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Individual Acceptance of e-Government Services in a Developing Country: Dimensions of Perceived Usefulness and Perceived Ease of Use and the Importance of Trust and Social Influence

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Abstract

Perceived Usefulness (PU) and Perceived Ease of Use (PEU) are two prominent factors suggested by many researches towards adoption of a technology. In case of online public services (e-government), are they still dominant factors for the adoption? This question is raised since e-government is a computer-based system that exists and used for social, voluntary, and daily life context which involves more adoption factors, such as social norms, facilitating conditions, and trust. This study investigated dimensions of PU and PEU of an e-government service, and measured the influence of PU, PEU, Social Norms, Facilitating Conditions, and Trust toward individual acceptance of a new e-government service in a developing country. By collecting qualitative and quantitative data from 40 users of an online Immigration service in Indonesia, this study validated Trust and Social Influence as the most significant factor toward individual's decision to use a new e-government service. This finding recommends government initially to put attention on building people's trust and utilizing social influence in order to promote a new e-government service.

Keywords: e-Government; Trust; Social Influence; Perceived Ease of Use; Perceived Usefulness; Technology Adoption

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1. Introduction

e-Government refers to all use of information and communication technologies (ICT) — including all ICT platforms and applications such as internet, telephone, fax, and mobile technologies — to provide government information and public services to citizens (G2C), businesses (G2B), and government employees or other government organizations (G2G) (Nations, 2002). Current studies revealed that e-government have improved the efficiency of public administration, enabled government services to reach more people, improved accountability and transparency of public services, and improve people trust on government (Furuholt and Wahid, 2008). From citizens' perspective, e-government enables people to access public services anytime anywhere, with cheaper and fixed standard cost, more simple, quick and convenient way.

Considering these benefits, many developing countries have adopted e-government models of developed countries expecting the same outcomes and benefits. In fact, Heeks (2003) found that many e-government initiatives in developing countries failed since there are a big gap between the e-government design and exiting situations in developing countries, such as poor information communication and technology (ICT) infrastructure and management, leading to low adoption of the online services by citizens and businesses.

To investigate how to improve the acceptance of e-government services, a number of studies exploring what psychological forces exist behind individual's actions, thoughts, or behavior towards deciding to use e-government services have been conducted. It is found that individual acceptance of an e-government service is determined by his/her attitude towards use, social pressures, and perceptions about the services, the technology, and the service provider (government agency) (Susanto, 2013).

Further, Davis (1989) suggests that all psychological forces for using an information technology (IT) can be classified as dimensions of *Perceived Usefulness* (PU) and *Perceived Ease of Use* (PEU). *Perceived Usefulness* in an organizational context refers to "the degree to which a person believes that using a particular system would enhance his or her job performance" and *Perceived Ease of Use* refers to "the degree to which a person believes that using a particular system would be free of effort" (Davis, 1989). The dimensions of *Perceived Usefulness* cover perceptions that by using the system would make job easier, increase productivity, enhance work effectiveness, improving job performance, and help to get raises, promotions, bonuses, and other rewards.   Supporting this, current e-government studies adopted the TAM and the UTAUT models have also verified that *Perceived Usefulness* (or *Performance Expectancy*) and *Perceived Ease of Use* (or *Effort Expectancy*) are major influences on the intention to use or to not use an e-government service (Al-Adawi et al., 2005, Dimitrova and Chen, 2006, Carter and Belanger, 2005, Gilbert et al., 2004, Wangpipatwong et al., 2008).

However, dimensions of *Perceived Usefulness* and *Perceived Ease of Use* of e-government services may be unique and different with dimensions of *Perceived Usefulness* and *Perceived Ease of Use* in a work organizational context. First, because e-government services exist in a daily life context, in which users may relate the perceptions on the extent to which the services fulfill a citizen's daily life needs and meet their interests instead of improving job performance.

Second, e-government users are more than just technology users. Traditional diffusion and adoption theories studied users based on their roles as technology users through their interaction with the technology and as a network member through their interaction with other people (AlHinai et al., 2007). Users of e-government play threefold roles: as technology users, as citizens, and as customers. Each of these three roles has a different set of factors to consider with regards to adoption of e-government services. A user of an e-government service is a citizen who communicates and interacts continuously with the government and also with other citizens who may use the services. As a citizen, perception about

government and traditional public services as well as recommendations from other people in social networks could be important to the adoption of e-government services. Particularly in developing countries where the governments are still struggling for implementing good governance (transparency, accountability, anti-corruption, efficiency) people's intention to use online public services might also be influenced by their perceptions on government and traditional public services. A user of an e-government service normally is also a customer of an Internet service provider. The customer's experiences with the company (such as service quality, bandwidth speed and capacity, customer relationships, the network quality, perceived cost and credibility) may also influence intentions of individuals to adopt or to reject the online services. As a technology user, their own experience during interactions e-government technology may influence their individual decisions to use or to reject the e-government services.

Therefore, this study aims to investigate the dimensions of *Perceived Usefulness* and *Perceived Ease of Use* of e-government services by answering these research questions: 1) what are dimensions of *Perceived Ease of Use* (PEU) and *Perceived Usefulness* (PU) of e-government services in a developing country? 2) Are PEU and PU the strongest acceptance factors of e-government services in a developing country? 3) If not, what are the most significant acceptance factor of an e-government service in a developing country? This study will contribute to future studies on e-government adoption, and government and e-government practitioners in designing and promoting e-government services particularly in developing countries.

2. Research Method

2.1. Research Object and Respondents

As an object of this research, this study investigated new online services provided by Immigration Office of Indonesian government, covering online passport services, public complaint services, visa services and resident permits. These online services can be accessed by Indonesians and foreigners at www.imigrasi.go.id (see Figure 1). The online services are quite new services for Indonesian since Indonesian people are familiar with traditional immigration services: public had to come to the Immigration office physically, buying a paper form, queuing for every steps of the service from registration, document collection, and photo with unclear procedure, service standard, and cost.

Fig. 1. The immigration online services, Indonesia.

Respondents of this study are citizens who are using the immigration online services and come to the Immigration office – Surabaya city to collect their documents or to do other manual steps, such as photo and interview. Total amount of the respondents is 40 people with characteristics presented in Table 1.

Table 1.   Respondents' characteristics

	Criteria	Amount (People)
Age	<30 years old	21
	>=30 years old	19
Gender	Male	28
	Female	12
Education	Primary School	3
	Junior School	6
	High School	13
	Diploma	2
	Undergraduate	13
	Post graduate	3
Occupation	Employees	5
	Enterpreneurs	16
	Lecturers	2
	House wife	6
	Retired	1
	Students	2
	Unemployee	8
Home's distance	<10 Km	16
	>=10 Km	24
Experience to use online services (ATM, *e-banking*, etc.)	< 1 year	2
	1-3 years	6
	3-5 years	6
	5-7 years	8
	> 7 years	18

2.2. Research Steps

In order to answer the research questions, this study was conducted in three main steps: First is collecting adoption factors of the online service, particularly exploring dimensions *Perceived Usefulness* and *Perceived Ease of Use*; second is formulating a research model of individual acceptance of e-government services; and finally validating the research model (see Figure 2).
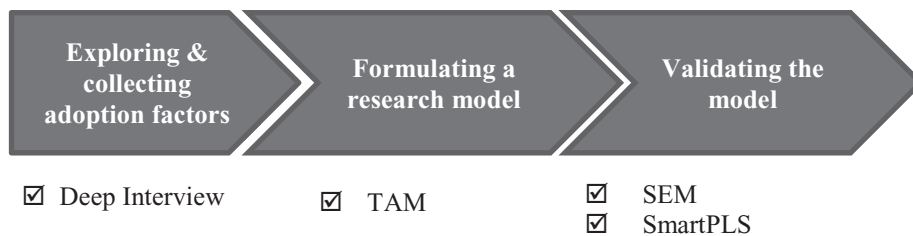

Figure 2. Research steps

This study collected and analysed qualitative and quantitative data. Initially, to explore what factors encourage citizens to use e-government services, this study conducted deep interviews to 20 users of the immigration online system asking an open-ended question why they are willing to use the online services.

Next, a conceptual model of individual acceptance of e-government services was formulated by adopting the TAM model and the collected factors. Finally, to validate the dimensions of PU and PEU and the model this study used structural equation model (SEM), SmartPLS as a tool, and data from 40 users of the immigration online system.

3. Findings and Discussion

The first survey found 13 factors why citizens are willing to use the online services while the option for manual procedure is still provided (see Table 2). Among the adoption factors, five factors are classified as dimensions of *Perceived Usefulness* (PU) (i.e. Information completeness, reducing cost, saving energy, saving time, and useful information), four factors are dimensions of *Perceived Ease of Use* (PEU) (i.e. easy navigation, quick response, good and fit interface, and accessible anywhere anytime), and three factors are analysed as independent variables (i.e. trust, social influence, and facilitating conditions). These factors construct a conceptual model of this study presented in Figure 3.

Table 2. Motivations for using e-government services

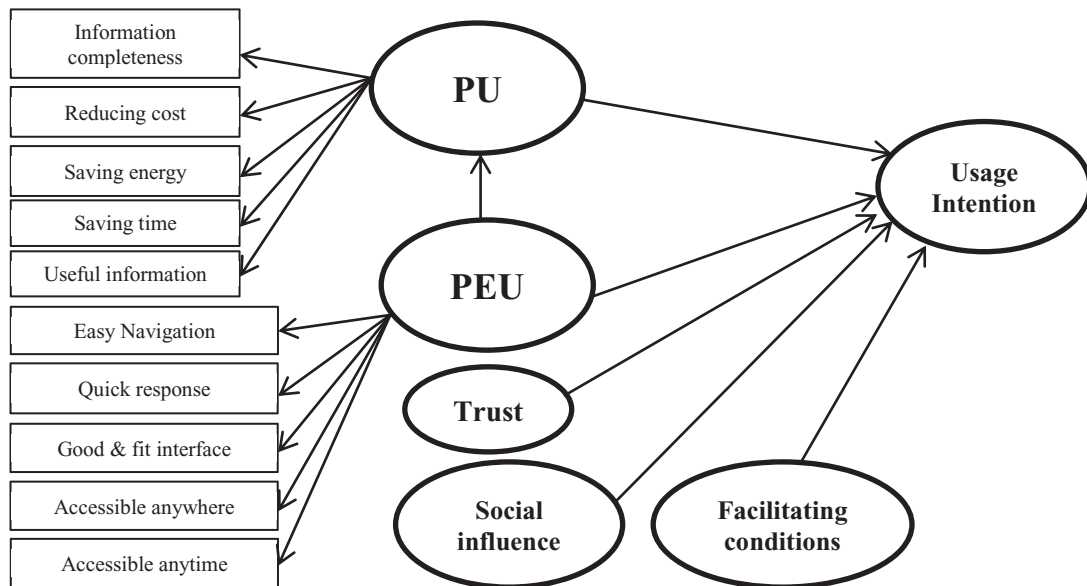| 1	Information completeness
2	Reducing cost (cheap)
3	Saving energy
4	Saving time
5	Useful information
6	Easy navigation
7	Quick response
8	Good and fit interface
9	Accessible anywhere
10	Accessible any time
11	Trust
12	Social influence
13	Facilitating conditions

Figure 3. Conceptual model of this study

To validate the conceptual model, this study developed a questionnaire measuring each variables of the model using Likert scale from 1 (Strongly Disagree) to 5 (Strongly Agree). There are 22 question items adopted and modified from the TAM's scales and feedback of the first survey.

Initially, the questionnaire was examined in terms of their validity and reliability. The *validity* is tested by conducting *Face validity* test and calculating *Pearson Product-Moment Correlations*. Face validity refers to an assessment about whether each question-item in the questionnaire seems like a reasonable/logical way to gain the information about the factor of interest, is well designed, clear and unambiguous, concise, has adequate time limits, appropriate level of difficulty, appropriate patterns in the answers, and the instructions are clear. The questionnaire was reviewed by an expert in e-government and pre-tested by 10 respondents who were asked to complete the questionnaire and to comment on any aspects of the questionnaire. Based on this feedback, the instructions and some questions were slightly reworded and some questions were worded with proper negation to reduce the potential for monotonous responses (such as all answers are 'strongly agree' or 'strongly disagree'). Another validity test was conducted by calculating *Pearson Product-Moment Correlations* between measurements of each variable. The Pearson Correlation coefficient showed values of 0.439 to 0.908 indicating moderate to very strong relationships, which is considered valid scales. In terms of *reliability*, this study computed *Cronbach's alpha* for each group of variable's scales. Based on the reliability analysis, *Information Completeness*, *Useful Information*, *Quick Response*, *Good and Fit Interface* are recommended to be deleted. The Cronbach's alpha values are 0.626 to 0.777 considered as acceptable reliability. By administering the questionnaire to 40 users of the immigration online services, this study validated the conceptual model using SmartPLS application with bootstrapping case size. Figure 4 presents the validated model with T-value more than 1.96 indicating significant paths.
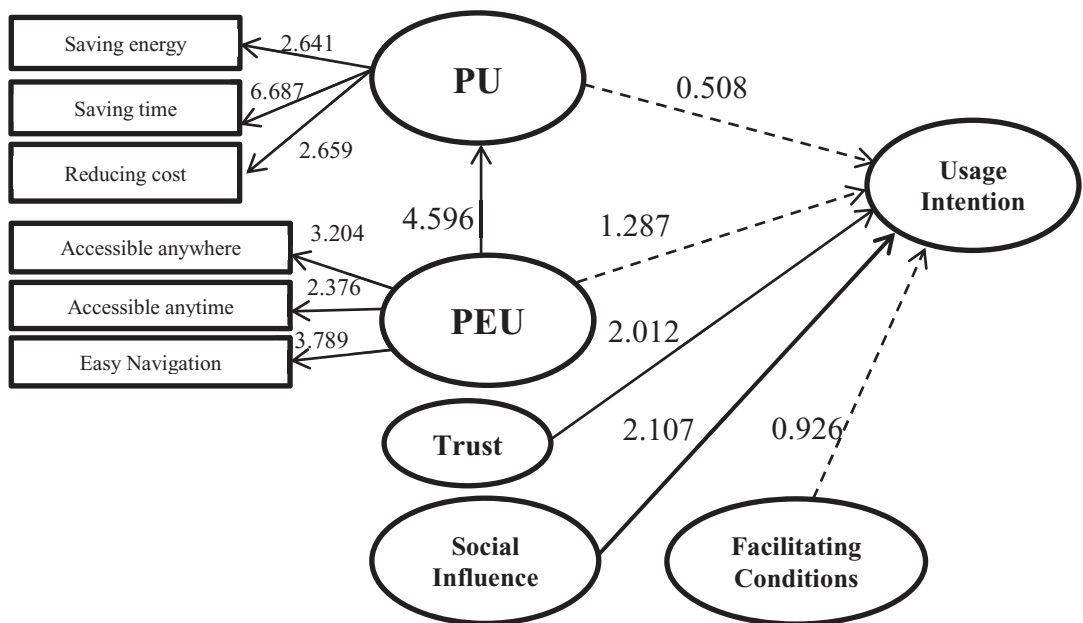

Figure 4.Validation of the model

The validated model (Figure 4) confirms that *perceived saving energy*, *perceived saving time* and *perceived cost efficiency* are dimensions of *Perceived Usefulness* of an e-government service and *perceived easy web navigation* and *easy access anywhere anytime* are dimensions of *Perceived Usefulness* of an e-government service. Even *Perceived Ease of Use* (PEU) significantly influences *Perceived Usefulness* (PU), however PEU, PU, and *Facilitating Conditions* do not have significant

relationship with intention to use e-government services. In fact, *Trust* and *Social Influence* are two factors that significantly influence individual's intention to use an e-government service in a developing country.

These findings suggest that in case of e-government in developing countries, individual's trust on an online public service and social influence are critical factors for individual's decision to use or not to use the service. People may consider whether an online service can be trusted or not before they think about the benefits and ease of use of the service. The first survey of this study suggests that users use the Immigration online services because they are sure that the website and the services are managed officially by the department of Immigration – Indonesian government, they trust all information and online services on the website. Citizens in developing countries who used to dealing with poor public services and corrupt government may need to be convinced about reliability of the online services, the online technology, and the government before they decide to use the services. Warkentin (2002) also suggests that citizens in cultures that have higher uncertainty avoidance would be more dependent on trust for e-government adoption. Moreover, most developing countries have low individualistic culture so they are likely to have a less positive attitude toward increasing the level of e-government readiness (Kovacic, 2005). In such culture, social opinions or environment may have dominant influence on individual's decision to use or not to use an e-government service.

4. Conclusions

This study suggests dimensions of *Perceived Ease of Use* (PEU) and *Perceived Usefulness* (PU) and the most important factor towards individual's decision to use an e-government service in a developing country. Individual's *perception on usefulness* to use an e-government service may cover his or her perception on to what extent the online services may save energy (effort), time and money. The dimensions of *perceived ease of use* of an online public service may relate to an individual's perception on the web navigation and ability to use anywhere anytime. *Trust* and *Social Influence* are two significant factors influencing individual's intention to use an e-government service in a developing country. Government and e-government practitioners in developing countries should accommodate these adoption factors in designing, developing, managing, and promoting an e-government service.

References

[1] Markus, M.L. and Robey, D. (1988). Information technology and organizational change: Causal structure in theory and research. Management Science, 34 (5), 583-598.
[2] Avison, D.E. and Fitzgerald, G. (1995). Information Systems Development: Methodologies, Techniques and Tools. 2nd Edition. McGraw-Hill, London.
[3] Kautz, K. and Mcmaster, T. (1994). The failure to introduce systems development methods: A factor-based analysis. In Proceedings of the IFIP TC8 Working Conference on Diffusion, Transfer and Implementation of Information Technology (Levine, L. Ed.), p. 275, IFIP Transactions A-45, North-Holland, Amsterdam.
[4] AL-ADAWI, Z., YOUSAFZAI, S. & PALLISTER, J. Year. Conceptual Model of Citizen Adoption E-Government. *In:* The Second International Conference on Innovations in Information Technology, 2005.
[5] ALHINAI, Y. A., KURNIA, S. & JOHNSTON, R. B. Year. A Literature Analysis on the Adoption of Mobile Commerce Services by Individuals. *In:* The 13th Asia Pacific Management Conference, 2007 Melbourne. 222-230.
[6] CARTER, L. & BELANGER, F. 2005. The utilization of e-government services. *Information Systems Journal,* 15**,** 5-25.
[7] DAVIS, F. D., BAGOZZI, R. P. & WARSHAW, P. W. 1989. User Acceptance of Computer Technology: A Comparison of Two Theoritical Models. *Management Science,* 35**,** 982.
[8] DIMITROVA, D. V. & CHEN, Y.-C. 2006. Profiling the Adopters of E-Government Information and Services. *Social Science Computer Review,* 24**,** 172-188.
[9] FURUHOLT, B. & WAHID, F. Year. E-Government Challenges and the Role of Political Leadership in Indonesia: the Case of Sragen. *In:* The Hawaii International Conference on System Sciences 7-10 Jan. 2008 2008 Hawaii. Hawai.
[10] GILBERT, D., BALESTRINI, P. & LITTLEBOY, D. 2004. Barriers and benefits in the adoption of e-government *The International Journal of Public Sector Management* 14**,** 286-301.
[11] HEEKS, R. 2003. *E-government for Developing Countries: Opportunities and Challenges* [Online]. UK: University of Manchester. Available: http://unpan1.un.org/intradoc/groups/public/documents/untc/unpan018634.pdf [Accessed].

[12] KOVACIC, Z. J. 2005. The Impact of National Culture on Worldwide eGovernment readiness. *Informing Science Journal,* 8**,** 143-158.

[13] NATIONS, U. 2002. Benchmarking e-government: A global perspective New York: American Society for Public Administration.

[14] SUSANTO, T. D. Year. Individual Acceptance of e-Government: A Literature Review. *In:* The Second International Conference on Informatics Engineering & Information Science (ICIEIS2013), 2013 Kuala Lumpur, Malaysia.

[15] WANGPIPATWONG, S., CHUTIMASKUL, W. & PAPASRATORN, B. 2008. Understanding Citizen's Continuance Intention to Use e-Government Website: a Composite View of Technology Acceptance Model and Computer Self-Efficacy. *The Electronic Journal of e-Government,* 6**,** 55-64.