge.org/city_syracuse_ny.html

⁴ <http://blogs.worldbank.org/voices/meet-winners-and-finalists-first-wbg-big-data-innovation-challenge>

The Problem Set

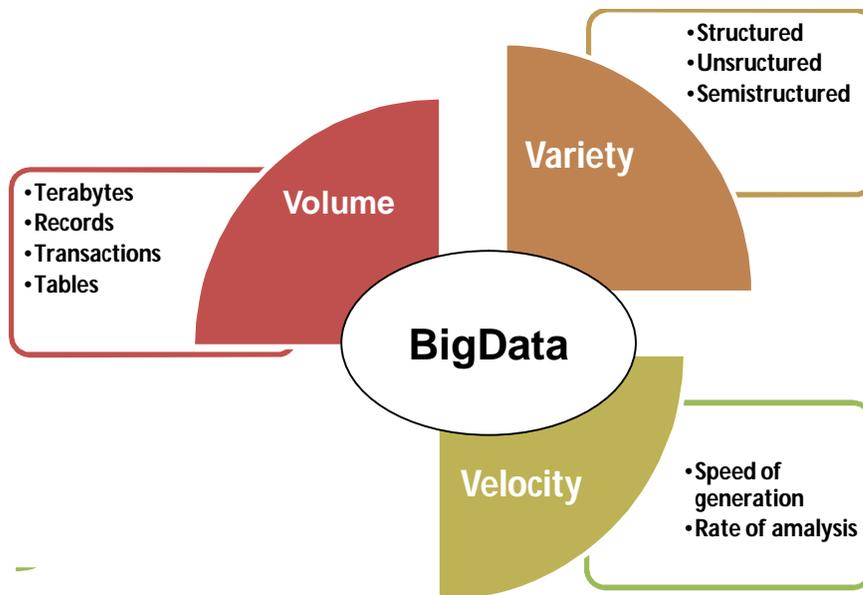
The size and complexity of data that is being created cannot be handled by traditional database management tools and data processing applications. The move towards larger data sets is due to the additional information that can be derived from analysis of a single large set of related data, compared to separate smaller sets with the same total amount of data. The amount of big data, therefore, offers new opportunities for production, creation and dissemination of knowledge and to enable governments and private sector organizations to take decisions backed by credible data and analytical support.

The challenge, however is to realize and unlock the potential of big data and to develop and nurture an accommodative environment and supporting technology, tools and mechanisms that can enable application of big data across various governmental and non-governmental platforms that are deemed to be the potential users of the technology. The challenge also is regarding capturing, storing, analyzing, and visualization of data; big data is not only expensive to collect and store but also raises many an administrative and security concerns like data privacy.

The 3V Model

Big Data can be defined by the 3Vs of Volume, Velocity and Variety. The 3V's regarded as the basic pillars of big data were proposed by Doug Laney in his Metagroup publication from 2001, titled, '3D data management: Controlling data volume, variety and velocity'. The figure below demonstrates the 3V model while also outlining its main components and characteristics:

Figure. 1:



Applications: Do Adoption Barriers Exist?

Big data in governance can have a huge impact, especially in governance areas like industry, services and trade. By applying the tool, governments can access information that is imperative for decision making and ensure constant accountability, monitoring and evaluation. In the healthcare sector for instance, governments can monitor healthcare expenditures, related health outcomes and the effectiveness of the available and incumbent health programs and systems through a constant monitoring and evaluation mechanism enabled through the application of big data tools. An application of big data tools for ICT in the health sector was done through the Teemardar online inventory management tool developed for Sheikhpura in 2016⁵.

In the Agriculture sector, monitoring and evaluation is even more difficult given the complexity related to the transactions, production techniques and issues like market access and value chains, in the sector. Several studies including the recent report on the agriculture published by the Shahid Javed Burki Institute of Public Policy⁶ point towards the effectiveness of IT-enabled services, ICT and big data tools for agriculture growth in Pakistan. The report proposed IT support centers in the rural areas, smart agriculture and market information systems for agriculture growth.

The influence of big data on the IT industry can also not be denied. The massive data generated from sensor-enabled machines, mobile devices, cloud computing, social media networks and satellites help different organizations and governments around the world to improve the way business is conducted, processes are defined and followed and how the key policy formulation and decision-making is undertaken.

Big data tools can be utilized for nearly all governance sectors and functions and is definitely the new way governments can manage and support their decisions and ensure more effective planning and allocation of resources.

Conclusion: The Future of Big Data

According to Susan Hauser, "Big data absolutely has the potential to change the way governments, organizations, and academic institutions conduct business and make discoveries, and it's likely to change how everyone lives their day-to-day lives"⁷. Companies like Google, Yahoo, Microsoft, IBM, Facebook, Amazon that are investing a huge amount in Big Data research and projects.

⁵ Teemardar was an online health inventory management tool developed by the Shahid Javed Burki Institute of Public Policy for the District of Sheikhpura. The tool was developed through funding and assistance of the Sub-National Governance Program of the Department for International Development, UK. It has been functional since first quarter of 2016.

⁶ The Shahid Javed Burki Institute of Public Policy published its Annual Report for 2016 titled "State of the Economy: Agriculture and Water".

⁷ Susan Hauser is the corporate vice president of Microsoft".

“International Data Corporation (IDC) estimated the value of Big Data market to be about \$ 6.8 billion in 2012 growing almost 40 percent every year to \$17 billion by 2015. By 2017, Wikibon’s Jeff Kelly predicts the Big Data market will top \$50 billion”.⁸ Google is launching the Google Cloud Platform, which provides developers to develop a range of products from simple websites to complex applications. It enables users to launch virtual machines, store huge amount of data online, and plenty of other things⁹. Basically, it will be a one stop platform for cloud based applications, online gaming, mobile applications, etc.¹⁰.

In conclusion, one must acknowledge that big data is a growing field, where a lot of the work in research and developing new technologies and tools is yet to be done. However, within its current use, technology and digital platforms, in particular big data has a significant role to play in the inclusive and sustainable development of the world, specifically for countries located in the global south. Governments in this part of world need to channelize their efforts, mobilize funds and expertise to celebrate the world telecommunications and information society day with a focus on encouraging and facilitating new and entrepreneurial ideas by arranging policy-related seminars and entrepreneurial symposiums that become a futuristic platform for research and innovation in IT, most particularly, the big data domain.

⁸ <http://www.forbes.com/sites/siliconangle/2012/02/29/big-data-is-creating-the-future-its-a-50-billion-market/>

⁹ https://en.wikipedia.org/wiki/Google_Cloud_Platform

¹⁰ <https://cloud.google.com/>