

EVALUATION OF PEDULILINDUNGI APPLICATIONS IN THE JABODETABEK REGION

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Abstract

This paper will explain the result of evaluation using combination between technology acceptance model (TAM) and updated DeLone and McLean IS success model. The objective of this research is to analyze correlation between system quality, information quality, service quality, perceived risk, attitude, and actual use in moderation of age which is the factor influencing technology acceptance model of PeduliLindungi. The method of research is to analyze the relationship between variable stage before. The data collection techniques used in this paper is using questionnaire and Likert scale. The data analysis method in this study uses partial least square (PLS) to do validity test, reliability test and hypothesis analysis. The result of this paper is the technology acceptance model of PeduliLindungi which has strong influence to increase users' attitude that would increase users actual use.

Keywords: TAM, IS Success Model, PeduliLindungi

Introduction

Currently, people around the world have been affected by the coronavirus pandemic 2019 (COVID 19), which is the fifth pandemic after the 2009 flu pandemic. Within a few months, the COVID-19 pandemic has claimed many victims in various countries around the world, one of the is Indonesia. Antiviral and vaccines for COVID-19 are still under development and testing, therefore it is advisable to carry out quarantine and social distancing in order to prevent the spread of the virus. In Indonesia itself, the government is currently aggressively vaccinating Covid-19. In the early stages, the Covid-19 vaccination has been successfully administered to all health workers, assistants to health workers, and students carrying out medical professional education who work in health care facilities. The second phase of the vaccine has also been given to the elderly, essential sector workers, and teachers. Vaccination distribution is currently being continued for the general public and continues until it reaches all Indonesian citizens and foreign nationals residing in Indonesia.

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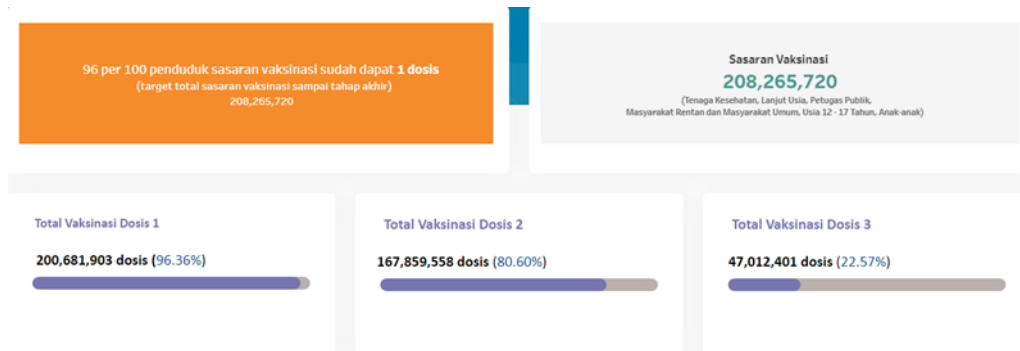


Figure 1: Indonesia Total Vaccinated Target

To combat global spread of COVID-19, many countries develop their own contract tracing apps (CTAs). In Indonesia its called PeduliLindungi. PeduliLindungi is an application developed to assist relevant government agencies in tracking to stop the spread of Coronavirus Disease (COVID-19)[1]. This application relies on community participation to share location data with each other while traveling so that contact history tracing with COVID-19 sufferers can be carried out[1]. Users of this application will also get a notification if they are in a crowd or are in a red zone, namely an area or sub-district where it has been recorded that there are infected with positive COVID-19 or there are patients under surveillance. This application is also used to distribute certificates for those who have vaccinated and results from covid-19 test. Now this application has a feature called check-in which is required by the government to be used before entering public areas such as malls and office buildings. This feature uses data from vaccine certificates and Covid-19 test results. if the user has not done the 2nd vaccine or has just taken a covid-19 test and the result is positive, then when the user uses the check-in feature, the user will be prohibited from entering public areas. As you can see from figure 1, there are still around 19 percent of the total vaccine target who still have not received the 2nd dose of vaccine. This causes these users to continue to be rejected when checking in.

Based on survey result from Badan Pusat Statistik (BPS), even though the public is expected to have PeduliLindungi application, however there are still 19,4% of respondents who claim that they do not have the government-made application. In addition, there are still a small number of respondents who do not know PeduliLindungi application, which is 1,9% [2]. The elderly population over 60 years do not have PeduliLindungi application at most compared to other age groups. It was recorded that 36,8% of elderly respondents did not have PeduliLindungi Application. Meanwhile, other age groups who have PeduliLindungi application are above 75%. In the age group of 46 to 60 years, as many as 83,3% have PeduliLindungi application, while those who don't have only 15,1%. In the age group from 31 to 45 years, 80% already have PeduliLindungi application and about 18,3% do not have the application. Finally, 75.5% of the 17- to 30-year-old age group have PeduliLindungi application. Those who do not have from this age group are 22.5%. Many problems were found when using the PeduliLindungi application, some of which were unable to register or login, the

application required the Global Positioning System (GPS) to be active at all times in order to use the tracing feature, the confidentiality of user data was still in question, and so on. It takes a model that can be used to analyze and understand the factors that influence the use of this PeduliLindungi application. One of these models is the Technology Acceptance Model and the IS Success Model. It is hoped that by using the TAM model, researchers can help find problems and provide suggestions to increase the use of the PeduliLindungi application.

Method

Research methodology used in this paper is explanatory research that aims to analyze the relationship between one variable with other variables or how a variable affects other variables.

1. Research Model

Based on the literature review and survey from several previous similar studies, in figure 4 is the research model that will be used by the author to show the relationship between variables that are related to one another.

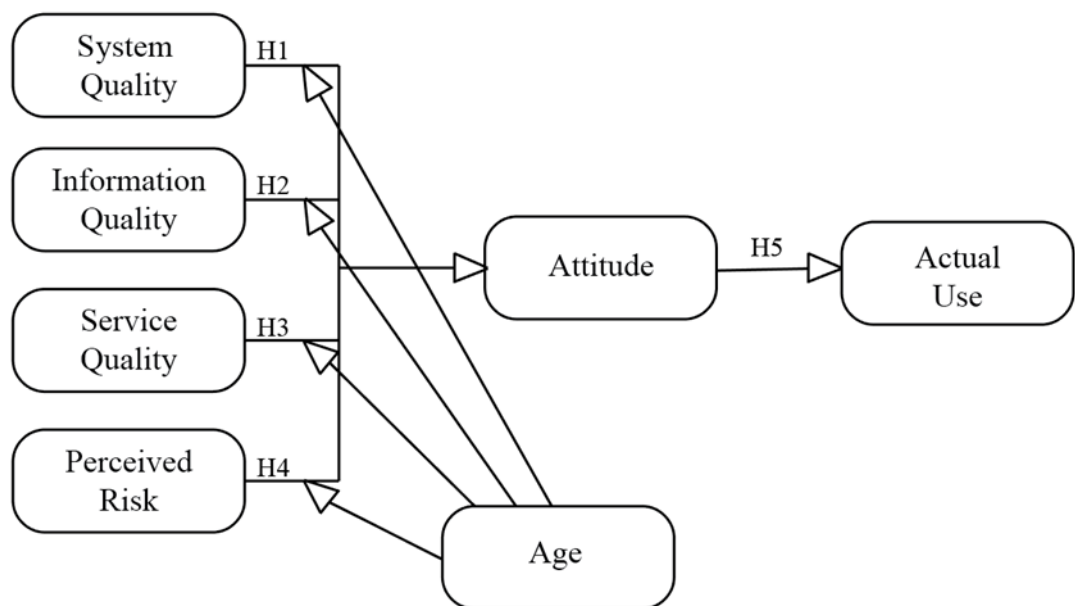


Figure 5: Research Model

2. Hypothesis

Based on the research model to be carried out, the hypotheses are as follows:

H1: System quality has a significant effect on the attitude

H2: Information quality has a significant effect on the attitude

H3: Service quality has a significant effect on the attitude

H4: Perceived risk has a significant effect on the attitude

H5: Genders moderates the influence of system quality on attitude

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H6: Genders moderates the influence of information quality on attitude

H7: Genders moderates the influence of service quality on attitude

H8: Attitude has a significant effect on the actual use

3. Variable Measurements

In measuring variables, indicators are needed to test the validity of these variables. The following in table 1 is a table of variables and indicators that will be used to develop questions that will be compiled into questionnaire that will be distributed to respondents.

Table 1: Variables and indicators.

Variable	Initial	Indicator	Citation
System Quality	SQ1	Ease of use	[5], [10]
	SQ2	Availavility	[5], [10]
	SQ3	Reliability	[5], [10]
	SQ4	Response time	[5], [10]
Information Quality	IQ1	Accuracy	[5], [10]
	IQ2	Relevant	[5], [10]
	IQ3	Usefulness	[5], [10]
	IQ4	Completeness	[5], [10]
Service Quality	SQ1	Contact	[5], [10]
	SQ2	Reliability	[5], [10]
	SQ3	Responsiveness	[5], [10]
	SQ4	Empathy	[5], [10]
Perceived Risk	PR1	Privacy	[11]
	PR2	Time	[11]
	PR3	Performance	[11]
	PR4	Psychological	[11]
Attitude (A)	A1	Convenience	[3], [6]
	A2	Happiness	[3], [6]
	A3	Helpful	[3], [6]
Actual Usage (AU)	AU1	Frequency	[3], [5], [6]
	AU2	Extent of use	[3], [5], [6]
	AU3	Intention to reuse	[3], [5], [6]

4. Data Collection Technique

In this paper, we use a likert scale where data will be collected from survey results through a questionnaire that use google form and distributed to respondents through various media, such as social media, chat messengers and email.

Table 2: Likert Scale

Description	Value
Strongly disagree	1
Disagree	2
Neutral	3
Agree	4
Strongly agree	5

5. Validity test

Validity test is used to measure that ad data has a valid value questionnaire or not [12]. The validity test has 2 stages, namely the convergent validity and discriminant validity test. The convergent validity test is done by looking at the loading factor value, which is the value generated by each indicator to measure the variable and by looking at the average variance extracted (AVE) value. If AVE and loading factor value is higher than 0.5, the the variable is valid. The discriminant validity test was carried out by calculating the Fornell Larcker Criterion and cross loading.

Table 3: Loading Factor and AVE Analysis Result

Indicator	AVE	Loading Factor	Result
SQ	0.627		Valid
SQ1		0.754	Valid
SQ2		0.792	Valid
SQ3		0.804	Valid
SQ4		0.815	Valid
IQ	0.678		Valid
IQ1		0.774	Valid
IQ2		0.811	Valid
IQ3		0.859	Valid
IQ4		0.846	Valid
SerQ	0.687		Valid
SerQ1		0.776	Valid
SerQ2		0.863	Valid
SerQ3		0.844	Valid
SerQ4		0.831	Valid
PR	0.572		Valid
PR1		0.652	Valid
PR2		0.785	Valid
PR3		0.877	Valid
PR4		0.691	Valid
A	0.810		Valid
A1		0.869	Valid
A2		0.901	Valid
A3		0.933	Valid
AU	0.586		Valid
AU1		0.874	Valid
AU2		0.759	Valid
AU3		0.647	Valid

From table 4 and table 5 it can be seen that the correlation between variables with other variables has a smaller value than the correlation with the variable itself. From this value it can be concluded that all variables are valid.

Table 4: Fornell Larcker value

	A	AU	IQ	PR	SQ	SerQ
A	0.900					
AU	0.700	0.766				
IQ	0.668	0.625	0.823			
PR	0.563	0.614	0.649	0.756		
SQ	0.679	0.600	0.609	0.584	0.792	
SerQ	0.684	0.655	0.656	0.629	0.599	0.829

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Table 5: Cross Loading

	A	AU	IQ	PR	SQ	SerQ
A1	0.868	0.585	0.575	0.492	0.630	0.585
A2	0.903	0.647	0.555	0.481	0.622	0.621
A3	0.933	0.660	0.659	0.533	0.621	0.662
A4	0.896	0.626	0.612	0.519	0.572	0.590
AU1	0.671	0.873	0.553	0.479	0.548	0.560
AU2	0.514	0.768	0.419	0.433	0.426	0.569
AU3	0.369	0.647	0.469	0.549	0.387	0.347
IQ1	0.444	0.431	0.778	0.496	0.438	0.429
IQ2	0.482	0.491	0.813	0.554	0.467	0.503
IQ3	0.631	0.575	0.861	0.548	0.561	0.600
IQ4	0.605	0.540	0.846	0.541	0.522	0.598
PR1	0.212	0.379	0.432	0.651	0.336	0.347
PR2	0.409	0.420	0.470	0.785	0.387	0.431
PR3	0.580	0.562	0.638	0.880	0.542	0.615
PR4	0.379	0.468	0.381	0.702	0.458	0.442
SQ1	0.548	0.441	0.479	0.498	0.752	0.423
SQ2	0.499	0.430	0.437	0.369	0.791	0.433
SQ3	0.511	0.523	0.488	0.529	0.808	0.541
SQ4	0.583	0.504	0.519	0.448	0.816	0.499
SerQ1	0.444	0.528	0.467	0.521	0.435	0.776
SerQ2	0.571	0.587	0.610	0.601	0.512	0.862
SerQ3	0.518	0.524	0.529	0.542	0.515	0.845
SerQ4	0.685	0.535	0.554	0.445	0.514	0.830

6. Reliability

Reliability testing was carried out by analyzing the composite reliability and Cronbach's Alpha value. The measurement is carried out by taking into account the composite reliability and Cronbach's Alpha values on smart pls and can be considered quite reliable if the reliability value is more than 0,6[13].

Table 5: Reliability Test Results

Variable	<i>Cronbach's Alpha</i>	Composite Reliability
System Quality	0. 801	0. 870
Information Quality	0. 843	0. 894
Service Quality	0. 850	0. 898
Perceived Risk	0. 756	0. 841
Attitude	0. 921	0. 945
Actual Usage	0. 650	0. 807

RESULTS

The results show that there are three variables that significantly influence the attitude, namely system quality (H1 accepted) with p-value = 0,000 and $\beta = 0,326$, information quality (H2 accepted) with p-value = 0,000 and $\beta = 0,237$, and service quality (H3 accepted) with p-value = 0,000 and $\beta = 0,296$, while the other one have no significant effect on attitude variable, namely perceived risk (H4 rejected) with p-value

= 0,429 and $\beta = 0,039$. When moderated by age, there are only 2 variables that significantly influence the attitude, namely system quality, moderated by age (H5 accepted) with p-value = 0,020 and $\beta = -0,130$ and information quality, moderated by age (H6 accepted) with p-value = 0,038 and $\beta = 0,110$, while the other two have no significant effect on attitude, namely service quality, moderated by age (H7 rejected) with p-value = 0,543 and $\beta = 0,041$, and perceived risk, moderated by age (H8 rejected) with p-value = 0,679 and $\beta = -0,019$.

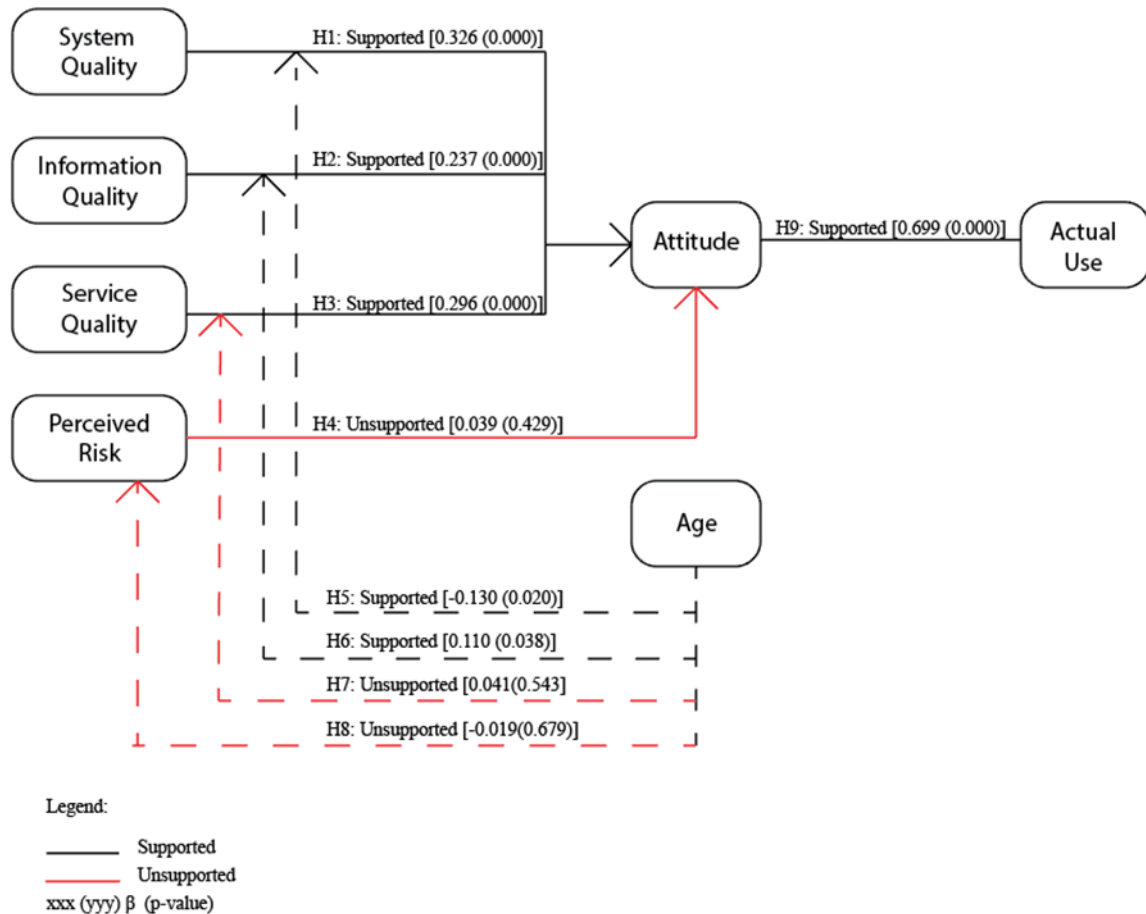


Figure 6: Result Model

Table 6: Hypotheses Result

	H	β	P-Values	Result
System Quality -> Attitude	H1	0.326	0.000	Accepted
Information Quality -> Attitude	H2	0.237	0.000	Accepted
Service Quality -> Attitude	H3	0.296	0.000	Accepted
Perceived Risk -> Attitude	H4	0.039	0.429	Rejected
System Quality Moderate by Age -> Attitude	H5	-0.130	0.020	Accepted
Information Quality Moderate by Age -> Attitude	H6	0.110	0.038	Accepted
Service Quality Moderate by Age -> Attitude	H7	0.041	0.543	Rejected

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Perceived Risk Moderate by Age -> Attitude	H8	-0.019	0.679	Rejected
Attitude -> Actual Usage	H9	0.699	0.000	Accepted

From these results it can be concluded that although many users feel a lot of risk when using the PeduliLindungi application, in fact they still use the application because it is required to be used. Application developers can focus more on improving other variables such as system quality. This variable has the greatest effect because when users have difficulties and problems using the application, the user does not use the application and looks for other alternatives. The results of the research and analysis also show that age moderates system quality and information quality towards attitude towards use but does not moderate service quality and perceived risk.

Table 7: Average Questioner Result per Age Category

Ages	System Quality	Information Quality
< 22 years	4.14	4.43
23 – 38 years	4.17	4.22
39 – 54 years	3.96	4.15
> 55 years	4.02	4.19

When viewed from the average results of the questionnaire per age category, for the age category below 22 years and 23 to 38 years, the average results for system quality and information quality variables are higher than the average results for the 39 to 54 years age category and above 55 years. From these results, PeduliLindungi application developers need to create age-based programs and services in order to increase the use of applications in the age category above 39 years.

Conclusion

The results of the analyzes have shown that system quality, information quality and service quality affect attitude significantly but perceived risk has no effect on attitude. Attitude affect actual usage significantly. Age does not moderate the influence of system quality, information quality on attitude, but age moderates the influence of service quality and perceived risk on attitude.

The author recommendations in this research are:

Suggestions for PeduliLindungi application developers, the most influential factor to influence attitudes is system quality, then followed by service quality and the last is information quality. This level can be used as a benchmark when there is urgency in order to focus on improving the variables that have the greatest influence on attitude towards use which indirectly also affects actual use. PeduliLindungi application developers also need to develop age-based features, why are certain age groups not using PeduliLindungi more, whether because the writing is too small or how to use the application is considered complex by that age group or the use of abbreviated words and the use of foreign languages that make users confused. This needs to be investigated more deeply in order to make it easier for some age groups to use the PeduliLindungi application in order to further increase the level of use in that age group. The

PeduliLindungi application can also combine several other government applications such as Alpukat Betawi and mobile JKN (BPJS) so that it is not only an application for vaccines but can be a super app for all government needs.

Suggestions for further research, in order to add other variables that are not discussed in this study, determine the number of respondents in each age group more evenly in order to see more precise and clear results.

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