"An investigation of the factors affecting citizens' adoption of e-government in Indonesia"

AUTHORS	Khoirul Aswar (iD) Wisnu Julianto Mahendro Sumardjo (iD) Ingrid Panjaitan (iD) Azwir Nasir

NUMBER OF REFERENCES	NUMBER OF FIGURES	NUMBER OF TABLES
43	0	5

BUSINESS PERSPECTIVES

businessperspectives.org

Khoirul Aswar (Indonesia), **Wisnu Julianto** (Indonesia), **Mahendro Sumardjo** (Indonesia), **Ingrid Panjaitan** (Indonesia), **Azwir Nasir** (Indonesia)

AN INVESTIGATION OF THE FACTORS AFFECTING CITIZENS' ADOPTION OF E-GOVERNMENT IN INDONESIA

Abstract

The citizen acceptance of e-government is widely researched in industrialized nations; however, only a few studies have looked at the adoption of e-government in developing nations, including Indonesia. This study aims to identify the elements influencing Indonesian citizens' acceptance of electronic governance. The following models are suggested to achieve this purpose: the information system success model (ISSM) and the technology adoption model (TAM). The sample includes 735 respondents in Indonesia; the self-selection convenience sampling technique was used in this study. The findings indicated that perceived usefulness is positively impacted by system quality ($\beta = 0.113$; $p < 0.05$), information quality ($\beta = 0.502$; $p < 0.05$), and service quality ($\beta = 0.285$; $p < 0.05$). Furthermore, considering the TAM model, perceived usefulness ($\beta = 0.762$; $p < 0.05$) has a favorable impact on intentions to use e-government, and intention to use ($\beta = 0.502$; $p < 0.05$) favorably influences user behavior. The findings of this study advance theoretical knowledge by developing and validating an integrated model for the effect of e-government adoption, information quality, system quality, and service quality on perceived usefulness. Risks may be lessened by enhancing the systems and capabilities that enable citizens to use e-government. Additionally, this paper offers various recommendations for improving and promoting e-government in Indonesia.

Khoirul Aswar, Ph.D., Lecturer, Department of Accountancy, Faculty of Economics and Business, Universitas Pembangunan Nasional Veteran Jakarta, Indonesia. (Corresponding author)

Wisnu Julianto, M.M, Lecturer, Department of Accountancy, Faculty of Economics and Business, Universitas Pembangunan Nasional Veteran Jakarta, Indonesia.

Mahendro Sumardjo, Dr., Lecturer, Faculty of Economics and Business, Department of Accountancy, Universitas Pembangunan Nasional Veteran Jakarta, Indonesia.

Ingrid Panjaitan, M.Sc, Lecturer, Bukit Harapan Christian Business and Technology Institute, Indonesia.

Azwir Nasir, Dr., Lecturer, Faculty of Economics and Business, Department of Accountancy, University of Riau, Indonesia.

Keywords	e-government, TAM, ISSM, perceived usefulness, Indonesia
JEL Classification	H83, M38, O38

INTRODUCTION

Internet technology has increased computer self-efficacy, showing that users have improved their ability to learn and retain information via online sources. Given the favorable trend in Internet usage in Indonesia, the government should concentrate on developing e-government services. Physical access to information technology is the first step in closing the digital gap. Most individuals currently use traditional methods to receive government services, which can consume a lot of time and resources and make citizens reluctant to deal with such complicated procedures. The only thing that will signify a change for the better is a more positive perspective of interacting with government-related administration. Better options for dealing with government services will help citizens and the government achieve good performance (Dwiyanto, 2013).

In addition to the current digital gap, Indonesia has seen increased information technology development. Indonesia's National Statistics Agency uses the information and communication technology (ICT) development index to assess the country's progress in information technology development. The typical index value was 3.88 out of 10

on average in 2015, and it increased to 4.34 from 10 in 2016 (Badan Pusat Statistik, 2017). The National Statistics Agency established several indicators for this index, including access to communication infrastructure, ICT use, and ICT competency.

Countries and citizens can benefit from e-government, which uses the most contemporary communication technology to improve the quality of public services (Fang, 2002). As a result, the primary objective of e-government is to make it easier for residents to access public services. Leveraging e-government in a nation can assist in resolving a variety of issues, such as the need for expensive maintenance and a lot of storage space to archive essential papers. Additionally, it would make it possible to search archives electronically, which would speed up information access (West, 2004; Fang, 2002; Holmes, 2001). E-government can also streamline communication between the government and its constituents, giving people more convenience when dealing with administrative tasks. Enhancing the quality of government services will lead to a more accountable and transparent government (Weiss, 2000).

The acceptance of e-government by citizens is a crucial factor in its success (Ozkan & Kanat, 2011). Therefore, this study concentrates on the government-to-citizen dimension due to the significance of citizen adoption of e-government and the need for more studies on this hot topic in Indonesia.

1. LITERATURE REVIEW

E-government services have enormous potential for advancing political structures in any nation, including Indonesia. Studies show that e-government can improve the way that government operates by increasing citizen trust and raising the standard of services (West, 2004). Through public services, e-government provides cost advantages and enhanced convenience (Holmes, 2001). Citizens' involvement with elected politicians and the government is crucial in a democracy. Without the involvement of its population, democracy loses its core. Liberal democracy is centered on electing representatives of the executive branch of government. Through their representatives, citizens are supposed to share their thoughts on topics and policies (Clift, 2004). By allowing residents to access services directly through ICT, the government and citizens may interact and communicate with one another (Palvia & Sharma, 2007; Fang, 2002).

Technological, social, cultural, and demographic factors impact citizens' adoption of e-government. Therefore, a deeper understanding of the variables affecting citizen adoption of e-government can be achieved by incorporating variables from many viewpoints in the conceptual framework. However, depending on the research's focus, it may be possible to integrate these aspects from many perspectives into a unified framework.

TAM and UTAUT are the most frequently used models for studying the adoption of e-government. Khan and Woosley (2011) claim that this model is also the most widely used for researching the adoption of IS/IT. While UTAUT was established in the realm of information technology, TAM was developed in the field of information systems and technology adoption. Therefore, the individual level of adoption can be predicted using one of these models.

System quality is a measure of a system's technical elements. Users assess system quality based on desired features such as usability, functionality, dependability, flexibility, data quality, portability, and integration (Delone & McLean, 2003). Governments should digitize conventional public services, per Bannister and Connolly (2014), to increase the effectiveness of providing services to citizens and make credit information available to the broader public via government websites and public portals. DeLone and McLean (1992) evaluated and redesigned the assessment items in their information systems success model based on their literature research before including this construct. They found that system quality impacted user happiness and information system use.

The system's functionality is viewed as the interface between the user and the government (Osman et al., 2014). Therefore, the user's view of the system's usability will increase if they believe it to be dependable, simple to use, and responsive, among other positive attributes. Contrarily, consumers' perceptions of the usability of a system will decline when they encounter it as being challenging to use, unreliable, or having a slow reaction time (Gao & Bai, 2014; Zhou, 2011).

System quality elements from the information system success model were incorporated by Gao and Bai (2014), and the results revealed a strong correlation between perceived usefulness and system quality. Through their investigation into customers' intentions for online shopping, C.-W. Chen and C.-Y. Cheng (2009) established that system quality influences behavioral intentions. Additionally, Almalki (2014) discovered that each association was positively significant, confirming the significance of the system quality construct in adopting e-government.

According to DeLone and McLean (2003), a website's information quality refers to the information's accuracy, novelty, readability, completeness, timeliness, relevance, and consistency. The information system success model now includes the information quality component because it greatly influenced how the system was used. Previous research has looked into how the quality of the information affects other elements. Jiang (2011) showed that of these factors, information quality has the greatest impact on the adoption of e-government. C.-W. Chen and C.-Y. Cheng (2009) validated the positive association between information quality and intention to use.

The quality of the information was found to be a significant element in affecting perceived usefulness, according to Gao and Bai's (2014) and Zhou's (2011) findings on users' continued intentions to utilize mobile social networking services and mobile website uptake. However, Shareef et al. (2011) discovered that during the fixed period, information quality has a favorable impact on adopting e-government. By providing high-quality information, citizens can efficiently get the information they require without going to government offices as in conventional systems. In addition, one advantage of using e-government over conventional methods is that work can be completed more quickly online than in government offices.

The entire support a service provider offers is how DeLone and McLean (2003) define service quality. DeLone and McLean (2003) include this component in their updated model due to its significance being a concern through researchers who have validated the model. Many academics advise including this concept, particularly after evaluating the SERVQUAL measurement tool created by Parasuraman et al. (1988). Although they advise updating the SERVQUAL assessment, DeLone and McLean (2003) concur that service quality should be viewed as a distinct system quality component.

Jayawardhena (2004) recommended employing qualitative and quantitative research techniques to gauge service quality. When examining customer intentions in online shopping, C.-W. Chen and C.-Y. Cheng (2009) validated this measuring item. They concluded that service quality significantly influences behavioral intentions. The industry of digital public services has serious challenges, and the quality of e-public services is without a doubt one among them (Jaradat et al., 2018). After examining the data, Ahn et al. (2007) discovered that service quality positively impacts perceived usefulness, supporting their initial premise. This is consistent with Pai and Huang's (2011) findings that the two constructs of service quality and perceived usefulness have a significant positive association.

Almalki (2014) looks at the impact of service quality on perceived usefulness, user satisfaction, and perceived ease of use in adopting e-government. The study discovered that whereas perceived user pleasure and ease of use were significantly impacted by service quality, the construct did not significantly affect perceived usefulness. In contrast, Chen et al. (2015) investigated variables influencing Filipino citizens' adoption of online tax filing and concluded that service quality significantly improves perceived usefulness.

Perceived usefulness is "the extent to which a person believes that employing a certain system will enhance his or her ability to accomplish his or her job" (Davis, 1989, p. 320). Performance expectations, extrinsic motivation, job fit, relative advantage, and outcome expectations are other perceived usefulness constructs uncovered in different models. Although these notions are named differently, scholars have found their definitions share many commonalities (Venkatesh et al., 2003). The two main predictors of behavioral intention are perceived usefulness and perceived ease of use. Additionally, Davis (1989) claimed that these two notions might anticipate how a system would be used.

The perceived usefulness of a new system or approach refers to how it will help users in the future. Although the lack of use should not be interpreted as a lack of usefulness, some users may find the system useful but choose not to use it because they must attend to more critical issues. The system usage can indicate the system's success in voluntary settings (Seddon & Kiew, 1996). Perceived usefulness and citizens' intention to use e-government systems have a significant positive association, according to Carter and Bélanger's (2005) findings on citizen adoption of e-government. The intention of Malaysian residents to use e-government services was examined by Lean et al. (2009). The results imply that higher levels of behavioral intentions are correlated with higher levels of perceived usefulness.

Lu and Nguyen (2016) in Vietnam and Xie et al. (2017) in China analyzed the adoption of e-government. Accordingly, perceived usefulness significantly improved intention to use. Other studies in the field of information technology adoption, such as those by Venkatesh et al. (2012) and Carter and Weerakkody (2008), also incorporate perceived utility. The results show that perceived usefulness significantly favorably affects users' intention to use the system.

Lean et al. (2009) considered intention to use as "a measure of the strength of a person's intention to undertake a given activity." According to Davis (1989), user behavior considers the intention to use as a direct antecedent and a key predictor. No other element can directly affect

user behavior; however, any other component can indirectly affect it through intention to use. In line with the original TAM results, intention to use had a strong positive impact on user behavior. Alsaif (2014) researched the adoption of e-government in Saudi Arabia using an integrated model that includes UTAUT and discovered that behavioral intention significantly improved consumption behavior.

2. AIM AND HYPOTHESES

The aim of this study is to investigate factors affection e-government adoption combining TAM and ISSM models in Indonesia. The hypotheses are as follows:

H1:   System quality has a positive effect on perceived usefulness.

H2:   Information quality has a positive effect on perceived usefulness.

H3:   Service quality has a positive effect on perceived usefulness.

H4:   Perceived usefulness has a positive effect on intention to use.

H5:   Intention to use has a positive effect on user behavior.

3. METHODS

Either online service providers (government) or consumers (citizens) are primarily responsible for the difficulties in citizen acceptance of e-government. The target population comprises Indonesian citizens who have used any e-government website, either to search for information or to apply for government services online, and who are also at least 18-year-old. This is because the study is focused on identifying the factors that influence citizens' adoption of e-government and no group better reflects citizens' current opinions and experiences than the citizens themselves. Purposive sampling was used to choose the sample for this study. 735 participated in the survey.

Table 1. Independent variables

Component	Indicators	Scale	Questions	Source
User Behavior	Retrieve information	Likert	7	Almalki (2014)
	Apply for services			
	Payment for government service			
	Communicate			
	Network with others			
	Check requirements			
	Check the latest news			
System Quality	Reliability	Likert	7	C.-W. Chen and C.-Y. Cheng (2009)
	Accessibility			
	Response time			
	Flexibility			
Information Quality	Accuracy	Likert	6	Shareef et al. (2011)
	Completeness			
	Usefulness			
	Currency			
	Format			
Service Quality	Tangibility	Likert	7	C.-W. Chen and C.-Y. Cheng (2009)
	Reliability			
	Responsiveness			
	Assurance			
	Empathy			
Perceived Usefulness	Useful searching	Likert	7	Davis (1989), Gefen and Straub (2003)
	Improved performance			
	Faster service faster			
	Easier work			
	Productivity			
	Effectiveness			
Intention to Use	Intention to use in the future	Likert	4	Pai and Huang (2011) Rachmawati et al. (2022)
	Intention to use all the time			
	Intention to use the portal rather than the office			
	Use the portal to do different things			

The survey's closed-ended questions were formatted with 5-point Likert scale responses to encourage participation. There is a total of 47 questions in the survey. In the first section of the questionnaire, nine questions related to demographic data. The second section of the survey consists of 38 questions about the ISSM elements, which were taken from the TAM model and are thought to impact Indonesia's adoption of e-government. Table 1 lists the metrics for evaluating each variable.

This study examines the relationship between the variables using structural equation modeling (SEM). Regression analysis, factor analysis, analysis of variance, and path modeling are all combined in SEM, a statistical technique. For example, regression coefficients can be used to investigate the relationships between various variables and validate significance (Hair et al., 2016). Table 2 shows the demographic statistics of the respondents.

Table 2. Demographic statistics

Characteristics	Description	Frequency	Percentage
Gender	Male	230	31.3%
	Female	505	68.7%
Province	Aceh	18	2.4%
	Riau	34	4.6%
	Kepulauan Riau	5	0.7%
	Jambi	3	0.4%
	Bengkulu	0	0.0%
	Lampung	8	1.1%
	Sumatera Utara	6	0.8%
	Sumatera Barat	6	0.8%
	Sumatera Selatan	4	0.5%
	Kepulauan Bangka Belitung	1	0.1%
	Jakarta	320	43.5%
	Banten	74	10.1%
	Jawa Barat	161	21.9%
	Jawa Tengah	30	4.1%
	Jawa Timur	23	3.1%
	DI Yogyakarta	11	1.5%
	Kalimantan Timur	3	0.4%
	Kalimantan Tengah	0	0.0%
	Kalimantan Selatan	3	0.4%
	Sulawesi Utara	2	0.3%
	Sulawesi Selatan	2	0.3%
	Sulawesi Tengah	1	0.1%
	Sulawesi Barat	0	0.0%
	Sulawesi Tenggara	0	0.0%
	Gorontalo	0	0.0%
	Nusa Tenggara Timur	14	1.9%
	Nusa Tenggara Barat	2	0.3%
	Bali	2	0.3%
	Maluku	0	0.0%
	Maluku Utara	0	0.0%
	Papua	1	0.1%
	Papua Barat	1	0.1%
Job Position	Students	327	44.5%
	Government employees	67	9.1%
	Private employees	290	39.5%
	Unemployed	51	6.9%

4. RESULTS

Table 3 shows the analysis of the data with smart-PLS 3.0. According to the descriptive data in Table 3, the mean result for user behavior is 3.69, with an SD of 0.266. In addition, system quality has a mean value of 3.60 and an SD of 0.289. The mean information quality value is 3.75, with an SD of 0.441. Service quality has a mean value of 3.53 and an SD of 0.173. Perceived usefulness had a mean value of 3.82 and an SD of 0.305. The average intention to use score is 3.78, with an SD of 0.504. Then, reliability and convergent validity tests were used to calculate the average variance extracted (AVE), composite reliability, and Cronbach's alpha. These results are displayed in Table 4.

Hair et al. (2016) state the minimum standard value of 0.7 for composite reliability and Cronbach's alpha. The findings of this study show that the composite reliability and Cronbach's alpha values have satisfied the required standards. Additionally, the convergent validity test's average variance extracted (AVE) component has a minimum limit value of 0.5. (Hair et al., 2016). The tests produced AVE results from each of the resulting variables with values above 0.6 and 0.7, indicating that the AVE value in this study has met the requirements.

Table 3. Descriptive statistics

Variable	Questions	Mean	Standard Deviation (SD)
User Behavior (UB)	7	3.69	0.266
System Quality (QS)	7	3.60	0.289
Information Quality (IQ)	6	3.75	0.441
Service Quality (SQ)	7	3.53	0.173
Perceived Usefulness (PU)	7	3.82	0.305
Intention to Use (IU)	4	3.78	0.504

Table 4. Validity and reliability

Variable	Average Variance Extracted (AVE)	Composite Reliability	Cronbach's Alpha
User Behavior (UB)	0.609	0.886	0.839
System Quality (QS)	0.629	0.911	0.882
Information Quality (IQ)	0.681	0.914	0.883
Service Quality (SQ)	0.653	0.919	0.894
Perceived Usefulness (PU)	0.715	0.938	0.920
Intention to Use (IU)	0.774	0.911	0.854

Table 5. PLS path algorithm and bootstrapping

Path	Path coefficient (Original sample)	t-statistics	p-value
QS → PU	0.113	2.746	0.006
IQ → PU	0.502	12.374	0.000
SQ → PU	0.285	7.139	0.000
PU → IU	0.762	36.362	0.000
IU → UB	0.502	13.584	0.000

Note: QS – system quality; PU – perceived usefulness; IQ – information quality; SQ – service quality; IU – intention to use; UB – user behavior.

Therefore, all variables have passed the standards set out by the reliability and convergent validity testing, indicating the validity of the results. Due to the authorization of the feasibility data, the PLS Algorithm and Bootstrapping in smartPLS version 3.0 are shown in Table 5.

Table 5 shows the statistical results for determining the path coefficient and significance level. If the t-statistics are higher than the t-count and the p-value is lower than 0.05, this study considers the predicate significant. On the other hand, the study considers the path coefficient value when selecting hypotheses.

5. DISCUSSION

The e-government portal's technical components are measured by system quality, which examines the existence of desirable qualities such as usability, functionality, dependability, flexibility, data quality, portability, and integration. Osman et al. (2014) as-

sert that because system quality is seen as bridging the gap between consumers and the government, it is one of the crucial structures in adopting e-government. Users are more likely to embrace a reliable system if it is user-friendly, reliable, and has other good features than they are of a poorer quality system, which lowers their view of the system's usability (Gao & Bai, 2014; Zhou, 2011).

This study puts forth H1, which states that system quality significantly improves perceived usefulness. This hypothesis was confirmed (QS → PU = 0.113, p < 0.05), which shows that system quality significantly affects whether citizens adopt e-government. This result is consistent with Almalki (2014), who analyzed the adoption of e-government in Saudi Arabia. System quality had a significant positive effect on perceived usefulness. This highlights the critical role of system quality in citizens' adoption of e-government.

Similar results were found in earlier studies, such as Zhou's (2011) investigation of the impact

of three website quality factors on the uptake of mobile websites in China. It was discovered that perceived usefulness was significantly positively impacted by system quality. Gao and Bai (2014) have also studied long-term plans to use mobile social networking platforms in China. Regarding how system quality affected perceived usefulness, the same conclusion was drawn. This is consistent with the findings of Nguyen and Tran (2022), who showed that system quality positively influences perceived usefulness. As a result, citizens are concerned about the system quality, and the better the system is, the more value they will derive from it.

H2 asserts that information quality has a favorable impact on perceived usefulness. H2 is supported by the data analysis (IQ $\rightarrow$ PU = 0.502, p < 0.05). When Gao and Bai (2014) investigated the variables that affect users' sustained intention to use mobile social networking services, they concluded that information quality substantially positively affects perceived usefulness. Additionally, Zhou (2011) looked at mobile website adoption and discovered that content quality is the primary element affecting perceived usefulness. Concerning e-government, Jiang (2011) concluded that information quality significantly improves perceived usefulness in China.

Nguyen and Tran (2022) and Jaradat et al. (2018) discovered that perceived usefulness positively correlates with information quality. Both factors have the same level of significance. In comparison, Gao and Bai (2014) and Zhou (2011) found that the effect of information quality on perceived usefulness is more significant than the impact of service quality on perceived usefulness. This finding indicates that in Indonesia, citizens emphasize the quality of systems and information to determine the level of utility derived from adopting e-government. Citizens will find e-government advantageous when they discover that the information on the portal has positive qualities like completeness, currentness, and accuracy because it enables them to access the necessary information without having to physically contact a government office. Flexibility in e-government will be helpful. Therefore, managers must set rules for evaluating the quality of information to ensure that the material on the e-government portal is high caliber.

H3 analyzes the impact of service quality on perceived usefulness in relation to the adoption of e-government generally and in Indonesia specifically. This hypothesis was supported by data analysis (SQ $\rightarrow$ PU = 0.285, p < 0.05). This finding is consistent with Chen et al. (2015) conducted in the Philippines. Similarly, Ahn et al. (2007) in Korea examined the impact of website quality and fun on consumer acceptance of online retail. They found that service quality had a strong beneficial impact on perceived usefulness.

Pai and Huang (2011), who researched the factors influencing the adoption of health information systems, also looked at the connection between service quality and perceived usefulness and discovered that service quality had a sizable positive impact on perceived usefulness. Additionally, of the three website quality characteristics examined in this study, service quality had the most significant impact on perceived usefulness. Therefore, e-government administrators should ensure sufficient support is always available on the e-government portal by allocating this responsibility to competent people and that transactions are executed promptly because citizens are concerned with the quality of provided services.

The user's perceived value of a new system compared to an older one is measured by perceived usefulness. Perceived usefulness in this study is defined as the extent to which a person thinks accessing an e-government site will boost their acceptance of governmental information and services. In this study, H4 suggests that perceived usefulness has a strong favorable impact on intention to use. The data analysis supported the proposed hypothesis (PU $\rightarrow$ IU = 0.762, p < 0.05).

The findings demonstrated that perceived usefulness was a highly reliable indicator of intention to use. According to a study on citizen acceptance of e-government, this outcome is similar to the assessments made regarding e-government adoption in the United States (Carter & Bélanger, 2005): perceived usefulness significantly improves intention to use. Perceived usefulness has a considerable positive impact on intention to use, according to Lean et al. (2009), who studied the factors driving citizen adoption of e-government in Malaysia. Aswar et al. (2022) examined how e-government

was adopted in Indonesian public universities; they also came to the same conclusion: perceived usefulness has a significant favorable influence on the intention to use e-government.

H5 is concerned with the impact of intention to use on user behavior. It is confirmed (IU → UB = 0.502, p < 0.05), which is consistent with earlier results. In order to determine which adoption model was most helpful in comprehending the usage of information technology, Taylor and Todd (1995) looked at their number. One of their conclusions is that intention to use significantly improves user behavior. Venkatesh et al. (2012) also came to this conclusion. The significance of intention to use is further highlighted by the fact that it is the sole construct that directly impacts user behavior.

Additionally, Alsaif (2014) uses a combined model based on UTAUT to analyze how citizens accept e-government. The study discovered that user behavior is significantly positively impacted by intention to use. Accepting this premise is justified because more people today are familiar with utilizing e-government and can execute tasks independently since it is easily accessible.

CONCLUSION

This study aims to determine the elements influencing Indonesian citizens' adoption of e-government. According to the results of this investigation, system quality significantly improves perceived usefulness. As a result, citizens who believe that e-government portals have higher system quality also see e-government adoption as having higher utility. Information quality has a favorable impact on perceived usefulness. This demonstrates that people's perceptions of how valuable utilizing e-government is depends partly on the caliber of the material presented on the portal.

In addition, service quality significantly enhances perceived usefulness. This demonstrates that when deciding whether to adopt e-government, citizens place a high value on its level of services. Additionally, perceived usefulness has a very beneficial impact on the intention to use. Citizens who rate the utility of electronic government higher will be more likely to use the system. Finally, user behavior is significantly benefited by intention to use. This suggests that the more strongly residents intend to use it, the more probable they will actually do so.

Contributions to the Indonesian government promoting the use of e-government by citizens will increase their familiarity with the platform and may help lessen the perceived hazards connected with it. By distributing adverts across various media platforms and offering access to portals in the offices that provide the service, residents can be encouraged to use e-government. This will allow some citizens who visit government offices to acquire services to try to register online. If students need assistance registering online, they must wait in line and ask for it immediately.

This study offers several recommendations for future research. First, by testing the model suggested in this paper using data gathered from numerous developing nations, it is possible to learn more about what motivates the use of electronic government. Second, a helpful technique to better understand the factors influencing the adoption of e-government is to interview citizens, especially since some might not be technologically competent or have easy access to it. Third, further research may also investigate the perception of risk, confidence in the government, and confidence in the internet.

AUTHOR CONTRIBUTIONS

Conceptualization: Khoirul Aswar, Wisnu Julianto.
Data curation: Khoirul Aswar, Wisnu Julianto, Mahendro Sumardjo, Ingrid Panjaitan.
Formal analysis: Wisnu Julianto, Azwir Nasir.

Investigation: Mahendro Sumardjo, Ingrid Panjaitan, Azwir Nasir.
Methodology: Khoirul Aswar, Wisnu Julianto, Mahendro Sumardjo, Ingrid Panjaitan, Azwir Nasir.
Resources: Khoirul Aswar.
Software: Khoirul Aswar, Wisnu Julianto.
Supervision: Wisnu Julianto.
Validation: Wisnu Julianto, Mahendro Sumardjo, Ingrid Panjaitan, Azwir Nasir.
Visualization: Khoirul Aswar.
Writing – original draft: Khoirul Aswar, Wisnu Julianto.
Writing – review & editing: Khoirul Aswar, Wisnu Julianto, Mahendro Sumardjo, Ingrid Panjaitan, Azwir Nasir.

REFERENCES

1. Ahn, T., Ryu, S., & Han, I. (2007). The impact of web quality and playfulness on user acceptance of online retailing. *Information & Management, 44*(3), 263-275. https://doi.org/10.1016/j.im.2006.12.008

2. Almalki, O. (2014). *A framework for e-government success from the user's perspective.* The University of Bedfordshire.

3. Alsaif, M. (2014). *Factors affecting citizens' adoption of e-government moderated by socio-cultural values in Saudi Arabia.* The University of Birmingham.

4. Aswar, K., Ermawati, E., Juliyanto, W., Andreas, A., & Wiguna, M. (2022). Adoption of e-government by Indonesian state universities: An application of Technology Acceptance Model. *Problems and Perspectives in Management, 20*(1), 396-406. https://doi.org/10.21511/ppm.20(1).2022.32

5. Badan Pusat Statistik. (2017). *Statistical yearbook of Indonesia.* Jakarta, Indonesia: Badan Pusat Statistik.

6. Bannister, F., & Connolly, R. (2014). ICT, public values and transformative government: A framework and programme for research. *Government Information Quarterly, 31*(1), 119-128. https://doi.org/10.1016/j.giq.2013.06.002

7. Carter, L., & Bélanger, F. (2005). The utilization of e-government services: Citizen trust, innovation and acceptance factors. *Information Systems Journal, 15*(1), 5-25. https://doi.org/10.1111/j.1365-2575.2005.00183.x

8. Carter, L., & Weerakkody, V. (2008). E-government adoption: A cultural comparison. *Information Systems Frontiers, 10,* 473-482. https://doi.org/10.1007/s10796-008-9103-6

9. Carter, L., Weerakkody, V., Phillips, B., & Dwivedi, Y. K. (2016). Citizen adoption of e-government services: Exploring citizen perceptions of online services in the United States and United Kingdom. *Information Systems Management, 33*(2), 124-140. https://doi.org/10.1080/10580530.2016.1155948

10. Chen, C.-W. D., & Cheng, C.-Y. J. (2009). Understanding consumer intention in online shopping: A respecification and validation of the DeLone and McLean model. *Behaviour & Information Technology, 28*(4), 335-345. https://doi.org/10.1080/01449290701850111

11. Chen, J. V., Jubilado, R. J. M., Capistrano, E. P. S., & Yen, D. C. (2015). Factors affecting online tax filing – An application of the IS Success model and trust theory. *Computers in Human Behavior, 43*, 251-262. https://doi.org/10.1016/j.chb.2014.11.017

12. Clift, S. L. (2004). *E-government and democracy. Representation and citizen engagement in the information age* (40 p.). Publicus. Retrieved from http://www.publicus.net/articles/cliftegovdemocracy.pdf

13. Davis, F. D. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology. *MIS Quarterly, 13*(3), 319-340. https://doi.org/10.2307/249008

14. DeLone, W. H., & Mclean, E. R. (1992). Information systems success: The quest for the dependent variable. *Information Systems Research, 3*(1), 60-95. https://doi.org/10.1287/isre.3.1.60

15. DeLone, W. H., & Mclean, E. R. (2003). The DeLone and McLean model of information systems success: A ten-year update. *Journal of Management Information Systems, 19*(4), 9-30. https://doi.org/10.1080/07421222.2003.11045748

16. Dwiyanto, A. (2013). *Mengembalikan kepercayaan publik melalui reformasi birokrasi.* Jakarta: Gramedia Pustaka Utama. (In Indonesian).

17. Fang, Z. (2002). E-government in digital era: Concept, practice, and development. *International Journal of the Computer, the Internet and Management, 10*(2), 1-22. Retrieved from http://www.ijcim.th.org/past_editions/2002V10N2/article1.pdf

18. Gao, L., & Bai, X. (2014). An empirical study on continuance intention of mobile social networking services: Integrating the IS success model, network externalities and flow theory. *Asia Pacific Journal of Marketing and Logistics, 26*(2), 168-189. https://doi.org/10.1108/APJML-07-2013-0086

19. Gefen, D., & Straub, D. (2003). Managing user trust in B2C e-Services. *E-Service Journal, 2*(2), 7-24. https://doi.org/10.2979/esj.2003.2.2.7

20. Hair JR, J. F., Hult, G. T. M., Ringle,

C., & Sarstedt, M. (2016). *A primer on partial least squares structural equation modeling (PLS-SEM)*. Sage Publications.

21. Holmes, D. (2001). *Egov: Ebusiness strategies for government*. Nicholas Brealey Publishing.

22. Jaradat, M. I. R. M., Moustafa, A. A., & Al-Mashaqba, A. M. (2018). Exploring perceived risk, perceived trust, perceived quality and the innovative characteristics in the adoption of smart government services in Jordan. *International Journal of Mobile Communications, 16*(4), 399-439. http://dx.doi.org/10.1504/IJMC.2018.092669

23. Jayawardhena, C. (2004). Measurement of service quality in internet banking: The development of an instrument. *Journal of Marketing Management, 20*(1-2), 185-207. https://doi.org/10.1362/026725704773041177

24. Jiang, X. (2011). Enhancing users' continuance intention to e-government portals: An empirical study. *International Conference on Management and Service Science (MASS)* (pp. 1-4). Retrieved from https://ieeexplore.ieee.org/document/5998967

25. Khan, A., & Woosley, J. M. (2011). Comparison of contemporary technology acceptance models and evaluation of the best fit for health industry organizations. *The International Journal of Computer Science & Emerging Technologies, 1*(11), 709-717. Retrieved from https://ijcset.net/docs/Volumes/volume1issue11/ijcset2011011106.pdf

26. Lean, O. K., Zailani, S., Ramayah, T., & Fernando, Y. (2009). Factors influencing intention to use e-government services among citizens in Malaysia. *International Journal of Information Management, 29*(6), 458-475. https://doi.org/10.1016/j.ijinfomgt.2009.03.012

27. Lu, N. L., & Nguyen, V. T. (2016). Online tax filing – E-government service adoption case of Vietnam. *Modern Economy, 7*(12). https://doi.org/10.4236/me.2016.712135

28. Nguyen, H. N., & Tran, M.

D. (2022). Stimuli to adopt e-government services during Covid-19: Evidence from Vietnam. *Innovative Marketing, 18*(1), 12-22. http://dx.doi.org/10.21511/im.18(1).2022.02

29. Osman, I. H., Anouze, A. L., Irani, Z., Al-Ayoubi, B., Lee, H., Balcı, A., Medeni, T. D., & Weerakkody, V. (2014). COBRA framework to evaluate e-government services: A citizen-centric perspective. *Government Information Quarterly, 31*(2), 243-256. https://doi.org/10.1016/j.giq.2013.10.009

30. Ozkan, S., & Kanat, I. E. (2011). e-Government adoption model based on theory of planned behavior: Empirical validation. *Government Information Quarterly, 28*(4), 503-513. https://doi.org/10.1016/j.giq.2010.10.007

31. Pai, F.-Y., & Huang, K. I. (2011). Applying the technology acceptance model to the introduction of healthcare information systems. *Technological Forecasting and Social Change, 78*(4), 650-660. https://doi.org/10.1016/j.techfore.2010.11.007

32. Palvia, S. C. J., & Sharma, S. S. (2007). E-government and e-governance: Definitions/domain framework and status around the world. *International Conference on Foundations of E-governance.*

33. Parasuraman, A., Zeithaml, V. A., & Berry, L. L. (1988). SERVQUAL: A multiple-item scale for measuring consumer perceptions of service quality. *Journal of Retailing, 64*(1), 12-40. Retrieved from https://www.proquest.com/openview/7d007e04d78261295e5524f15bef6837/1?pq-origsite=gscholarcbl=41988

34. Rachmawati, Aswar, K., Sumardjo, M., Wiguna, M., & Hariyani, E. (2022). Personal and reliability factors affecting adoption and utilization of e-government: an effect of intention to use. *Problems and Perspectives in Management, 20*(2), 281-290. https://doi.org/10.21511/ppm.20(2).2022.23

35. Seddon, P. B., & Kiew, M. Y. (1996). A partial test and development of the DeLone and McLean model of IS success. *Australasian Journal*

of Information Systems, 4(1), 90-109. https://doi.org/10.3127/ajis.v4i1.379

36. Shareef, M. A., Kumar, V., Kumar, U., & Dwivedi, Y. K. (2011). e-Government adoption model (GAM): Differing service maturity levels. *Government Information Quarterly, 28*(1), 17-35. https://doi.org/10.1016/j.giq.2010.05.006

37. Taylor, S., & Todd, P. A. (1995). Understanding information technology usage: A test of competing models. *Information systems research, 6,* 144-176. https://www.jstor.org/stable/23011007

38. Venkatesh, V., Morris, M. G., Davis, G. B., & Davis, F. D. (2003). User acceptance of information technology: Toward a unified view. *MIS Quarterly, 27*(3), 425-478. https://doi.org/10.2307/30036540

39. Venkatesh, V., Thong, J. Y., & Xu, X. (2012). Consumer acceptance and use of information technology: Extending the unified theory of acceptance and use of technology. *MIS Quarterly, 36*(1), 157-178. https://doi.org/10.2307/41410412

40. Weiss, T. G. (2000). Governance, good governance and global governance: Conceptual and actual challenges. *Third World Quarterly, 21*(5), 795-814. Retrieved from https://library.fes.de/libalt/journals/swetsfulltext/11375717.pdf

41. West, D. M. (2004). E-government and the transformation of service delivery and citizen attitudes. *Public Administration Review, 64*(1), 15-27. Retrieved from https://www.jstor.org/stable/3542623

42. Xie, Q., Xie, Q., Song, W., Song, W., Peng, X., Peng, X., Shabbir, M., & Shabbir, M. (2017). Predictors for e-government adoption: Integrating TAM, TPB, trust and perceived risk. *The Electronic Library, 35*(1), 2-20. https://doi.org/10.1108/EL-08-2015-0141

43. Zhou, T. (2011). Examining the critical success factors of mobile website adoption. *Online Information Review, 35*(4), 636-652. https://doi.org/10.1108/14684521111161972