Antecedents of e-government perceived net benefits: a study of e-filing in Indonesia

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Article Info

ABSTRACT

Given that electronic filing is one of the earliest e-government services in Indonesia, additional research is needed to determine the antecedents of service users' perceived net benefit. The e-government system success model by DeLone and McLean was used in this study, however trust factors were added to the government, technology, and e-government websites as antecedents. 195 individual taxpayers were sent a questionnaire including 39 statements as part of the study examination. Data were analyzed using structural equation model-partial least square (SEM-PLS) with the assistance of WarpPLS. This study concludes that these three antecedents determine the success of the e-government system, and thus that e-government development is the integration of trust in government, which is built by increasing its credibility in the eyes of the public, trust in technology, which can be accomplished through education, and trust in e-government websites, which can be accomplished by consistently improving the security and quality of government website services.

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1. INTRODUCTION

To better serve their residents, governments around the world are spending heavily in information technology, such as by implementing e-government programs [1]–[3]. E-government has been believed to be successful in achieving its goals, especially in developed countries [4], [5]. Meanwhile, in developing countries, e-government faces various obstacles related to various factors such as human resources, information communication and technology (ICT) consultants, digital divide, and many more [6]–[10]. As a result, e-government and the associated benefits remain a long way off, with a significant gap between what is currently supplied and what will be realized. This is because e-government places a greater focus on the supply side than on the demand side, or from the community's perspective in this case [11]–[13]. This leads to the fact that people in developing countries have a lower adoption of electronic services [14]–[17].

Currently, the focus of e-government development is placed on citizens and as a consequence, they must be presented in designing e-government systems [18]–[21]. However, e-government development focuses more on government. This does not only happen in this process, but in almost the entire public service provision where the public is excluded from the design process [20], [22]. It results in the lack of adoption and use of this technology so that the government is currently trying to bring the public in the process of designing an e-government system.

One of the most widely used e-government services in Indonesia is e-filing, which is a system for electronically submitting tax returns through the internet and in real time on the website of the directorate general of taxes, ministry of finance. This system arises because the conventional method of direct tax reporting using printed paper files is time-consuming, so e-filing allows taxpayers to submit their income data directly which allows them to know the taxes they have to pay to the state in real-time [23], [24]. The performance of this system can be observed from the number of taxpayers who report each year which has increased even though the percentage of taxpayers who report is still less than 100 percent.

Unfortunately, taxpayers still have doubts due to the system which was created, although it has been updated every year, this system is still not able to meet the expectations of its users in terms of cost, time, and the level of trust in the government [23]–[25]. Academically, only a few studies are exploring how trust influences the successful implementation of e-government [26]–[31]. At the same time, both trusts in government and technology have been recognized as factors for adopting and deploying e-government. Moreover, perceptions of risk, particularly data security issues, also influence the desire to use such a system [27]–[29], [32].

Monitoring the behaviour of users of the taxation system is an urgent need because, for the government, tax is the main source of income which is allocated to finance various public services at the national or local level [33]–[36]. There are other elements that influence tax filing, including faith in government, which is why e-government is only one part of what's needed [26], [27]. Public trust in the government is damaged by the corruption of regional heads who misuse the budget for their personal needs which results in public services that are not as expected by the public [37]–[39]. Due to the limited amount of e-government research that focuses exclusively on users without ignoring study of [40]–[43], particularly for e-filing, this research aims to fill that need. Therefore, a behavioural approach is needed to reveal the antecedents of service users' perceived net benefit of e-government system, which is an online taxation service.

To investigate the antecedents of service users' perceived net benefit, we proposed several variables which were considered to be integrated into our model. This study combined several models which have been built on previous research to investigate the antecedents of e-government adoption [11], [23], [44], [45]. Trust in e-government proposed in this study was influenced by trust in government and technology which had been explored in several previous studies [27]–[29]. The argument was that public trust in e-government was not only built on trust in technology itself but also in the government as an entity which was given the authority to manage taxes. Another notion is that trust in government e-government websites has an effect on the quality of information and services, as well as the system's quality, all of which have an effect on the usability and satisfaction of e-government systems [23], [46]. Eventually, these two variables influence the perception of the usefulness of the system.

2. HYPOTHESIS DEVELOPMENT

The DeLone and McLean [47] model is used in this study to assess the success of e-government systems. This model is comprehensive and multifaceted in nature because it defines communication at the technical level as a manifestation of the correctness and efficiency of the information-producing communication system [47]. DeLone and McLean consider system quality, information quality, utilization, user satisfaction, individual impact, and organizational impact [47].

Trust in the government is born from citizens who believe in what the government is doing. Trust changes fast and depends on how the government tries to maintain its credibility. About e-government, the antecedents of e-government web in several previous studies have revealed trust in government as a factor which significantly influences it [23], [24], [44]. This occurs because public participation will be high in various kinds of public services and policies, including e-government if the government succeeds in building public trust in it. Therefore, we draw the following hypothesis.

- H$_1$: trust in government has a substantial positive impact on trust in e-government websites.

Also, previous studies reveal the role of trust in technology as a predictor of e-government adoption [27], [44]. Trust has become one of the main predictors and fundamental constructs for understanding user behaviour. This is mainly related to security and privacy issues from various data and information sent to government websites. Trust in technology becomes the foundation for belief in technology and therefore it encourages people to trust a government e-government website product for transactions. So, we draw the following hypothesis:

- H$_2$: technology trust has an important and positive effect on trust in e-government websites.

Because consumers of online services no longer have the opportunity to interact with government staff in person, the information provided on government websites must be adequate and of good quality. As a result, public trust in e-government websites is directly related to the accuracy of the data available. Government websites are trusted for the information they give, especially in terms of delivery time, authenticity, and accuracy. Additionally, public trust in e-government websites has a substantial effect on the perceived value of the information [48], [49]. Equally important from the quality of information is the quality of the system

being built. Past research has revealed that trust in e-government improves perceived system quality [50], [51]. As a result, when citizens have more trust in e-government websites, they will have a better perception of system quality. The level of trust in e-government websites also has an effect on the perceived quality of service. As a result of their confidence in e-government websites, the general public will expect them to provide higher-quality public services [52]–[54]. Therefore, we draw the following hypothesis.

− H_3: trust in e-government websites will influence quality of information positively and significantly.
− H_4: trust in e-government websites will influence system quality positively and significantly.
− H_5: trust in e-government websites will influence service quality positively and significantly.

Better quality of information will determine perceptions of the usefulness of an e-government website [29], [49], [52]. Face-to-face services are being phased out in favor of the high-quality information available on the internet, which is representative of government services. As a result, the perceived value of e-government system will be impacted by the information's quality. Additionally, the level of information quality has an effect on user happiness. The quality of the information provided is crucial for increasing customer happiness [26], [49]. Therefore, we draw the following hypothesis.

− H_6: the quality of information has a positive and significant impact on the perceived usefulness.
− H_7: the quality of information has a positive and significant impact customer satisfaction.

A good quality system is what the public and the government want because it is a medium for the government to deliver its services. In its website, the government must ensure good quality information, such as security and reliability because this affects the user's perception of the usefulness of an e-government website [23], [24], [44]. In previous research, system quality has also been confirmed to affect community satisfaction. This happens because the better the system built as seen from the speed of access, process and response, the higher the community's satisfaction [53], [55], [56]. Therefore, we draw the following hypothesis.

− H_8: system quality will influence perceived usefulness positively and significantly.
− H_9: system quality will influence customer satisfaction positively and significantly.

Prior studies have shown that the perceived utility of an e-government website is influenced by perceptions of service quality. As e-government websites are supposed to provide improved and streamlined services to satisfy users' issues, service quality is a determinant of satisfaction [23], [24], [44]. Therefore, we draw the following hypothesis.

− H_{10}: service quality will influence perceived usefulness positively and significantl.
− H_{11}: service quality will influence customer satisfaction positively and significantly.

Online tax systems are anticipated to increase the performance of tax-related tasks and hence encourage user happiness, as systems that accomplish critical tasks are deemed more helpful. Users are more likely to be satisfied with a system if it is more useful. As long as the system is useful in carrying out its functions, it will benefit users by boosting their output [23], [24], [44]. People are more likely to enjoy and justify total value in an online system if it is regarded to be useful, so that investment pays off more quickly. It is projected that customer happiness will have an impact on how much value people derive from the services they receive. If users are happy, the e-government system's benefits will be felt more strongly as a result.

− H_{12}: perceived usefulness has a positive and significant effect on the perceived net benefit of e-government systems.
− H_{13}: user satisfaction has a positive and significant effect on the perceived net benefit of the e-government system.

3.   METHOD

The purpose of this research is to discover the antecedents of service users' perceived net benefit of e-government system. It was quantitative study that was utilized to reach this end. Research designs that use quantitative approaches examine the link between several variables to see if they are valid [57].

3.1. Sample

The questionnaire was developed based on the previous research of [44] and distributed to 195 individual taxpayers, a five times of 39 questionnaire items as recommended by Hair *et al*. [58]. The research procedure begins by submitting letter of permition to the taxation agency. After obtaining permission, research assistants distributed questionnaires to the individual taxpayers. Purposive sampling, a non-probability sampling technique, was employed in this investigation. Purposive sampling is a sampling technique that takes into account a number of factors before selecting a sample [59]. The criteria include an active taxpayer as an individual and is not representing a business or other sector entities; and since the system updated regularly, the other criterion is that the respondent was at least 6 months visiting the e-government website (https://djponline.pajak.go.id/).

3.2. Measurements

This research employed nine variables including trust in government (TIG) [44], trust in technology (TIT) [44], trust in e-government website (TIEGW) [44], information quality (IQ), system quality (SQ), service quality (SERVQ) [44], perceived usefulness (PU) [44], user satisfaction (US), [44], and perceived net benefits (PB) [44]. Trust in government is quantified using four factors and the phrase "in my opinion, the government acts in the public interest". Trust in technology [43] is quantified using four factors and the statement "because the internet provides a high level of security, I am confident in using it to connect with government entities". Trust in e-government websites [43] is quantified using three criteria and the statement "a dependable online tax report submission system". Measurement of information quality [43] consists of six criteria and is illustrated by the statement "the information provided in the online submission system for tax returns is accurate". Measurement of system quality [43] entails nine variables and uses the statement "the system includes a download form" as an example. Service quality measurement [43] entails four variables, as illustrated by the statement "the e-filing system's operation was exceptionally responsive to my requests". Perceived usefulness [43] is quantified using four factors and the statement "when it comes to preparing to submit my taxes, having an e-filing system would help me be more efficient". User satisfaction measurement [43] entails four variables, as illustrated by the statement "e-filing, in my opinion, fits the needs of my relationship with the tax office". Perceived net benefits [43] are quantified using five variables and the statement "e-filing saves time". All of the statements were given 7 answers ranging from strongly disagree to strongly agree.

3.3. Data analysis method

Partial least square-structural equation model (PLS-SEM) is is used to predict a model for theory development [58], [60]. This study utilized PLS-SEM to develop a model which can predict perceived net benefits of e-government service. Data analysis was conducted with the help of WarpPLS 6.0.

4. RESULTS AND DISCUSSION

4.1. Respondent demographic

This part includes information about the respondents' demographic characteristics. There are five things we asked respondents which are gender, age, latest education and length of time using e-filing. Table 1 shows the gender profiles of respondents divided into male and female. Most of our respondents were women with a total of 146 people and the rest were male with a total of 109 people.

Table 1. Respondent gender profile

Category	Category	Frequency	%
Gender	Female	131	57.4%
	Male	94	42.6%

Table 2 draws the age of the respondents. Most of the taxpayers who filled out our questionnaire were those aged 17–20 years. Then, this was followed by those aged 31–40 years, namely 19.6%. Respondents with the lowest age range were those aged 51–60 years or about 1.8%.

Table 2. Respondent age profile

Category	Category (years)	Frequency	%
	17–20	131	63%
	21–30	27	10.7%
Age	31–40	50	19.6%
	41–50	13	5%
	51–60	5	1.8%

Table 3 summarizes the respondents' most recent educational profile. The majority of our respondents had completed senior secondary education, with 58.5% having completed senior high school/vocational high school and 31.9% having completed a bachelor's degree. With 0.4% and 0.7%, respectively, respondents with a graduate degree and a junior high school diploma had the least education.

Table 4 contains the duration profile of e-filing usage. Most respondents were new users with a usage period of less than one year, which is 67.5%. Then, the data is followed by those who had used e-filing between 1–3 years, which is 15.2%. The number of respondents using this system for more than six years is 6.9%.

Table 3. Respondents' last education profile

Category	Category	Frequency	%
Last education	Junior high school	2	0.7%
	Senior high school/vocational high school	119	58.5%
	Associate degree	5	2.1%
	Bachelor degree	81	31.9%
	Master degree	6	6.4%
	Doctoral degree	1	0.4%

Table 4. Duration profile of e-filing usage

Category	Category (Years)	Frequency	%
Duration of using e-filing	< 1 year	142	67.5%
	1–3 year	39	15.2%
	2–6 year	27	10.5%
	> 6 year	18	6.9%

4.2. Validity and reliability test
4.2.1. Convergent validity

To find out whether the constructs and indicators meet the criteria of convergent validity, the authors present the factor loading value of each indicator. The data analysis indicated the value is greater than 0.70 based on the results of the measurement of all indicators, indicating that the indicators are preserved. Indicators with a loading value of more than 0.70 indicate that the latent variable can explain the variance of each indicator by 50% [58]. By paying attention to the loading value of each indicator, the authors conclude that each indicator in the study meets the criteria for convergent validity.

4.2.2. Discriminant validity

The data analysis indicated the outer loading value is greater than the cross-loading value, based on the measurement performance. This means that each indicator can only represent a single variable and cannot represent any other variables [58]. The second method of determining discriminant validity is to compare the square root of average variance extracted (AVE) to the correlations between the latent variables in Table 5.

Table 5. AVE square roots and correlations among latent variables

Variables	TIG	TIT	TIEGW	IQ	SQ	SERVQ	PU	US	PB
TIG	(0.944)	0.814	0.818	0.870	0.852	0.876	0.865	0.841	0.856
TIT	0.814	(0.951)	0.827	0.833	0.821	0.838	0.789	0.809	0.768
TIEGW	0.818	0.827	(0.954)	0.936	0.829	0.831	0.829	0.835	0.761
IQ	0.870	0.833	0.936	(0.942)	0.916	0.937	0.918	0.930	0.889
SQ	0.852	0.821	0.829	0.916	(0.969)	0.969	0.931	0.922	0.914
SERVQ	0.876	0.838	0.831	0.937	0.873	(0.975)	0.939	0.948	0.907
PU	0.865	0.789	0.829	0.918	0.931	0.939	(0.961)	0.954	0.931
US	0.841	0.809	0.835	0.930	0.922	0.948	0.954	(0.957)	0.934
PB	0.856	0.768	0.761	0.889	0.914	0.957	0.931	0.934	(0.957)

Table 5 shows the AVE square root and the relationship between latent variables. Previously, a construct was stated to meet the requirement for discriminant validity if the square root of AVE was greater than the correlation between latent variables [58]. Since the square root of AVE is greater than the correlation between latent variables for and variable, all variables in this analysis meet these criteria for discriminant validity.

4.2.3. Reliability

Table 6 shows the results of the calculation of composite reliability and Cronbach's alpha for each research indicator. We provide both scores for each variables. It is intended to measure the reliability to each variable employed in this study.

Table 6. The value of composite reliability and Cronbach's alpha

Reliability	TIG	TIT	TIEGW	IQ	SQ	SERVQ	PU	US	PB
Composite reliability	0.970	0.974	0.968	0.979	0.966	0.987	0.980	0.978	0.959
Cronbach's alpha	0.959	0.965	0.950	0.975	0.958	0.983	0.972	0.969	0.946

Using Cronbach's alpha, the dependability of each research variable is summarized in Table 6. Cronbach alpha value of greater than 0.6 indicates that a variable is accurate when its composite reliability score is higher than 0.70 [58]. Based on the calculation results, the composite reliability value for each variable is above 0.70. The Cronbach's alpha value is then greater than or equal to 0.60. Each variable can be labeled dependable by focusing on these two tests.

4.3. Structural model evaluation

Once it is established that each variable in the analysis is accurate and consistent, the structural model is evaluated. The structural model is evaluated by examining the model's fit, the path coefficient, and R2. The first stage of model validation is to examine the model fit indices (model suitability). Table 7 summarizes the model fit indices and their associated parameters.

Table 7. The model fit indices

Model fit and quality indices	Score	Criteria
Average path coefficient (APC)	0.443, P < 0.001	P < 0.05 [61]
Average R-squared (ARS)	0.748, P < 0.001	P < 0.05 [61]
Average adjusted R-squared (AARS)	0.746, P < 0.001	P < 0.05[61]
Average block variance inflation factor (AVIF)	1.575	≤ 5,ideal ≤ 3.3 [61]
Average full collinearity VIF (AFVIF)	2.15	≤ 5, ideal ≤ 3.3 [61]
Tenenhaus GoF (GoF)	0.778	Small ≥ 0.1, medium ≥ 0.25, Large ≥ 0.36 [61]
Sympson's paradox ratio (SPR)	1.000	≥ 0.7 ideal = 1 [61]
R-squared contribution ratio (RSCR)	0.929	≥ 0.9 ideal = 1 [61]
Statistical suppression ratio (SSR)	1.000	≥ 0.9 [61]
Nonlinear bivariate causality direction ratio (NLBCDR)	0.7	≥ 0.7 [61]

Table 8 Path coefficient and their significance

Hypothesis	Path	Path Coefficient	P	Result
H$_1$	TIG → TIEGW	0.17	< 0.001	Accepted
H$_2$	TIT→ TIEGW	0.71	< 0.001	Accepted
H$_3$	TIEGW → IQ	0.85	< 0.001	Accepted
H$_4$	TIEGW → SQ	0.81	< 0.001	Accepted
H$_5$	TIEGW → SERVQ	0.80	< 0.001	Accepted
H$_6$	IQ → PU	0.03	0.34	Rejected
H$_7$	IQ → US	0.22	< 0.001	Accepted
H$_8$	SQ → PU	0.44	< 0.001	Accepted
H$_9$	SQ → US	0.21	< 0.001	Accepted
H$_{10}$	SERVQ → PU	0.46	< 0.001	Accepted
H$_{11}$	SERVQ → US	0.51	< 0.001	Accepted
H$_{12}$	PU → PB	0.46	< 0.001	Accepted
H$_{13}$	US → PB	0.48	< 0.001	Accepted

As seen in Table 7, the APC, ARS, and AARS each have a value of around 0.730. The P-value is less than 0.05 in each of the three instances. As a result, the model developed by the authors satisfies the requirements [58]. Additionally, the author's AVIF and AFIV scores, both of which are greater than the optimal 3.3 on a 1 to 5 scale, meet the model's requirements [61].

Additionally, Tenenhaus goodness of fit (GoF) has a 0.623 value (GoF). According to [61], the Tenenhaus GoF should be greater than 0.36 to qualify as an optimal model. Additionally, the SPR score is 1, indicating that the product meets all ideal characteristics [61]. Due to the fact that these investigations established that the model constructed was faultless, the RSCR value was set to 1. With an SSR value of 1, it is possible to conclude that the model is suitable [61]. The value of the NLBCDR is 1, indicating that the model is adequate. It is capable of reliably forecasting future occurrences, based on the author's model.

Table 5 summarizes the structural model's test results based on the R-square (goodness of fit test). The findings indicated a close relationship between the total R-square value and the R-square value. Additionally, the TIEGW defined by trust in government and trust in technology are 0.70 or 70% [58]. The IQ, SQ, and SERVQ described by TIEGW have each R-square value of 0.72; 0.66; and 0.64 [58]. IQ, SQ and SERVQ can explain PU at 0.83, while the three variables are also able to predict US at 83% with an R-square value of 0.83. Last, the PB which can be explained by PU and US is 83% with an R-square value of 0.83.

Once the prerequisites have been completed, the hypothesis will be put to the test. We then looked at the path coefficient and P-value. Each hypothesis tested in the study has a path coefficient and a corresponding significance level shown in Table 8.

Table 8 summarizes the thirteen hypotheses advanced in this review. Twelve of the thirteen hypotheses we suggested are accepted, while two were dismissed. The IQ to US hypothesis is dismissed. Simultaneously, the overall result, as summarized in Table 8, is positive.

4.4. Discussion

The study's objective is to determine the antecedents of service users' perceived net benefit of e-government system. There were thirteen hypotheses, and each was tested. According to the study's findings, there was a positive association between public trust and public trust in e-government websites. Individuals who believe in government are more likely to believe in the government's actions, one of which is requiring people to use e-government. This confirms several previous studies [26]–[28]. The digital government allows the government to build another image, which is faster, responsive and efficient, which is different from offline services which are slow, unresponsive, and therefore inefficient [52], [62], [63].

Additionally, the researchers discovered that people's faith in technology influenced their trust in e-government portals positively. Given the public's confidence in government-developed technology, it's logical to assume that consumers who utilize e-government services share that sentiment. This means that users' faith in technology becomes the basis for their trust in a specific technology, which encourages users to transact with confidence on an e-government website [64]–[66].

Trust in e-government websites improves information quality, the system, and how well it works as a result of these findings. Both quantity and quality of knowledge are affected, as was traditional. As a result, customers who believe in the website's reliability trust it. In order to keep the system running smoothly, e-government websites are essential. According to prior research, improvements should entail more community involvement. You have to have faith in government systems that are run by computers. According to the findings of this study, citizens who have faith in e-government websites receive better service.

While the quality of the system and service have an effect on these variables, the quality of the information itself is unaffected. As indicated by this finding, there is a correlation between user impressions of e-government website usability and system quality. As a result, the information offered may not be sufficient for consumers to file their taxes, diminishing its perceived usefulness. The quality of the system, the quality of the information, and the quality of the service all have an effect on how satisfied customers are with their service. This demonstrates that the system was developed effectively from an information systems perspective and has an effect on customer satisfaction [23], [44]. The information provided is sufficient in terms of quality to guide visitors through e-government websites. Users who are satisfied with the services they receive express a high degree of satisfaction with the service's quality.

Utility perceptions in e-government and user pleasure have an effect on users' perceived utility. Users believe that e-government websites boost their performance by increasing the effectiveness and efficiency of tax services, indicating that they view the system as beneficial from a perceived utility standpoint [23], [44]. E-government website utility perceptions were shown to be affected by user satisfaction, demonstrating that users are content with e-government websites, which in turn influences how pleased they are with e-government websites.

5. CONCLUSION

The findings indicate that citizens' faith in government and technology has an effect on their confidence in e-government websites. Credibility of e-government websites has a good and significant effect on the quality of information, the system, and its performance. As a result, consumer pleasure is influenced by a variety of variables. The perceived utility of e-government websites was shown to be influenced by the quality of the material as well as the system and service. This is also influenced by user satisfaction and perceptions of the utility of e-government.

The purpose of this study is to determine the antecedents of service users' perceived net benefit of e-government system. Academically, this study fills a hole in e-government research by examining the acceptance and use of e-government systems, as well as perceptions of their utility, which have not been adequately examined in previous studies. Indeed, various areas for improvement exist, including the consistency of offline public services and the information supplied on e-government portals. Due to the fact that not all government services are available online and due to the digital divide, the government must also improve the quality of offline government services. Consistent information dissemination might be improved; in addition to being reasonably useable and accessible, the material could be made more appealing.

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