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Research

Determinants of Satisfaction Using Healthcare Application: A Study on Young Halodoc Users in Jakarta During the COVID-19 Pandemic

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Abstract

Fear of COVID-19 makes people seek information about health protection independently, which is closely related to user satisfaction. This condition makes the need for a series of online applications such as Halodoc a necessity that is increasingly used. People are looking for various information from online health services during the pandemic, ranging from information on personal protection from COVID-19, online consultations with doctors, to ordering drugs or supplements online. This study aims to investigate whether graphic user interface and reliance on use affect the satisfaction of using Halodoc during the COVID-19 pandemic, especially among young users in Jakarta. This quantitative research uses Structural Equation Modeling based on Partial Least Square (PLS-SEM) analysis with SMART PLS 3.0. The sample size of this study was 126 participants taken randomly using an online questionnaire. The results of this study explained that the graphic user interface does not affect the user's reliance on use and satisfaction. Interestingly, the reliance on use affects user satisfaction. In addition, the role of reliance of use is not proven to be a mediator between the graphic user interface on user satisfaction. Originality in this study itself lies in the use of graphic user interface and reliance on use. This is important because these two aspects can represent aspects of user behavior and the quality of the digital-based health service system itself.

Keywords: *Satisfaction; graphic user interface; reliance on use*

INTRODUCTION

The need for digital and non-digital-based health services cannot be separated for the community, especially in Indonesia. Private companies to the government continue to develop Online Healthcare Application (OHApp) which can be used more widely in Indonesia. Based on a report from Deloitte Indonesia, shows that 10% of Indonesia's population uses digital-based health applications (Petriella, 2019). The development of this usage rate should also be followed by user satisfaction in using health services, especially those based on digital, where the role of technology is one of the determinants of the success of the health service performance. However, it cannot be denied that dissatisfaction still occurs. Previous studies (Atinga et al., 2020; Barello et al., 2016; Rosis & Barsanti, 2016; Sakka & Qarashay, 2020) have succeeded in explaining the satisfaction

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factor in using e-health applications for users where this can indirectly support the user's health performance. But on the other hand, several studies also explain that there are still obstacles to dissatisfaction with the use of e-health applications for users. This is due to several factors such as cost (Benavides-Vaello & Anne Strode, 2013; Goldstein et al., 2014), e-health design, and technical support (Gagnon et al., 2012, 2014; Oluoch et al., 2012) the quality of e-health systems, information and services (Kilsdonk et al., 2011), ease of use (McGinn et al., 2011), and culture (Saliba et al., 2012).

The ease of finding and obtaining health information and services in Indonesia is increasingly available through the presence of various digital platforms. Currently, various OHApp platforms in Indonesia have begun widely used, one of which is the largest and most well-known is Halodoc. This study uses Halodoc as a study to investigate its user satisfaction, especially for young users. Various references refer to this platform by various names such as doctor consultation applications (Hartono et al., 2019; Silalahi et al., 2018), health applications (Thinnukool et al., 2017), or mobile health applications (Abaza & Marschollek, 2017; Barton, 2012; Martínez-Pérez et al., 2013). The entire term refers to a medium or platform. The development of service features that are tailored to the needs of the community forms the variety of services on this platform. Therefore, this study categorizes this platform functionally as a Digital Health-Based Service.

As one of the most innovative platforms in Asia by Galen Growth Asia in November 2018, Halodoc is increasingly aggressively developing its business strengths, one of which is seeking trust by getting funding from various parties such as UOB Venture Management, WuXi AppTec, Singtel Innov8, and Korea Investment. This explained that the digital health services provided by Halodoc can form a selling point and become a necessity for the community. In 2020 by CB Insights, Halodoc has been named as one of the 150 most promising Digital Health startups in the world where indicators are assessed such as technological innovation and market potential. This achievement is not easy considering new competitors have emerged in the last few years. Efforts to get closer to society through the fulfillment of health services continue to be made in this digital-based health industry, such as DIGIClinic made by TelkomGroup (Muhammad, 2020). Apart from the private sector, the government also presents digital-based health information services through the Sehatpedia application which provides accurate, accurate, and credible health information (Rahim, 2019). Based on the publication of the 2019 Deloitte Indonesia report (Deloitte et al., 2019), there are several aspects of the benefits of products/services presented by several parties, both private and government, as shown in Table 1.

Table 1. Categories of Digital-based Healthcare in Indonesia.

Main Service Aspects	**Private companies**	**Government**
Hospital information system (patient data management)	Medico; Periksa.id	V-Claim BPJS; P-Care BPJS; SIRS YANKES KEMKES; JKN Mobile
Electronic prescription information	HaloDoc; Prosehat	-
Health information	Guesehat; Alo Dokter	JKN Mobile
Clinical Information Provider	MIMS Indonesia;HaloDoc; Alo Dokter; Guesehat; Sehati	-

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	Homedika	
Telepharmacy	HaloDoc; K24Klik	-
Teleconsultation	HaloDoc; Alo Dokter; Medika app; Tele-CTG; Homecare24	Tele-ECG; Teleradiology

The sufficient variety of OHApp in Indonesia today makes choices for the community as users are increasingly available according to their needs and preferences. The determinants of user satisfaction with the existing OHApp can vary widely. Several studies have explained that user satisfaction, especially in using a digital platform, has a variety of backgrounds and factors. Hartono, Laurence, & Tedja (2019) explain that user satisfaction on the Halodoc is determined by the Graphic User Interface (GUI). This explains that users prioritize the comfort aspect of using it right away. This view is the same as that described by Silalahi et al., (2018) where a balanced contrast factor in the appearance and ease of use of existing menu features determines user satisfaction in using a doctor consultation application. In general, the benefits and ease of use factors also affect application satisfaction on smartphones.

Not only marketplaces, young people around the world, including in Indonesia, have begun to be literate with online health services, such as Halodoc. As a result of the integration of public health services and application-based technology, the target market will be indirectly expanded to include young users. The characteristics of these young users are inseparable from their use of technology applications, such as media in information search (Dabija et al., 2018), lifestyle (Fietkiewicz et al., 2016), or self-identity (Nuzulita & Subriadi, 2020), and their susceptibility to online content (Christian et al., 2022). In addition, just as the majority of people's living needs have been incorporated or suggested by the use of online purchasing methods (Christian et al., 2021; Kim et al., 2016; Ko et al., 2016; Suhartanto et al., 2019), public health services have expanded their services to online methods. Thus, the independence of young group users in seeking health information encouraged the selection of respondents' criteria in this study.

However, this is not an easy thing because the young group has a behavior that is still easy to change. Furthermore, during this COVID-19 pandemic where social restrictions force people to stay indoors more often. This condition makes the need for a series of online applications such as Halodoc a necessity that is increasingly used. People are looking for various information from online health services during the pandemic, ranging from information on personal protection from COVID-19, online consultations with doctors, to ordering drugs or supplements online. Originality in this study itself lies in the use of two important factors that are rarely used by previous researchers, namely Graphic User Interface and Reliance of Use. This is important because these two aspects can represent aspects of user behavior and the quality of the digital-based health service system itself. In addition, this study focuses on young users who are close to mobile technology in daily lives, especially in the pandemic. Therefore, these results are expected to enrich and complete the existing gaps in satisfaction with using OHApp.

LITERATURE REVIEW

According to Lahoti & Kumar (2016), Graphic User Interface (GUI) is a type of User Interface (UI) that is related to graphic symbols, visual markers, or other graphic components that allow users to associate them via personal computers or gadgets. It is further explained that the suitability

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of the GUI on the screen can satisfy users in using e-commerce. Thinnukool et al., (2017) explain that the GUI includes aspects in it, namely the ease of use of buttons on the screen, the clarity of the screen both foreground and background, suitability of screen color, suitability of functions with the images used on the menu, the reasonableness of the many menus that are dispalyed, ease of menu list provided, the font size used, and attractive display contrast. Users must enjoy the UI on a platform, both functional and non-functional. This is closely related to effectiveness and efficiency which can shape user satisfaction (Paškevičius & Damasevicius, 2016). Processes that are difficult to use should be avoided so as not to create negative experiences or displeasure in use (Christian et al., 2020). In addition to the GUI, satisfaction and loyalty of e-commerce users in general can also be influenced by aspects, namely system quality, information quality, service quality, trust, and the organization itself (Chan, Hexel, & Wen, 2013; Patil & Rao, 2015).

UI is an important part of a mobile application (Vos et al., 2015) which can determine user satisfaction (Soul et al., 2019). UI itself in its usefulness has challenges such as predictability on the minimum number of UI elements and the speed of the UI to be read (Wozniak, Napoli, et al., 2015) or the privacy aspect of information that does not need to be presented (Wozniak, Polap, et al., 2015). In addition, the issue that often arises is that the GUI font size on the front display is too small or the position of some images or buttons is not in the right place (Thinnukool et al., 2017). Planning for design procedures, for example in e-commerce, can help form integrated templates or plug-ins (Patil & Rao, 2015). Based on the explanation that has been described, it can be explained that the aspects contained in the user UI can vary widely in determining user satisfaction, although not all aspects can be fulfilled. This can be due to the different preferences and preferences of each user. Seeing this, the first hypothesis (H1) in this study is Graphic User Interface affects Young Users Satisfaction with Halodoc.

Hartono et al., (2019) in their research on Halodoc users in Indonesia found an influence between GUI on the reliance of use (ROU) or dependence on use. Likewise with research conducted by Silalahi et al., (2018) also found a correlation between GUI and ROU in users of doctor consultation applications in Indonesia. GUI is closely related to user interactivity which can shape the results of certain experiences (R.E, 2017; Medynska-Gulij & Myszczuk, 2012). Although there are fundamental differences between UI and User Experience (UX), these two things are related to each other, especially in two-way communication between users and applications (Cybulski & Horbinski, 2020). Therefore, the design of the UI will have an impact on the convenience of interactions that occur to users (Horbiński & Lorek, 2020; Roth, Donohue, & Sack, 2014). Furthermore, UX will help to develop the results of interactions and communication processes that occur (Sundar et al., 2014) so that in the next stage it can form user satisfaction. Based on what has been explained, the second hypothesis (H2) in this study, namely Graphic User Interface affects the Reliance of Use of young users of Halodoc.

Thinnukool et al., (2017) describe the reliance of use (ROU) or dependence of use through several indicators such as the belief that the application used provides information and benefits, the application can be used in any place, the use of applications can reduce health care costs, and applications can make it easier for users in terms of initial treatment. In explaining the same thing, especially in the aspects of privacy and trust, Altmann & Gries (2017) use the term reliability or reliability. ROU is the result of own experience and the experience of others in using doctor consultation applications as an evaluation aspect to form intentions while achieving user satisfaction (Silalahi et al., 2018; Thinnukool et al., 2017). Meanwhile, Hartono et al., (2019) in their

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research did not find any effect of ROU on Halodoc user satisfaction in Indonesia. Even excessive dependence on users can result in barriers for users with low/limited connectivity so that the accessibility of health information and services is not obtained (Barton, 2012). The explanations above lead this research to the third hypothesis (H3), namely reliance on use affects the satisfaction of young users of Halodoc, and the fourth hypothesis (H4) is reliance of use mediates graphic user interface to satisfaction.

RESEARCH METHOD

With the phenomena of satisfaction in using digital-based health services above, the problem formulation in this study is whether the Graphic User Interface and Reliance of Use shape the satisfaction of using Halodoc as a form of digital-based health service. A structural model with partial least square (SEM-PLS) was used to analyze this quantitative research. This model enables the completion of the research model using pathways with direct effects and indirect effects, such as mediating effects, even with relatively small sample sizes (Benitez et al., 2020; Willaby et al., 2015; Wolf et al., 2013). The sample in this study was 126 young users of Halodoc in Jakarta who were taken randomly. Young users in this study were Halodoc users who were under 30 years old. To ensure that the participants are young users, the questionnaire has asked these criteria in the choice of participant profiles. This number is then multiplied by 5 to 10 to determine the number of samples used (Hair et al., 2014). The analysis was carried out through a series of tests with SMART PLS 3.0 such as validity, reliability, suitability of structural models, and hypothesis testing. SMART PLS is one of the correlation analysis tools in the structural equation modeling model with a relatively small sample (Hair et al., 2017; Wong, 2013). This study used a survey with a questionnaire. The questionnaire instrument in this study was designed with a measure of the level of agreement from strongly disagree (1) to strongly agree (5). Adapting the measurement from Hartono et al., (2019), in the Graphic User Interface (GUI) variable there are 8 items and the Reliance of Use (ROU) variable uses 7 items. Furthermore, the Satisfaction variable uses 3 items.

RESULTS AND DISCUSSION

Participant profile

A total of 126 participants in this study with the number of female participants dominating with the number of 86 users or 68.25% followed by male totaling 40 users or 31.75%. Another profile is that this research has participants aged 26-29 years with 43.65%, followed by 20-25 (32.54%) and <20 years at 23.81%.

Table 2. Participant profile

Profile	**N=126**	**%**
Gender		
Male	86	68.25%
Female	40	31.75%
Age (years old)		
<20	30	23.81%
20-25	41	32.54%
26-29	55	43.65%

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Reliability-validity test

In the first, several items do not exceed the specified limit, which is 0.7, namely GUI1 = 0.637; GUI2 = 0.252; GUI3 = 0.241; GUI4 = 0.268; GUI8 = 0.685; ROU1 = 0.283; ROU2 = 0.273; and ROU3 = 0.348. Based on the results of this figure, items that do not exceed the standard number limit will be deleted and then retested. A total of three times the test was carried out. After the same testing process, in Figure 1, the numbers of all items have passed the threshold of 0.7.

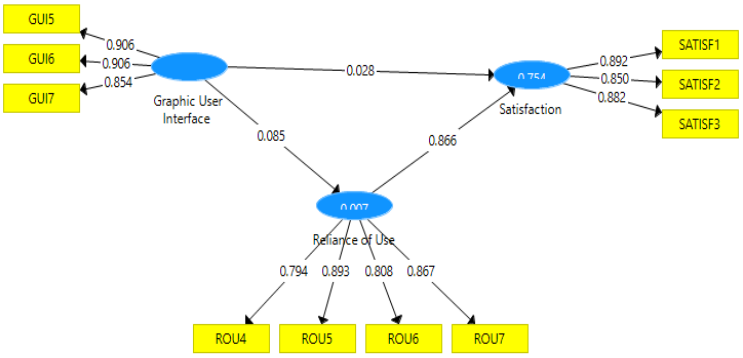

Fig. 1 Outer Loading

Furthermore, the next testing process will be carried out using SEM-PLS analysis. Table 3 shows the results of Outer Loading (OL) and Average Variance Extracted (AVE) which explains the results of the authenticity test. The results on composite reliability (CR) and Cronbach's alpha (CA) will explain the reliability results of the variables used in this study. The results of the numbers on OL have all passed the required number limit, namely 0.7. The results of the numbers on the AVE also show the results of numbers above the required number limit, namely 0.5. All items and variables in this study are valid and reliable. Then the results of the numbers on CR and CA have all passed the required number limit, namely 0.7. Therefore, it can be explained that all the variables in this study are reliable.

Table 3. Validity and Reliability Test.

Variable	Item	OL	AVE	CR	CA	Remark
Graphic User Interface	GUI5	0.906	0.790	0.919	0.868	valid and reliable
	GUI6	0.906				
	GUI7	0.854				
Reliance of Use	ROU4	0.794	0.708	0.907	0.862	valid and reliable
	ROU5	0.893				
	ROU6	0.808				
	ROU7	0.867				
Satisfaction	KEP1	0.892	0.765	0.907	0.847	valid and reliable
	KEP2	0.850				
	Kep3	0.882				

Note: OL=Outer Loading >0.7; AVE=Average Extracted Variance >0.5; CR=Composite Reliability >0.7; CA=Cronbach's Alpha >0.7

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Coefficient of determination

Next, Table 4 describes the structural model. The use of Graphic User Interface (GUI) in explaining Reliance of use (ROU) is 0.007 or 7%. With these results, it can also be explained that there are still other factors that were not involved in this study. Furthermore, the use of Graphic User Interface (GUI) and Reliance of use (ROU) variables in explaining Satisfaction is 0.754 (75.4%), and this number includes relatively large or strong.

Table 4. R-square.

Variable	R-square	%	Remark
Reliance of Use	0.007	7%	Weak
Satisfaction	0.754	75.4%	Strong

Hypothesis testing

The results in table 5 describes the test results on the research hypothesis. The t-statistic of the Graphic User Interface (GUI) to Satisfaction is 0.499. The result of this number is below 1,96 as the prerequisite number to accept the hypothesis. Furthermore, the results obtained provide an explanation that Halodoc young users' satisfaction is not affected by the Graphic User Interface (GUI). With this result, Hypothesis 1 is rejected. In terms of the GUI barriers that can occur as described by Thinnukool et al., (2017) and Wozniak, Napoli, et al., (2015), what is obtained in this study is also in line. However, this study rejects studies such as Hartono et al.,(2019), Silalahi et al., (2018), and Lahoti & Kumar (2016). Possible bottlenecks such as screen display and UI and UX predictability.

Table 5. Hypothesis testing.

Hypothesis (H)	t-statistic	p-values	Remark
H1	0.499	0.441	H1: rejected
H2	0.710	0.571	H2: rejected
H3	33,256	0.000	H3: supported
H4	0.764	0.445	H4: rejected

The value of the t-statistic Graphic User Interface (GUI) to Reliance of Use (ROU) of 0.710. The result of this number is below 1,96 as the prerequisite for accepting the hypothesis. The results obtained provide an explanation that the dependence on the use of Halodoc for its young users is not affected by the Graphic User Interface (GUI). With this result, Hypothesis 2 is rejected. Dependence on use with reasonable stages on the interactivity should be able to form a good UX, so there are quite a lot of studies that contradict this result such as Hartono et al., (2019); R.E, (2017), Medynska-Gulij & Myszczuk (2012) and Cybulski & Horbinsk (2020). Furthermore, the results of the figures in the table below show the numbers on the t-statistic Reliance of Use (ROU) to Satisfaction of 33,256. The result of this number passes 1,96 as the prerequisite for accepting the hypothesis. Then, the results obtained provide an explanation that Halodoc young users' satisfaction is affected by dependence on use. With this result, Hypothesis 3 is accepted. These results support several studies such as Silalahi et al., (2018); Thinnukool et al., (2017), and (Altmann & Gries, 2017). On the contrary, this

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result rejects the research conducted by Hartono et al., (2019) which did not find any effect of Reliance of Use (ROU) on satisfaction.

Online Healthcare Application in the COVID-19 Pandemic

The government's policy regarding social restrictions has limited the mobility of the people. People's mobility, which previously mostly happened outside the home, has now turned mostly indoors. This situation makes all information seeking and absorption of information also done from home. The community's need for health is a vital main thing regardless of having a congenital disease or not. The COVID-19 pandemic has made social limitations, a thing that must be used to at least until the pandemic subsides. Therefore, the role of online-based health applications forms a high demand during a pandemic. The public's fear of being exposed to COVID-19 forms a pattern of urgency for the community to independently seek health protection information online. The results in this study are in line with the phenomenon where young users live side by side with technology including application platforms related to everyday life for the community. This is also supported by the COVID-19 pandemic, which has made dependence on the use of online-based health applications more attached to users of this young group. With the development of technology and information that makes it easier to access, it is easier for young groups to often seek and obtain health information, especially to increase literacy and self-protection during this pandemic. This is also in line with the research results of Asadzadeh & Kalankesh (2021) which explain that online-based health applications, especially health applications during the pandemic, are optimal as protection for early detection, education, and treatment. Furthermore, this study suggests that the use of mobile health is maximized during the pandemic. Reliance of use can explain that in special conditions such as a pandemic, technology through online applications makes people closer and more literate to online applications. Online-based health applications during a pandemic are the right and innovative solution to increase public awareness of the importance of forming independent health knowledge (Pai & Alathur, 2021). Almalki & Giannicchi (2021) describes the main functions of health applications during a pandemic, namely increasing awareness, managing exposure to COVID-19, controlling personal health tracking, monitoring health, and as research study material.

In this pandemic situation, the needs of health application users prioritize the trustworthiness of functional health applications compared to aesthetic aspects in the graphic user interface of a health application. The urgent need makes dependence to seek information and the need for drugs or supplements become the main factors that shape user satisfaction in online-based health applications. However, this also forces the community to have public health readiness by maximizing the digitization of online-based health technology that is relatively economical and real-time (Adeniyi et al., 2020). In the process of its use, certain assessments of health applications are used. The positive experience of using health applications can shape actions to recommend to others. In addition to this being important for service providers, it is also important for other people in obtaining health application information based on recommendations. Online review media, in this case, have become a favorite place for other users to find and make choices about online-based health applications. Psychologically, this positive experience creates a satisfying trust in the selection and use of online-based health applications.

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CONCLUSION

This research ultimately succeeds in explaining the interesting things about the satisfaction factors of young users of Online Health applications such as Halodoc. This research brings interesting results where Graphic User Interface does not significantly affect the satisfaction of the young users. Other result is the Graphic User Interface does not affect the reliance of use on Halodoc. What is different from the other results can be explained that the reliance on use on Halodoc significantly affect the satisfaction of the users. As the mediating effect, Reliance of Use does not mediate the Graphic User Interface to Satisfaction. In this time of the COVID-19 pandemic, these results prove that the urgent condition in terms of health in the community realizes that the function of a health application is prioritized over the aesthetic aspect of an application. This is different in non-pandemic conditions where the role of the application display becomes important in shaping an interesting experience related to the user interface. Theoretically, the results of this study demonstrate that the user-friendliness of a website or application is largely determined by the intuitiveness of graphical user interfaces that are tailored to the user's criteria or characteristics. When combined with a variety of benefits, such as pop-up ads with promotional information or discounts, the visual appeal of a website or application can influence user intent and satisfaction with a service.

LIMITATION & FURTHER RESEARCH

This research has several limitations. First, this research was carried out during an uncertain and unclear pandemic, making data collection as comfortable and efficient as possible. This has an impact on the relatively small sample size in this study. Second, as explained above, this study highlights two aspects of the user experience on Halodoc. Other variables such as motivation to use, willingness to buy funds at Halodoc, or other health applications can be considered for future research. Third, the variety of users from other generations such as generation X can also be used for future research, especially in measuring the adoption of health application technology.

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