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The impacts of digital divide on e-government usage: A qualitative research

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Abstract

E-government readiness in Indonesia showed no improvement from year to year, indicating that the implementation of e-government is encountering serious problems. Despite the lack of empirical evidence, it is indicated that one of them is digital divide. This research paper aims to validate and examine the tentative research model. This study investigates the impacts of digital divide on e-government usage, particularly on the systems provided by local governments, and to conceptualize 'innovativeness divide' in order to understand digital divide more comprehensively. The research used qualitative method by conducting semi-structured interviews with 12 informants and took place in Sleman Regency and Tulungagung Regency of Indonesia. The results show that digital divide is a significant problem in Indonesia, which should be resolved in order to improve the usage of e-government. The research is significant for scholars to give an empirical evidence of digital divide and its impact on e-government systems, especially in the Asian countries. For the local governments, this research may contribute to policy making in improving the e-government readiness.

Keywords

Digital divide, e-government, qualitative research, Indonesia.

1. Introduction

E-Government refers to the use of information and communication technology (ICTs) to enhance the access to and delivery of all facets of government services and operations for the benefit of citizens, business, employees and other stakeholders (Srivastava & Teo 2007). Due to its potential benefits, most countries in the world have implemented e-government; nonetheless, the success rate of e-government in developing/transitional countries was estimated to be as low as 15% (Heeks 2008). Low success rate indicates that developing

countries need more efforts than developed countries in implementing e-government (Schuppan 2009).

Indonesia has established its e-government since 2001 through the Presidential Directive No. 6/2001 (Harijadi & Satriya 2000; Haryono & Widiwardono 2010). The objectives of e-government in Indonesia are to improve democratic process, enhance accountability and transparency, and enable transformation toward information society (Furuholt & Wahid 2008). Local governments in Indonesia have implemented various forms of e-government systems; with electronic system for internal processes being the most implemented one.

Countries/region	2005*		2008**		2010***	
	Rank	Index	Rank	Index	Rank	Index
Indonesia	**96**	**0.382**	**106**	**0.411**	**109**	**0.403**
Australia	6	0.868	8	0.811	8	0.786
USA	1	0.906	4	0.864	2	0.851
Malaysia	43	0.571	34	0.606	32	0.610
Thailand	46	0.552	64	0.503	76	0.465
Vietnam	105	0.364	91	0.456	90	0.445
South Eastern Asia Average		0.439		0.429		0.425
World Average		0.427		0.451		0.441

Source: *(UN 2005); **(UN 2008); ***(UN 2010)

Table 1: United Nations Survey on e-Government Readiness
(*Selected Countries and Region*)

The survey of e-government readiness by United Nations for 2005 – 2010 revealed that Indonesia's ranks and e-government indices were quite low, reflecting an unsuccessful implementation of e-government in that particular country (as illustrated in Table 1). Obviously, Indonesia needs a strategic policy to improve the quality of e-government as well as the readiness to implement it.

The implementation of e-government in Indonesia is facing some challenges including lack of financial resources, low quality of human resources, low ICT penetration, and lack of regulation and culture (Harijadi 2004). However, empirical research on the impact of those obstacles on e-government usage is still lacking. This paper aims to validate the tentative research model. The research investigates the impact of digital divide on the implementation of e-government in Indonesia, and to conceptualize an "innovativeness divide" in order to get a more comprehensive picture on the issue. This research paper is divided into six sections to respond to the aims and contributions of the research, in following manner: introduction; theoretical background; research method; research findings; discussion; and finally, research conclusions, which is written in integration with suggestions for future research directions.

2. Theoretical Framework

The phenomenon of digital divide has attracted many researchers recently. In the beginning, researchers defined digital divide as the inequality between those who had access to ICT and those who had not. Such definition then led policy makers to the wrong solution, which was simply a provision of access to ICT (Hsieh et al. 2008). Even though the speed at which digital divide is growing is still debatable, it is obvious that the gap is widening (UN 2010). Many

researchers have attempted to understand and explain this issue more comprehensively due of the importance of ICT. ICT has the aspects of what economists call positive externalities, which are social benefits received by those who use technology. ICT might create massive economic opportunity, civic engagement and political participation (Mossberger et al. 2008). Hence, expanded ICT use will lead to positive externalities for society; on the other hand, unequal ICT access and usage may lead to a greater social inequality.
Dewan and Riggins (2005) suggest that there are two orders of digital divide; first order refers to the access divide, while the second order refers to the ability divide which is an inequality of ability to use ICT among those who already have access. Furthermore, Wei et.al., (2010) assert a third order of digital divide, the outcome divide, which is an inequality of outcomes of exploiting ICT resulted from the first and second order of digital divide. This research has categorized digital divide into four types, as follows and the tentative research model is described in Figure 1:

2.1 Access Divide

Access divide represents the disparity of distribution of information and communication technology (Quibra et al. 2003). The disparity is not just experienced worldwide between developed and developing countries, but also within country. In the developing countries in particular, availability of ICT infrastructure is not equally distributed. As described in Table 2, Indonesia's telecommunication infrastructure index is ranked 116 in the world. Compared to other developing countries in South East Asia and the average of developing countries worldwide other than least developing countries (LDCs), Indonesia seems struggle in developing its telecommunication infrastructure. The small number of ICT infrastructure per 100 inhabitants shows that the ICT infrastructure is not well distributed in Indonesia. Those who have examined access divide and its influence on computer or internet usage (Hsieh et al. 2008; Wei et al. 2010; Dewan et al. 2005; Kuk 2002) show that the availability of ICT is a key factor of ICT usage.

Countries	Rank	Telecomm Infrastructure Index	Internet users/100 inhabitants	Mobile subscribers/100 inhabitants	Personal Computers/100 inhabitants
Indonesia	**116**	**0.1143**	**11.13**	**61.83**	**2.03**
Australia	17	0.6011	71.98	104.96	60.29
USA	11	0.6449	74.00	86.79	78.67
Malaysia	52	0.3438	62.57	100.41	23.15
Thailand	94	0.1746	20.03	92.01	6.68
Vietnam	79	0.2261	23.92	80.37	9.54
Developing Countries other than LDCs		0.2046	22.84	77.74	12.08

Source: (UN 2010)

Table 2: Telecommunication infrastructure index and its components
(Selected Countries)

2.2 Economic Divide

Socio-economic factors substantially bring about a synergy of social and economic forces to individuals and resources contained in their surrounding environments (Hsieh et al. 2008).

Socio-economic is also believed as internal and external resources that together shape experiences, opportunities and even ways in which the world is viewed (Williams 1990). Hence, socio-economic has been associated with behavioral patterns in many fields, including psychology and information systems. In the field of information systems, prior researchers found that socio-economic condition influences the technology acceptance (Hsieh et al. 2008; Agarwal et al. 2009; Schleife 2010; Mossberger et al. 2006).

2.3 Capability Divide

Digital capability divide, which refers to computer skill level, stems from the access divide and other contextual factors (Dewan & Riggins 2005). Recently, capability divide has been investigated by Wei et.al. (2010). In this study, Social Cognitive Theory (Bandura 1977, 2001; Compeau & Higgins 1995; Compeau et al. 1999) is used to explain the influence of capability divide on IT usage, particularly on e-government systems. Social Cognitive Theory argues that individual possesses a self-belief system, which allows each individual to control over his/her cognitive processes, feelings, motivation and behavior (Bandura 1977), with self efficacy being the key of the system.

2.4 Innovativeness Divide

In order to understand the digital divide comprehensively, this research conceptualizes 'innovativeness divide'. The innovativeness divide refers to the willingness to change to try out any new information technology (Hurt et al. 1977; Agarwal & Prasad 1998). As the ultimate goal of e-government is transforming the relationship between government and citizens (Davison et al. 2005; Weerakkody & Dhillon 2008), the implementation of e-government requires the willingness to change from all of its users. This research uses Personal Innovativeness to explain the influence of innovativeness divide on IT usage. According to Rogers (1995), information about innovations flows through social systems, which is then processed by the adopters to form perceptions about the characteristics of the innovation. Such perceptions, together with other contextual factors, then shape innovation adoption decision. Therefore, personal innovativeness is an important construct to study individual behavior toward innovation. Rogers (1995) argues that individuals are categorized as 'innovative', if they are early to adopt an innovation, whereas 'non-innovative' refers to those who adopt later. Consequently, this construct was operationalized as 'time of adoption', which has been criticized by some researchers. Based on the research of Midgley and Dowling (1978) and Flynn and Goldsmith (1993), Agarwal and Prasad (1998) suggest that personal innovativeness is an important construct in the acceptance of information technology innovations.

Innovation, by its nature, is associated with greater risk and uncertainty (Kirton 1976). Rogers (1995) believes that innovators and early adopters are able to cope with high level of risk and uncertainty. However, Hofstede (1983, 2009) find that in most of Asian countries, levels of 'uncertainty avoidance' index, which refers to the society's tolerance for uncertainty and ambiguity are generally high. Consequently, the society in general does not easily accept any change and innovations.

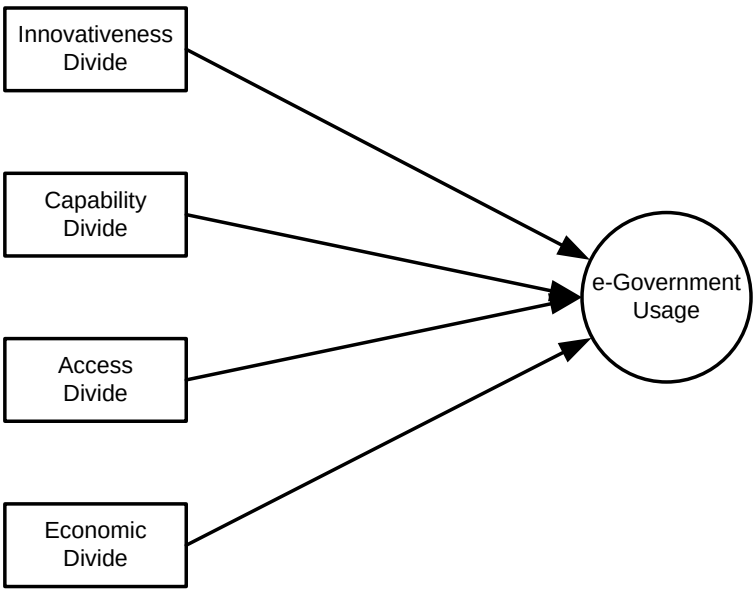

Figure 1: Tentative Research Model

3. Research Method

Interactive e-government systems, the systems which enable citizens to directly interact (through online systems) with the local governments, were implemented in three local governments in Indonesia, namely Sleman Regency, Tulungagung Regency, and Denpasar City. Those systems are voluntary, thus citizens are free to choose whether to use online system or not. Considering that Denpasar City terminated its system in the end of 2010, this research took place in two regions only (Sleman Regency and Tulungagung Regency).

The aim of this study is to validate the tentative research model and hence constructivist paradigm using qualitative method was applied. The researchers conducted semi-structured interviews with 12 informants who had used e-government system. The questions for the interview were based on previous literature and research and also based on the response of the interviewees. The profiles of the 12 informants are described in Table 3. The sampling method is purposive sampling, which is considered most appropriate in qualitative research (Corbin & Strauss 2008). Purposive sampling method refers to random selection of sample units in segmented population based on the need of researcher (Guarte & Barrios 2006; Patton 1990). In this research, the researchers interviewed informants from various demographic backgrounds (residential place, age group and gender), who were selected from a list of users prepared by the local governments. The interviews were recorded with the permission of the informants. After being transcribed, the interview data was then managed using NVivo8, and content analysis was applied in analyzing the data.

4. Findings

4.1 Demographic Characteristics of e-Government Users

In determining the informants of the field study, researchers consider their demographic background. Table 3 describes the characteristics of informants based on demographic groups.

Informant	Region	Residential Place	Age Group	Gender
Inf.1	Sleman Regency	City Area	40 – 50	Male
Inf.2		Remote Area	30 – 40	Female
Inf.3		Remote Area	30 – 40	Male
Inf.4		City Area	40 – 50	Male
Inf.5		City Area	30 – 40	Male
Inf.6		Remote Area	30 – 40	Male
Inf.7		City Area	20 – 30	Male
Inf.8	Tulungagung Regency	City Area	30 – 40	Male
Inf.9		City Area	30 – 40	Male
Inf.10		City Area	20 – 30	Male
Inf.11		Remote Area	30 – 40	Male
Inf.12		City Area	40 – 50	Male

Table 3: Characteristics of Informants Based on Demographic Groups

According to the informants who live in the urban area, access to internet and e-government online system is not a problem, as they were able to easily access internet. However, for those who live in the remote area, internet connection could be difficult to access. Informant 11, for instance, who lives in mountainous area where no telephone signal was received, had to travel out of his area or into his office in the city to access internet connection. On the other hand, informant 2, 3 and 6, who lives in the remote area, did not experience any difficulties in accessing internet connection. However, we can learn from the Table 3, that most of the e-government users are located in city area.

In term of age group, most of the participants (N=7) belong to age group 30-40. Those who are in age group 20-30 and 30-40 do not experience difficulties in term of access and capability. Informants 1, 4 and 12, who belong to age group 40-50, revealed that they need their children to assist them in using e-government system.

Furthermore, one of the interesting findings in this research is the gender factor on e-government usage. Although researcher had put considerable effort to include female informants, only 1 informant had agreed to participate. Researcher had contacted 9 female potential informants; however 8 of them refused to participate. They confessed that even though the e-government documents were registered under their names, actually their husbands completed the online process on their behalf.

4.2. Impact of Access Divide on E-Government Use

With regard to the influence of access divide on e-government usage, all of the informants (N=12) agreed that access was one of the most important factors. Most of the users did not experience any difficulties in accessing internet and e-government system. According to the informants, access is prerequisite for citizen in utilizing e-government system. Interviewee 9 emphasized, “Yes I believe that access is important for e-government usage. How can you use

the system if you cannot access it?". Table 4 provides the response of each individual participant based on content analysis. The responses confirm that access divide is one of the key determinants of e-government use.

In terms of dimension of access divide, there are three dimensions to describe access divide. All of the respondents agreed with the first (easiness) and third (comfort) dimension, as they actually felt easy and comfortable in accessing any ICT (TV, radio, phones, internet, etc.). Furthermore, 6 participants agreed that 'place of residence limits the access to online system' (second dimension). Informant 2, who lives in remote area, stated "*...it is more difficult in mountainous areas, like my area*".

4.3. Impact of Economic Divide on E-Government Use

Most informants (12 of 14) stated that economic condition did not influence e-government usage (see Table 4). They mostly believed that, nowadays, cost for internet connection was not an issue. Informant 5 and 9, for example, stated that, "I think people at any level of economic condition can access the online service by government. In fact through online system, I don't have to pay transportation costs. I mean the government actually provides cheaper service through online system..." *(Inf.5).* While Inf.9 commented, "I don't think that the economic condition influences the usage of e-government online system as nowadays we can easily find internet facilities in the shopping centers, restaurants and other public areas. We can access internet for free…".

However, two interviewees (Inf.7 and Inf.8) suggested that e-government usage was influenced by economic condition. Informant 7 admitted that there was a weak influence of economic condition on e-government usage, as described in his statement: "Yes obviously we need cost to access the e-government online system, well maybe there is a correlation with economic condition, but I don't think that is really significant." *(Inf.7).* While informant 8 argued, "As we have an increased income, we might be able to have all facilities including internet. And by having internet connection, I believe more people will use e-government, because it makes our business easier and simpler".

Based on the content analysis of the influence of economic divide on e-government usage, Table 4 shows the response of each informant to the link. The finding does not support the relationship between economic divide and e-government usage.

Variable	Informant												Freq
	1	2	3	4	5	6	7	8	9	10	11	12	
ED → EU	×	×	×	×	×	×	✓	✓	×	×	×	✓	3
AD → EU	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	12
CD → EU	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	12
ID → EU	✓	✓	✓	✓	×	✓	✓	✓	✓	✓	✓	×	10

Note: ED = Economic Divide; AD = Access Divide; CD = Capability Divide; ID = Innovativeness Divide
EU = E-Government Use

Table 4: Relationship between Digital Divide and E-Government Use

4.4. Impact of Capability Divide on E-Government Use

Content analysis of the semi-structured interview shows that all of the informants consider capability as the key determinant of e-government use. Table 4 represents the individual agreement on this relationship. Participants believe that capability in operating online system is substantially required for e-government usage. Informant 1 strongly suggested, "*Capability is a must. Without it, citizen cannot use e-government*". While respondent 11 stated, *"I think technology literate is the most important factor".* Thus, the relationship between capability divide and e-government usage is confirmed by the findings in this research. Interestingly, Informant 5 pointed out that capability would influence perceived ease of use (PEoU) and then PEoU would affect e-government use in turn. Informant 5 stated, "The increase of capability in using a particular system, I believe will increase my understanding of it. And if I think that the system is easy to use, I might then use it*."*

Researchers find the informants involved in this research are familiar with information and communication technology (ICT). They felt confident and comfortable in using ICTs, although for some informants, their main motivation to utilize ICTs was simply to fulfill their needs, particularly in relation with business.

4.5. Impact of Innovativeness Divide on E-Government Use

Among the informants, 10 informants agreed with the relationship between innovativeness divide and e-government usage (Table 2). Informant 10 answered:

> *"Yes, it can be one of the factors I believe. Because I have seen many people capable of operating computer and websites, but they just utilize it narrowly. Many people just use internet to check email and social network. Basically it's more just for fun. I suspect they are hesitant in utilizing computer further. Let's say for online transaction, for example."*

Informant 11 also stated:

> *"As I mentioned before, I use this service by accident. I mean, because I was curious, I just browse the internet and found that this online system is already available. Because I get use to explore new websites and ICTs, I just feel confident in filling the form and following the online procedures…"*

Content analysis reveals that all of the informants (N=12) are curious of new ICTs. They would seek a way to try new ICTs when they heard about it. Furthermore, most of the participants (10 informants) liked to experiment with new ICTs. Most of the interviewees (7 informants) did not hesitate to try new ICT, but the rest of them (5 informants) felt reluctant, due to the fear from virus, data theft and hackers.

5. Discussion

E-government is a new milestone in the public sector reform, because e-government is capable of transforming the way public service is delivered as well as the fundamental relationship between government and its stakeholders. The flexibility of internet in providing information, goods, and service has improved citizens' expectation of public service and their interaction with the government. However, there are a number of barriers for the successful

implementation of e-government, including the existence of digital divide. To understand the issue of digital divide more comprehensively and its impacts on e-government usage, this paper investigates four types of digital divide, namely access divide, economic divide, capability divide and innovativeness divide.

The research finds that most of the informants confirm that all types of digital divide, except economic divide, significantly influencing e-government usage. Due to the low cost of internet connection nowadays, economic condition is not perceived as an important issue in relation with the usage of e-government. However, for approximately 13.3% of Indonesian citizens living below the poverty line (BPS 2010), investment in ICT and internet are obviously not a priority. This, in turn, will be a serious obstacle for the citizens to access internet and e-government. Furthermore, previous researches on the impact of economic divide on ICT usage show that economic divide is a significant barrier. Among the four types of digital divide, participants perceive access divide and capability divide as the most important factors influencing e-government use. Nonetheless, the importance of innovativeness or willingness to try out new ICT is confirmed by most of the informants.

This research reveals the complexity of digital divide. The findings of this research are essential in understanding the digital divide comprehensively, and should be considered by the local governments to increase the usage of e-government. The government should comprehend that digital divide is not just about the inequality between those who have access and those who do not, and therefore, providing access is not the only policy needed to close the digital divide. In addition to access provision, the government should educate its citizens in utilizing ICT and socialize the existence and benefits of e-government in order to remove citizens' hesitancy. The government should pay more attention to females, citizens in the remote area and various age groups in opening the access, educating and socializing to its citizens. As investigated by some researchers previously, demographic factors have been recognized by previous research as important factors in ICT adoption or usage. Residential place has been researched by Mossberger et.al. (2006), Mariscal (2005), Kuk (2002), Stern et.al. (2009); gender was examined by Venkatesh and Morris (2000), Wei et.al., (2010), Agarwal et.al. (2009), Schleife (2010); and age has been studied by Agarwal et.al. (2009), Hargittai et.al.(2006), Schleife (2010).

5.1. Future research direction

Future research should be directed on testing the findings by applying quantitative method involving larger number of users. In regard with the informants, it will be important to include non-users and explore the difference behaviour toward e-government between user and non-user. And in order to understand the phenomenon of digital divide, the relationships among variables of digital divide will be interesting to be investigated in the future.

6. Conclusion

This research presents a comprehensive picture of digital divide and its impact on e-government usage, particularly in Indonesia and most Asian countries. Based on the evidence from 12 e-government users, the types of digital divide defined from literature review, are confirmed. Furthermore, it concludes that digital divide is a significant factor for e-

government usage by the citizens. Thus, this research contributes significantly for the theoretical development in the literature of digital divide and e-government.

References

Agarwal, R., A. Animesh, and K. Prasad (2009) "Social Interactions and the Digital Divide: Explaining Variations in Internet Use", *Information Systems Research* 20(2), pp. 277-294.

Bandura, A (1977) "Self-efficacy: Toward a Unifying Theory of Behavioral Change", *Psychological Review* 84(2), pp. 191-215.

-------- (2001) "Social Cognititve Theory: An Agentic Perspective", *Annual Review of Psychology* 52, pp. 1-26.

BPS (2010) *Berita Resmi Statistik: Badan Pusat Statistik*, http://www.bps.go.id/getfile.php?news=776, (accessed on Dec, 10th 2011).

Compeau, D., and C. A. Higgins (1995) "Computer Self Efficacy: Development of a Measure and Initial Test", *MIS Quarterly*, pp. 189-211.

Compeau, D., C. A. Higgins, and S. Huff (1999) "Social Cognitive Theory and Individual Reactions to Computing Technology: A Longitudinal Study", *MIS Quarterly* 23(2), pp. 145-158.

Corbin, JM. and Strauss, AL. (2008), *Basics of Qualitative Research: Techniques and Procedures for Developing Grounded Theory*, Sage, Thousand Oaks, CA.

Davison, R. M., C. Wagner, and L. C. Ma. (2005) "From Government to E-Government: A Transition Model", *Information, Technology and People* 18(3), pp. 280-299.

Dewan, S., D. Ganley, and K. L. Kraemer (2005) "Across the Digital Divide: A Cross-Country Multi-Technology Analysis of the determinants of IT Penetration", *Journal of the Association for Information Systems* 6(12), pp. 409-432.

Dewan, S., and F. J. Riggins (2005) "The Digital Divide: Current and Future Research Directions", *Journal of the Association for Information Systems* 6(12), pp. 298-337.

Flynn, L. R., and R. E. Goldsmith (1993) "A Validation of the Goldsmith and Hofacker Innovativeness Scale", *Educational and Psychological Measurement* 53, pp. 1105-1116.

Furuholt, B., and F. Wahid (2008) *41st Hawaii International Conference on System Sciences E-Government Challenges and the Role of Political Leadership in Indonesia: the Case of Sragen*. Hawaii: IEEE

Guarte, JM. and Barrios, EB. (2006), "Sampling theory: estimation under purposive sampling", *Communications in Statistics – Simulation and Computation*, Vol. 35 No. 3, pp. 277-284.

Hargittai, E (2006) "Hurdles to Information Seeking: Spelling and Typoraphical Mistakes During Users' Online Behavior", *Journal of the Association for Information Systems* 7(1), pp. 52-67.

Harijadi, D. A (2004) "Developing e-Government: The Case of Indonesia", in *29th Meeting APEC Telecommunication and Information Working Group*. Hong Kong, China. UNPAN.

Harijadi, D. A., and E. Satriya (2000) "Indonesia's Roadmap to e-Government: Opportunities and Challenges", in *APEC High-Level Symposium on e-Government*. Seoul, Korea. UN APCICT-ESCAP.

Haryono, T., and Y. K. Widiwardono (2010) *Current Status and Issues of e-Government in Indonesia*. http://www.aseansec.org/13757.htm (accessed September 7, 2010).

Heeks, R (2008) *Success and Failure in e-Government Projects*. http://www.egov4dev.org/success/sfrates.shtml#survey (accessed June, 5th 2010).

Hofstede, G. 1983. Cultural Dimensions in Management and Planning. *Asia Pacific Journal of Management* 1 (2): 81-99.

--------. 2009. *Cultural Dimensions*. http://www.geert-hofstede.com/ (accessed August, 10th 2010).

Hsieh, J. P.-A., A. Rai, and M. Keil (2008) "Understanding Digital Inequality: Comparing Continued Use Behavioral Models of Socio-Economically Advantage and Disadvantage", *MIS Quarterly* 32(1), pp. 97-126.

Hurt, H. T., K. Joseph, and C. D. Cook (1977) "Scales of the Measurement of Innovativeness", *Human Communication Research* 4 (1), pp. 58-65.
Kirton, M. (1976) "Adaptors and Innovators: A Description and Measure", *Journal of Applied Psychology* 61(5), pp. 622-629.
Kuk, G (2002) "The Digital Divide and the Quality of Electronic Service Delivery in Local Government in the United Kingdom", *Government Information Quarterly* 20, pp. 353-363
Mariscal, J (2005) "Digital Divide in a Developing Country", *Telecommunications Policy* 29, pp. 409-428.
Midgley, D. F., and D. G. R. (1978) "Innovativeness: The Concept and Its Measurement", *Journal of Consumer Research* 4 pp. 229-242.
Mossberger, K., C. J. Tolbert, and M. Gilbert (2006) "Race, Place and Information Technology", *Urban Affairs Review* 41(5), pp. 583-620.
Mossberger, K., C. J. Tolbert, and R. McNeal (2008) *Digital Citizenship: The Internet, Society, and Participation*. Massachusetts: The MIT Press.
Quibra, M., S. N. Ahmed, T. Tschang, and M.-L. Reyes-Macasaquit (2003) "Digital Divide: Determinants and Policies with Special Reference to Asia", *Journal of Asian Economics* 13, pp. 811-825.
Patton, M. Q. (1990). *Qualitative evaluation and research methods* (2nd ed.). Newbury Park, CA: Sage Publications.
Rogers, E. M. (1995). *Diffusion of Innovations*. 4th ed. New York: The Free Press.
Schleife, K (2010) "What Really Matters: Regional versus Individual Determinants of the Digital Divide in Germany", *Research Policy* 39, pp. 173-185.
Schuppan, Tino (2009) "E-Government in Developing Countries: Experience from sub-Saharan Africa", *Government Information Quarterly* 26, pp. 118-127.
Srivastava, S. C., and T. T. Teo (2007) "E-Government Payoffs: Evidence from Cross Country Data", *Journal of Global Information Management* 15(4), pp. 20-40.
Stern, M. J., A. E. Adams, and S. Elsasser (2009) "Digital Inequality and Place: The Effects of Technological Diffusion on Internet Proficiency and Usage Across Rural, Suburban and Urban Counties", *Sociological Inquiry* 79(4), pp. 391-417.
UN (2005) *Global E-Government Readiness Report 2005: From E-Government to E-Inclusion*. New York: United Nations.
-------- (2008) *E-Government Survey 2008: From E-Government to Connected Government*. New York: United Nations.
-------- (2010) *E-Government Survey 2010: Leveraging e-Government at a Time of Financial and Economic Crisis*. New York: United Nations.
Venkatesh, V., and M. G. Morris (2000) "Why Don't Men Ever Stop Ask for Direction? Gender, Social Influence and Their Role in Technology Acceptance and Usage Behavior", *MIS Quarterly* 24(1), pp. 115-139.
Weerakkody, V., and G. Dhillon (2008) "Moving from E-Government to T-Government", *International Journal of Electronic Government Research* 4(4), pp. 1-16.
Wei, K.-K., H.-H. Teo, H. C. Chan, and B. C. Tan (2010) "Conceptualizing and Testing a Social Cognitive Model of the Digital Divide", *Information Systems Research* Article in Adv., pp. 1-21.
Williams, D. R. (1990) "Socioeconomic Differentials in Health: A Review and Redirection", *Social Psychology Quarterly* 53(2), pp. 81