The Impact of ICT and Big Data on e-Government

Joseph M. Woodside¹, Shahram Amiri², and Brianne Boldrin²

¹²³Department of Decision and Information Sciences, Stetson University, DeLand, FL, USA

Abstract - Given the global debt crisis, increasing government debt ratios are unsustainable. An e-government model utilizing ICT and resulting Big Data is anticipated to reduce costs and decrease debt. This poster paper develops the research background methodology and outline for development of an e-Government model using global indicators.

Keywords: Big Data, e-Government, ICT

1 E-Government, ICT and Big Data

Current and developing technologies promote the advancement of E-government. E-government uses information and communication technologies (ICT) to allow the government to connect with citizens and private groups electronically. This provides citizen centered services that increase the transparency of governmental agencies through the integration of various departments and programs. Two major trends have increased E-governance projects for ICT. The first is the recent development in the ease of the use of the governmental operational systems. The second is the increasing use of ICT in the daily lives of citizens, growing the community’s level of knowledge and skill [1]. Literature says, “E-government systems frequently encompass strategic goals that go beyond efficiency, effectiveness and economy to include political and social objectives, such as trust in government, social inclusion, community regeneration, community wellbeing and sustainability” [2].

Big data, cloud computing technology and increased departmental communication have been described as recent development trends in E-Government. Big data is the massive amount of digital data that is collected and compiled from a variety of different sources. Sources say, “90% of the world’s data today was generated during the past two years, with 2.5 quintillion bytes of data added each day”. A large amount of this data is unusable to relational databases because of its structure. Resources are needed to transform this data into more than just figures. Data is a valuable resource that has new value and can increase discovery and business intelligence. Governments can use big data to help serve their citizens and overcome national challenges such as rising health care costs, unemployment, natural disasters and terrorism [3]. Recently, the Obama admiration began a Big Data Research and Development Initiative with the intent to “improve [American] capability to extract knowledge and insights from large and complex collections of digital data; harness these technologies to accelerate the pace of discovery in science and engineering; strengthen national security and transform teaching and learning” [4]. Big data will help enhance the use of E-government along with the use of several other technologies.

2 Cost Savings from ICT and Big Data

Today’s literate provides a limited amount of data and research that significantly supports the overall cost savings of the government with the implementation of an ICT system [5]. However, many works of literature do note the cost savings that the ICT provides to citizens once the system is implemented. Recently, a study was conducted with the Road Safety and Transport Authority in Bhutan. The study analyzed the transition of several offices from a manual system of issuing drivers licenses and automobile licenses to an electronic database system. The old system required that the licenses be sent from four regional offices to a main office for approval. This resulted in a large amount of backorders and a long duration of travel time (at least 2 weeks each). With automobile documents requiring renewal every year and drivers licenses every five years, the volume of documents was very high. The government hoped that an electronic system could help streamline this process and reduce turnover time so a new IS system was installed in November of 2004. The system was completed less than a year later in July of 2005. In order to retrieve substantial data, the licensing system was studied before the IS implementation as well after the new system had been fully functioning for a significant amount of time, in 2007 [6].

Data showed that the activity based cost of direct labor fell 24%. However, the costs to implement the system itself rose 43% [6]. Literature cites a high rate of project failure, the learning curve and the need to implement a system simultaneously to an existing system, as some of the challenges of ICT similar to the project in Bhutan [7]. However, there are several cost and service benefits the citizens receive through successful implementation. The customers have better service, a higher level of quality and fairer treatment. This can allow the customer to cut down on travel expenses and the time that they spend away from work or waiting to get a license. A similar study conducted at seven service locations in rural and urban India also concluded comparable findings. They found that after the various projects began using ICT systems, the number of trips citizens made to complete transactions for a service were reduced at
all seven locations, thus reducing the citizens travel costs. They also found that the wait time at all seven locations was reduced 30-60%, resulting in a reduction in forgone wages [5].

Recent publications also recognize cost savings through the correct research and use of big data. The British government could make a savings of £33bn through better use of big data [8]. This large predicted figure is the result of better data collection, storage, analysis and interpretation. Government officials stated that the use of data should increase the quality of decision-making and increase the collaboration between departments. Currently, the siloes in government lead to bad decision making because of the poor and restricted sharing of data and communication. With an improved big data system, information can become more accessible from all departments and can be exchanged more frequently. Big data can also help the government by decreasing the amount of fraud that occurs after the ability to complete a more comprehensive analysis on tax submissions data. Data can also be used to be the base of a health care system that is more focused on preventative care and chronic care. This will create a much greater return for the public information [8].

3 The Global Debt Crisis

It may appear that a country’s capability to produce hinges on the workers and machines that it employs despite its balance sheet, however, mass production doesn’t always result in overall wealth [9]. While production and economic growth have increased across the world, the combined debt that counties owe, including governments, corporations, banks and households, has also increased dramatically. Literature claims that since the global crisis at the end of 2007, world debt has increased a whopping 57 trillion dollars or 286% of global economic output. Since 2007, China, one of the largest growth economics in the world, recorded a ratio of debt to economic output up 83 percentage points. This debt can have catastrophic worldwide impacts. It has been cited that public or private high debt, causes economy’s to be increasingly vulnerable to shifts in the economy and can act as the fuel to extreme booms or busts [9].

In the early 2000’s, five countries were predicted to act as the future “drivers of global growth”. These five countries were: Brazil, Russia, India, China and South Africa. The acronym BRICS was coined to represent these five countries of promising markets for financial capital. While each of these countries are unique, literature offers support for some similarities that may have helped these countries produce some of the largest economic growth in the world. One of these similarities is the marriage between global capital and cheap labor. China and Russia both have capitalist regimes with the capability to control workers [10]. Slovenian philosopher Slavoj Žižek writes that China “seems to embody a new kind of capitalism: disregard for ecological consequences, disdain for workers’ rights, everything subordinated to the ruthless drive to develop and become the new world force” [11]. Conversely, Brazil, South Africa and India have electoral democracies, however; these countries also have power central bureaucracies that choose profits over welfare. These governmental characteristics have caused dramatic implications within each of the BRICS. Many social, political and economic problems have risen within the countries. Nobel Peace Prize writer Michael Spence predicts that as the trade with BRICS increases “the future of emerging economics is one of reduced dependence on industrial-country demand”. Additional sources support this claim and suggest that the BRICS’s problems may stem from a dependency on Global economies. This has caused a disheartening domestic demand and an increasing amount of displacements in the local market [9].

4 References