

# Customer Acceptance on Smart Medical Application

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## Abstract

This research is focused on customer acceptance of the use of health care services through an application of smart technology, as well as its relationship to customer satisfaction. This research was conducted by distributing questionnaires to the general public in the Jakarta area who use Halodoc application as one of the health service applications with internet-based of things. Data collection techniques are carried out by purposive sampling. The number of respondents is as many as 100 respondents. Data analysis techniques are carried out with Structure Equation Modeling with Smart PLS 3 as an analyzing tool. The results showed that smart medical technology dimensions showed a significant effect on customer use and generated satisfaction for customers of the Halodoc application.

## Keywords:

Smart Medical Technology, Customer Use, Customer Satisfaction, IoT, SEM

## 1. Introduction

In recent years, global research updates have always appeared with "smart," and this term has become very well known today (Femenia-Serra and Neuhofer 2018). Smart technology has spread across all lines of the electronic market in the life sector, including the financial, retail, tourism, and medical sectors. Technology-based facilities and support a business are some of the superior requirements to win positive perceptions of consumers (Subakti et al. 2020). Smart technology, which implies smart and intelligent terms, generally refers to the technological products, conditions, or services required for various functions that can adapt to individual circumstances (Neuhofer et al. 2015). Smart technology is a smart way to create memorable experiences by broadening experience horizons (Pai et al. 2020).

The current pandemic has a considerable impact on society's life, economy, and socialization. A pandemic, even though it looks simple, had infected millions of people. As a novel virus, coronavirus has never existed in human history, nor has this new pandemic resulted in unprecedented social and economic impacts on people worldwide, therefore, there is a need for a human-driven approach to limit human movement to control this virus's transmission (Kummitha 2020).

Health care service managers need to anticipate and interact wisely to overcome this new condition's transmission control. Technology becomes an alternative as a point of interaction between patients and the medical team to become an alternative health recovery and alternative health service actions (Uzdavines and Care 2020). Currently, smart applications on cell phone users can apply their intelligence to become more intelligent and more prevalent in carrying out cellular health care (Chen 2020). This smart health monitoring system can optimize patient monitoring tasks. Therefore, becoming a smart medical technology user is a competitive aspiration in the new normal conditions (Chen 2020). Improving user experience must be maximized to enhance service quality, which is the key to controlling transmission and achieving customer satisfaction (Abdel-Basset et al. 2019). In general, smart medical technology users are worried about their inexperienced experience with this application. The health care service provider will maximize customers to find relevant information about this system. For health care service providers, communication is the main thing and the primary goal of management. The report can stimulate and facilitate the highest patient satisfaction, and experience is essential to promote and control the initial customer experience. New technological developments, growing medical needs, and patient aspirations will add exact value in researching this issue, and also facilitate it for other service levels towards workflow management (Lu et al. 2019). Currently, technology has prepared sophisticated to be able to detect certain groups in certain situations (Chen 2020).

Technology combined in health care services design can create the interactions that the health care services want and help to prevent transmission. It will offer and enrich experiences in the concept of inclusion and accessibility in health care services and increase public awareness in the new normal in recent months (Lam et al. 2020). The objective of this study is to understand if each of the dimensions of smart medical technology has a significant effect on customer satisfaction through the use of halodoc health care services application.

## **2. Literature Review**

### **2.1. Smart Medical Technology**

According to Chen-Kuo Pai et al. (2020), the entire industrial world is currently embracing information technology (IT) and experiencing its benefits in business development, including the health services business. The application of smart devices in the healthcare industry context is a necessity to maximize resources and generate enormous social and economic value benefits. Service users benefit from comfort and efficiency by adopting this smart medical application. In everyday life, the smart application can be accessed directly via a portable-smart phone, and many health services have made use of this application (Büyüközkan and Göçer 2019). Based on Lenna Vet et al. (2020), the value of the hospitality business is a multi-phase and multi-party process, which improves and creates customer experiences, has an impact on customer satisfaction, finds the justification of the perceived value for customers who are involved in creating togetherness, can test the psychological influence with customer value (Shulga and Busser 2020). This can be applied in the health care business.

### **2.2. Perceived Smart Medical Technology**

Information and communication through technology are critical factors in this discussion; social platforms, computerized systems, data processing, artificial intelligence, and others related to health service activities are currently developing (Chen 2020). Many people are vulnerable in terms of health risks, and technology helps enforce preventive measures and mitigation strategies for the community to flatten the virus's current spread curve. Today's world needs network capabilities in devices because this can limit the potential for carrying out activities; currently, many types of tools have embraced information technology to achieve the convenience of human life, plus new technological advances will continue to develop and continue in the future (Gupta et al. 2020). Chen-Kuo Pai et al. (2020), identified the various types of technology that exist on online platforms to get information about health services, such as blogs, public sites, company sites, and social media sites. On the other hand, identifying five online features such as information, accessibility, interaction, Personalization, and security. Although the results show that security is the most dominant attribute for public websites, it can be concluded that other characteristics such as informativeness, accessibility, Interactivity, and Personalization are other factors that need to be considered in Perceived Smart Medical Technology. Although the results show that security is the most dominant attribute for public websites, other characteristics such as informativeness, accessibility, interactivity, and personalization are other factors that need to consider in Perceived Smart Technology (Pai et al. 2020), including in health care service.

#### **2.2.1. Informativeness**

Informativeness is a combination of quality, credibility, and accuracy of information received by health care users (Li et al. 2017). Informative is very important in smart medical; it assesses that information accuracy can affect health service

users' attitudes. When smart medical provides relevant, adequate, and accurate information on health services, it's hoping that customers will be satisfied with their experience. Informative ratios the value of health services and help make highly efficient customer decisions (Pai et al. 2020).

This writing focuses on the role of information perceived by health care services on customer use; therefore, the following hypothesis proposes:

H1: Informativeness has a significant effect on customer use

### **2.2.2. Accessibility**

According to Chen-Kuo Pai et al. (2020), accessibility is how and to what extent information is offered to achieve the use of various types of services. Accessibility determines the usefulness of smart medical technology on target. Customers tend to look for more of the information they need when smart medical technology is easily accessible (Pai et al. 2020). Given that this paper focuses on the role of accessibility that is used by health care services to customer use; therefore, the following hypothesis is proposed:

H2: Accessibility has a significant effect on customer use

### **2.2.3. Interactivity**

In research conducted by Chen-Kuo Pai et al. (2020), interaction activities can define as facilitators who promote real-time feedback on services and communication using smart medical technology. The role of interaction activities significantly affects customer responses to the benefits of smart medical technology. On social media, when customers feel the level of interaction is relatively high, customers tend to adopt services and communicate more actively by producing output in comments better known as customers' voices (Pai et al. 2020). Again, this paper focuses on the role of Interactivity perceived by customers towards customer use; therefore, the following hypothesis proposes :

H3: Interactivity has a significant effect on customer use

### **2.2.4. Personalization**

In Chen-Kuo Pai et al. (2020) research, Personalization can also refer to a customer's ability to obtain more specific information according to customer needs when using smart medical technology. In customers' behavior, personality, and prior purchasing preferences, customers can receive recommendations through big data or the cloud (Pai et al., 2020). According to Henkens et al. (2020), services that are more formalized in the smart medical technology system can capture more information about customers. The more information provided by the provider, the easier it will be for providers to improve their services from time to time. It predicted that an increased level of intelligence in line with customer expectations could result in customer engagement with smart medical technology players. More specifically, playing the role of smart medical technology can enter customers' lives and make adjustments as needed (Henkens et al. 2020). The focus of this paper is the role of Personalization to the customer used, therefore the following hypothesis is proposed:

H4: Personalization has a significant effect on customer use

### **2.2.5. Security**

In research conducted by Kabadayi S et al. (2019) in smart medical technology and from the description above, this service is hazardous, which sometimes raises concerns about data security and privacy violations. However, suppose this service is equipped with data control that can be done to improve their experience and the right balance between maximizing personalized services and being more open. In that case, it can limit the disclosure of customer privacy (Kabadayi et al. 2019). Previous studies have considered the security attribute to be a thing. The most important thing is that customers must feel the security brought by the application (Pai et al. 2020). The author focuses on this writing, the role of security felt by customers towards customer use. Therefore, the following hypothesis is proposed:

H5: Security has a significant effect on customer use

## **2.3. Customers as users of smart medical technology applications**

According to Preeti Tak and Savita Panwar (2017), customers will prefer smart medical technology rather than offline channels. When customers see the agreement online, customers will be more interested in impulsive interaction. The number of offers in the application will be unique, and customers can enjoy the interactions. Learn about the role of convenience and self-service apps in their charm. On the other hand, customers also expect the promotion of health services that can save costs to achieve low prices; here, customer preferences are very much at stake to change customer behavior to get their role in using smart medical technology applications (Tak and Panwar 2017). Studying the role of customers as users of smart medical technology and finding a positive value on customer satisfaction; therefore, the following hypothesis proposes:

H6: Customer use has a significant effect on customer satisfaction.

### 3. Methods

The object of research in this study is Halodoc smart medical application which is widely used in Indonesia with a website address in <https://www.halodoc.com> (HaloDoc 2020). This research uses a quantitative research approach, with the type of explanatory research. The analysis method is carried out on the data of the questionnaire answer and then processed by statistical method. The data were analyzed using structural equation model data analysis techniques with partial least squares. Partial Least Square is used to confirm the theory and previous research and also used to explain the influence between latent variables (Hair et al. 2018). Following singarimbun opinion (2003) that the use of the explanation method is used if the researcher wants to explain the relationship between variables through hypothesis testing then this method is named explanatory research (Singarimbun 2003).

### 4. Data Collection

The research population is all people in the Jakarta area who have used the halodoc application that became the object of research. Samples were taken of as many as 100 people from residents of the Jakarta area. It is based on the theory of Frankel and Wallen (Fraenkel, J. and Wallen 1993) that suggested a minimum sample for correlational research is 50 samples. The sampling technique used is purposive sampling. In purposive sampling techniques, what is emphasized to be a sample is due to consideration of certain characteristics or characteristics (Sekaran and Bougie 2016). In this study, the characteristic of the sample is they are using the application of halodoc for at least one time. Due to the pandemic situation, we conduct to spread the questionnaire through an online form.

### 5. Results and Discussion

A two-stage approach to structural equation modeling (SEM) with SmartPLS tools was applied to validate this study model and test research hypotheses. In the first stage, measurement models were tested and the second stage was tested on structural models (Hair et al. 2018).

#### 5.1. Measurement Models

Based on the data in table 1 showed convergent validity value indicator of each variable has a loading factor of more than 0.50 means the statement in the questionnaire is valid, the higher the loading factor the higher the validity. AVE value and indicators of overall variables are greater than 0.5 and meet the criteria for discrete validity. So it can be stated that the question item is valid in measuring variables. To test Reliability using Cronbach Alpha and rho\_A, showing that the construct of each variable has a Cronbach Alpha of more than 0.70 means the statements in the questionnaire are reliable and can represent the variables in this study.

Table 1. Construct Reliability and Validity

	Cronbach's Alpha	rho_A	Composite Reliability	Average Variance Extracted (AVE)
ACC	0.782	21.019	0.830	0.717
IF	1.000	1.000	1.000	1.000
INT	1.000	1.000	1.000	1.000
PER	0.831	0.831	0.922	0.856
SAT	1.000	1.000	1.000	1.000
SEC	0.794	0.810	0.878	0.706
USE	0.831	0.832	0.922	0.856

Notes: ACC: Accessibility, IF: Informativeness, INT: Interactivity, PER: Personalization, SAT: Customer Satisfaction, SEC: Security, USE: Customer Use

This discriminant validity use-value of cross-loading and the Fornell-Larcker criterion. The value of cross-loading of all indicators on its construct has a greater value than the loading factor of the indicator in other constructs. The results of discriminant validity of each latent variable can be seen in table 2 and table 3. The results of cross-loading and Fornell-Larcker met the criteria, then all latent variables in this study are declared to meet the requirements of discriminant validity.

Table 2. Fornell-Larcker Criterion

	ACC	IF	INT	PER	SAT	SEC	USE
ACC	0.847						
IF	-0.167	1.000					
INT	-0.087	0.699	1.000				
PER	-0.086	-0.205	-0.132	0.925			
SAT	-0.098	-0.094	-0.087	0.654	1.000		
SEC	-0.028	-0.190	-0.171	0.601	0.665	0.840	
USE	-0.085	-0.206	-0.133	1.000	0.654	0.601	0.925

Table 3. Cross-Loading

	ACC	IF	INT	PER	SAT	SEC	USE
ACC4	0.660	-0.030	-0.032	-0.004	0.008	0.052	-0.003
ACC5	1.000	-0.169	-0.088	-0.088	-0.100	-0.030	-0.086
IF2	-0.167	1.000	0.699	-0.205	-0.094	-0.190	-0.206
INT2	-0.087	0.699	1.000	-0.132	-0.087	-0.171	-0.133
PER4	0.001	-0.242	-0.181	0.926	0.642	0.556	0.928
PER5	-0.161	-0.136	-0.063	0.925	0.567	0.556	0.922
SAT5	-0.098	-0.094	-0.087	0.654	1.000	0.665	0.654
SEC3	0.026	-0.170	-0.109	0.434	0.466	0.812	0.433
SEC4	-0.012	-0.169	-0.200	0.584	0.635	0.857	0.584
SEC5	-0.081	-0.140	-0.106	0.476	0.554	0.851	0.476
USE4	0.001	-0.242	-0.181	0.926	0.642	0.556	0.928
USE5	-0.161	-0.136	-0.063	0.925	0.567	0.556	0.922

## 5.2. Structural Models

Table 4 shows the R-square value for the endogenous variables of customer use is 1.00, meaning the percentage of customer use influenced by informativeness, accessibility, interactivity, personalization, and security is 100%. While the R-square for the endogenous variable of customer satisfaction is 0.428, meaning the percentage of customer satisfaction which can be explained by customer use is 42,8% and the rest 57,2% is explained by other variables that did not examine in this study.

Table 4. R Square

	R Square	R Square Adjusted
SAT	0.428	0.422
USE	1.000	1.000

### Hypothesis Testing

The p-value test is intended to test the influence of independent variables (exogenous latent variables) and dependent variables (endogenous latent variables). P-value in each exogenous latent variable to endogenous latent variables is obtained from the bootstrapping process using SmartPLS 3. The path coefficient diagram of the inner model after bootstrapping in this research can be seen in Figure 1. The result of the p-value is summarized in table 5.

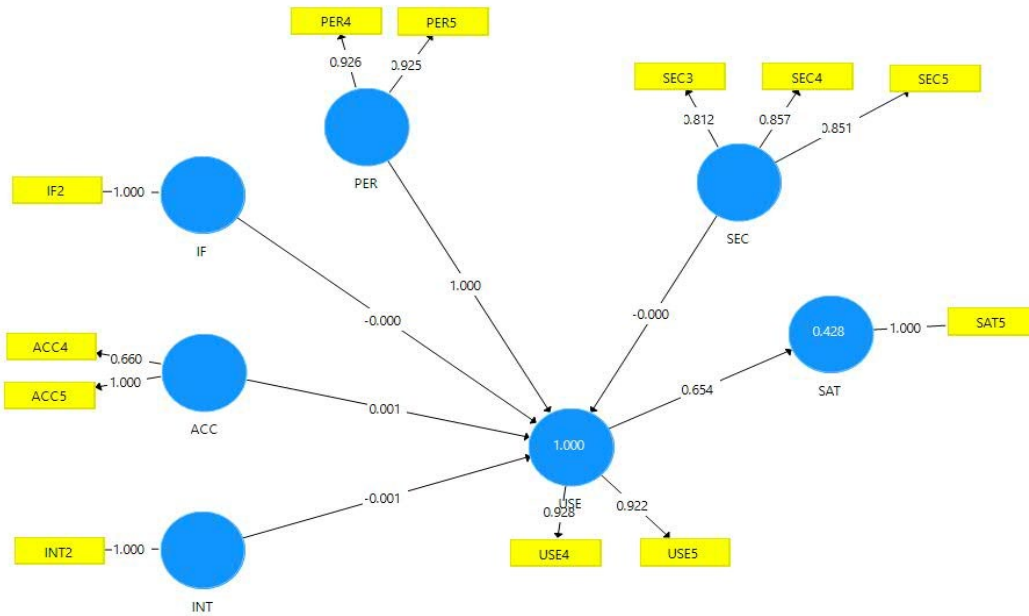


Figure 1. Outer Model

Table 5. Hypotheses Testing

	Standard Deviation (STDEV)	T Statistics ( O/STDEV )	P Values	Conclusion
H2: ACC -> USE	0.002	8.680	0.000	Accepted
H1: IF -> USE	0.001	1.970	0.000	Accepted
H3: INT -> USE	0.002	5.360	0.000	Accepted
H4: PER -> USE	0.001	11.861	0.000	Accepted
H5: SEC -> USE	0.001	14.800	0.000	Accepted
H6: USE -> SAT	0.069	9.426	0.000	Accepted

## 6. Conclusion

The results showed that; there is a significant effect of Informativeness on customer use. Informativeness showed a t-test of 1.97 more than the t-value of 1.96. This means that to the customer the smart technology of the halodoc application provides relevant, adequate, and accurate information on health services that they need during the pandemic situation. There is a significant effect of Accessibility on customer use. Accessibility has a t-test of 8.68 more than the t-value of 1.96. This means customers find the application is easy to be accessed. The halodoc application led to a good display, link, and choices for customer use. There is a significant effect of Interactivity on customer use. Interactivity has a t-test of 5.36 more than the t-value of 1.96. This means customers find that the management of this application is doing a good responding to queries from customers. So, customers feel noticed. There is a significant effect of Personalization on customer use. Personalization has a t-test of 11.86 more than the t-value of 1.96. This means customers felt there is personalization by using this application through the internet. There is a significant effect of Security on customer use. Security has a t-test of 14.80 more than the t-value of 1.98. This means customers perceived that the Application of halodoc is attending to their need for security. The important things such as customer data and privacy violence are secured while customers using this application. There is a positive and significant impact of customer use on customer satisfaction. With R square value of 42.8%, t-test of 9.42 > t-value of

1.96. This means customer use proved to be satisfied while using this application to seek the help of their medical queries during the pandemic of Covid19

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