

# Measuring Acceptance Level of Online Service for Business Permit in Surabaya using Technology Acceptance Model

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**Abstract.** Surabaya is known nationally as the pioneer of e-government in Indonesia, as time goes Surabaya's e-government started to provide online services for permits and licenses. One of the service that they provide is business license known as Surat Izin Usaha Perdagangan/Tanda Daftar Perusahaan (SIUP/TDP). With this service, citizens are able to take care of such licenses online. This research discussed about citizen's level of acceptance of the online service and identifying factors that influence the acceptance of online SIUP/TDP in Surabaya using Technology Acceptance Model (TAM). The factors that influenced the acceptance level were measured through questionnaire survey for 100 respondents who already experienced the service. The data is then analysed through structural equation modelling (SEM). The result shown that 8 of 9 hypotheses are failed to be rejected. Three solutions can be proposed to improve the level of acceptance of the service namely: animated guidance, better socialization campaign, and scheduled site maintenance.

**Keywords:** E-government, Level of Acceptance, Technology Acceptance Model, Structural Equation Modelling

## 1. Introduction

The development of information technology has impacted many sectors including the management process of a country. The use of information technology in this case is often referred to as electronic government (e-government) which is a new phenomenon because previously, information technology was more widely used for internal government affairs. E-government is an external approach that connects government agents with external stakeholders such as citizens, business owners, and among government agents [1]. With the existence of e-government, citizens have 24-hour access to government services, other than that another perceived benefit is a closer relationship between government and citizens, increased transparency, reduced costs and increased quality and speed of service [2].

These benefits make the Indonesian government encourage and support the implementation of e-government in every service area of the Indonesian government as stated in Presidential Instruction No. 3 of 2003 which instructed that e-Government was intended to guarantee the integration of electronic document management and processing systems and information in developing a transparent public service system. Furthermore, it is emphasized in Presidential Regulation No. 54 of 2015 by assigning the director of informatics application as the manager of the e-government process.

In the e-government implementation, Surabaya municipal government is recognized as the best example and become the model for the others. With their Surabaya Single Window (SSW) platform, the government can serve many kinds of services to the citizens which includes business permit i.e. SIUP/TDP. Despite the recognition, it seems to attract only a few researchers to academically analysing



the implementation success. Dewi and Mujahidin [3] analysed SSW using a method called Government Adoption Model, while Bisma[4] interested in analysing the transactional service in e-government. This research measured the acceptance level from the citizens toward the SIUP/TDP online services and proposed some improvement actions for weak performing aspects. The acceptance level is measured according to the classic Technology Acceptance Model (TAM) with some modifications as proposed by Belanche et.al.[5].

## 2. Literature Review

Literature on e-government are grouped into two broad categories based on the point of view used: supply and demand [1]. Researches in the supply group mainly discussing obstacles experienced in e-government implementation to reach its objective, while the demand group focusing from users point of view such as measuring satisfaction level and financial impact after the implementation of e-government. E-Government is a government process that involves the use of communication and information technology, especially web-based applications to provide access to information and services that are faster, easier, and more efficient to the public[6]. More concisely, according to the OECD in [7] e-government can be defined as the use of communication and information technology for better governance. Our research took the demand side when trying to assess the acceptance level of the e-government in Surabaya.

For Indonesia specifically, only a few literatures take it as the object of the research. Prahono and Elidjen [8] measured e-government role and its relation with public administration reform where they took 32 samples from e-government websites and found out that through e-government the public administration reformation has started although at a slow pace. Surabaya municipal e-government has become the object for Bisma [4] and Dewi and Mujahidin [3].

As the objective of this research is to measure the performance of e-government implementation, so a metric is needed. Previous research included in the supply category offers several different measurement models. As summarized by Fath-Allah et.al [9] from about 25 different models to measure the maturity of e-government, the most important stage of maturity can be grouped into four stages: presence, interaction, transaction, and integration. E-government performance measurement conducted by Huang and Benyoucef [10] used 13 guidelines and 13 criteria to measure the usability and credibility levels of e-government sites. Choi et.al [11] proposed a model called the STOPE framework. This framework considers 5 dimensions in e-government to be measured including: Strategy, Technology, Organization, People, and Environment. Each dimension is then broken down into 4-5 sub dimensions so that the measurement process can be done easier. As a bridge to the gap between theory and practice, the STOPE Framework is combined with the Analytical Hierarchical Process (AHP) so that the results can be used as a basis for taking action by the government in improving the quality of e-government services.

Prahono and Elidjen [8] measures Index of Reform (IR) which is an index prepared by considering 4 parameters related to e-government, namely citizen document services, business licensing services, transparency of planning, and financial transparency. Each parameter is then given an assessment between 0-4 and then aggregated into an IR which also has a scale of 0-4. The results revealed that only 15.6% of the websites had score between 2.75 and 4.00, Surabaya City ranked highest among the 32 samples taken. Bisma [4] used SEM-PLS to analyse factors affecting e-government transactional service adoption and identified that social norms have positive relations with user intention to use the service. The respondents were Surabaya, Sidoarjo, and Malang citizens. The Surabaya Single Window (SSW) is the object taken by Dewi and Mudjahidin [3]. They analysed the adoption level using Government Adoption Model (GAM) which consist of 11 explanatory factors that influenced the level of adoption in both static and interaction maturity stage.

Belanche et.al [5] proposed a TAM based framework to assess adoption level of e-government services. They integrated trust factor into the TAM framework and testing 4 new hypotheses in addition to the traditional 5 TAM related hypotheses. They tested their framework for e-government services in Spain. TAM also used by Hamid et.al [12] when they measured the continuance intention to use e-government in Malaysia. They analysed the effect of perceived usefulness and perceived ease of use and

found out that both factors positively related to the intention. Belanche et.al [5] mentioned that their framework has only tested in Spain with Spanish speaking respondents, it is necessary to test the framework in other country. We tried to adopt the framework in our research for Surabaya e-government services because we share the same believe that trust is a major factor in the acceptance level of such services.

### 3. Methodology

#### 3.1. Data Collection

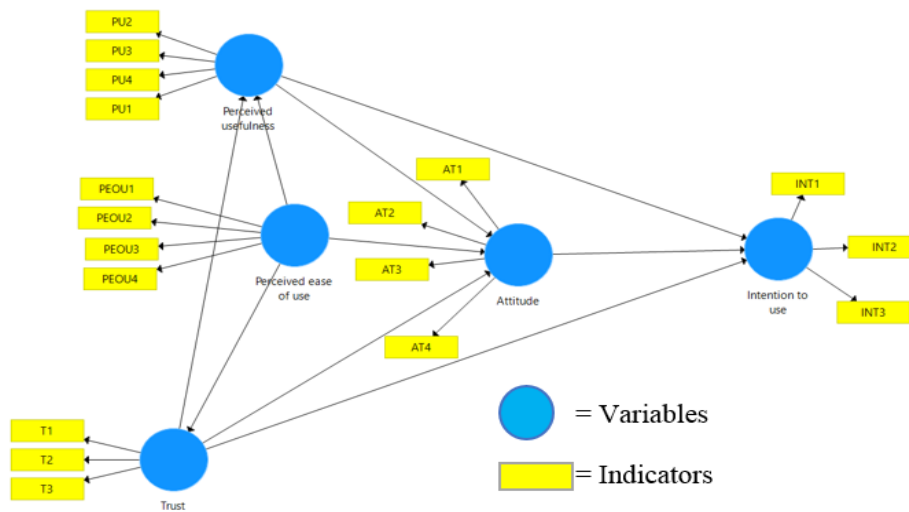
To collect the data, we adapt questionnaire from Belanche et.al [5] and translated them into Bahasa Indonesia. The indicators are presented in Table.1 where we asked the respondents on 5 dimensions and 18 indicators besides the demographic questions. The respondents are contacted in the public service mall UPTSA Surabaya and they fill the questionnaire online via a tablet computer provided by the surveyor. We surveyed 30 respondents as our pre-sample to check against the validity and reliability of the instrument which both are confirmed valid and reliable. Afterwards, we continue to survey another 70 respondents to make up the 100 minimum respondents.

**Table 1.** Questionnaire Indicators

Variable	Notation	Indicator
Perceived Usefulness	PU1	Useful for me
	PU2	Speed up my activities
	PU3	Save my money
	PU4	Save my time
Perceived Ease of Use	PEO1	The site is easy to find in the internet
	PEO2	The steps are easy to be understood
	PEO3	Easy to fill in the admission data
	PEO4	Easy to upload documents
Trust	T1	Official service from Surabaya government
	T2	Reliable functionality (never error)
	T3	Will not divulge my personal data
Attitude	AT1	Give a pleasant experience
	AT2	Give a modern experience
	AT3	Is a good idea
	AT4	Interesting
Intention to use	INT1	Using it now
	INT2	Recommend to other
	INT3	Willing to use in another time

#### 3.2. Analysis Process

The data collected are then analysed using Structural Equation Modelling (SEM) which started with model development as shown in Figure 1. The process continued with confirmatory factor analysis to analyse the loading factor on the outer model before moving on the inner model analysis. The final step is to test 9 hypotheses to check the relationship between indicators and variables.



**Figure 1.** Structural Equation Model

**4. Result and Discussion**

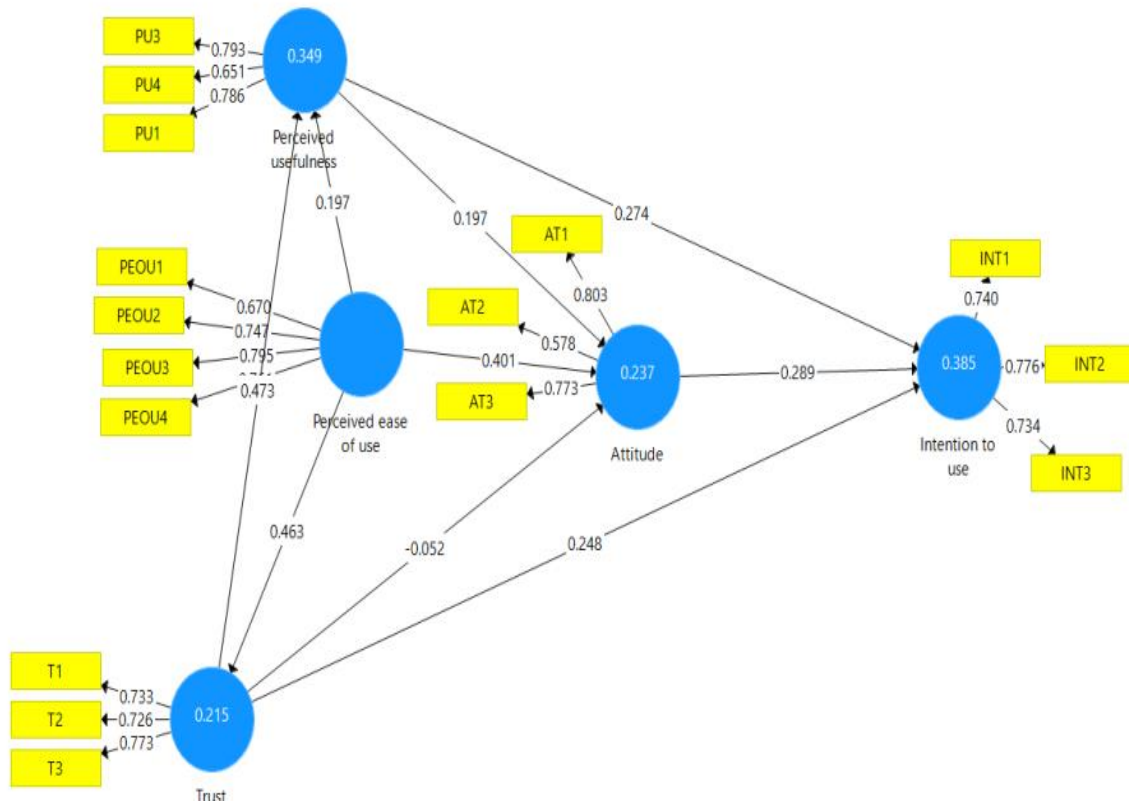
*4.1. Outer Model*

Outer model is a model that focuses on the relationship between the latent variables and each indicator. The average variance extracted in Table 2 suggests some values is below 0.5 (before removal) which means the variables’ validity is not sufficient. In order to make the variable valid, we must remove the indicators that have high loading factor to the variable. We removed the AT4 (Interesting) and PU2 (Speed up my activities) because we think the respondents have difficulties to express their subjective judgment on the questions that may be too general for them. After the removal, the variables become valid.

**Table 2.** Outer Model AVE before removal of AT4 and PU2

Variables	Average Variance Extracted	
	before removal	after removal
Attitude	0,488	0,526
Intention to use	0,564	0,564
Perceived ease of use	0,554	0,554
Perceived usefulness	0,484	0,556
Trust	0,557	0,554

We also observe from Table 3, each indicator has better correlation to its dedicated variable than to the other variables suggesting that there is no problem with the discriminant validity. In Table 4, we observed some Cronbach’s Alpha values fall under 0.7 threshold which requires us to observe the composite reliability to check the reliability of the model. The composite reliability shown a good reliability because all the values are above the 0.7 threshold, so we can confirm that the outer model is reliable.



**Figure 2.** Loading factors after removal

**4.2. Inner Model**

The inner model is analysed by observing the regression values from independent variables toward the dependent variables. The R<sup>2</sup> values presented in Table 5 suggesting that only less than 40% of variations in the independent variables are explained by the dependent variables indicating there should be other variables to be identified as the better explanatory variable.

**Table 3.** Cross Loading

Indi.	Variable				
	AT	IU	PEOU	PU	T
AT1	0,803	0,402	0,373	0,267	0,198
AT2	0,578	0,217	0,259	0,176	0,206
AT3	0,773	0,309	0,351	0,272	0,139
INT1	0,274	0,762	0,39	0,386	0,308
INT2	0,329	0,758	0,371	0,457	0,442
INT3	0,393	0,733	0,337	0,291	0,293
PEOU1	0,306	0,377	0,674	0,239	0,44
PEOU2	0,296	0,403	0,755	0,317	0,349
PEOU3	0,395	0,373	0,788	0,4	0,349
PEOU4	0,363	0,284	0,756	0,263	0,221
PU1	0,32	0,448	0,436	0,784	0,446
PU3	0,24	0,374	0,235	0,793	0,464
PU4	0,162	0,295	0,225	0,652	0,342
T1	0,079	0,264	0,296	0,384	0,74
T2	0,241	0,34	0,322	0,327	0,721
T3	0,21	0,419	0,401	0,519	0,772

**Table 4.** Reliability Testing

	Cronbach's Alpha	Composite Reliability
Attitude	0,549	0,765
Intention to use	0,615	0,795
Perceived ease of use	0,731	0,832
Perceived usefulness	0,607	0,789
Trust	0,608	0,789

**Table 5.** R-Square

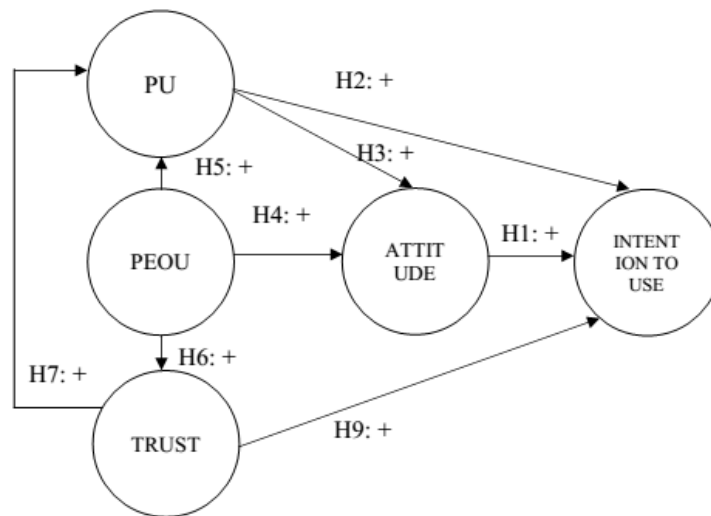
	R square
Attitude	0,237
Intention to use	0,386
Perceived Usefulness	0,348
Trust	0,216

*4.3. Hypotheses Testing*

We tested 9 hypotheses in this research as Belanche et.al[5] did. The result presented in Table 6 is mostly confirming their finding except for hypothesis 8 which tested the effect of trust variable towards the attitude variable. Our result suggest that trust is neither significant nor positively affect the attitude variable. So, we could now graph our research model as in Figure 3 where we do not put arrow sign from Trust towards Attitude. The difference findings may imply some differences between sample taken in Spain and sample taken in Surabaya that impacting the acceptance level of the e-government services.

**Table 6.** Hypotheses Testing

Hyp.	Relations	Original Sample (O)	P Values	Conclusion
H1	Attitude → Intention to use Perceived Usefulness	0,289	0,017	Significant and Positively Affects
H2	→Attitude Perceived Usefulness →	0,197	0,01	Significant and Positively Affects
H3	Intention to use Perceived ease of use →	0,274	0,007	Significant and Positively Affects
H4	Attitude Perceived ease of use →	0,401	0,003	Significant and Positively Affects
H5	Perceived usefulness	0,197	0,038	Significant and Positively Affects
H6	Perceived ease of use → Trust	0,463	0	Significant and Positively Affects
H7	Trust →Perceived usefulness	0,473	0	Significant and Positively Affects
H8	Trust --> Attitude	-0,052	0,309	Not Significant and Not Positively Affects
H9	Trust --> Intention to use	0,248	0,017	Significant and Positively Affects



**Figure 3.** Research Model after SEM

#### 4.4. Service improvement

Based on the analysis, some ideas can be suggested to the municipal government to improve the service offered especially in the perceived usefulness, perceived ease of use, and trust variables. The lowest loading factor in PU is from PU4 (save my time) which could be improved by preparing a detailed step-by-step tutorial video on the e-government website so the user does not need to come to the offline office. Improvement for PEOU1 can be done through a better socialization campaign so users can easily find the link to e-government websites. And lastly, to improve trust variable, the system need to have a regular maintenance schedule to ensure the reliability of the system (T2).

#### 5. Conclusion

This research has confirmed 8 out of 9 hypothesis formulated by Belanche et.al [5] regarding the factors that have effect on the acceptance level of online business permit service in Surabaya Municipal. The research rejected the hypothesis that trust has significant and positive effect on attitude toward the service, however trust variable has significance and positive effect toward the perceived usefulness and intention to use. This implies that trust variable is an important aspect that need attention from the government. The survey also indicates that the service need to improve performance of indicator PU4, PEOU1, and T2.

This research only took samples from one type of service offered from around 24 different services available in the Surabaya Single Window which indicates that this research can be extended to learn the experience of other services' user. Another limitation is the point of contact is at the offline office which may well filled by those users who cannot use the service online which may lead to some bias in their judgment toward the system. Further research could help eliminating those limitations.

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This issue and seminar become special as more delegates come and join from various country as well as universities. We host 90 delegates both from abroad and local.

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This is the thirteenth years of the collaboration of those universities, and the second time we had MOU with IOP in United Kingdom to publishing the papers that is indexed by Scopus.

In this occasion, let us give special thanks to Prof. Dr. Md. Mamun Habib, from BRAC Business School (BBS), BRAC University, Bangladesh, Editor-in-Chief, International Journal of Supply Chain Management (IJSCM) UK, Prof. Dr. Dzuraidah Abd. Wahab from Center for Integrated Design of Advanced Mechanical Systems Faculty of Engineering and Built Environment, University Kebangsaan Malaysia, for their contribution as keynote speakers. We are also grateful to all reviewers, for their commitment, effort and dedication in undertaking the task of reviewing all of the abstracts and full papers. Reviewing a large number of submissions in a relatively short time frame is always challenging. Without their help and dedication, it would not be possible to produce this proceeding in such a short time frame. I highly appreciate all members of committees (advisory, steering, and organizing committees) for mutual efforts and invaluable contribution for the success of seminar.

*Wassalamu'alaikum Warrahmatullah Wabarrakatuh.*

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