

THE LEVEL OF E-GOVERNMENT ADOPTION: THE CASE OF JOGJAKARTA'S LOCAL GOVERNMENTS

Samiaji Sarosa¹ and Jenjang Sri Lestari²

Abstract

Indonesia ranked 96 out of 191 United Nations' members state in e-government readiness index. Since Indonesia has a great deal of heterogeneity in term of economic development, infrastructure, and human resources quality, we tried to study the state of e-government adoption by looking at local governments. Stanton's framework wais used to evaluate local government websites. We found that the provincial and local government web sites in Jogjakarta had not moved from web-based information publishing to e-transactional presence and far from being an integrated virtual government.

1. Introduction

Department of Economic and Social Affairs, Division for Public Administration and Development Management of the United Nation had published the report entitled "UN Global E-government Readiness Report 2005 From E-government to E-inclusion"[20]. With e government readiness index of 0.3819 Indonesia was ranked 96 out of 191 UN member states³. This ranking was far bellow other South East Asia countries such as Singapore (7), The Republic of Philipines (41), Malaysia (43), Thailand (46) and Brunei Darrusalam (73). Indonesia experienced an 11 points decrease compare to prior year ranking (85). This ranking was partly based on web site assessment.

As Indonesia adopting decentralized governance that give considerable autonomy to its provinces and local governments, the whole picture of Indonesia would be better portrayed by assessing province and local government web sites. This approach is also of benefit considering Indonesia has a great deal of heterogeneity in term of economic development, infrastructure and human resources quality. The Special Province of Jogjakarta, the region where the researchers live, was chosen to be the object of this research.

This paper examined the state of Jogjakarta's local governments web sites (i.e, Bantul, Sleman, Kulon Progo, City of Jogjakarta and The Special Province of Jogjakarta provincial government)⁴. There is few tools available to assess government web site [10, 15, 17, 18, 21]. We used the framework developed by Stanton [18] that emphasized the use of ICT by local government for better interaction with the citizen. This framework is inline with the UN framework that aimed at building a people-centered and inclusive information society [20]. Stanton [18] identified 4 e government sub space (i.e. publish, interact, transact and transform). For each sub space Stanton developed some primary and secondary components.

¹ Accounting Department, Faculty of Economics, Atma Jaya Yogyakarta University, ss@fe.uajy.ac.id

² Accounting Department, Faculty of Economics, Atma Jaya Yogyakarta University, jenjang@fe.uajy.ac.id

³ The index was a weighted average composite index of e-readiness based on website assessment; telecommunication infrastructure and human resource endowment.

⁴ Jogjakarta is a province consisted of 5 local governments. All but the local government of Gunung Kidul have developed their official web sites.

This paper will be started by discussing theoretical base, namely adoption of innovations and e-government evaluation. We continue by presenting our evaluation result. Our findings will be discussed after the evaluation result. At the end of this paper, we presented our discussion, conclusion and future works arise from our study.

2. Theoretical Foundations

2.1. Adoption of Innovations

Adoption of IT can be considered as have originated from the diffusion of innovation (DOI) studies and more specifically diffusion of IT innovation. Within this paper, we shall consider three different terminologies, which are *diffusion*, *adoption*, and *IT innovation*. The notion of diffusion is often associated with the effort to spread the innovation to the greater audience using communication channel, while adoption is often associated with the decision to accept and use the innovation [2, 3, 12, 14, 22]. Innovation is associated with something new, it can be ideas, artefacts, products, etc. [12]. In this paper, a new IT equipment, systems, or infrastructure introduced into the organisation are considered as new, hence the notion of IT innovations.

Within the diffusion and adoption of innovation literature, there is no commonly accepted definition of the word adoption [9]. Basically there are three different definitions of adoption of innovation. The first definition refers to the Diffusion of Innovation (DOI) theory [12], where adoption means physical acquisition of technical artefacts or commitment to implement innovation with the emphasis being on the decision to adopt [1, 6, 7]. The commitment to use the innovation is the result of decision to make full use of an innovation or adoption [12]. Rogers's diffusion of innovation theory was drawn mainly from communication theory. Accordingly, its main idea was concerned with the process of communicating the idea of innovation to the potential adopters. The main objective is to convey the innovation message and make the potential adopters to accept the innovation. Adoption would be achieved in the adopter's mind and it is not important how the innovation is really put in use by the adopter.

The second definition of adoption was from the works of Thong and Yap [19] where adoption of IT is defined as using IT to support business. This definition has similarity with the third definition of IT adoption, which is using innovations as intended by the designer [2]. The difference was Bøving and Bødker [2] argued that the modification of the innovation by user in practice or re-invention [12] was not supported by their findings, therefore it was concluded that not all use of innovation was equal and can be called adoption. Only a full use of innovation as intended by the designer without reinvention can be called adoption. On the other hand Thong and Yap [19] did not differentiate between full use and modified use of IT in their studies. Still, these two definitions argue that unless the innovation is put in use, it is not an adoption. This argument is inline with Zaltman et.al. [22], Damanpour [4], and Damanpour and Evan [5], they considered a new idea as innovation when implemented.

Zaltman et.al. [22] divided innovation adoption process into initiation and implementation stage. Palen and Grudin [11] furthermore support this distinction by using the term adoption for decision to begin using technologies and using the term deployment for making the technologies available. For IT adoption, in this paper we argue that the definition of adoption should include the implementation stage. IT as innovation is not only ideas but also includes artefact. It is not enough that the use of IT is only accepted or decided upon without any physical implementation. Rogers [12] noted that all activities until the decision made to adopt innovation were mental activities and the implementation of the innovation required physical activities. Therefore, we believe that

adoption of innovation is not only an acceptance of a new or novel idea (mental activities) but also putting the idea into work (physical activities). In this paper, we adopt the definition of adoption from Thong and Yap [19], which is using IT to support business.

2.2 E-government Evaluation

There are few e-government evaluation methods. Some of them based on citizen-centric approach, where the citizen become a focal point [18, 21], while some others using similar methods as e-business evaluation methods [10, 15]. Although one might argue that government also conduct business as commercial corporations, we argue that government’s businesses have a unique characteristic. Government has special role as regulator and policy maker, yet at the same time it also provides unique services without any competitors such as tax payment, birth certificates, driving licences, etc [21]. Therefore we do not believe in using commercial corporations’ evaluation methods for government services.

We used a model developed by Stanton [18] to evaluate Jogjakarta’s local governments’ websites. Stanton proposed a framework to evaluate e-government adoption as seen in table 1. Stanton’s framework shows the evolution of e-government from government centric to citizen-centric. Basically Stanton’s framework classified E-government in four different states, which are:

A. Publish – Providing Information (Data in context)

This state includes primary and secondary components of web site such as the availability of static and strategic information for the user. We find that all of the official web sites have provided the wide variety of information and strategic documents. The sites provide menus that enable citizen to gain information on government vision, mission, planning, economic data, law and regulations, geographic conditions, demographic data, potential natural resources, news and announcements.

E Space	Sub Space	Primary e Components	Secondary e components
E government On line process Implementation “Push” Conceptual Model: Government focus VEE	Publish Providing information –“data in context”	Static and Strategic information available for download	Information documents Strategic Documents
	Interact Two-way communication with the citizen. Citizen feedback	Common entry points Access to information to do business with government	Downloadable forms/documents Site search Email to officers Employment Tenders

			Information Portal
	Transact Citizen can conduct and complete transactions online	Access to transactions online or in person Seeking feedback	Payment on line E mail to officers
	Transform Integrated virtual government	Submission tracking End-to-end process integration E-business opportunities	E-ECRM Central government portals for all services and links Integrated supply chain Business Portals

Table 1. Stantons’ framework adapted [18].

B. Interact – Two-way communication with the citizen and citizen feedback.

This stage include primary and secondary components of web site such as common entry points, access to information to do business with government, the availability of downloadable forms, site search, e mail to officers, employment and tenders.

C. Transact – the sites enable citizens to conduct and complete transactions on line

D. Transform - Integrated virtual government

Stanton believed that e-government could evolve from just information provider toward citizen centric. The ultimate goal is to enable citizen to actively involve in the governance processes, such as e-vote, e-consultation, etc.

3. Jogjakarta’s Local Governments’ Website Evaluation Result

We assessed provincial and local government web sites using 2 steps assessment. First we analysed the available facilities on the web sites. Secondly, we investigated the use of the facilities. The second step is needed to check whether the available facilities had been used to promote local government - citizen interaction.

Step 1—Analysis of the available facilities on the web sites.

The findings are summarized in table 2.

E Space	Sub Space	Primary e Components					Secondary e components											
		A	B	C	D	E	A	B	C	D	E							
E government On line process Implementati on “Push” Conceptual Model: Government focus VEE	Publish Providing information –“data in context”	V	V	V	V	V	Static and Strategic information available for download	V	V	V	V	V	Information documents	V	V	V	V	V
														Strategic Documents	V	V	V	V

	Interact Two-way communication with the citizen. Citizen feedback	V	V	V	V	V	Common entry points	V	V	V	V	V	Downloadable forms/documents	V	V	Y	V	Y
							Access to information to do business with government	V	X	V	V	V	Site search	V	V	X	V	V
													Email to officers	X	X	X	V	V
													Employment	X	X	X	X	X
													Tenders	X	X	X	X	X
													Information Portal	V	V	V	V	V
	Transact Citizen can conduct and complete transactions online	X	X	X	X	X	Access to transactions online or in person	X	X	X	X	X	Payment on line	X	X	X	X	X
							Seeking feedback						E mail to officers	X	X	X	V	V
	Transform Integrated virtual government	X	X	X	X	X	Submission tracking	X	X	X	X	X	E-ECRM	X	X	X	X	X
							End-to-end process integration	X	X	X	X	X	Central government portals for all services and links	X	X	X	X	X
							E-business opportunities	X	X	X	X	X	Integrated supply chain	X	X	X	X	X
													Business Portals	X	X	X	X	X

Legend:

- A : The official website of Bantul (<http://www.bantul.go.id>)
- B : The official website of Sleman (<http://www.sleman.go.id>)
- C : The official website of Kulon Progo (<http://www.kulonprogo.go.id>)
- D : The official website of Pemerintah Kota Jogjakarta (<http://www.jogja.go.id>)
- E : The official website of Pemerintah Provinsi Jogjakara (<http://www.pemda-diy.go.id>)
- V: The facilities are available
- X: The facilities are not available
- Y: Site only provide downloadable documents but not downloadable forms

Table 2. Evaluation result using Stanton’s framework

The first step revealed that the sites only provide menu related to publish and interact state. The sites provide neither facilities to conduct and complete online transaction nor facilities of integrated virtual government. Thus the second step will be conduct according to the available facilities.

Step 2 – The use of the facilities

A. Publish – Providing Information (Data in context)

Many data were available for citizen. We had checked data availability and found that all of the official web sites provided the wide variety of information and strategic documents. The sites provided menus that enable citizen to gain information on government vision, mission,

planning, economic data, law and regulation, geographic conditions, demographic data, potential natural resources, news and announcements.

B. Interact – Two-way communication with the citizen and citizen feedback.

All sites contained menus that enable local government – citizen interaction, but it seemed that the facilities had not been used optimally. Kulon Progo web site provided chat menu, but when we tried to use it, it did not work. This site provided an on line pooling on many topics, but the participants were very limited compared to the total population. Bantul web site provided the interactive facility under interaction menu. Unfortunately, Bantul’s local government never gave any on line comment on the discussions. Slightly better than Bantul was Sleman site. The site provided discussion forum among citizens and letter from the citizens menus that enabled citizens to make certain inquiries. Unfortunately, most of the government answers were standardized statement such as:

Answer to general questions will be published through the website. Answer to personal questions will be sent by email.... (Sleman website).

Sometimes even for non personal questions, the standardized answers were given on the site. The Government of Jogjakarta and The Government of Jogjakarta Special Province on line interaction facilities were used far better than the other 3 sites. The Government of Jogjakarta had a link to web site called UPIK site (Unit Pelayanan Informasi dan Keluhan = *Complain and Information Unit*). This site enabled registered citizens to make on line complains, gather information and check the current status of their complains. We had tried to use this facility to make an inquiry and the result were given within two working days.

The Government of Jogjakarta Special Province provided on line interaction using email and Yahoo! Messenger. The officers were very responsive. During the time of earthquake recovery, we tried to gather information regarding cleaning facilities for damaged houses and we received immediate responds.

C. Transact – Citizens can conduct and complete transactions n line

The sites did not provide facilities for citizen to conduct and complete online transaction.

D. Transform --- Integrated virtual government

There were no facilities on the web sites that enable the formation of integrated virtual government.

All sites did not facilitate on line recruitment and tenders. Sites just announced the job vacancies and tender information but never processed it on line. The above facts reveal that the province and local government web sites in Jogjakarta had not moved from web-based information publishing to e-transactional presence and far from being an integrated virtual government.

4. Discussions, Conclusions, and Future Works

We have evaluated 5 Jogjakarta’s local governments’ websites using Stanton’s framework [18] based on citizen-centric approach [18, 20, 21]. Our evaluation shows that Jogjakarta’s local governments had not moved to the citizen-centric e-government yet. They were still in publish state with a slight variation in government-citizen interaction through email, Yahoo! Messenger, online forums, and online forms. Most of the interactive facilities were used by and among the citizen.

Only few were replied by government officials. The exceptions were The Government of Jogjakarta and The Government of Jogjakarta Special Province with their immediate response toward our inquiry.

In this paper, we adopted the definition of adoption from Thong and Yap [19], which is using IT to support business. E-government could be seen as a supportive tool for the government to conduct their business. Jogjakarta's local governments so far only used their website to publish necessary information. They also provided various methods for the citizen to interact with government official by providing email address, online discussion forums, online forms, and Yahoo! Messenger. However, only few interactions between local government and citizen really exist.

Wang et.al. [21] argued that government has a unique business position where they could not be replaced by commercial corporations in providing specific services (such as tax payment, birth certificates, driving licences, etc). Using their websites merely as a mean of publication, Jogjakarta's local government did not fully optimise their e-government investment. The website only supported a fraction of the whole government businesses, which is information dissemination. Such investment should be optimised by expanding it facilities as a mean of communication toward democracy, accountability, and transparency as suggested by citizen-centric approach. Our brief observation showed that most of the interactions between and among citizens were conducted by a handful of citizens. A pooling in Kulon Progo website only filled by 104 people compared to total population of more than 400,000. We believe that merely providing information would not attract more citizens to use the website because the price of Internet access in Jogjakarta was not cheap and not considered as a high priority expense for most of the population. Therefore, setting up governmental website as an information dissemination tool would be failed since citizens could obtain the similar information at more affordable price from other sources. Additional services and additional affordable internet access points need to be considered to attract more users.

Our research was conducted by observing the website of Jogjakarta's local governments. We are interested in exploring why the local government decided to develop website in the first place, its benefit compared to its cost, and why local government of Gunung Kidul did not have one. We are also interested in exploring the process of e-government adoption as suggested by some literature for investigating adoption of innovation [8, 13, 16]. Stanton's framework suggested that e-government consist of government, citizens, and space of interactions. The adoption of e-government with such interactions would be better understood using interactive process approach.

References

- [1] M. Aiken, S. B. Bacharach, and J. L. French, "Organizational Structure, Work Process, and Proposal Making in Administrative Bureaucracies," *Academy of Management Journal*, vol. 23, pp. 631-652, 1980.
- [2] K. B. Bøving and K. Bøker, "Where is The Innovation?," in Proceedings of The Diffusion and Adoption of Networked Information Technologies, Copenhagen, 2003.
- [3] L. A. Brown, *Innovation Diffusion: A New Perspective*. London: Methuen, 1981.
- [4] F. Damanpour, "The Adoption of Technological, Administrative, and Ancillary Innovations: Impact of Organizational Factors," *Journal of Management*, vol. 13, pp. 675-688, 1987.
- [5] F. Damanpour and W. M. Evan, "Organizational Innovation and Performance: The Problem of "Organizational Lag", " *Administrative Science Quarterly*, vol. 29, pp. 392-409, 1984.

- [6] W. M. Evan and G. Black, "Innovation in Business Organizations: Some Factors Associated with Success or Failure of Staff Proposals," *Journal of Business*, vol. 40, pp. 519-530, 1967.
- [7] R. G. Fichman and C. F. Kemerer, "Adoption of Software Engineering Process Innovations: The Case of Object Orientation," *Sloan Management Review*, vol. 32, pp. 7-22, 1993.
- [8] K. Kautz, "The Enactment of Methodology: The Case of Developing a Multimedia Information Systems," in Proceedings The 25th International Conference on Information Systems, 2004.
- [9] K. Kautz, "Definition of Adoption," S. Sarosa, Ed. Sydney, 2005, pp. personal communication.
- [10] B. Mosse and E. A. Whitley, "Assessing UK E-government Websites: Classification and Benchmarking," in Proceedings of the 12th European Conference on Information Systems, Turku, Finland, 2004.
- [11] L. Palen and J. Grudin, "Discretionary Adoption of Group Support Software: Lessons from Calendar Applications," in *Implementing Collaboration Technologies in Industry: Case Examples and Lessons Learned*, B. E. Munkvold, Ed. London: Springer-Verlag, 2003, pp. 159-180.
- [12] E. M. Rogers, *Diffusion of Innovations*, 4th ed. New York: Free Press, 1995.
- [13] S. Sarosa and D. Zowghi, "Information Technology Adoption Process within Indonesian SMEs: An Empirical Study," in Proceedings the 16th Australasian Conference on Information Systems, Sydney, 2005.
- [14] D. A. Schon, *Beyond Stable State*. New York: The Norton Library, 1971.
- [15] P. Shackleton, J. Fisher, and L. Dawson, "Evolution of Local Government E-Services: the Applicability of Ebusiness Maturity Models," in Proceedings of the 37th Hawaii International Conference on System Sciences, Hawaii, 2004.
- [16] C. Slappendel, "Perspectives on Innovation in Organizations," *Organization Studies*, vol. 17, pp. 107-129, 1996.
- [17] D. Stamoulis, D. Gouscos, P. Georgiadis, and D. Martakos, "Revisiting Public Information Management for Effective E-government Services," *Information Management & Computer Security*, vol. 9, pp. 146-153, 2001.
- [18] D. Stanton, "Community-Centric Virtual Government: Citizen Interaction in the e-Spaces," in Proceedings the 16th Australasian Conference on Information Systems, Sydney, 2005.
- [19] J. Y. L. Thong and C. S. Yap, "CEO Characteristics, Organizational Characteristics and Information Technology Adoption in Small Businesses," *Omega The International Journal of Management Science*, vol. 23, pp. 429-442, 1995.
- [20] UN, "UN Global E-government Readiness Report 2005: From E-government to E-inclusion," New York, United Nations, 2005, Accessed: 24 July 2006
- [21] L. Wang, S. Bretschneider, and J. Gant, "Evaluating Web-based E-government Services with a Citizen-centric Approach," in Proceedings of the 38th Hawaii International Conference on System Sciences, Hawaii, 2005.
- [22] G. Zaltman, R. Duncan, and J. Holbek, *Innovations and Organizations*. New York: Wiley, 1973.