TAM Method and Acceptance of COVID-19 Website Users in Indonesia

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Abstract. The world facing a hard time during this time since the presence of coronavirus (COVID-19). Public can monitor and update the information related the virus and its spread during this time through the internet, Indonesian Mobile website. The purpose of this research is to analyze the factors that influence people’s acceptance of the website the using the Technology Acceptance Model (TAM) method. Five constructs of the TAM research model used are Perceived Usefulness, Perceived Ease of Use, Attitude Towards Use, Intentions of Use Behavior and Use of Actual Systems. Data obtained using an online questionnaire from Google Form. Valid questionnaire data is processed using the SmartPLS 3 application using three structural analysis models, namely external model analysis, inner model analysis, and hypothesis testing. The results showed that of all the hypotheses studied and obtained in each hypothesis can be stated significantly and proven acceptable.

1. Introduction
Website is an internet-based communication that is much needed by the community because the information presented can be a resource in making decisions so as to improve communication of various types of information between the public and researchers to improve the effectiveness and quality of service [1]. Website is an information system that is easily used effectively because it can improve communication and interaction between human beings through information messages [2]. According to ISO-9241 standards the website has the ability to the extent that a system can be used by users who have been demonstrated in order to achieve the goals set efficiently and effectiveness and satisfaction in certain contexts [3].

Indonesian Mobile Website [4] is an initiative of several startup technology companies namely Kata.ai, Qiscus, Volantis, and Qlue which is overseen by MDI Ventures part of the Telkom Group to oversee accurate information about Coronavirus (Covid-19) in Indonesia. Indonesia Mobile is a citizen reporting platform to report and monitor Covid-19 developments based on data integration, chatboxes, and citizen reporting related to Covid-19 developments. Reports from the community will be visualized in the form of maps that will be integrated with other data. Data related to the Covid-19 pandemic case is presented in the form of a bar chart with information on the data and the amount of data on each axis. The bar charts presented are positive cases based on age, total daily cases and new daily cases. Chatbox is a textual intellectual conversation to find out what kind of information is Covid-19, what are the symptoms, how to prevent it,
referral hospitals in Indonesia, Corona virus Hotline, a list of current cases and check facts about Coronavirus.

Covid-19 causes severe acute respiratory coronavirus 2 syndrome (SARS-CoV-2) [5]. Coronavirus is an outbreak of pneumonia virus which later developed into the 2019-nCoV or Covid-19 pandemic epidemic, a disease involving humans and vertebrates [6]. Coronavirus (Covid-19) first appeared in Wuhan, Hubei Province, China [7], occurred the first time in December 2019 and reached its peak in February 2020, then developed into a global pandemic in March 2020 [8].

This study aims to analyze the acceptance of the Indonesia Mobile website as an accurate source of information for monitoring developments related to Coronavirus (Covid-19) cases in Indonesia by using the Technology Acceptance Model (TAM) method, where the model can determine how technology acceptance by taking into account the parametric attributes of a behavior component that is relevant to the attitude so as to increase the scalability of a technology [9]. The Technology Acceptance Model comes from Theory of Reasoned Action (TRA) which is rooted in the Ajzen and Fishbein research in 1975 and Theory of Planned Behavior (TPB) in the Ajzen study in 1991 and in the Ajzen and Fishbein research in 1980 which was later developed by Davis (1989) [10]. Technology Acceptance Model (TAM) which used to describe user motivation toward technology, namely perceived ease of use, perceived benefits and attitudes toward use because it has a considerable influence on actual behavioral and user behavior intentions [11]. Thus The TAM model provides benefits that can measure the extent to which people believe that using technology will improve quality of life [12]. The TAM (Technology Acceptance Model) model has five constructs that can be used to model a study including Perceived Ease of Use as a perception of ease of use of technology, Perceived Usefulness can be interpreted as a perception of the usefulness of a technology, Attitude Towards Using, namely attitudes towards the use of technology, Behavioral Intentation to Use is described as behavioral intention, and Actual System Use is referred to as technology use [13].

The composition of this paper consists of an introduction, method, result and discussion, conclusion and future research.

2. Method

2.1. Design and Procedure

The data collection in this study was conducted by an online survey method using an online questionnaire on Google forms containing several questions and statements related to respondents’ demographic data such as gender and age with 8 age interval scales, as well as several questions or statements as indicators of 5 variables with measurement instruments using the Likert scale ie for scale 1 it means strongly disagree, scale 2 means disagree, scale 3 means neutral, scale 4 means agree and scale 5 means totally agree. The Likert scale is an instrument for measuring variables that cannot be measured directly or subjectively, and each question has an affirmative scale response to state that the score is based on the interval scale that has been obtained with a psychological scale and then the total score of all questions can be stated for measure these variables [14].

The research sample was taken based on random sampling techniques from the population of Indonesia in April-May 2020. The research sample was respondents from prospective respondents ie users who could actually use mobile devices or computers connected to the internet, thus they could access a website. The questionnaire was sent to prospective respondents via a short message directly whatsapp, and this message contains a brief introduction to the purpose of the study and a request to fill in the research questionnaire in a link to the Google forms form. Respondents obtained from prospective respondents who have accessed and used the Indonesian mobile website generate the number of respondents who filled out the questionnaire anonymously was 142.
Data from respondents who have filled in the questionnaire with a total of 142 can be declared valid for further processing and analysis using SmartPLS 3. Partial Least Squares Structural Model or also called PLS-SEM is used to design structural models (inner models) and design measurement models (outer models) by combining psychometric models and econometric predictions of the construct [15].

2.2. Conceptual Model
In this study the authors use five variables or construct models that exist from the TAM (Technology Acceptance Model) research model, namely Actual System Use (AUSE), Attitude Toward Using (ATU), Behavioral Intention Of Use (BI), Perceived Ease Of Use (PEU) and Perceived Usefulness (PU). The relationship of each construct is illustrated in Figure 1:

![Figure 1. Conceptual Model](image1)

Based on the relationship of the variables in Figure 1 in this study, there are six related hypotheses, including: H1 Perceived Usefulness (PU) has a positive and significant influence on attitudes towards use (Attitude Toward Using / ATU). H2 Perceived Usefulness (PU) has a positive and significant influence on behavioral interest in use (Behavioral Intention of Use / BI). H3 Perceived Ease of Use (PEU) has a positive and significant effect on Perceived Usefulness (PU). H4 Perceived Ease of Use (PEU) has a positive and significant effect on attitudes towards use (ATU). H5 attitude towards use (ATU) has a positive and significant effect on interest in usage behavior (BI). H6 interest in usage behavior (BI) has a positive and significant effect on actual use (Actual System use / AUSE).

The structural model that is built based on the conceptual model is illustrated in Figure 2 using SmartPLS 3. Based on Figure 2, the linear regression equation is formulated:

\[ PU = a_1 + b_1 PEU \]  
\[ ATU = a_2 + b_2 PU + c_2 PEU \]  
\[ BI = a_3 + b_3 PU + c_3 ATU \]  
\[ AUSE = a_4 + b_4 BI \]

where PU, ATU, BI, AUSE = linear regression equation. \( a_1, a_2, a_3, a_4 \) = Y-intercept. \( b_1 \) = partial regression coefficient PEU. \( b_2 \) = partial regression coefficient PU. \( c_2 \) = partial regression coefficient PEU. \( b_3 \) = partial regression coefficient PU. \( c_3 \) = partial regression coefficient ATU. \( b_4 \) = partial regression coefficient BI.
3. Result and Discussion

3.1. Demographics Respondent
The number of respondent profiles based on gender and age resulting from 142 respondents who filled out the questionnaire obtained through google form is shown in Table 1:

| Category | Variable | Respondents | %  | Category | Variable | Respondents | %  |
|----------|----------|-------------|----|----------|----------|-------------|----|
| Gender   | Female   | 64          | 45.1 | Age      | 40-49 years | 6           | 4.2 |
|          | Male     | 78          | 54.9 |          | 50-59 years | 8           | 5.6 |
|          | Total    | 142         | 100  |          | 60-69 years | 4           | 2.8 |
|          | 10-19 years | 3          | 2.2  | 70-79 years | 0           | 0           |
|          | 20-29 years | 92         | 64.8 | 80 years  | 0           | 0           |
|          | 30-39 years | 29         | 20.4 |          | Total      | 142         | 100 |

3.2. Outer Model Analysis
The validity of an indicator or instrument is declared valid if the loading factor value on the latent variable indicator is the loading factor value \( \geq 0.6 \) [16]. Table 2 shows the results of the loading factor value of each indicator in this research model obtained for all indicators the loading factor value ranges from 0.758 to 0.926 in which the results are stated to be greater than 0.6, therefore these results prove that the instrument is feasible or adequate.

| Indicator | Loading Factor | Result | Indicator | Loading Factor | Result |
|-----------|----------------|--------|-----------|----------------|--------|
| (AUSE1)   | 0.926          | Valid  | (PEU1)    | 0.877          | Valid  |
| (AUSE2)   | 0.907          | Valid  | (PEU2)    | 0.892          | Valid  |
| (ATU1)    | 0.917          | Valid  | (PEU3)    | 0.880          | Valid  |
| (ATU2)    | 0.861          | Valid  | (PU1)     | 0.846          | Valid  |
| (ATU3)    | 0.868          | Valid  | (PU2)     | 0.849          | Valid  |
| (BI1)     | 0.819          | Valid  | (PU3)     | 0.849          | Valid  |
| (BI2)     | 0.875          | Valid  | (PU4)     | 0.758          | Valid  |

The validity of a model can also be seen from the value of Average Variance Extracted (AVE) for each construct or variable. In this study, the AVE value for each construct is found in Table 3, and the variable is declared valid because the AVE value (Average Variance Extracted) \( \geq 0.5 \) [16].

| Construct | AVE  | Result |
|-----------|------|--------|
| (AUSE)    | 0.840| Valid  |
| (ATU)     | 0.779| Valid  |
| (BI)      | 0.718| Valid  |
| (PEU)     | 0.780| Valid  |
| (PU)      | 0.683| Valid  |

In the following Table 4 the resulting square root values at AVE are greater than each correlation, thus it can be concluded that there are no problems with discriminant validity
values. Discriminant validity is the value of the correlation coefficient between two constructs smaller than the square root value of each AVE construct [16].

Table 4. Discriminant Validity

|       | ATU  | AUSE | BI    | PEU  | PU   |
|-------|------|------|-------|------|------|
| ATU   | 0.883|      |       |      |      |
| AUSE  | 0.658| 0.916|       |      |      |
| BI    | 0.773| 0.770| 0.847 |      |      |
| PEU   | 0.646| 0.555| 0.611 | 0.883|      |
| PU    | 0.648| 0.655| 0.658 | 0.656| 0.826|

The reliability test is intended to test and see the consistency of the answers given from respondents. The reliability of a study can be seen from the value of composite reliability and Cronbach alpha. Table 5 shows the composite reliability value of all constructs having a value >= 0.6 [16]. thus it can be concluded that the five constructs have acceptable consistency.

Table 5. Composite Reliability and Cronbach Alpha

| Construct                          | Composite Reliability | Cronbach Alpha |
|------------------------------------|-----------------------|---------------|
| Actual System Use (AUSE)           | 0.913                 | 0.810         |
| Attitude Toward Using (ATU)        | 0.913                 | 0.885         |
| Behavioral Intention of Use (BI)   | 0.836                 | 0.609         |
| Perceived Ease of Use (PEU)        | 0.914                 | 0.859         |
| Perceived Usefulness (PU)          | 0.896                 | 0.844         |

Linear regression equation is an equation model that can calculate the prediction model of the relationship of one or several independent variables to one dependent variable [17]. Table 6 shows the results for the linear regression equation of an independent variable relationship with a dependent variable based on a structural model built using SmartPLS 3, namely the linear regression equation \( PU = 3.749 + 0.983 \text{PEU} \) and \( AUSE = 0.434 + 0.931 \text{BI} \). and the form of linear regression equation of two independent variables with one dependent variable, namely the linear regression equation \( \text{ATU} = 2.105 + 0.277 \text{PU} + 0.412 \text{PEU} \) and \( \text{BI} = 1.173 + 0.127 \text{PU} + 0.398 \text{ATU} \).

Table 6. Linear Regression Equations

| Linear Regression | Intercept | PEU | PU | ATU | BI |
|-------------------|-----------|-----|----|-----|----|
| PU PEU            | 3.749     | 0.983|    |     |    |
| ATU PU + PEU      | 2.105     | 0.412| 0.277|    |    |
| BI PU + ATU       | 1.173     | 0.127| 0.398|    |    |
| AUSE BI           | 0.434     | 0.127| 0.398|    | 0.931|

3.3. Inner Model Analysis
Hypothesis testing is done by analyzing the structural model to find out whether the structural model is strong and accurate or not, by looking at the T-Statistics value is greater than 1.977 at the 5% level, if the T-Statistics value is greater then the influence between positive and significant variables and acceptable. Based on Table 7, it proves in this study that the T-Statistics value
Table 7. Coefficient and T-Statistics

| Hypotheses | Path        | T-Statistics | Result |
|------------|-------------|--------------|--------|
| H1         | PU → ATU    | 5.298        | Accepted |
| H2         | PU → BI     | 3.612        | Accepted |
| H3         | PEU → PU    | 10.330       | Accepted |
| H4         | PEU → ATU   | 4.503        | Accepted |
| H5         | ATU → BI    | 8.930        | Accepted |
| H6         | BI → AUSE   | 22.530       | Accepted |

for each hypothesis is greater than 1.977, which means that the testing of the six hypotheses is proven to be acceptable and significant.

In the first hypothesis (H1) by examining the relationship between Perceived Usefulness and Attitude Toward Using the resulting T-Statistic value of 5.298 is stated to be greater than 1.977 so that it can be concluded that the relationship between variables on the construct of perception of the usefulness of information technology is proven to have a positive and significant influence on attitudes going towards use which means that H1 is proven to be accepted. The fifth hypothesis (H5) by examining the relationship between Attitude Toward Using and Behavioral Intention of Use variables is generated with a T-Statistic value of 8.930 > 1.977, so the relationship between attitude variables will lead to use has a positive and significant effect on the behavior of technology users so that it can be stated H5 acceptable [18].

The second hypothesis (H2) tests the relationship between the variable Perceived Usefulness and Behavioral Intention of Use and produces a T-Statistic value of 3.612 > 1.977, so that the relationship between variables on the construct of perception related to the use of technology to the tendency of users’ behavioral intentions with technology can be accepted because it gives influence positive and significant which means that H2 is acceptable [19].

The third hypothesis (H3) is testing the relationship between Perceived Ease of Use and Perceived Usefulness variables produced with a T-Statistic value of 10.330 > 1.977, so that the relationship between variables regarding the perception of ease of a technology on the perception of the usefulness of the use of a technology has a positive and significant influence meaning that H3 from both relations can be accepted [20].

The fourth hypothesis (H4) examines the relationship between Perceived Ease of Use and Attitude Toward Using variables producing a T-Statistics value of 4.503 > 1.977, so that the relationship between variables related to perceived ease of use of technology with an attitude of using technology is acceptable because it gives a positive and significant influence means that H4 can be proven proven acceptable. The sixth hypothesis (H6) tests the relationship between the Behavioral Intention of Use variable and the Actual System Use (AUSE) and produces a T-Statistic value of 22.530 > 1.977, so that the relationship between the intention variable will use technology and the technology user can actually be concluded as acceptable because it has a positive effect and significant which means that H6 is proven to be acceptable [21].

4. Conclusion and Future Research
In this study, the TAM model is used to assess community acceptance of the Indonesia Mobile website. The website provides detailed, accurate and has real-time information to the public regarding coronavirus (Covid-19) cases in Indonesia. The results of this study prove that based on all questions as a benchmark a variable can be declared valid, and the results of reliability have acceptable consistency which means that respondents have consistency in answering the questionnaire, as well as for each hypothesis results are acceptable which means the website can be it was concluded that it was easy to use and could be accepted by the community as a source of information to monitor developments in the Covid-19 case in Indonesia.
Future research is expected to be able to add other variables to further analyze external factors that might influence, or it can be added to the analysis comparison of other methods.

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