


## Analysis of Digital Legal Acceptance based on the Technology Acceptance Model 3 (TAM3)

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### Article Process Abstract

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*This study aims to analyze the acceptance of the PeduliLindungi application from a public perspective using the Technology Acceptance Model (TAM) concept. The government requires the PeduliLindungi application to track community activities through the Decree of the Minister of Communication and Informatics No. 171 of 2020. The Indonesian government hopes that this application records the mobility of infected patients and becomes a solution to reduce the transmission of COVID-19. However, PeduliLindungi is a new application that developed after the pandemic. Thus, the user acceptance of this app is questionable. This is a survey analysis from 102 respondents using Structural Equation Model-PLS. The results found that perceived usefulness, system failure, and social influences affect the user intent of the PeduliLindungi app while perceived ease of use is not. This app was applicable to record individual movement as virus prevention in the future. This is a contribution to theory and practice in economics and business. In theory, this research provides a new and more comprehensive view of fundamental human behaviour idea. In practice, this research is able to measure the effectiveness of government regulations in responding to an unexpected global crisis*

**Keywords:** Behavioral Intention, Technology Acceptance Model, PeduliLindungi App

### Abstrak

Penelitian ini bertujuan untuk menganalisis penerimaan aplikasi PeduliLindungi dari perspektif masyarakat dengan menggunakan konsep *Technology Acceptance Model (TAM)*. Pemerintah mewajibkan aplikasi PeduliLindungi untuk melacak aktivitas masyarakat melalui Keputusan Menteri Komunikasi dan Informatika Nomor 171 Tahun 2020. Pemerintah Indonesia berharap aplikasi ini mencatat mobilitas pasien yang terinfeksi dan menjadi solusi untuk mengurangi penularan COVID-19. Namun, PeduliLindungi merupakan aplikasi baru yang berkembang setelah pandemi. Dengan demikian, penerimaan pengguna terhadap aplikasi ini dipertanyakan. Ini adalah analisis survei dari 102 responden dengan menggunakan *Structural Equation Model-PLS*. Hasilnya menemukan bahwa kegunaan yang dirasakan, kegagalan sistem, dan pengaruh sosial mempengaruhi niat pengguna aplikasi PeduliLindungi sementara kemudahan penggunaan yang dirasakan tidak. Aplikasi ini dapat digunakan untuk merekam pergerakan individu sebagai pencegahan virus di masa mendatang. Ini adalah kontribusi untuk teori dan praktek di bidang ekonomi dan bisnis. Secara teori, penelitian ini memberikan pandangan yang baru dan lebih komprehensif tentang gagasan dasar perilaku manusia. Dalam praktiknya, penelitian ini mampu mengukur efektivitas regulasi pemerintah dalam merespon krisis global yang tidak terduga.

**Kata kunci:** Niat Perilaku, Model Penerimaan Teknologi, Aplikasi PeduliLindungi

## I. Introduction

This study purposes to examine users' intention of PeduliLindungi Application as a technology that helps improve the safety and comfort of mobility. This study uses the TAM 3 framework. The Covid-19 phenomenon has become a pandemic because tracing the mobility history of infected patients is difficult. The Indonesian government responded through the

Decree of the Minister of Communication and Informatics No. 171 of 2020 to track community mobility through the PeduliLindung application. All public areas must install this application and require visitors to scan at the entrance and exit. PeduliLindung is an application that has just been introduced to the public, and immediately requires them to become users. In fact, each individual has various considerations before deciding to accept a new system. Technology Acceptance Model (TAM) is able to analyze the level of acceptance of a system for its users. Research analysis of new systems is important before the system is implemented. A system needs to ensure the feasibility and responsiveness of its users. If the system is feasible and well-accepted, then the system can be implemented or required to be used.

This study examines behavioral intentions with TAM framework to analyze user intention of PeduliLindungi application. Factors that influence intention in the framework of TAM are positive, such as: perceived ease of use and perceived usefulness. A person's behavior in the framework of TAM is influenced by individual considerations, such as perceived ease of use and perceived usefulness.

From 102 data using Structural Equation Model-PLS, the results found that perceived usefulness, system failure, and social influences affect the user intent of the PeduliLindungi app while perceived ease of use is not. This research provides several contributions, both theoretical and practical. First, it provides a new, more complete framework for the technology acceptance model. Second, expand the information systems research literature in the discussion of technology acceptance models. Third, the PeduliLindungi application can be accepted and used by the community at large. Fourth, increase public knowledge and understanding of the simple concept of information system technology. Fifth, giving consideration to application developers to see what factors influence so that applications can be accepted by the wider community.

### Technology Acceptance Model - TAM

TAM is one of the most influential frameworks in information systems research<sup>1</sup>. The TAM framework tries to explain what factors influence a user intention to accept new technology. This framework has 2 main factors that influence intention, namely: perceived usefulness and perceived ease of use. This framework is one of the most influential frameworks because of its parsimony<sup>2</sup>. Many researchers from various fields use the technology acceptance model, including<sup>3</sup>: Estriegana, Medina-Merodio, dan Barchino (2019); Ha dan Stoel (2009); Hsiao dan

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<sup>1</sup> Neil Charness and Walter R. Boot, "Technology, Gaming, and Social Networking," *Handbook of the Psychology of Aging: Eighth Edition* (January 1, 2016): 389–407; Younghwa Lee et al., "The Technology Acceptance Model: Past, Present, and Future," *Communications of the Association for Information Systems* 12, no. 1 (December 29, 2003): 50, accessed November 14, 2022, <https://aisel.aisnet.org/cais/vol12/iss1/50>.

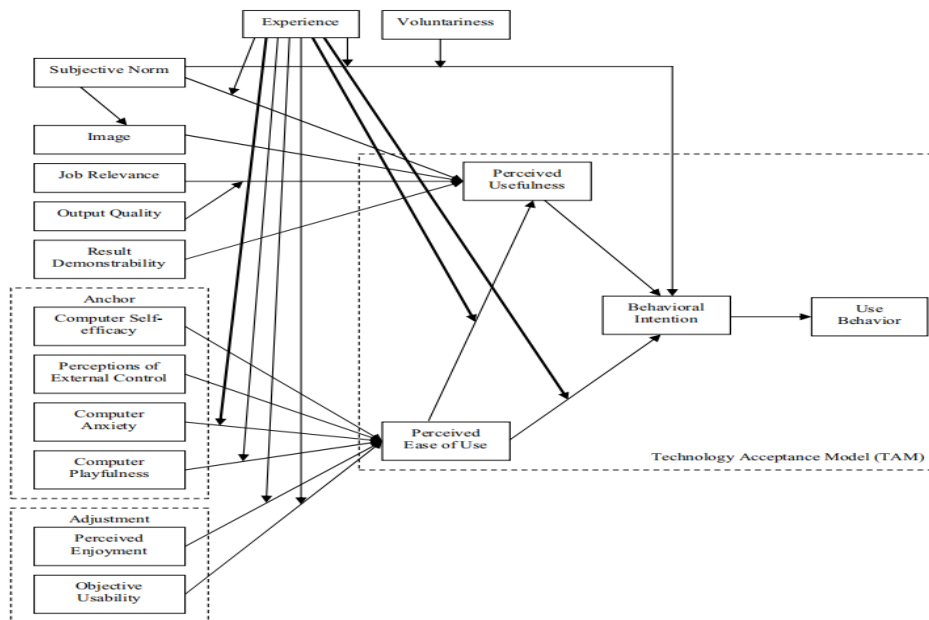
<sup>2</sup> Viswanath Venkatesh and Fred D. Davis, "Theoretical Extension of the Technology Acceptance Model: Four Longitudinal Field Studies," *Management Science* 46, no. 2 (2000): 186–204, accessed November 14, 2022, [https://www.researchgate.net/publication/227447282\\_A\\_Theoretical\\_Extension\\_of\\_the\\_Technology\\_Acceptance\\_Model\\_Four\\_Longitudinal\\_Field\\_Studies](https://www.researchgate.net/publication/227447282_A_Theoretical_Extension_of_the_Technology_Acceptance_Model_Four_Longitudinal_Field_Studies); Christopher R. Plouffe, John S. Hulland, and Mark Vandenberg, "Research Report: Richness Versus Parsimony in Modeling Technology Adoption Decisions—Understanding Merchant Adoption of a Smart Card-Based Payment System," <https://doi.org/10.1287/isre.12.2.208.9697> 12, no. 2 (June 1, 2001): 208–222, accessed November 14, 2022, <https://pubsonline.informs.org/doi/abs/10.1287/isre.12.2.208.9697>; Ronald Kabbiri et al., "Mobile Phone Adoption in Agri-Food Sector: Are Farmers in Sub-Saharan Africa Connected?," *Technological Forecasting and Social Change* 131 (June 1, 2018): 253–261.

<sup>3</sup> Rosa Estriegana, José Amelio Medina-Merodio, and Roberto Barchino, "Student Acceptance of Virtual Laboratory and Practical Work: An Extension of the Technology Acceptance Model," *Computers & Education* 135 (July 1, 2019): 1–14; Sejin Ha and Leslie Stoel, "Consumer E-Shopping Acceptance: Antecedents in a Technology Acceptance Model," *Journal of Business Research* 62, no. 5 (May 1, 2009): 565–571; Chun Hua Hsiao and Kai Yu Tang, "Explaining Undergraduates' Behavior Intention of e-Textbook Adoption: Empirical Assessment of Five Theoretical Models," *Library Hi Tech* 32, no. 1 (2014): 139–163; Paul J. Hu et al., "Examining the Technology Acceptance Model Using Physician Acceptance of Telemedicine Technology," <https://doi.org/10.1080/07421222.1999.11518247> 16, no. 2 (March 1, 2015): 91–112, accessed November 14, 2022, <https://www.tandfonline.com/doi/abs/10.1080/07421222.1999.11518247>; Kabbiri et al., "Mobile Phone Adoption in Agri-Food Sector: Are Farmers in Sub-Saharan Africa Connected?"; Kerry T. Manis and Danny Choi, "The Virtual Reality Hardware Acceptance Model (VR-HAM): Extending and Individuating the Technology Acceptance Model (TAM) for Virtual Reality Hardware," *Journal of Business Research* 100 (July 1, 2019): 503–513; Plouffe, Hulland, and Vandenberg, "Research Report: Richness Versus Parsimony in Modeling Technology Adoption Decisions—Understanding Merchant Adoption of a Smart Card-Based Payment System"; Anggar Riskianto, Bayu

Tang (2014); Hu dkk. (1999); Kabbiri dkk. (2018); Manis dan Choi (2019); Plouffe, Hulland, dan Vandenbosch (2001); Riskianto, Kelana, dan Hilmawan (2017).

The TAM framework was conceived by Fred Davis in 1985 and underwent rapid development in the 2000s. The evolution of TAM was initiated by research<sup>4</sup> which attempts to expand the TAM framework in the presence of additional theoretical constructs. This development is referred to as TAM 2. Venkatesh and Bala in 2008<sup>5</sup> continued the development of the TAM model. They based their development on the TAM 2 model. The development model is known as TAM 3. This model was proposed at that time in response to several studies that provided new directions on the TAM 2 model proposed by Benbasat dan Moore (1991) and Goodhue (2007)<sup>6</sup>. The proposal that was responded to was the need to add other antecedent factors to the TAM framework. Venkatesh and Bala (2008)<sup>7</sup> adding a theoretical construct as an antecedent of the perceived ease of use variable. There are six proposed antecedents, namely: computer self-efficacy, perception of external control, computer anxiety, computer playfulness, perceived enjoyment, and objective usability.

**Figure 1** TAM 3 (Venkatesh and Bala 2008)



### PeduliLindungi App

The PeduliLindungi application has three main functions. The first is screening, so that users who often enter public areas or want to travel long distances using trains, planes, ships and so on, are actually selected using the system. So it can be ascertained that the person concerned has been vaccinated, and has not been exposed to Covid or has not been in close contact with COVID-19 patients. In addition, this feature can also limit people who enter the public area automatically according to the level of restriction.

Kelana, and Deliar Rifda Hilmawan, "The Moderation Effect of Age on Adopting E-Payment Technology," *Procedia Computer Science* 124 (January 1, 2017): 536–543.

<sup>4</sup> Venkatesh and Davis, "Theoretical Extension of the Technology Acceptance Model: Four Longitudinal Field Studies."

<sup>5</sup> Viswanath Venkatesh and Hillol Bala, "Technology Acceptance Model 3 and a Research Agenda on Interventions," *Decision Sciences* 39, no. 2 (May 2008): 273–315.

<sup>6</sup> Gary C. Moore and Izak Benbasat, "Development of an Instrument to Measure the Perceptions of Adopting an Information Technology Innovation," <https://doi.org/10.1287/isre.2.3.192> 2, no. 3 (September 1, 1991): 192–222, accessed November 14, 2022, <https://pubsonline.informs.org/doi/abs/10.1287/isre.2.3.192>; Dale L. Goodhue, "Comment on Benbasat and Barki's 'Quo Vadis TAM' Article.," *Journal of the Association for Information Systems* 8, no. 4 (April 1, 2007): 15, accessed November 14, 2022, <https://aisel.aisnet.org/jais/vol8/iss4/15>.

<sup>7</sup> Venkatesh and Bala, "Technology Acceptance Model 3 and a Research Agenda on Interventions."

This application we can also check the health status. The green color means the user has been vaccinated twice and is not currently infected. Yellow color means that the user has been vaccinated once and is not infected. Then, the red color means that the user's vaccination data cannot be found (not yet vaccinated) but is not infected, and the black color means that the user is infected or has been in contact with a Covid-19 positive patient for less than 14 days. The goal is that users do not harm others by tracking backwards, so that the spread of the virus can be limited. Testing the user intention the PeduliLindungi application can be explained in the following research framework:

## II. Research Methods

### Population and Sample

The population of this research is the flight passengers in Indonesia. The sampling frame of this research is participants who are accustomed to using mobile applications. It was chosen because this study deals with the use of new mobile applications. The sample of this research is airplane passengers who are in 34 airports in Indonesia. The survey method was used in this study to collect data. The survey technique of this research is a self-administered survey. The sample method used is convenience sampling. The research data was obtained 102 data from direct answers by research respondents through questionnaires distributed online via a google form link.

### Questionnaire

The questionnaire is organized into 2 parts. The first part contains construct statements that will be analyzed using a 5-point Likert scale, score 1 for strongly disagree, to score 5 for strongly agree. All respondents should filling out total 45 statement items. According to <sup>8</sup> scale measurement for perceived ease of use (four items), perceived external control (four items), self-belief (four items), playability (four items), perceived usefulness (four items), description (three items), visibility of results (four items). items), and behavioral intentions (three items). Six items from <sup>9</sup>, Five items from <sup>10</sup>, and four items from <sup>11</sup> used to measure system failure, insecurity, and social influence. All respondents have 15 minutes to answer all the statements. The second part contains demographic data of respondents, such as: gender, age, educational background, regional origin, and experience using mobile applications.

### Data Collection

This research use Structural Equation Modeling (SEM) to analyze the data because of several reasons. First, this research is developing theory in an exploratory context. Second, this research is also a development of the existing structural model. Third, SEM-PLS is also able to minimize the errors contained in the construct and maximize the R2 value of the endogenous variables.

Model testing using SEM-PLS has 2 stages (Two-Step Structural Equation Modeling). The first stage is the measurement model (outer model). The measurement model explains the relationship between latent variables and their measuring indicators. The second stage is the structural model (inner model). The structural model explains the relationship between the latent variables that are formulated. This study uses the SMART PLS 3.0 analysis tool. This analytical tool was chosen for 3 reasons. First, SMART PLS used to correlation between latent variables and indicator variables. Second, SMART PLS suitable to test formative and reflective variables. Third, SMART PLS has a characteristic for testing small samples.

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<sup>8</sup> Venkatesh dan Bala (2008)

<sup>9</sup> Tan, Benbasat, dan Cenfetelli (2016)

<sup>10</sup> Lam, Chiang, dan Parasuraman (2008)

<sup>11</sup> Venkatesh dkk. (2003)

### III. Result And Discussion

#### Descriptive Analysis

This research obtained 102 respondents for the testing process in this study. The table shows the demographic characteristics of the study sample. The characteristics of the sample of respondents are quite varied (men - 68.89%; women 31.11%) with various age ranges (17-24, 54.44%; 25-32, 32.22%; 33-40, 8, 48%). 89%; 41-48, 3.33%; and 49-56, 1.11%).

#### Measurement Model Results

The data should passed validity and reliability measurement<sup>12</sup> which are consist of item reliability, convergent validity of measurements, and discriminant validity<sup>13</sup>. Hair (2017)<sup>14</sup> states that the individual item reliability assessment uses several provisions, namely: 1) if the loadings value is greater than 0.7 then the item is retained; 2) if the loadings value is between 0.3 to 0.7 then the item is considered (if item deletion increases the AVE value above 0.5) to be maintained; and 3) if the loadings value is less than 0.3 then the item is deleted. The outer loadings value of all items can be assessed as good even though there are some items that do not meet the criteria.

According to the test, all variables have above 0.5. This indicates that each item explain its construct. Assessment of reliability is determined on the condition that composite reliability is greater than 0.7 and Cronbach's Alpha is greater than 0.6<sup>15</sup>. Of all the existing constructs, the self-efficacy construct unqualified value because 3 out of 4 measurement items cannot meet the standard loading factor. Therefore, the researcher decided to delete the three items to obtain the expected level of construct reliability.

#### Structural Model Test Results

The structural model was tested by path analysis method with SMART PLS 3.0. The hypothesis test supports seven paths of analysis and the other four are not supported. Hypotheses 1 and 2 explain the impact of the antecedents of perceived usefulness of images on perceived usefulness. The image construct showed insignificant results (0.267) while Result Demonstrability had a significant effect on perceived usefulness (0.018). Thus, hypothesis 1 is not supported and hypothesis 2 is supported with the ability to explain the construct of perceived usefulness of 30.3%.

**Table 1** Inner Model Test Results – Path Coefficient

Hypothesis	Relationship	Original Sample	Sig	Decision
H1	Image -> Perceived Usefulness	0,077	0,267	Not Supported
H2	Result Demonstrability -> Perceived Usefulness	0,349	0,018	Supported
H3	Perception of External Control -> Perceived Ease of Use	0,483	0,000	Supported
H4	Playfulness -> Perceived Ease of Use	0,278	0,001	Supported
H5	Self-Efficacy -> Perceived Ease of Use	0,213	0,012	Supported
H6	Perceived Usefulness -> Behavioral Intention	0,496	0,000	Supported
H7	Perceived Ease of Use -> Behavioral Intention	-0,101	0,179	Not Supported

<sup>12</sup> (Hair, Hult, dan Ringle 2017)

<sup>13</sup> Hulland, "Use of Partial Least Squares (PLS) in Strategic Management Research: A Review of Four Recent Studies."

<sup>14</sup> Hair, Hult, dan Ringle (2017)

<sup>15</sup> Ibid.

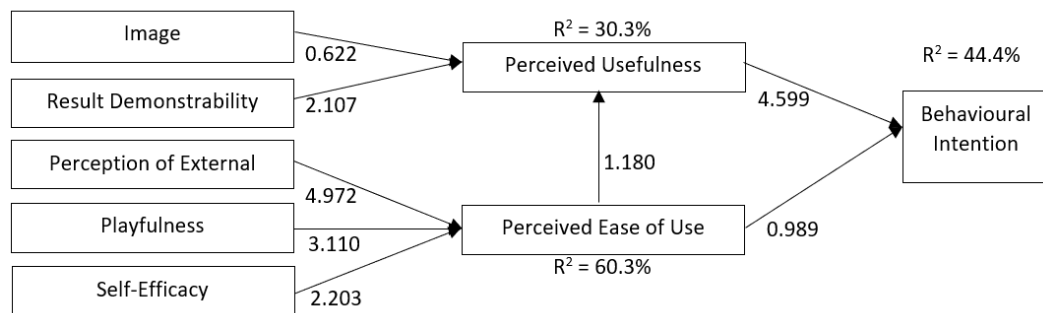
Hypothesis	Relationship	Original Sample	Sig	Decision
H8	Perceived Ease of Use -> Perceived Usefulness	0,208	0,118	Not Supported

Hypotheses 3, 4, and 5 explain the impact of three internal factors, there are: Perception of External Control, Playfulness, and Self-Efficacy on the construct of Perceived Ease of Use. Perceived ease of use was significantly influenced by perceived external control (0.000), playfulness (0.001), and self-efficacy (0.012). Thus, all three hypotheses are supported and 65.7% of their effect on perceived ease of use is explained by these constructs.

Hypotheses 6 and 7 examine the influence of positive factors, namely Perceived Usefulness and Perceived Ease of Use on Behavioral Intentions. The perceived usefulness construct had a significant effect 0.000, while the perceived ease-of-use showed insignificant results (0.179). Therefore, hypothesis 6 is supported and hypothesis 7 is not supported. Hypothesis 8 examines the mediating effect of the perceived ease of use construct on perceived usefulness. The findings show an insignificant value (0.118) so that hypothesis 8 is not supported.

Figure 4 shows the level of the coefficient of determination of the endogenous variables. The R-Square value of the Behavioral Intention construct is 0.444 which means that the constructs of perceived usefulness, perceived ease of use, insecurity, system failure, and social influence can explain 44.4% of behavioral intention constructs while the remaining 55.6% by other constructs outside the model. R-Square value of the Perceived Ease of Use construct is 0.657 and perceived usefulness construct is 0.303.

**Figure 1** Path Analysis Test Results and R-Square Level



**Blindfolding Test**

Blindfolding is a test to calculate the value of Stone-Geisser's Q2. The value of Q2 represents the evaluation criteria for the predictive relevance of the PLS path model <sup>16</sup>. The following are the results of the blindfolding test.

**Table 2** Blindfolding Test Results

Endogen Variables	Q <sup>2</sup>
Behavioral Intention	0.299
Perceived Ease of Use	0.406
Perceived Usefulness	0.210

Table 2 shows the blindfolding test result which all Q2 values of each endogenous variable have a value greater than 0. Therefore, it can be concluded that the path model of the endogenous variables has predictive relevance.

<sup>16</sup> (Hair dkk. 2014)

This study shows unique finding that is inconsistent with previous studies<sup>17</sup>. The results show that perceived ease of use does not have a significant positive effect on behavioral intentions. However, this study supports research<sup>18</sup>. Kasilingam (2020)<sup>19</sup> examines consumer interest in using chatbots on mobile devices for shopping. He did some test schemes. In testing the perceived ease of use of the user intention, the results show the hypothesis is not supported. Kasilingam (2020)<sup>20</sup> also tested the perceived ease of use of the user intention mediated by the construct of Attitude and the hypothesis was supported. Thus, there is a strong possibility that the inconsistent findings are due to the need for a perceived ease of use construct mediated by an attitude construct to influence behavioral intentions. Further research is needed to confirm this.

#### **IV. Conclusion**

This study aims to examine the user intention the PeduliLindungi application with TAM3 theory. The findings prove that Result Demonstrability affects perceived usefulness positively while Image and ease of use are not. Then, Perception of External Control, Playfulness and Self-Efficacy effects Perceived Ease of Use positively. However, Perceived Ease of Use does not effects Behavioral Intention positively.

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<sup>17</sup> (Davis 1985; Venkatesh dan Bala 2008)

<sup>18</sup> Dharun Lingam Kasilingam, "Understanding the Attitude and Intention to Use Smartphone Chatbots for Shopping," *Technology in Society* 62, no. May (2020): 101280.

<sup>19</sup> Ibid.

<sup>20</sup> Ibid.

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