Big data analysis of local government 3.0: Focusing on Gyeongsangbuk-do in Korea

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ABSTRACT

In the era of Government 3.0, local governments focus on establishing, maintaining, and strengthening relationships with citizens to fulfill "service government"; they thus engage in administration customization. This research aims to provide a structural understanding of local Government 3.0 through network and semantic analyses of Big Data gathered from the homepage of Gyeongsangbuk-do, North Gyeongsang Province in Korea, and Naver and Daum, major Korean portals. Results show that information and opinions about future policies, issues, and plans, and about the vision of provincial government, are dominant on the portals, while the Gyeongsangbuk-do homepage mainly plays a role for communicating public grievances and requests. The portal sites are more suitable places for giving information about and discussing technologies and urban policies than the homepage is. This study contributes to the analysis of Government 3.0 on a local level. In addition, it can be used as a reference and comparison by other countries or local governments and scholars interested in the issue.
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1. Introduction

The impact of new technology on information access, government service delivery, and public attitudes about government has long been debated by observers, researchers, and policymakers. Each technological innovation has sparked speculation in regards to its longer-term social and political impact (Carter & Belanger, 2005; Dombrowki et al., 2014; King & Cotterill, 2007; West, 2004). However, the Internet has brought more than a technological breakthrough. It has stimulated a transformation in the philosophy and organization of government.

The arrival of the Internet and the World Wide Web marked a watershed in information technology use by shifting the focus of governance to its external relationship with citizens (Seneviratne, 1999). Technology has certainly played an important role in fostering this change. From the newsgroup and commercial email technology that appeared in the mid-1980s, to the development of the World Wide Web and Web browser technology in the early 1990s, to the expansion of portal and online services in the 2000s, the Internet has gradually matured into a cost-effective and user-friendly platform for citizens and officials to communicate directly with each other and for the delivery of information to the public.

Information and communications technology (ICT) enhances interaction by overcoming geographical distance, promoting ideological variety, opening citizens to more diverse viewpoints, and encouraging deliberation (Codagnone & Wimmer, 2007; Snead & Wright, 2014). The interactive nature and ability to speed communications have the potential to make governance function better than it currently does. Technological innovation is leading to the proliferation of "e-government" and thus the delivery of government information and services online through the Internet or other digital means.

In the 2010s, revolutionary changes led to the creation of the Korean government's Government 3.0 initiative, a nonhierarchical, nonlinear, and multi-channel ecology that can be accessed at any time and place according to citizens' needs, uses, and satisfaction at the individual level. The term "Government 3.0" has gained much attention from the public since the 2012 presidential election in the nation (Nam, 2013). Geun-hye Park, the Korean president, announced Government 3.0 as a new paradigm for the government's tasks in her inaugural ceremony in 2013 and decided to invest $45 million in the Big Data for Government 3.0 project over the next 5 years (Park, 2013).

Driven by ICT and data evolution, the Government 3.0 initiative transforms existing administration from typical bureaucracy-based mechanisms to task-centered and program-centered mechanisms for collaborative administration. The recent orientation of local government portals in Korea provides evidence that the paradigm shift is taking place as well. Local governments are using information and user-oriented portal designs, which in each case requires a dismantling of departmental thinking and a reorganization of information according to citizens' perspectives and interests.

The Government 3.0 drive may offer far more than the promise of the technological potentials of Web 3.0, of which the main features

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are personalization and a Semantic Web, providing customized and intelligent services according to the demands, characteristics, and preferences of individuals by storing and analyzing the records of individual lifestyles via information devices and sensors connected onto networks (NIA, 2008). While Government 3.0 citizens have convenient and efficient access to required information and services, they also enjoy flexible management, interdepartmental services, formal and informal feedback through multiple channels, virtual but direct interaction, and user customization and personalization.

Government 3.0 environment may enhance local democracy through greater and more direct citizen input into policy making, an expansion in the scope of policy deliberation, and reduction in the intermediate barriers to information dissemination, thus giving citizens new access to the levers of power in government. Local government is actively promoting the openness of public data and has expanded the use of social media. As more information reaches citizens, the greater their potential to influence and make informed choices about how government touches their lives (O'Neill, 2001). In addition, technology-driven local Government 3.0 increases transparency, which will bring governments and citizens closer, reduce corruption or power abuse, and lead information to be correctly interpreted and processed. Thus, the local government and citizen-generated content and communication found on city portals give new meaning to "government of the people, by the people, and for the people" in the era of Government 3.0.

Although the benefits of local government portals are numerous, there are significant challenges associated with developing and implementing them in many countries. A high percentage of e-government portal efforts has been failing at an alarming rate (United Nations, 2011; Venkatesh et al., 2014). As Belanger & Carter (2012) argued, while research on e-governments and their online platforms, such as homepages and portals, began in or around 2000, it is only recently that researchers have increasingly begun to examine them in their own right, apart from other commonly researched technologies. A majority of research describes specific governmental initiatives, the status of the portals, or the rate of success or failure of such initiatives (Saxena, 2005).

There is not much research, however, that specifically focuses on Asian countries and provides a richer understanding of what drives e-government portal adoption and the extent of use of such portals (Venkatesh et al., 2014; Vicente & Novo, 2014). Moreover, the role of Internet-related resources in Asia and the online discourse of local public administrations remain little explored, while local governments still rely significantly on the direction and support of higher authority such as President and Prime Minister (Valero, 2015).

Future governments are expected to advance toward Government 3.0, preferring Semantic Web-based government in which the services are personal, intelligent, and appropriate to the conditions and preferences of each individual (NIA, 2013). Government 3.0 is also intended to make information sharing more equitable and transparent among the central government, local governments, government agencies, and the public (Nam, 2013) through various channels, data evolution, and ubiquitous services provided and processed online. On the basis of these arguments, through semantic analyses of Big Data and online interviews, this exploratory research aims to provide a structural understanding of local Government 3.0 in Korea where Government 3.0 is employed as a symbol of the superior national policy overarch and directs many public programs and initiatives.

2. Literature review

2.1. E-government

E-government is a generic term for Web-based services from agencies of local, state, and federal governments. E-government uses information communication technology and particularly the Internet (Gartner Group, 2000; Liikanen, 2003; United Nations Department of Economic and Social Affairs, 2004; World Bank, 2011), to support government operations, engage citizens, and provide government services.

ICT is improving the efficiency of government and increasing information and service ease of use for citizens. The development of the Internet and Web technology makes it possible to combine the administration process with electronic elements to improve the work of public officials and the methods of dealing with civil affairs, as well as helping citizens to extend their means to access government with ease.

Government innovation driven by ICT is leading to an interest in the characteristics of e-government from various fields. The United Nations Department of Economic and Social Affairs (2004) defines e-government as the "use of ICT and its application by the government for the provision of information and basic public services to the people." More broadly, e-government can be referred to as the use and application of information technologies in public administration to streamline and integrate workflows and processes. It effectively manages data and information, enhances public service delivery, and expands communication channels for the engagement and empowerment of people (United Nations Department of Economic and Social Affairs, 2014). According to the World Bank (2011), government agencies driven by information technology have the ability to transform relations with citizens, businesses, and other arms of government. The resulting benefits can be reduced corruption, increased transparency, greater convenience, revenue growth, and cost reductions.

Liikanen (2003) identified e-government as the "use of information and communication technology in public administrations," combined with organizational changes and new skills in order to improve public services or democratic processes and strengthen support for public policies. According to the Gartner Group (2000), in the private sector, e-government is the continuous optimization of service delivery, constituency participation, and governance by transforming internal and external relationships through technology, mostly the Internet and new media.

To sum up, e-government is a form of government services system that supports administrative tasks and induces citizen participation by using ICT. Improvement in government services can raise efficiency and transparency, while citizen participation can promote participatory democracy through mutual interaction. This interaction may be in the form of obtaining information, filing of returns, making of payments, or a host of other activities via the World Wide Web (Sharma, 2004; Sharma & Gupta, 2003).

This study assumes that e-government enhances trust in and satisfaction with the government administration by providing governmental innovations based on ICT. Government innovation using ICT not only enhances administrative efficiency and transparency but also induces citizen participation and collaboration through information sharing and interactions among citizens, enterprises, and the branches of the government.

2.2. From Government 2.0 to 3.0

E-government based on ICT raises administrative service satisfaction along with government innovation and the development of democracy. The development of ICT in Government 1.0 changed the task style of public officials, improving the type of government. Government 1.0 established the computerization of the internal administration serving government-centered services.

Government 2.0, based on Web 2.0 (Maio, 2009; Mintz, 2007), provides computerized administration in a citizen-centered two-way service system, using social media, key technologies even in times of crises (Kim et al., 2015). According to Shannon (2006), Web 2.0 refers to an Internet that is even more interactive, customized, social, and media-intensive—not to mention more profitable—than that of a decade ago. Web 2.0 refers to the interactive Web. It focuses on data sharing among users and the use of social networking services. Tim O'Reilly