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# APPLICATION OF TECHNOLOGY ACCEPTANCE MODEL IN ELECTRONIC FILING SYSTEM: THE ACCEPTANCE IN USER LEVEL

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## Abstract

The development of the mailing system today has shifted from conventional systems that originally used paper switch to digital as a media for delivering information. As the development of information technology encourages the use of application systems that specifically handle the mailing business processes, but the application system must be well adopted by the user in order to increase satisfaction in the use of the system application. This study aims to implement an electronic letter filing information system and the use of Technology Acceptance Model (TAM) to determine the effect of information systems developed with user acceptance. The input of the system is in the form of primary data and secondary data while the process inside uses UML (Unified Markup Language) for the formation of authority and the use of TAM to evaluate the system so that it produces output in the form of acceptance level of the system. A research sample of 63 ( $n = 63$ ) came from the administrative staff of an institution and data was collected using a questionnaire that was analyzed using multiple linear regression while the constructs used were perceived ease of use, perceived usefulness and attitude toward. The results indicate that perceived usefulness factor and perceived ease of use significantly influence attitude toward and both of them simultaneously have a positive effect.

**Keywords:** Mail Tracking, Technology Adoption, User Acceptance, Technology Acceptance Model, Multiple Linier Regression.

## 1. INTRODUCTION

The development of investment in technology and communication is currently developing significantly due to benefits such as reducing employee costs, facilities and improving service quality (Caldeira et al., 2012). The benefits offered by the existence of this technology will be able to increase the effectiveness in the performance of an institution or organization. Correspondence is something that cannot be separated from daily activities, especially if it is in the government system. Letters are communication media which is one of the proofs of activities that exist within an organization. From a correspondence itself we can dig up information that runs in an organization. Letters are used as an agent for delivering messages both physically and non-physically or digitally (Kartikasari, 2012). The supporting technology of the correspondence system itself has evolved including a shift from conventional systems that still involve paper recording, which has caused difficulties in tracing the history of letters and is now becoming digitalized which involves supporting devices such as computers. Electronic letter filing systems can be a solution to these problems because with computer and information technology-based systems which will certainly cut some time-consuming activities in business processes because the data is in digital form which will facilitate the processing (Legris et al., 2003), for example the process of searching for correspondence documents about an activity that must be immediately available.

So that the information technology that is owned in accordance with what is desired then we need a method that can measure acceptance between the system and user behavior. Of the many methods used to measure the level of conformity between information systems and users and Technology Acceptance Model (TAM) is one of them. TAM is a method that is widely used, as in research on the prediction of reaction to the receipt of a medical record information system / Electronics Health Records (EHR) integrated with the Health Information System (HIS) in Armenia. If sociotechnical factors are not taken into consideration in an information system, the system can be ineffective and can disrupt the existing business processes (Bunker, 2017). TAM has also succeeded in predicting the user's behavior whether to accepts or rejects a technology (Marangunić & Granić, 2015).

## 2. LITERATURE REVIEWS

This study conducted an evaluation of the electronic filing system using TAM to predict the level of acceptance of the system of user behavior which also results from this study can be used as a reference for further system development.

### 2.1 Application of electronic filing system

Letters have been used for more than 4000 years in human civilization as a media of correspondence (John, 2015)(John, 2015). Letters are still used as a media for documenting the activities of an organization. Letters are communication media for conveying information both officially and non-officially. In the traditional system of correspondence management, it is still limited to recording in books. Recording with this system will result in many errors including repeated recording or not recording of letters due to administrative errors or even losing the agenda book itself which means it will result in loss of information regarding the letter archive (Tochkov, 2015). With the increasing volume of correspondence activities, the traditional system has become increasingly abandoned because it requires recording resources which in this case paper or books make it ineffective and inefficient.

The development of information technology also influenced the correspondence system by starting to use computers for recording correspondence data. The recording system using a computer has several advantages including the use of relatively few resources and ease of operation. However, the recording system using a computer still has weaknesses, including existing data that is still less organized (Cleverley & Burnett, 2015) although there have been improvements compared to traditional systems. To

overcome the problems, we need an integrated system that can accommodate the need for speed and accuracy in the distribution of correspondence information and archiving.

## 2.2 Technology Acceptance Model

TAM is a popular and influential model in describing the level of acceptance of an information technology or information system (Ma et al., 2013). TAM has 2 strong influencing factors, namely perception of use (Perceived Ease of Use / PEOU) and perception of utilization (Perceived Usefulness / PU) (Abdullah & Ward, 2016). TAM is adopted from Theory of Reasoned Action (TRA) which explains that Individual willingness, rational decision making, attitudes and subjective norms will affect intentions and behavior. Subjective norms refer to the individual's belief that he must perform certain behaviors because this is expected by others (Fishbein & Ajzen, 2015). The aims of TAM is explain the behavior of user adoption of technology. External variables are used to track the impact of external factors on the perception of TAM. TRA was developed by researchers as a model for predicting behavioral intentions in an action (Fayad & Paper, 2015).

Research on the satisfaction of applying technology-based information systems in business processes of an organization or company has long been done. A study on measuring the effectiveness of the use of technology was carried out in Turkey. The study involved 197 participants at an educational institution in Turkey. The purpose of this research is to measure the effectiveness of the use of technology in supporting the teaching and learning process in Turkey. This research was conducted by training teachers and staff to use computers that are integrated with their educational technology systems. The results show that tam can explain the intention to use technology of Turkish pre-service teachers (Teo et al., 2011). Other research on the use of learning management systems has also been carried out in Saudi Arabia. Learning Management system technology is widely used to support teacher education and students accessing knowledge resources within the institution. The result of the research is that technology can significantly improve students' academic abilities (Alharbi & Drew, 2014).

Current research on health information technology has always focused on the design of information technology and its implementation, but has not focused on the end users reacting to the technology. Research TAM on health sciences widely used to assess habits and behaviors towards the latest health information technology such as digitalization of health records, telemedicine technology, Electronic Medical Records (EMR) and others (Holden & Karsh, 2010). The results of the study mentioned that the health information system is very useful for accessing existing patient data resources but must be accompanied by the desires and conveniences offered by the system. The use of technology must be fit with the wishes of the user, this is where the role of TAM to analyze the level of acceptance of information technology so that in the future information technology will be more comfortable to use to support world health activities.

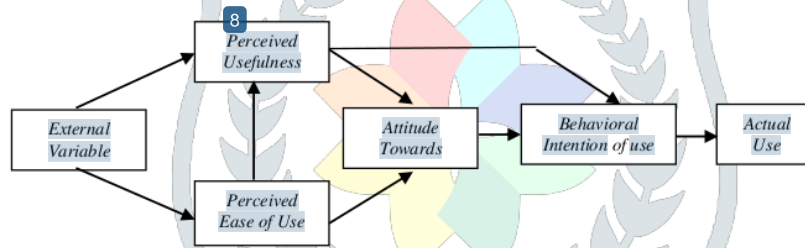


Fig 1. Technology Acceptance Model Diagram (Davis, 1985)

TAM built using some construction that is Perceived Usefulness (PU), Perceived Ease of Use (PEOU), Attitude Toward (AT), Behavioral Intention of use (BIOU) and Actual Use (AU). Perceived of usefulness illustrates the extent to which level of trust in the use of an information system will improve the performance of a job (Fayad and Paper, 2015). Davis (1985) explained that Perceived of usefulness empirically proven able to explain the reasons why a technology can be well received, the more useful it is, the more adaptation levels there will be. Perceived ease of use explains the extent to which technology can simplify its work (Fayad and Paper, 2015). Attitude Toward explain attitudes that can be positive or negative that are formed as a reaction to the acceptance of the system (Marangunić and Granić, 2015). This attitude can contain rejection or acceptance. Abdullah (2016) revealed that Davis in his research said attitudes and behaviors were the main determinants of whether users really would use or reject a system. Behavioral Intention of use illustrates the tendency for behavior to still apply a technology (Davis, 1985). Actual Use illustrate the real condition when implementing the system technology. Based on Figure 1 TAM can predict the user behavioral of using the technology.

## 3. METHOD

This study uses a survey method where respondents are taken from the admins in the existing units and the results of the scoring are quantified using a Likert scale (1-5). Questionnaire data contains the identity of the respondent, manuals in answering questionnaire questions, and questions regarding the use of the correspondence filing system.

### 3.1 Population and Sample

There are 40 sections and research units and 5 study programs with 63 respondents collected. The data was collected from the respondent in the form of questionnaire and observation in the institution which began to be carried out in October 2019 until November 2019.

### 3.3 Theoretical Framework

In this study, three constructs were used in the research. These variables are the construct of usefulness (Perceived Usefulness) and the construct of ease (Perceived Ease of Use) as the independent variable, for the dependent variable is the construct of satisfaction/ acceptance (Attitude Toward) as indicated in Figure 2.

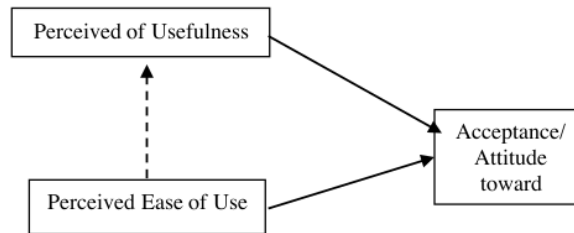


Fig 2. TAM Research Framework

### 3.2 Research Tools

Referring to the three constructs, we develop a questionnaire to determine the level of acceptance of the system and all questionnaires were measured using a Likert scale with scores ranging from 1-5, strongly disagreeing to strongly agreeing as shown in Table 1.

Table 1: Questionnaire indicators

TAM Construct	Indicator
Perceived of Usefulness	1. Performance improvement 2. Accuracy of information 3. Effectiveness at work 4. Increased productivity of correspondence
Perceived Ease of Use	1. Easy to understand 2. Simple interface 3. Ease of operation 4. Ease of getting information about correspondence
Attitude toward	1. Receive the existing system 2. Motivate people to use 3. Feel the system really helps performance

The analysis used in this study are the reliability test, validity test, F test, t test and multiple regression. Validity Test is used to find out whether the questionnaire material is valid, while the reliability test is used to find out whether the designed questionnaire has been reliable. Multiple regression analysis aims to determine the value of the independent variable towards the dependent variable.

### 3.3 Analysis method

We use validity and reliability testing to conduct a feasibility analysis of the questionnaire before distributing the questionnaire. Pearson product moment is used to test validity as shown on Figure 3. F test aims to see the effect of all independent variables simultaneously on the dependent variable. Or it is useful to test whether the regression model that we make is good or significant or not good or non-significant while the t test aims to test how the influence of each independent variable individually to the dependent variable.

This equation is as follows;

$$r_{yx1} = \frac{n \sum XY - \sum X \sum Y}{\sqrt{[n \sum X^2 - (\sum X)^2] [n \sum Y^2 - (\sum Y)^2]}} \quad (3)$$

Where n is sample size, X and Y are the individual sample points.

Reliability tests are used to find out whether the questions in the questionnaire are reliable. The questionnaire will be judged reliable if the answers obtained will be consistent and stable if done from time to time and the variable declared reliable if the Cronbach Alpha value > 0.6 as shown on figure 4.

$$r_{11} = \left[ \frac{k}{k-1} \right] \left[ \frac{1 - \sum \sigma_b^2}{V_t^2} \right] \quad (4)$$

Where k is the number of questions, V is total variant.



Multiple linear regression analysis is used in looking at the effects of independent relations and independent variables. The results of the analysis produce positive or negative values that occur between variables and are formulated as shown in Figure 4.

$$Y = \alpha + \beta_1 X_1 + \beta_2 X_2 + e \quad (5)$$

Where Y is acceptance,  $X_1$  is usefulness variable and  $X_2$  is ease of use variable.

Basic decision making:  $t_{10}$

1. If significance  $< 0.05$ ,  $t_{10}$  is the effect of variable X on Y.
2. If the sig value  $> 0.05$  then there is no effect of the variable X on Y.

#### 4. RESULT AND DISCUSSION

From the questionnaire data collected it can be seen that women dominate with a percentage of 64% with level of education are 11% of high school, 31% of diploma and 58% from undergraduate.

Table 2: Validity and Reliability test result

Construct	Variable	Pearson Correlation	Cronbach $\alpha$
Perceived of Usefulness	Pu1	0,827	0,753
	Pu2	0,737	
	Pu3	0,819	
	Pu4	0,666	
Perceived Ease of Use	Peou1	0,751	0,783
	Peou2	0,797	
	Peou3	0,845	
	Peou4	0,756	
Acceptance	At1	0,797	0,795
	At2	0,777	
	At3	0,854	
	At4	0,758	

In this study the reliability test processing uses a significance of 0.05 and  $n = 20$ . From processing shows that cronbach alpha in construct Perceived of Usefulness was 0,753, Perceived Ease of Use was 0,783 and Attitude toward was 0,795. The results show that the Cronbach alpha value is above 0.6, which means the questionnaire is reliable as shown in table 2. The output of the validity test in table 2 explains that the correlation value between item scores and total scores is then compared with r tables. Processing the validity test using significance 0.05 and  $n = 20$  then obtained r table 0.444, r value at1 at 0.797, r value at2 at 0.777, r value at3 at 0.854 and r value at4 at 0.758. Comparison between r value questionnaire variables and r tables obtained that r value bigger than r table thus the questions on the satisfaction variable are valid.

Table 3: Result of t test on multiple regression analysis

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	7.532	1.605		4.693	.000
1 PU (x1)	.264	.120	.283	2.207	.031
PEOU (x2)	.277	.103	.345	2.688	.009

Hypothesis Formulation:

**Hypothesis I:**

H<sub>0</sub> = Perceived of Usefulness does not significantly influence attitude toward.

H<sub>1</sub> = Perceived of Usefulness significantly affects attitude toward.

**Hypothesis II:**

H<sub>0</sub> = Perceived Ease of Use does not significantly influence attitude toward.

H<sub>1</sub> = Perceived Ease of Use significantly influences attitude toward.

**Hypothesis III:**

H<sub>0</sub> = Simultaneous Perceived of Usefulness and convenience does not significantly influence attitude toward.

H<sub>1</sub> = Perceived Ease of Use and Perceived Ease of Use simultaneously significantly influence attitude toward.

The level of confidence = 95% with  $\alpha = 5\%$ .

Based on table 3, it can be seen that perceived usefulness has a significance value of 0.031 less than 0.05, it can be concluded that H<sub>0</sub> is rejected and H<sub>1</sub> is accepted, which means that **perceived usefulness has a significant effect on attitude forward**. Perceived ease of use has a significance value of 0.009 less than 0.05, it can be concluded that H<sub>0</sub> is rejected and H<sub>1</sub> is accepted, which means that **perceived ease of use has a significant effect on attitude forward**.

Table 4: Result of F test on multiple regression analysis

Model	Sum of Squares	df	Mean Square	F	Sig.
1 Regression	33.246	2	16.623	13.235	.000 <sup>b</sup>
Residual	75.358	60	1.256		
Total	108.603	62			

From the F test based on table 4 indicate that significance value of 0.000 less than 0.05, it can be concluded that H<sub>0</sub> is rejected and H<sub>1</sub> is accepted, which means that **perceived usefulness and perceived ease of use simultaneously affect acceptance**.

Based on table 3, you can see the multiple linear regression equation can be arrange as follows;

$$Y = 7,532 + 0,264X_1 + 0,277X_2$$

Table 5: Result of coefficient of determination test

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.553 <sup>a</sup>	.306	.283	1.121

Based on table 5, it can be seen that the coefficient of determination is  $r^2 = 0.306$  which means that 30.6% of the independent variable is able to explain the dependent variable, the remaining 69.4% is influenced by other variables not measured in this study.

## 5. CONCLUSION

Statistical results show that the level of ease, usefulness and acceptance of the electronic filing system is still not very well accepted, because the usefulness level is still small at 28.3% while the convenience is only 34.5% as in table 3 which means that the system it is still not well received by users. From the percentage of beta value, it can be seen that the ease variable is the most dominant variable towards acceptance

Another conclusion that can be drawn is the usefulness and convenience variables can predict satisfaction variables, where that if the value of the two variables increases, there will also be an increase in the satisfaction variable. Besides that, from the interview results it is seen that the level of satisfaction that is still felt to be lacking is also due to the existence of a culture that still cannot fully trust the use of technology as a work support, so that the portion for the use of the system is still lacking.

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