Consumer Usage Intention On Digital Health Application Using Extended TAM

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Abstract

The aim is to understand the relationship that predicts consumer intentions towards digital healthcare applications. The independent variable is Trust, Privacy, Perceived usefulness, Perceived ease of use, Resistance to technology, and Technological Anxiety and the dependent variable is Usage Intetion. The designed model was tested on the results of a survey of 270 respondents who actively use digital healthcare applications in Jakarta. Normality, validity, and structural equation (SEM) analysis were used to conceptualize the model and validate the seven hypotheses that had been designed. The results show that perceived usefulness and trust are factors that positively influence consumer intentions in Jakarta to use digital healthcare applications. In summary, this study can provide an empirical contribution to the literature on the factors that influence consumer intentions in Jakarta to use digital healthcare applications.

Keywords
Digital healthcare application, Trust, Privacy, Perceived usefulness, Perceived ease of use, Resistance to technology, Technological anxiety, Usage Intention, TAM

1. Introduction
Digital healthcare application is the use of digital telecommunication tools to provide information and health services with a broad scope with the aim of improving public health. This digital healthcare application allows health practitioners to monitor and provide health checks remotely without compromising the quality of health services (save time, flexible, and high quality service) (Esmaeilzadeh et al., 2010). This digital healthcare application technology certainly has a positive impact on the community in Jakarta, where with a population of more than 11.25 million people, there are still obstacles in providing health services to consumers in remote areas

and far from urban areas and the quality of public health is still relatively low. one of the reasons for the need for a massive and comprehensive acceleration of health services.

Since 2014, there have been many companies engaged in the digital healthcare application business in Jakarta, such as Halodoc, Alodokter, SehatQ, YesDok, KlikDokter, ProSehat, MySiloam, and MyDoctors. Until now, in 2021, the development of the digital healthcare application business in Jakarta reached 57%, which means that there are still 43% of consumers in Jakarta who have not used the services of the digital healthcare application business. Koumpouros et al., 2015 suggest that the success of a business strategy for an industry that utilizes technology is strongly influenced by consumer interest in the technology, so it is interesting in this study to find out what factors influence consumer usage intentions. in Jakarta in using digital healthcare applications. In this study, an extended TAM (Technology Acceptance Model) approach was used where according to Davis, 1989 the level of consumer intention to use technology was influenced by several factors, including trust, perceived usefulness, perceived ease of use. perceived ease of use, technological anxiety, resistance to use, and privacy concern. This study aims to examine these factors in determining their effect on consumer behavior towards the use of digital healthcare applications. Therefore, the current research is expected to help digital health service providers in choosing the optimal strategy to improve health services for consumers in Jakarta, both new consumers and retaining existing customers.

2. Literature Review

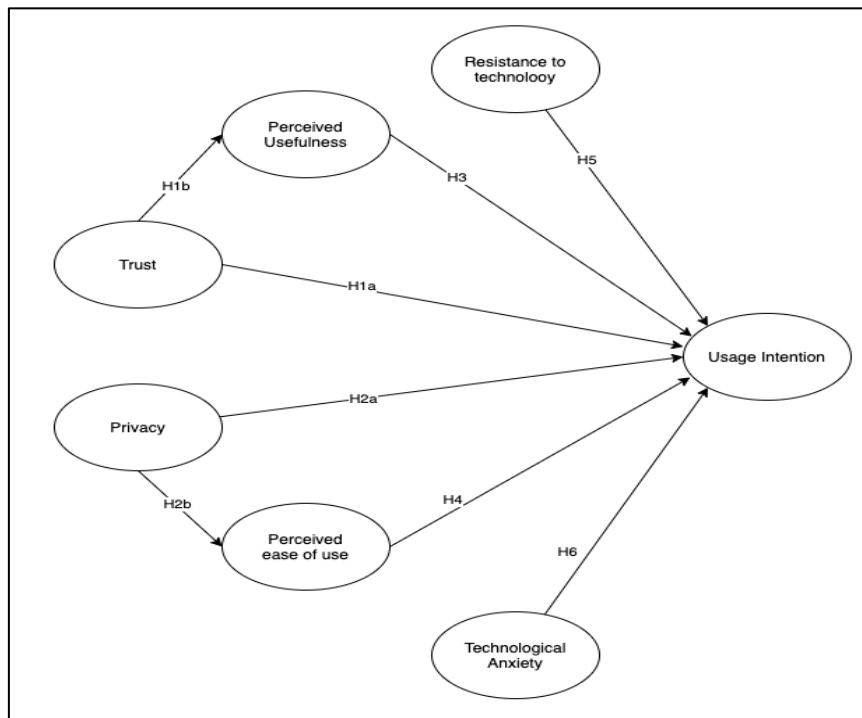The following is the research model and hypothesis as described in the image below (Figure 1).

Figure 1. Proposed Research Model

Based on the research model, the hypotheses to be tested in this study are as follows:
H1a: Trust positively influences usage intention to use digital healthcare application.
H1b: Trust through perceived usefulness positively influences usage intention to use digital healthcare application.
H2a: Privacy positively influences usage intention to use digital healthcare application.
H2b: Privacy through perceived ease of use positively influences usage intention to use digital healthcare applications.
H3:   Perceived usefulness positively influences usage intention to use digital healthcare application.
H4:   Perceived ease of use positively affects usage intention to use digital healthcare application.
H5:   Resistance to technology positively affects usage intention to use digital healthcare application.
H6:   Technological Anxiety positively influences usage intention to use digital healthcare application.

3. Methods

The study was conducted with respondents in Jakarta and its surroundings with several considerations, including the high acceptance of technology and the use of digital healthcare applications for the people of Jakarta and its surroundings. In the questionnaire of 270 respindent, criteria have been determined as elimination questions to ensure that those who fill out the questionnaire are respondents who are in accordance with what is needed in this study. Each question in the questionnaire can be answered using a Likert scale of 1 (strongly disagree), 2 (disagree), 3 (neutral), 4 (agree), and 5 (strongly agree). This study uses the extended TAM model from previous studies with latent variables of trust, perceived usefulness, perceived ease of use, technological anxiety, resistance to use. use), and privacy (privacy concern). The research model used is the adoption of the previous study Extended TAM which consists of the variables trust, privacy, perceived ease of use, technological anxiety, perceived usefullness, resistance to technology, and usage intention. Quantitative analysis will use the SmartPLS application.

4. Data Collection

A total of 270 respondents filled out questionnaires using online surveys distributed through digital media.

5. Result and Discussion

The implementation of this research data collection using Google Form which is distributed via WhatsApp, Telegram, Twitter, and Instagram. From the results of the questionnaires that we have distributed, there are 270 respondents who filled out and 135 who match the criteria that have been determined with the respondent's profile as follows (Table 1).

Tabel 1. Respondent's Profile

Gender	
Male	57,6%
Female	42,4%
Education	
Bachelor/Diploma	76,3%
Senior High School	12,2%
Postgraduate	11,5%
Income	
< Rp 5 million	31,7%
Rp 5 million – Rp 9 million	33,1%
Rp 10 million – Rp 25 million	23,0%
> Rp 25 million	12,2%

Measurement Model Evaluation

The results of the respondents who have been obtained are then tested for normality and validity tests to determine and assess the normal distribution and the level of validity of the data distribution using SPSS. Then, analyze the influence of each variable in the research model using SmartPLS.

Normality test is a test carried out with the aim of knowing and assessing the distribution of data in a group of data or variables whose purpose is to determine whether the distribution of data is normally distributed or not. Table 2 shows the results of the Normality test analysis using SPSS software.

Table 2. Normality Test Using Kolmogorov-Smirnoff (SPSS)

N		134
Normal Parameters[a,b]	Mean	.0000000
	Std. Deviation	.49615344
Most Extreme Differences	Absolute	.044
	Positive	.033
	Negative	-.044
Test Statistic		.044
Asymp. Sig. (2-tailed)		.200[c,d]

Remarks:
a. Test distribution os Normal.
b. Calculated from data.
c. Lilliefors Significance Correction.
d. This is a lower bound of the true significance.

Based on Table 2, it can be seen that the tested data passed the Normality Test by looking at the Asymp indicator. Sig (2-tailed) has a value of 0.200 which is based on decision making, if the significance value is greater than 0.05, then the residual value is normally distributed. The results of the above test show a significance value of 0.200 > 0.05 which means that the data is normally distributed.

To test the reliability will use the PLS Algorithm with a maximum criterion of 200. Based on the sample used, all factors or questionnaires have outer loadings values above 0.7, which means that each factor can explain each variable (Table 3).

Table 3. *Outer Loading*

Variabel	Cronbach's Alpha	rho A	Composite Reliability	Average Variance Extracted (AVE)
Perceived Ease of Use	0,888	0,892	0,923	0,749
Perceived Usefulness	0,768	0,775	0,852	0,590
Privacy	0,917	0,986	0,940	0,796
Resistance Technology	0,846	0,874	0,907	0,764
Technological Anxiety	0,846	0,874	0,895	0,680
Trust	0,845	0,846	0,890	0,620
Usage Intention	0,925	0,927	0,946	0,816

Furthermore, the value of Cronbach's Alpha, Composite Reliability and Average Variacne Extracted has a value above the cut off of 0.7 (Hair et al. 2016). This means that each variable has met the statistical calculations and is considered reliable enough to be used as the basis for calculations in the study (Table 4).

Table 4. R Square Value Calculation

Variabel	R Square
Perceived Ease of Use	0.000
Perceived Usefulness	0.418
Usage Intention	0.527

Perceived usefulness has an R Square value of 0.418. This means that perceived usefulness can explain the research model by 41.8%. The same thing applies to the usage intention variable, which has an R Square value of 0.527, meaning that 52.7% can be explained by usage intention and the other 47.3% is explained by things outside of usage intention.

Hypothesis testing was conducted to see the suitability of the variables described in a research model. Table 5 shows the results of hypothesis testing using SmartPLS software.

Table 5. *Direct Effect Result Analysis*

Hypothesis	Original Sample	Sample Mean	Standard Deviation	T Statistic	P Value	Status
Perceived Ease of Use -> Usage lntention	0,326	0,334	0,105	3,112	0,002	Accepted
Perceived Usefullness -> Usage lntention	0,180	0,175	0,109	1,647	0,100	Rejected

Privacy_ -> Perceived Ease of lJse	-0,014	-0,020	0,098	0,146	0,884	Rejected
Privacy -> Usage lntention	-0,095	-0,096	0,072	1,306	0,192	Rejected
Resistance Technology -> Usage lntention	0,026	0,023	0,074	0,352	0,725	Rejected
Technological Anxiety -> Usage lntention	-0,142	-0,144	0,083	1,724	0,085	Rejected
Trust -> Perceived Usefulness	0,646	0,652	0,048	13,391	0,000	Accepted
Trust -> Usage lntention	0,266	0,262	0,082	3,244	0,001	Accepted

Furthermore, for indirect effects, there are two hypotheses proposed and the results are as follows (table 6).

Table 6. Specific *Indirect Effects*

Hypothesis	Original Sample	Sample Mean	Standard Deviation	T Statistic	P Value	Status
Privacy_-> Perceived Ease of Use-> Usage Intention	-0.005	-0.007	0.034	0.136	0.892	Rejected
Trust-> Perceived Usefulness-> Usage Intention	0.116	0.114	0.073	1.594	0.111	Rejected

Based on the test results above, (Table 6) it shows several things that can be used as further analysis of the relationship and relationship of each variable, including:

1. **H1a (Trust positively affects usage intention to use digital healthcare application)**
   The tests conducted showed that trust had a significant effect on usage intention with a p value of 0.001 (lower than the standard 0.05). This is in line with what was stated by Kamal et al., 2020, that trust has become the main factor for users to want to use and adopt digital healthcare applications to replace conventional health services. People with a high level of trust will be more enthusiastic in using digital healthcare applications because they do not have negative issues in using them (Dhagarra et al., 2020).

2. **H1b (Trust through perceived usefulness positively influences usage intention to use digital healthcare application)**
   In a previous study conducted by Daud et al., 2018, suggests that trust has a positive influence on consumer loyalty and a positive influence indirectly through the perceived usefulness or satisfaction variable. However, in the research conducted, the correlation of p values showed a negative value (p values 0.111, higher than the standard 0.05).

3. **H3 (Perceived usefulness positively affects usage intention to use digital healthcare application)**
   In a previous study conducted by Daud et al., 2018, suggests that the perceived usefulness variable has a positive influence on consumer loyalty which triggers an increase in the use of technology services. However, in the research conducted, the correlation of p values showed a negative value (p values 0.100, higher than the standard 0.05).

4. **H2a (Privacy positively affects usage intention to use digital healthcare application)**
   In a previous study conducted by Filkins, 2016, suggested that privacy can improve consumer behavior in using digital healthcare applications. However, in a study conducted with a demographic scope in Jakarta, privacy showed a negative correlation value (p value 0.192, higher than the standard 0.05).

5. **H2b (Privacy through perceived ease of use positively affects usage intention to use digital healthcare application)**
   In a previous study conducted by Daud et al, 2018, suggests that Perceived ease of use can also increase consumer convenience in using technology. However, in the research conducted, the correlation of p values showed a negative value (p values 0.100, higher than the standard 0.05).

6. **H4 (Perceived ease of use positively affects usage intention to use digital healthcare application)**
   Based on the test results, the correlation of p values shows a positive value (p values 0.002, lower than the standard 0.05). This is consistent with and is also supported by previous research conducted by Daud et al, 2018, which suggests that the adoption of technology acceptance through the perceived ease of use variable is a very strong influence on consumer confidence.

7. **H5 (Resistance to technology positively influences usage intention to use digital healthcare application)**
   In a previous study conducted by Safi, 2018, it was stated that the adoption of new technology in health services is believed to encourage consumers to be more enthusiastic in using digital healthcare applications. However, in a study conducted with a demographic scope in Jakarta, technological barriers showed a negative correlation value (p values 0.725, higher than the standard 0.05).

8. **H6 (Technological Anxiety positively affects usage intention to use digital healthcare application)**
   In a previous study conducted by Tsai et al, 2020, suggested that technology anxiety can affect the perception of computer users. However, in a study conducted with a demographic scope in Jakarta, technology anxiety showed a negative correlation value (p-value 0.085, higher than the standard 0.05).

Managerial Implications
From a managerial point of view, the main implication of this research is that technology that focuses on health services is currently highly developed and competitive for people who need health services of high quality and affordable cost. Therefore, management must find the best way to understand the factors that can increase consumer acceptance of technology. This study shows that factors such as perceived ease of use and trust greatly influence consumer intentions to use digital healthcare applications.

6. Conclusion

The conclusions that can be drawn from the results of this study include:
1. Trust variable affects consumer's intention to use digital healthcare application.
2. Trust variable through perceived usefulness affects consumer's intention to use digital healthcare application.
3. Privacy variable does not affect consumer's intention to use digital healthcare application.
4. Privacy variable through perceived ease of use does not affect consumer's intention to use digital healthcare application.
5. The Perceived Usefulness variable does not affect consumers' intentions to use digital healthcare applications.
6. The Perceived Ease of Use variable affects consumers' intention to use digital healthcare applications.
7. The Resistance to Technology variable does not affect consumers' intention to use digital healthcare application services.
8. Technological Anxiety variable does not affect consumers' intention to use digital healthcare application services.

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