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# Acceptance Analysis of School DAPODIK Information System Using the Technology Acceptance Model (TAM)

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Abstract. The purpose of this study was to determine user acceptance of the Basic Education Data system (DAPODIK) with the Technology Acceptance Model (TAM) based on five constructs. The five constructs are Perceived Usefulness, Perceived Ease of Use, Attitude Towards Behavior, Behavioral Intention, and Actual Technology Use. This study will analyze the relationship between constructs that affect the acceptance and use of DAPODIK in Elementary School District Binuang. The type of research used in this research is explanatory research with data analysis techniques using the SEM-PLS approach, analyzed using SmartPLS 3.0 software. There are 62 samples of respondents from teachers at the District Binuang Elementary School in Indonesia. The conclusion of this study is that of the seven hypotheses proposed, there are six accepted hypotheses and one rejected hypothesis, namely: PerceivedEase Of Use affects Perceived Usefulness, Perceived Ease Of Use has an effect on Attitude Towards Behavior, Perceived Usefulness has an effect on Attitude Towards Behavioral Intention, Perceived Usefulness has an effect on Actual Technology Use, Attitude Towards Behavior has an effect on Behavioral Intention, and Behavioral Intention has an effect on Actual Technology Use.

Keywords: Analysis, Technology Acceptance Model (TAM), Main Data Education (DAPODIK), Partial Least Squares (PLS)

#### 1 Introduction

Information and Communication Technology (ICT) is currently very much felt the need and importance of using ICT in school activities (Kristiawan, 2014). Information and Communication Technology (ICT) systems provide coverage broad, fast, effective and efficient way of disseminating information to various corner of the world.

Suharjo (2006, p. 1) states that "elementary schools are basically educational institution that organizes a six-year educational program for children 6-12 years old." The Ministry of Education and Culture (Kemdikbud) has carried out application of information systems to manage management at the elementary school level (SD). The information system used in SD is called the Management Information System Primary School Education Basic Data (DAPODIK SD). This system is a system data collection used to collect all data related to institutional data and school curriculum, student data, teacher and employee data, and facilities and infrastructure data every school throughout Indonesia, especially in elementary schools.

This DAPODIK is the only data reference used by the Ministry of Education and Culture, of course, this makes DAPODIK have a very vital role and with various functions. The function of DAPODIK every year continues to experience developments related to the planned changes in policies and programs Ministry of Education and Culture. One of its functions is the allocation of facilities and infrastructure for schools with inadequate facilities, submission and improvement of institutional data schools and so on.

The application of DAPODIK is a good step for improve performance in data management on SD. Successful implementation of the new information system also takes into account acceptance by the end user.

The end users here are elementary school teachers who use information systems DAPODIK management. An attitude of acceptance towards information systems signifies that the user is satisfied with using the system. One of important factors that can determine the success of implementing an information system is the satisfaction of the end users of the system (Subiyakto et al., 2016).

Technology Acceptance Model (TAM) is a model that adopts theory of reasoned action developed by Fishbein and Ajzen (1975). TAM is a model that links cognitive beliefs with attitudes and individual behavior towards technology acceptance. TAM is then used to explain the behavior of individual recipients of information technology that concluded that perceived usefulness and perceived ease of use is a major determinant of technology use. TAM has been recognized as a model that powerful to explain and predict individual acceptance of technology.

According to Davis (1989), the Technology Acceptance Model (TAM) predicts acceptance of the use of technology based on the influence of two factors cognitive, namely perceived usefulness and perceived ease (perceived ease of use). TAM adopts a causal chain of beliefs, attitudes, intentions, and behaviors as proposed by social psychologists who named Fishbein and Ajzen (Fishbein and Ajzen, 1975) and who became famous Theory of Reasoned Action (TRA). Based on someone's certain beliefs form an attitude towards an object on the basis of an intention to behave towards an object. Davis (1989) adapted TRA by developing two specific beliefs about the use of technology.

In the past, many information systems failed because of the system. Now, many Information Systems fail because of the behavioral aspects of the people. Many behavioral aspects occur in information system users. Many information systems fail because when used this system is really not used by the user. To overcome this problem, behavioral aspects need to be applied in the use and development of the system.

Research on the analysis of the Technology Acceptance Model (TAM) has been carried out by previous researchers, including: Eko Febri Lusiono and Suharman [5] who have conducted research on the Analysis of Acceptance of the Siskeudes Application in the Regional Government of Sambas Regency. The variables used in this study are perceived usefulness, perceived ease of use, perceived technology use (attitude), perceived interest in using technology (behavioral intention), perceived actual use of technology). The results of this study state that perceived usefulness and perceived ease of use are benchmarks for village officials to accept an application.

Kharismaya et al. (2017) conducted a study on the Analysis of Benefit and Ease of Acceptance of the OPAC System Using the TAM Method. This study uses the variable perceived usefulness (perceived usefulness), perceived ease (perceived to be easy to use) and the variable Acceptance of IT (Acceptance of IT). The purpose of this study was to determine the extent to which the acceptance of library technology has been accepted by users since the OPAC information system was introduced. The results of this study indicate that perceived usefulness and perceived ease of use have a significant effect on user system acceptance with an (R-Square) of 40.8%.

Gunawan et al. (2018) conduct research on Technology Acceptance Analysis "Smart City" Purwokerto City with the Technology Acceptance Model (TAM). The variables used in this study are Perceived Ease of Use (PEOU), Perceived Usefulness (PU) and Behavioral Intention to Use (BIU). The results of this study indicate that the perceived ease of use of the application will affect the behavior of students who show a desire to use the application. The perceived usefulness of the application does not significantly affect the desire to use smart city applications for the people of Purwokerto. So that the people of Purwokerto see if the application to be built is not easy to use, then they will not use it even though the application is useful for themselves. So, it is input for local governments to make smart city applications that are easy to use by the community so that they want to use the application.

Research conducted by Laily (2019) on Analysis of User Acceptance of Dapodik Management Information System PAUD-DIKMAS Using *Technology Acceptance Model* (TAM) and *End-User Computing Satisfaction* (EUCS) in District Cilincing. This study concludes that the TAM and EUCS. models able to explain the acceptance of PAUD dapodik information system.

There are 22 Elementary schools in Binuang District that have used DAPODIK information system. Each SD has one user information system DAPODIK, but there are some schools that have

more than one user. Based on the interviews with four users, the researchers found the fact that users found some problem when using DAPODIK. One of them is slow system response when saving a new data. This gives rise to feelings dissatisfaction and discomfort when using the DAPODIK system.

A system is said to be successful if the information system can be used easily and can meet user needs (Nugraha, 2014). However, when viewed from the problems described previously, the system actually does not make it easy for users where users are dissatisfied with the existence of problems caused by the DAPODIK system.

Given these problems, it is necessary to conduct an evaluation of the system DAPODIK information. In this study, researchers used the *Technology*. model *Acceptance Model* (TAM). One theory about the use of information systems that considered very influential and is generally used to describe acceptance towards the use of information systems is a model of technology acceptance (*Technology Acceptance Model* or TAM) (Hartono, 2007, p. 111). Based on the advantage is that the *Technology Acceptance Model* (TAM) has been tested with many research and its results mostly support and conclude that *Technology Acceptance Model* (TAM) is a good model. Even *The Technology Acceptance Model* (TAM) has been extensively tested compared to other models, for example with *Theory Reasoned Action* (TRA) and *Theory Planned Behavior* (TPB) and the results are also consistent that the *Technology Acceptance Model* (TAM) is quite good. From this statement, researchers are interested in using the model *Technology Acceptance Model* (TAM) in this study.

#### 2 Problem Statement

- 1. Does Perceived Ease of Use affect Perceived Usefulness in using the DAPODIK system?
- 2. Does Perceived Ease of Use affect Attitude Towards Behavior in using the DAPODIK system?
- 3. Does Perceived Usefulness affect Attitude Towards Behavior in the DAPODIK system?
- 4. Does Perceived Usefulness affect Behavioral Intention in the DAPODIK system?
- 5. Does Perceived Usefulness affect the Actual Technology Use in the use of the DAPODIK system?
- 6. Does Attitude Towards Behavior affect Behavioral Intention in the DAPODIK system?
- 7. Does Behavioral Intention affect the Actual Technology Use in the use of the DAPODIK system?

## 3 Research Objectives

- 1. Knowing the effect of Perceived Ease of Use use on Perceived Usefulness in the use of DAPODIK system.
- 2. Knowing the effect of Perceived Ease of Use Use on Attitude Towards Behavior in use of the DAPODIK system.
- 3. Knowing the effect of Perceived Usefulness on Attitude Towards Behavior in the system DAPODIK.
- 4. Knowing the effect of Perceived Usefulness on Behavioral Intention in the DAPODIK system.
- 5. Knowing the effect of Perceived Usefulness on Actual Technology Use in the use of the DAPODIK system
- 6. Knowing the effect of Attitude Towards Behavior on Behavioral Intention in the DAPODIK system.
- 7. Knowing the effect of Behavioral Intention on Actual Technology Use in the use of the DAPODIK system.

### 4 Hypothesis

- 1. H1: Perceived Ease of Use has an effect on Perceived Usefulness
- 2. H2: Perceived Ease of Use has an effect on Attitude Towards Behavior
- 3. H3: Perceived Usefulness has an effect on Attitude Towards Behavior
- 4. H4: Perceived Usefulness has an effect on Behavioral Intention
- 5. H5: Perceived Usefulness has an effect on Actual Technology Use
- 6. H6: Attitude Towards Behavior has an effect on Behavioral Intention

## 7. H7: Behavioral Intention has an effect on Actual Technology Use

#### **5** Research Method

## 5.1 Population and Sample

In this study the population is all users the DAPODIK Elementary School system at the District Binuang, amounting to 160 people. The sampling technique used is *simple random sampling*. The number of samples taken based on the 0.1 error rate is as follows:

$$n = \frac{160}{1 + 160(0,1)^2} = 61,53 \approx 62$$

# 5.2 Data Collection and Analysis

Data was collected using a questionnaire and the data analysis technique used in this research is the model structural equation or *Structural Equation Model* (SEM) with component-based approach (*component-based* SEM). Data analysis was carried out with the help of program SmartPLS.

## 6 Research Results

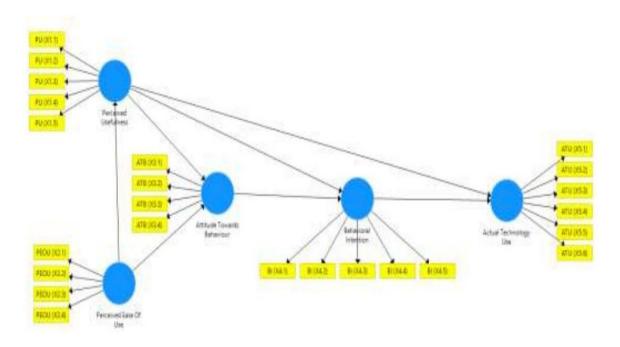


Figure 1 Graph of Outer Path Model

## 6.1 Measurement Model (Outer Model)

# a) Convergent Validity

Convergent Validity uses a reflexive measure of 0.70. From the results of the outer loading

output can be seen in the *Actual* variable *Technology Use* item ATU (X5.1), ATU (X5.2), ATU (X5.3), ATU (X5.4) is excluded from the model because it has a loading value less than 0.70.

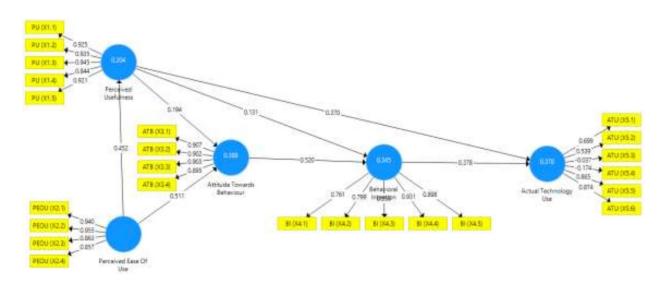


Figure 2 Outer Loading First Estimation Results

After removing the variable items that have the value *loading* is less than 0.70 then re-estimation is carried out for provide confidence that all items have met the requirements, namely: has a *loading* value of more than 0.70. The results of the re-estimation can be seen in Figure 4.

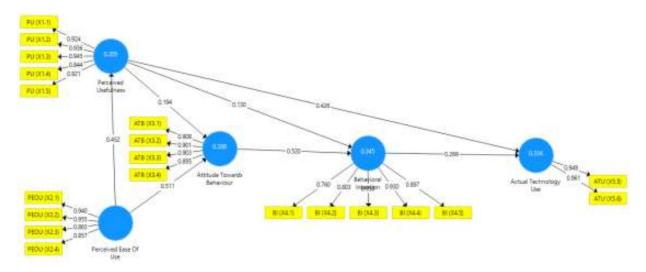


Figure 3 Outer Loading Second Estimation Results

Based on the table and figure 3, it can be seen that it is no longer there is another indicator of a model that has a *loading factor* below 0.70 so that the next model can be evaluated.

#### b) Discriminant Validity

Discriminant validity can be seen from the *cross-loading value*. Score the correlation of indicators to the construct must be greater than the value of the correlation between the indicator

and the value of other constructs.

From table 1 it can be seen that the correlation value of the construct with indicator is greater than other values and shows a difference the value or *loading* of each indicator with its respective latent variables each and other latent variables. This shows that latent constructs predict indicators on their blocks better compared to indicators in other blocks.

Table 1 Output Cross Loading

	Actual Technology Use	Attitude Towards Behaviour	Behavioral Intention	Perceived Ease Of Use	Perceived Usefulness
ATB(X3.1)	0.322	0.908	0.512	0.535	0.360
ATB(X3.2)	0.390	0.901	0.582	0.560	0.468
ATB(X3.3)	0.355	0.903	0.481	0.564	0.315
ATB(X3.4)	0.286	0.895	0.492	0.497	0.380
ATU(X5.5)	0.949	0.336	0.387	0.248	0.454
ATU(X5.6)	0.961	0.372	0.412	0.234	0.535
BI(X4.1)	0.318	0.404	<mark>0.760</mark>	0.424	0.320
BI(X4.2)	0.325	0.480	0.803	0.531	0.269
BI(X4.3)	0.374	0.551	0.958	0.663	0.340
BI(X4.4)	0.360	0.507	0.930	0.618	0.342
BI(X4.5)	0.439	0.553	0.897	0.616	0.270
PEOU(X2.1)	0.182	0.507	0.571	0.940	0.388
PEOU(X2.2)	0.242	0.513	0.629	0.955	0.452
PEOU(X2.3)	0.185	0.583	0.571	0.863	0.290
PEOU(X2.4)	0.290	0.559	0.607	0.857	0.488
PU(X1.1)	0.509	0.401	0.338	0.366	0.924
PU(X1.2)	0.476	0.421	0.317	0.436	0.936
PU(X1.3)	0.514	0.432	0.342	0.464	0.945
PU(X1.4)	0.411	0.255	0.326	0.339	0.844
PU(X1.5)	0.462	0412	0.288	0.452	0.921

## c) Reliability Test

In addition to construct validity tests, reliability tests were also carried out constructs measured by two criteria, namely *Cronbach's alpha* and *composite reliability* of the indicator block that measures the construct. The construct is declared reliable if the value of Cronbach's alpha and composite reliability above 0.70.

Tabel 2 Cronbach's Alpha dan Composite Reliability

Konstruk	Composite Reliability	Cronbach's Alpha
Perceived Usefulness (PU)	0.962	0.951
Perceived Ease Of Use (PEOU)	0.947	0.925
Attitude Towards Behaviour	0.946	0.924
Behavioral Intention	0.941	0.920
Actual Technology Use	0.954	0.903

*Cronbach's alpha* and *composite reliability* values are very goodfor all constructs where all have values above 0.70. So, it can be concluded that the construct has good reliability.

#### 6.2 Structural Model (Inner Model)

After the estimated model meets the *convergent validity* criteria, *Discriminant validity* and *composite reliability* are then tested on the structural model (*inner model*) which is done by looking at the value of *R-Square* (R2) on the endogenous construct. Value of *R-Square* (R2) respectively the endogenous construct of the model estimate can be seen in table 3

Variabel R Square

Actual Technology Use 0.334

Attitude Towards Behaviour 0.388

Behavioral Intention 0.345

Perceived Usefulness 0.205

Tabel 3 Output *R-Square* (R2)

Based on the *R-Square* value in the table 3, it shows a strong model. The interpretation of *the R-square* output can be explained as follows:

- 1) The *R-square* value of the *Actual Technology Use* construct was obtained at 0.334. This means the constructs of *Behavioral Intention* and *Perceived Usefulness* explain the construct of *Attitude Technology Use* by 33.4% and the rest explained by other variables outside the model.
- 2) The *R-square* value of the *Attitude Towards Behavior* construct is obtained by 0.388. This means the constructs of *Perceived Ease of Use* and *Perceived Usefulness* describes the construct of *Attitude Towards Behavior* of 38.8% and the rest is explained by other variables outside the model.
- 3) The *R-square* value of the *Behavioral Intention* construct was obtained at 0.345. Thing this means the constructs of *Perceived Usefulness* and *Attitude Towards Behavior* explain the *Behavioral Intention* construct by 34.5% and the rest explained by other variables outside the model.
- 4) The *R-square* value of the *Perceived Usefulness* construct was obtained at 0.205. Thing this means that the *Perceived Ease of Use* construct explains the *Perceived* construct *Usefulness* is 20.5% and the rest is explained by other variables outside model.

#### 6.3 ypothesis Testing

Statistics test used is the t statistic or t test. The comparison t value in this study was obtained from table t. The value of t-table with degrees of freedom of 500 and level significance of 5% = 1.96. Hypothesis testing is done by looking at *the output path coefficient* the results of bootstrap resampling can be seen in table 4.

	Original	Standard	T Statistics	P Values	Result
	Sample	Deviation	(  O /		
	(O)	(STDEV)	STDEV  )		
Perceived Ease of Use ->	0.452	0.070	6.453	0.000	Significant
Perceived Usefulness					
Perceived Ease of Use ->	0.511	0.125	4.081	0.000	Significant
Attitude Towards Behaviour					
Perceived Usefulness ->	0.194	0.080	2.241	0.016	Significant
Attitude Towards Behaviour					

Tabel 4 Output Path Coefficient

	Original	Standard	T Statistics	P Values	Result
	Sample	Deviation	(  O /		
	(O)	(STDEV)	STDEV  )		
Perceived Usefulness ->	0.130	0.095	1.365	0,173	Not
Behavioral Intention					Significant
Perceived Usefulness ->	0.426	0.103	4.143	0.000	Significant
Actual Technology Use					
Attitude Towards Behaviour -	0.520	0.113	4.616	0.000	Significant
> Behavioral Intention					
Behavioral Intention ->	0.269	0.112	2.405	0.017	Significant
Actual Technology Use					

- 1) There is a significant effect of the perceived Ease of Use variable (*Perceived Ease of Use*) -> Kegunaan Persepsian (*Perceived Usefulness*), because the t-statistic value is 6.453 > 1.96 and *P Values* 0.000 < 0.05. So that there is a significant influence between the Ease-of-Use variables Persepsian (*Perceived Ease of Use*) -> Kegunaan Persepsian (*Perceived Usefulness*), or in other words H0 is rejected and Ha is accepted.
- 2) There is a significant effect of the perceived Ease of Use variable (*Perceived Ease of Use*) -> Attitude Towards Behavior (*Attitude Towards Behavior*) due to the t-statistical value of 4.081 > 1.96 and *P Values* 0.000 < 0.05. So that there is a significant influence between the variables of Ease Perceived *Ease of Use* -> Attitude Towards Behavior (*Attitude Towards Behavior*), or in other words H0 is rejected and Ha is accepted.
- 3) There is a significant effect of the Perceived Usefulness variable (*Perceived Usefulness*) -> Attitude Towards Behavior (Attitude Towards Behavior), because the t-statistic value is 2,421 > 1.96 and *P Values* 0.016 < 0.05. So that there is a significant influence between the variables of Perceived Usefulness (*Perceived Usefulness*) -> Attitude Towards Behavior (*Attitude Towards Behavior*), or in other words H0 is rejected and Ha is accepted.
- 4) There is no significant effect of the Perceived Usefulness variable (*Perceived Usefulness*) -> *Behavioral Intention*, due to the t-statistic value of 1.365 <1.96 and *P Values* 0.173> 0.05. Until there is none significant influence between *Perceived Usefulness* variables -> *Behavioral Intention*, or in other words H0 is accepted and Ha rejected.
- 5) There is a significant effect of the Perceived Usefulness variable (*Perceived Usefulness*) -> Actual Technology Use, because the t-statistic value is 4.143 > 1.96 and P Values 0.000 < 0.05. So that there is a significant influence between the variables of Perceived Usefulness (*Perceived Usefulness*) -> Actual Technology Use, or in other words H0 is rejected and Ha is accepted.
- 6) There is a significant influence of Attitude towards Behavior (Attitude Towards Behavior) -> Behavioral Intention, due to the value of t-statistics were 4,616> 1.96 and P Values 0.000 <0.05. Until there is significant influence between the variables of Attitude Towards Behavior (Attitude Towards Behavior) -> Behavioral Intention, or in other words H0 rejected and Ha accepted.
- 7) There is a significant effect of *Behavioral Intention* -> Actual *Technology Use*, due to the t –value statistics were 2,405> 1.96 and *P Values* 0.017 <0.05. Until there is significant effect between the variables Behavioral *Intention* (*Behavioral Intention*) -> Actual *Technology Use*, or in other words H0 rejected and Ha accepted.

#### 7 Conclusion

- 1) Perceived Ease of Use Construct significant effect on the construct of Perceived Usefulness (Perceived Usefulness).
- 2) Perceived Ease of Use Construct significant effect on the construct of Attitude towards Behavior (Attitude Towards Behaviour).
- 3) The *Perceived Usefulness* construct has a significant effect on the construct of *Attitude Towards Behavior*.
- 4) The *Perceived Usefulness* construct has no effect significant to the construct of *Behavioral Intention* (*Behavioral Intention*).

- 5) The *Perceived Usefulness* construct has a significant effect to the construct of *Actual Technology Use.*
- 6) The construct of *Attitude Towards Behavior* has an effect significant to the construct of *Behavioral Intention* (*Behavioral Intention*).
- 7) Construct Behavioral *Intention* (*Behavioral Intention*) has a significant effect on construct of *Actual Technology Use*.

# 8 Suggestions

For further researchers who want to develop this research expected to pay more attention to and review indicators from various literature from experts to avoid misinterpretation and appropriate with the needs of users of the system comprehensively and thoroughly. The need deeper evaluation to find out the causes of the insignificance of the relationship between variables and it is expected that the addition of a larger number of samples and adding the number of research respondents in order to get optimal research.

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