ANALYSIS OF THE USE OF MENDELEY USING THE TECHNOLOGY ACCEPTANCE MODEL (TAM) APPROACH: STUDY IN STUDENTS OF OFFICE ADMINISTRATION EDUCATION IN SURABAYA STATE UNIVERSITY

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Abstract
The development of information technology makes it easier for humans to complete work. Work that previously required a lot of manpower to complete can now be completed with the help of technology. As in writing citations, it can be done automatically with the help of the Mendeley Reference Management Software. The purpose of this study is to determine the use of Mendeley in students of the Surabaya State University, Office Administration study program using the Technology Acceptance Model (TAM) approach. The research carried out is quantitative research. The study population is 62 students of the Office Administration Education study program, Surabaya State University. The data analysis tool used is Partial Least Square (PLS). The results of this study are: (1) Attitude towards using has a positive effect and significant on behavioral intention of use, (2) Perceived ease of use has no positive effect and significant on behavioral intention of use, (3) Perceived usefulness has a positive effect and significant on behavioral intention of use, (4) Perceived ease of use has a positive effect and significant on perceived usefulness, (5) Indirectly, Perceived ease of use has a positive and significant effect on behavioral intention of use through perceived usefulness.

Keywords:
Technology Acceptance Model; Mendeley; Attitude towards using; Perceived ease of use; Perceived usefulness; Behavioral intention of use;

1. INTRODUCTION
The development of science and technology provides benefits such as the emergence of new technological devices thought to be able to replace the abilities generally carried out by the human brain [1]. Now, in terms of writing citations or reference sources, you can use the Reference management software. Citation is a written description containing the author's name and year of publication presented by the author with the aim of showing the source of the writing or document used [2]. The source of the document is written to avoid the possibility of plagiarism. Plagiarism is an act related to the misuse of other people's information carried out illegally by stealing or imitating ideas and all things related to the intellectual rights of others [3]. Meanwhile, Reference management software is software giving users the opportunity to obtain and access documents for research needs and can also export biographies based on data in the software [4].

At Surabaya State University, many students have used Mendeley as their choice of reference management software. In the Office Administration Education Study Program, in addition to being used as an option for reference management software, it is also included in the subject matter. The purpose of this study is to determine the use of Mendeley in students of the Surabaya State University of Office Administration Education using the Technology Acceptance Model (TAM) approach.

The TAM approach has five main perceptions. There are attitude towards using, behavioral intention to use, perceived ease of use, perceived usefulness, and actual system usage [5].

Hermanto & Patmawati (2017) state that attitude towards using will affect behavioral intention to use [6]. The positive attitude that technology users have towards the existence of a technology will increase their intention to use the technology to continue it in the future.

The easier the technology is to use, the more useful the technology will be. The same statement was conveyed by Heryani et al., (2020), the easier it is to use technology, the more useful the technology will be [7]. Another result was conveyed by Kurniawati et al., (2017) that the ease with which users feel will give users confidence to continue using this technology [8]. The results of the study by Diop et al., (2019) state that the usefulness obtained by users is a determinant of behavioral intention [9]. Therefore, in designing a technology, attention is needed to the parts that will affect the usefulness that
II. LITERATURE

2.1. Mendeley Reference Management Software

Mendeley reference management software is a technology developed with the aim of arranging and compiling scientific work excerpts in PDF files on a free web basis [11]. Meanwhile, according to Zhang (2012) Mendeley is software with the ability to organize and compile references appropriately and to save scientific works in PDF form, and other abilities that Mendeley possesses include being able to manage citations included in scientific papers according to the format selected automatically by setting up a plug-in for both Word and Open Office [12].

2.2. Technology Acceptance Model (TAM)

TAM is introduced as a technology acceptance model since 1986 for the first time by Fred D. Davis [13]. The advantages of this model over other models are that TAM is simpler but still takes into account the level of validity considered good [14]. As a whole, according to Udayanti & Nugroho (2018), TAM has five main perceptions. There are perceived ease of use, perceived usefulness, attitude towards using, behavioral intention, and actual system usage [5].

2.3 Attitude Towards Using

Attitude towards using is defined as the attitude displayed by users after using technology in completing work [15]. This attitude arises after the experience gained from using technology. The attitude shown can be in the form of acceptance or rejection of technology caused by feelings of like and dislike.

2.4 Perceived Ease Of Use

Perceived ease of use is associated with reduced time and energy spent studying technology or systems [6]. Perceived ease of use describes how a user can interact with a technology [16]. Perceived ease of use can be measured by the ease with which technology is used and studied [17]. A user will prefer to interact with technology in which its use does not need to spend a lot of mental cognitive effort.

2.5 Perceived Usefulness

The utility of a technology has an important part when technology will be made. Perceived usefulness can be interpreted as a belief arising from users that using certain technology and systems can help in completing their work to be more effective [18].

2.6 Behavioral Intention Of Use

Behavioral intention is defined as an intention or desire to do something. Actions or behaviors taken by a person are originated from the intention or desire to carry out the action. The interest that someone feels in something today will affect the wishes or actions that will be carried out in the future or in the future [19].

Based on the description above, the hypotheses to be tested in this study are:

H1: Attitude Towards Using has a positive and significant effect on Behavioral Intention of Use
H2: Perceived Ease of Use has a positive and significant effect on Behavioral Intention of Use
H3: Perceived Usefulness has a positive and significant effect on Behavioral Intention of Use
H4: Perceived Ease of Use has a positive and significant effect on Perceived Usefulness

III. RESEARCH METHODS

3.1 Types of research

The type of research chosen is quantitative research. The data source in the study is a primary data, the data obtained by the researcher directly through a questionnaire through google-form filled in by the student who was the sample. This research is conducted at the State University of Surabaya on Jl Ketintang, Gayungan, Surabaya City. The population involved in this study are 96 students of the Office Administration Education study program class of 2017. The sampling technique to determine the number of samples is non-probability sampling with the type of sampling purpose. The questionnaire items used are adopted from previous research conducted by Alharbi & Drew (2014) [20] for attitude toward using and perceived usefulness variable items, Aboelmaged & Gebba (2013) [17] for items of perceived ease of use, and Diop et al. al., (2019) [9] for items of perceived usefulness.
for the behavioral intention of use variable. Determination of the number of samples used the Slovin formula so that there are as many as 77 samples.

3.2 Data collection technique

The Likert scale is used in this study to collect data discussing the analysis of Mendeley’s use using the Technology Acceptance Model (TAM) approach. The Likert scale used to determine the research value score is displayed with a value of 1; 2; 3; 4; and 5 which has an interpretation: Strongly Disagree; Disagree; Neutral; Agree; and Strongly Agree.

3.3 Data analysis

This study uses data analysis techniques of statistical inferencing. This analysis is used in measuring how much the influence of the causality of each dependent variable on the independent variable. Meanwhile, the data analysis tool is PLS (Partial Least Square) using SmartPLS 3.0 software.

In contrast to regression, data measurement using PLS with the bootstrapping method does not make the assumption of normality as an obstacle. In addition, PLS also does not determine how many samples are the minimum requirements for carrying out the measurement. This means that regardless of the number of samples to be tested, it can still be done using PLS or Partial Least Square data analysis tools [21].

Two measurement process models in Partial Least Squares (PLS) are the inner model and the outer model. In the measurement of the outer model, there are several measurements taken, including convergent validity, discriminant validity, composite reliability, and measurement using the Fornell-Larcker Criterion.

The measurement process through the inner model is seen to determine the magnitude of the relationship between latent variables (exogenous and endogenous variables) based on the substantive theory. There are several measurements made on the inner model, including testing through the R-square value contained in the dependent variable, performing calculations to find the value of the Stone-Geisser Q-square to determine the value of predictive relevance. Then the t test is carried out based on the value of the path coefficient in order to determine the significance level of each construct or latent variable. According to Urbanch & Ahlemann (2010), measurements occurring in the inner model are carried out to test the previously formulated hypotheses based on the resulting t-statistic value, provided that the t-statistic value is greater than 1.960 (> 1.960). It can be concluded that there is an influence which is significant between variables [22].

Hypothesis testing uses the t-statistical value. If the t value > t table provided that the error rate is 5% then the t table value used is 1.96 and if the results of the test are significant, it can be concluded that there is a significant influence between variables [22].

IV. RESULTS

4.1 Overview of Respondents

In this study, the respondents used are students of the State University of Surabaya in the Office Administration Education Study Program, totaling 77 students. However, judging from the results of the questionnaire distribution, the number of questionnaire samples received back by the researcher is 62 student samples, which is 80.52% of the actual sample. Based on the results of filling out the questionnaire, the average gender of the respondents is female at 87.8%. Meanwhile, based on age, from 62 samples, 3.23% are 20 years old, 69.35% 21 years old, 22.58% 22 years old, and 4.84% 23 years old. Meanwhile, the average duration of use of Mendeley is ≤ 6 months, which is 86.7%.

4.2 Results of the Measurement Model (Outer Model).

Convergent Validity

Convergent validity is used to determine the relationship between each indicator and its latent variable. According to A. S. Hussein, (2015), the expected convergent validity value is > 0.7 [21]. Table 1 shows all the t-statistical values above 1.960 (> 1.960) and the p-value is below 0.05 (p-value <0.05). The measurement concludes that the indicators of each latent variable are valid and significant as a condition for measuring the construct. Based on the evaluation of the AVE value, it can be concluded that the convergent validity value is more than 0.50, so the convergent validity value is good.

<table>
<thead>
<tr>
<th>Table 1. Cross Loading, T-Values, P-Values</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Latent Variables</strong></td>
</tr>
<tr>
<td>ATT 1 &lt;- Attitude Towards Using</td>
</tr>
<tr>
<td>ATT 2 &lt;- Attitude Towards Using</td>
</tr>
<tr>
<td>ATT 3 &lt;- Attitude Towards Using</td>
</tr>
<tr>
<td>ATT 4 &lt;- Attitude Towards Using</td>
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<tr>
<td>ATT 5 &lt;- Attitude Towards Using</td>
</tr>
<tr>
<td>BIOU 1 &lt;- Behavioral_Intention of Use</td>
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<tr>
<td>BIOU 2 &lt;- Behavioral_Intention of Use</td>
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<tr>
<td>BIOU 3 &lt;- Behavioral_Intention of Use</td>
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<tr>
<td>BIOU 4 &lt;- Behavioral_Intention of Use</td>
</tr>
<tr>
<td>BIOU 5 &lt;- Behavioral_Intention of Use</td>
</tr>
<tr>
<td>PIEOU 1 &lt;- Perceived Ease of Use</td>
</tr>
</tbody>
</table>
Discriminant Validity
The search for discriminant validity is obtained by comparing the AVE value with the critical value used in the study [23]. In this study, the critical value is 0.5. Based on table 2, the AVE value is greater than 0.5 so that all variables used in the study are valid.

<table>
<thead>
<tr>
<th>Table 2. Construct Reliability and Validity</th>
</tr>
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<tbody>
<tr>
<td>Latent Variable</td>
</tr>
<tr>
<td>---------------------------------------------</td>
</tr>
<tr>
<td>Attitude Towards Using</td>
</tr>
<tr>
<td>Behavioral Intention of Use</td>
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<tr>
<td>Perceived Ease of Use</td>
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<tr>
<td>Perceived Usefulness</td>
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</table>

Composite Reliability
According to Urbanch & Ahlemann (2010), a construct in a latent variable will be concluded to be reliable if the value of composite reliability and Cronbach alpha is ≥ 0.60 [22]. Composite reliability values between 0.60 to 0.70 are considered adequate in research exploration while values between 0.70 to 0.95 are considered satisfactory [24]. The AVE value is owned by four latent variables with all values > 0.50 so that from this comparison it can be concluded that the value of composite reliability is good. The value of Cronbach alpha and composite reliability is greater than 0.60 and is between 0.70 to 0.95 so the conclusion of this measurement is that the four variables have good and satisfactory reliability.

Table 3. Cross Loading Value

<table>
<thead>
<tr>
<th>Latent Variable</th>
<th>Attitude Towards Using</th>
<th>Behavioral Intention of Use</th>
<th>Perceived Ease of Use</th>
<th>Perceived Usefulness</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attitude Towards Using</td>
<td>0.871</td>
<td>0.820 0.792</td>
<td>0.736 0.828</td>
<td></td>
</tr>
</tbody>
</table>

Table 4. R-Square

<table>
<thead>
<tr>
<th>R Square</th>
<th>Dependent Variable</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.744</td>
<td>Behavioral Intention of Use</td>
</tr>
<tr>
<td>0.651</td>
<td>Perceived Usefulness</td>
</tr>
</tbody>
</table>

Fornell Larcker is a measure showing that all the values of the variables displayed regarding the square root result of the AVE are higher than the correlation relating one factor to another [25]. Based on table 3, it shows that the Fornell Larcker Criteria value of each variable is higher than the correlation connecting one factor to another. From several measurements in the outer model specification, it shows acceptable results to be able to take measurements at the next stage.

4.3 Results of the Measurement Model (Inner Model)

The strength of the prediction can be seen through the results of the R-Square measurement, with the criteria (0.67) having a strong value; 0.33 is moderate; and 0.19 is weak [22]. The R-Square value of the construct of behavioral intention of use is 0.744. The magnitude of this value explains that as many as 74.4% of behavioral intention variables are influenced by the attitude toward using, perceived ease of use, and perceived usefulness variables and 25.6% are influenced by other variables outside of this study. Furthermore, the variable for perceived usefulness is obtained R-Square 0.651 so it can be concluded that 65.1% of the perceived usefulness variables are influenced by the variable perceived ease of use and 34.9% are influenced by other variables outside the study. From the measurement results above, all values show a number close to 0.67, meaning that the predictive power of each related variable is high.

Q² Predictive Relevance
The value of the calculation of Q²> 0 can be concluded if the model has predictive relevance, while the value of Q² <0 can be concluded if the predictive relevance of the model is lacking [26]. Manual calculation is done to calculate the GoF value using the following formula:

\[ Q^2 = 1 - (1 - R12) \times (1 - R22) \]

\[ = 1 - (1 - 0.533) \times (1 - 0.424) \]

\[ = 1 - (0.467) \times (0.576) \]

\[ = 1 - 0.269 \]

\[ = 0.731 \]

Because the value of Q² approaches the value of 1 and Q²> 0, in this study the structural model can be said to be good and the model has predictive relevance.
4.4 Hypothesis test

Based on statistical testing using PLS simulation is used to test each relationship in the hypothesis where the calculation is carried out on the sample using the bootstrapping method.

Table 5 Path Coefficient

<table>
<thead>
<tr>
<th>Hypothesis Path</th>
<th>Original Sample (O)</th>
<th>T Statistics (STD)</th>
<th>P Values</th>
<th>Ha'il</th>
</tr>
</thead>
</table>
| Attitude Towards Using 
   - > Behavioral Intention of Use                  | 0.38                | 2.313             | 0.021    | Diterima |
| Perceived Ease of Use 
   - > Behavioral Intention of Use                  | 0.057               | 0.519             | 0.604    | Ditolak  |
| Perceived Ease of Use 
   - > Perceived Usefulness                          | 0.807               | 19.128            | 0.000    | Diterima |
| Perceived Usefulness 
   - > Behavioral Intention of Use                  | 0.468               | 2.489             | 0.013    | Diterima |

4.4.1 Attitude Towards Using has a positive and significant effect on Behavioral Intention of Use

The results of the hypothesis testing carried out obtained the result of the path coefficient value of the variable construct of perceived ease of use on behavioral intention of use, which is 0.057 with a t-statistic value of 0.519 which is less than 1.960 (0.519 < 1.960) and the p-value is greater than 0.05. From the assessment criteria, it can be concluded that H1 is rejected, so that attitude toward using has a positive and significant effect on behavioral intention of use.

The results of the same study conducted by Sana et al. (2019), that the more user attitudes to use technology are formed, the more convinced these users will continue to use technology [27]. The results of these studies are in accordance with research [13]; [6]; [7]; and [27] where the results of the research on behavioral intention of use variables are directly influenced by the attitude towards using variables positively and significantly.

4.4.2 Perceived Ease of Use has a positive and significant effect on Behavioral Intention of Use

The measurement of the hypothesis carried out obtained the result of the path coefficient value on the variable construct of perceived ease of use on behavioral intention of use, which is 0.057 with a t-statistic value of 0.519 which is less than 1.960 (0.519 < 1.960) and the p-value is greater from 0.05 which is equal to 0.604 (0.604 ≤ 0.05). From the assessment criteria, it can be concluded that H2 is rejected, so that perceived ease of use does not have a positive and significant effect on behavioral intention of use.

The results of the study not supported by research [19]; [5]; [10]; and [8], with the results of perceived ease of use a positive effect on behavioral intention of use, but the result of this study is supported by the results of previous studies [28] and [29] stating perceived ease of use has no positive and significant effect on behavioral intention of use.

4.4.3 Perceived Usefulness has a positive and significant effect on Behavioral Intention of Use

Judging from the measurement results, the path coefficient value on the variable construct perceived usefulness for behavioral intention of use is 0.468 with a t-statistic value of 2.489 which is greater than 1.960 (2.489 > 1.960) and the p-value is less than 0.05, which is equal to 0.013 (0.013 ≤ 0.05). From the assessment criteria, it can be concluded that if H3 is accepted, so that perceived usefulness has a positive and significant effect on behavioral intention of use.

Based on the perceived usefulness when using Mendeley, that is what motivates students to continue using Mendeley. The result of this study is in accordance with research [5]; [30]; [10]; [19] and [31] with the results of perceived usefulness having a
positive and significant effect on behavioral intention of use.

**Perceived Ease of Use has a positive and significant effect on Perceived Usefulness**

The value of the path coefficient given by the variable perceived ease of use for perceived usefulness is 0.807 and the t-statistic value of 19.128 is greater than 1.960 (19.128 > 1.960) then the p-value is 0.000 (0.000 ≤ 0.05). So it can be concluded that H4 is accepted and perceived ease of use has a positive and significant effect on behavioral intention of use.

Students who believe that Mendeley is a reference management software that is easy to use will influence the student's belief that Mendeley has a use for them. The perceived convenience will make students feel the usefulness of Mendeley as a reference management software. Procedures for using Mendeley that are easy to understand will help complete work faster and student performance will be better. The result of this test is in accordance with research [9];[7]; [13]; [8]; and [32] stating that perceived ease of use has a positive effect on perceived usefulness.

**Testing of Mediation Variables**

**Table 6. Specific Indirect Effects**

<table>
<thead>
<tr>
<th>Hypothesis Path</th>
<th>Original Sample (O)</th>
<th>T Statistics (O/STDE VI)</th>
<th>P Values</th>
<th>Decision</th>
</tr>
</thead>
<tbody>
<tr>
<td>Perceived Ease of Use</td>
<td>0.377</td>
<td>2.409</td>
<td>0.016</td>
<td>Positive and Significant</td>
</tr>
<tr>
<td>Perceived Usefulness</td>
<td>-&gt; Behavioral Intentions of Use</td>
<td>-&gt;</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

From table 6, it can be concluded that perceived ease of use indirectly has a positive and significant effect on behavioral intention of use through perceived usefulness. The value of the path coefficient that is owned is 0.377 with a t-statistic value of 2.409. Based on tests carried out using this value, it is concluded that the t-table is smaller than the t-count, 2.409 > 1.960, and the p-value is smaller than 0.05 or 0.016 <0.05.

The result of this study is in accordance with studies [33]; [34]; and [35], stating that the variable perceived ease of use has a positive and significant effect on the behavioral intention of use variable through the variable perceived usefulness.

V. CONCLUSION

5.1 Conclusion

Based on the results of hypothesis testing and discussion, it can be concluded that:

1. Attitude towards using has a positive and significant effect on behavioral intention of use. This is indicated by the attitude reflected by the students after using Mendeley having an effect on the student's intention to use Mendeley. If the attitude shown is a positive one, it will increase the intention to continue using Mendeley.

2. Perceived ease of use does not have a positive and significant effect on behavioral intention of use. The ease felt by students does not increase the intention to continue using Mendeley in the future. This is because the reason these students using Mendeley is not based on perceived ease.

3. Perceived usefulness has a positive and significant effect on behavioral intention of use. Students' perceived usefulness after they used Mendeley influenced the intention to use Mendeley for a long period of time. After using Mendeley, this is felt to be beneficial so that it affects students' intention to use Mendeley.

4. Perceived ease of use has a positive and significant effect on perceived usefulness. The use of Mendeley considered easy affects students' perceptions of the usefulness of reference management software, meaning the ease felt when using Mendeley assures students that Mendeley is useful in completing work.

5. Indirectly, perceived ease of use has a positive and significant effect on behavioral intention of use through perceived usefulness.

5.2. Suggestion

Future research can add other variables such as computer self-efficacy, subjective norms, and actual usage. Future research can carry out research on Mendeley users at other educational institutions and universities. It is hoped that the institution where this research is conducted is expected to conduct training or socialization in advance regarding the procedures for using Mendeley with the aim of making it easier for students to use Mendeley when completing assignments and scientific papers.

**REFERENCE**


[34] D. Sutomo, “Pengaruh Perceived Ease Of