Social Science Studies
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Decisions to Use Telemedicine During The Covid-19 Pandemic: The Effects of Perceived Fear, Information Quality and Trust

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ARTICLE INFO

ISSN: 2798-2688

Keywords:

Perceived fear; information quality; trust; purchase decision.

ABSTRACT

The emergency COVID-19 pandemic brings anxiety in the world and has changed customer behavior especially in the decision to use technology in the health sector. Digital health care changing consumer behavior from using conventional health services to digital. Health technology, telemedicine are designed for long-distance communication between doctor and patient, which is considered to bring effectiveness and efficiency during the COVID-19 pandemic. This research aims to examine perceived fear, information quality, and trust to use telemedicine during the COVID-19 pandemic. This research focuses on Halodoc users aged 17-45 years and uses a non-probability technique sampling. Respondents for this research were collected using an online questionnaire. Data were analyzed by the multiple linear regression method. The result showed the information quality and trust had significant effects on the decision to use M-health. However, perceived fear has no significant effect on to use of M-health.

Introduction

The formation of 4.0 industrial technology revolutionizes by creating a new combination of physical and digital in a fundamental way that changes human behavior (Tjandrawinata, 2016). Wikipedia Indonesia mentions the service industry is an economic activity by providing services and not produced in physical form, usually consumed directly during production, thereby providing added value such as consolation, pleasure, and comfort. Today, health services are one of the most crucial things, currently in COVID-19 plague in Indonesia. According to World matters 2021, Indonesia is the 5th country with the largest COVID-19 cases in the world. The World Bank 2010-2017 mentions, Indonesia occupies the position of the second-lowest number of doctors in Southeast Asia, which is 0.4 doctors for 1,000 people. Unbalancing between doctors and the patient and also the existence of circumstances that require everything to be done effectively and efficiently has created innovations, telemedicine as a digital health service.

Social Science Studies Vol. 2 No. 1 2022 Page 057-071
DOI: 10.47153/sss21.3142022
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Telemedicine according to Ryu (2012), literally means healing from a distance, which can be explained by the provision of health care services by doctors such as diagnosis, treatment, prevention, and education due to distance barriers from patients using information and communication technology and will continue to develop by technological advances. and community needs. COVID-19 is not only fatal but also contagious, therefore preventive measures in the form of human distance can save patients' lives (Rahi et al., 2021). Telemedicine, designed as a remote health service, strongly improves emergency response when environmental or biological hazards are occurred (Smith et al., 2020). This medical service innovation can help patients and doctors to be more effective and efficient, such as doctors being able to serve patients online (Ryu, 2012). Various applications are available to provide sustainable health care as demonstrated by hospitals in America now, doctors are currently using telemedicine to treat COVID-19 patients remotely. In addition, telemedicine enables people to navigate a health system and access routine care during a pandemic (Smith et al., 2020). Telemedicine through information and communication technology could save time, money and brings effectiveness to the health delivery system (Albarrak *et al*., 2021; Pai & Alathur, 2019; Hunter, 2020). To use telemedicine healthcare services has benefited both patients and doctors during the COVID-19 crisis (Hunter, 2020). Currently, one of the biggest innovations in telemedicine is the mobile health application or health application on mobile phones. Indonesia with a lack of health literacy, M-health helps to encourage a more balanced healthy lifestyle (Octavius & Antonio, 2021).

The existence of the coronavirus pandemic has made more people utilize and use online health service facilities, including purchasing drugs and consulting with doctors. Online consumer purchases both in purchasing goods or using services, specifically focusing on customer interaction, selection, and purchase of products through online covering services, products, and information provided (Shareef et al., 2016). Online decision making in Karimi et al., (2015) describes three consumer decision-making processes are formulation, evaluation, and assessment with the formulation and assessment stages being an important stage of a decision-making process. In the stage of the problem, the formulation will produce choices for consumers. Decision-makers often do not follow the decision-making stages and also sometimes pass through the existing stages, through online purchasing decisions the process made will be more flexible (Karimi et al., 2015).

Statista 2020 survey about the distribution of health app Global users, Indonesia ranks 3rd among the users of health service applications in the world, surpassing America and Britain. When a pandemic occurs, change in customer behavior with fear that arises because of the coronavirus, consumers prefer to shop

or do something online at home to reduce anxiety (Shin, 2021). In the case of changes in consumer behavior due to the increasing number of COVID-19 cases, people are afraid to come to the hospital (Al-Maroof et al., 2020). Perceived fear shows a significant result in a decision to use technology, especially during the COVID-19 pandemic Eder *et al*., 2021; Al-Maroof *et al*.,2020; Alhumaid *et al*., 2021). Perceived fear according to Alhumaid et al., (2021) is a stimulus when feeling and facing danger. Fear is understood as a feeling that is aroused from a response to environmental conditions that are considered risky and then decisions are made (Alsaad & Al-Okaily, 2021). Fear is an important predictor in changing a person's behavior in taking an action (Eder et al., 2021).

When everything is done virtually and using technology in every aspect, increasing internet penetration has changed people to search for information, especially health-related issues. One survey showed that in Indonesia 51.06% of M-Health users used their application to search for health-related information (Octavius & Antonio, 2021). The information system model from DeLone & McLean (1992) combines six factors such as system quality, information quality, patient impact, organizational impact, user satisfaction, and system used in the successful use of information. The use of telemedicine for the public in information is appropriate, relevant, and provides an adequate of telemedicine for health services. Information quality according to Alshikhi & Abdullah (2018) is the ability to satisfy the information needs needed by users. The formation of consumer decisions will be influenced when someone is looking for information that will look at information quality provided, this is confirmed from several previous studies in Rahi et al., (2021); Gu et al., (2021); Guo et al., (2020); Xie et al., (2017) show information quality influencing person's decision to use technology, especially for health applications.

In medical science, trust between patients and doctors is very crucial, trust is the belief or hope that doctors will take actions that can help patients (Lee et al., 2019). Alotaibi et al., (2019) mention a person's willingness to others with the hope and belief that others can perform important actions for the giver of beliefs, regardless of their abilities. Hui et al., (2021) used the McKnight trust model which categorizes the perceptions of doctors and patients in trusting the use of technology systems for their self-management in terms of functionality, usability, and reliability. In a virtual situation, people cannot communicate directly, in online services, trust becomes very important and is used as the center of usage decisions (Wu et al., 2021). Many previous studies examining trust provide an important impetus for patients to use telemedicine, as evidenced by several previous studies by Saigi-Rubió et al., (2016) and Hoque et al., (2017) that trust has a significant effect on decisions to use telemedicine. However, the study of Kamal et al., (2020) found that people are still

reluctant to use it because they do not believe in telemedicine, are afraid of data leakage and patient privacy.

In previous research on information, systems revealed the failure rate of telemedicine projects was 75% (Healy,2008; Dyk,2013). However, in developing countries telemedicine increased quite rapidly by 90% (Alaboudi et al., 2016). Telemedicine became popular during this pandemic, health applications in Indonesia are quite diverse and many start-up health applications are being developed in Indonesia, one of them is Halodoc.

This research focuses on users of Halodoc health applications, the Daily Social survey in 2019 found Halodoc application is the most popular health application used in Indonesia. A survey by Google, Temasek, and Bain & Company entitled SEA e-Conomy 2020 found a significant increase in active users of all telemedicine applications "Mobile Health" in Indonesia of more than 101%. Research World Intelligent 2020, indicates there was a significant decrease in Halodoc application users. In September 2020, the Halodoc application decrease the traffic reaches 927 million, or 51% of the traffic in the previous month. Based on the existing phenomena and research gaps, this research intends to determine the effect of perceived fear, quality of information, and trust on decisions to use the Halodoc health application.

Literature Review

Perceived Tear on Purchase Decision

Fears consisted of feelings of uncertainty, health anxiety and raised two important issues such as excessive worry level and high probability of being infected coronavirus (Ahorsu et al., 2020; Gerhold, 2020; Al-Maroof et al., 2020). Fear is a stimulus when feeling and facing danger (Alhumaid et al., 2021). Fear is understood as a feeling evoked by a response from environmental conditions that are considered risky and subsequent decisions are made (Alsaad & Al-Okaily, 2021). It can be concluded perceived fear is an individual stimulus to the surrounding environment considered dangerous. The most important factor in understanding environmental or individual responses to take any action is fear. Fear is an important predictor in changing human behavior in taking an action (Eder et al., 2021). A person's response to a threatening situation is different, many previous studies have examined how fear affects a person's decision to use when COVID-19 occurs, fear or perceived fear is significantly the main factor in a person's decision to use technology during a pandemic. COVID-19 hit (Eder et al., 2021). The deepest reaction response to the coronavirus is fear. Feelings of fear in Health Anxiety accounted for the highest scores in testing humans' response to the coronavirus and caused anxiety (Al-Maroof et al., 2020). The research examines perceived fear in decisions to use technology,

with the results that perceived fear has a significant effect on decisions to use health applications (Al-Maroof et al., 2020). In other studies, perceived fear shows significant results on decisions to use technology adapted from the theory of the technology acceptance model (Alhumaid et al., 2021). Based on the literature discussion and the relationship between variables, the following research hypotheses have been determined:

H1: Perceived fear has a significant effect on decisions to use telemedicine during the COVID-19 pandemic.

Quality of Information on Purchase Decisions

Information quality concerns the information provided is appropriate, relevant, and provides an adequate picture of what users need. Information quality is the ability of information to satisfy users' information needs (Alshikhi & Abdullah, 2018). Information quality includes reference to the accuracy, timeliness, and relevance of the information provided to users (Alharbi, 2021). According to Xie et al., (2017) information quality is information that can provide knowledge for users to find out the information needed. Meanwhile, according to Alhasanah (2014) information quality is the quality of the amount, accuracy, and form of information about the products or services offered on the platform used. Information quality can be interpreted as a description or knowledge received by the user by using the reference accuracy, timeliness, and relevance of information. In the theory of Delone & McLean (1992) about the Information Success Model which examines how the behavior of users using an information system, with the result that the factors that influence a person's decision to use our system quality, information quality, service quality, and user satisfaction. Rahi et al., (2021), revealed information quality in a person's decision to use telemedicine regarding the information conveyed, the timeliness and the description provided are adequate, from the results obtained information quality has a significant effect on decisions to use telemedicine. Supported by other research Guo et al., (2020) and Gu et al., (2021) about the effect of information quality on decisions to use telemedicine applications, information quality has a significant effect on usage decisions. Based on the literature discussion and the relationship between variables, the following research hypotheses have been determined:

H2: Information quality has a significant effect on decisions to use telemedicine during the COVID-19 pandemic.

The Effect of Trust on Purchase Decisions

Trust can be interpreted as a person's willingness towards others with the hope and belief that others can give important actions for the giver, regardless of their abilities (Alotaibi et al., 2019). Using telemedicine is based on trust where trust is a person's belief that can be measured from a social perspective, which mainly concerns the doctor-patient relationship (Alharbi, 2021). Patient trust is defined as beliefs about expectations that are based on expertise, privacy, confidentiality, and reliability from experts (Wu et al., 2021). According to Kamal et al., (2020) trust in telemedicine users, trust is an expectation from patients to use telemedicine that can help. Trust in telemedicine concluded is hope and confidence between patient and doctor through telemedicine which is based on the expertise and reliability of experts. In medical science, trust between patients and doctors is very important, trust is a belief or hope that doctors will take actions that can help patients (Meng et al., 2019). McKnight's trust model categorizes the perceptions of doctors and patients in trusting the use of technology systems for their self-management in terms of functionality, usability, and reliability (Hui et al., 2021). There is development in the use of technology to study consumer intentions to use trust in technology in a business to customer context, and the results of trust can be obtained directly or through perceived usefulness in someone's decision to use technology (Dahlberg et al., 2003). Trust between users and service providers is a fundamental thing, the use of health applications is virtual where people cannot communicate directly. Trust in online services is very important and used as the center of usage decisions (D. Wu et al., 2021). Based on the literature discussion and the relationship between variables, the following research hypotheses have been determined:

H3: Trust has a significant effect on decisions to use telemedicine during the COVID-19 pandemic.

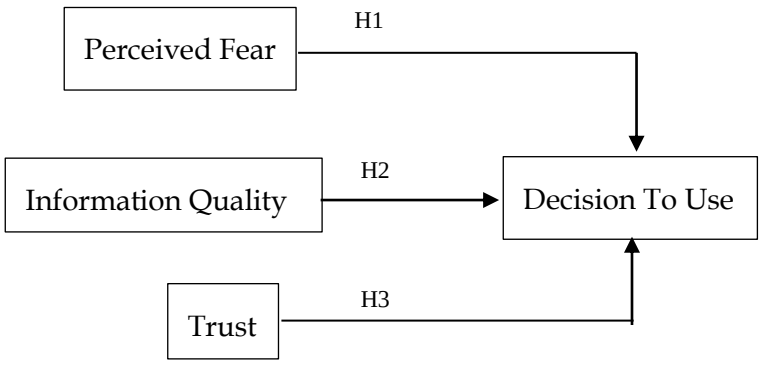

Figure 1. Research Framework

Method

Population and Sample

This research used an infinite population, which the number of population is unknown. Respondents are users of the Halodoc health application with the characteristics of respondents aged 17-45 years and have been using the Halodoc application in the past year or during the COVID-19 pandemic. The respondents were divided into two-part: 30 respondents for the validity and reliability test and 125 respondents for the multiple regression linear test. According to Hair theory, the minimum number of respondents who can be used for research is at least 100 or 5:1, which is at least 5 observations are used to represent 1 dimension or 1 research indicator, the researcher decided to use 125 respondents in this study. This study uses a Likert scale measurement with a range of 1 (strongly disagree) to 5 (strongly agree).

Measurement and Data Collection

This research is quantitative and uses research design, conclusive research to test hypotheses between variables. This research use sampling technique Non-probability sampling with the judicial sampling method. Data from respondents was obtained by distributing online questionnaires. Data analysis in this research used multiple linear regression techniques.

Result and Discussion

Result

Participant of this research is customers of Halodoc users, with 125 respondents collected by online questionnaire. The result shows the majority of Halodoc users are Female (79,2%), aged between 21-20 years old (65,6%), users mostly are student/ student college (82,4%), with income range per month IDR <1.5000.000 (70,4%).

The following are measurement items that have met the validity and reliability tests.

Table 1. Result of Variability and Reliability
Source: Primary data processed by researchers

No.	Variable	Item	*Correlated Item-Total*	*Cronbach Alpha*
1.	**Perceived Fear**	I'm afraid of being infected by a coronavirus	0,694	0,932
2.		I'm afraid of losing my life because of COVID-19	0,900	
3.		Heart pounding when thinking about COVID-19	0,908	

4.	Alhumaid, Alsaad, & Rather (2021)	I feel anxious when I watch the latest COVID-19 news via social media	0,910	
5.		I feel nervous when I see the latest news regarding COVID-19	0,955	
6.		I can't sleep because I'm worried about getting COVID-19	0,802	
7.	**Information Quality**	The information provided by Halodoc is correct	0,606	0,882
8.	Xie (2017) dan Rahi &Alharbi (2021)	Halodoc provides information on the party in charge	0,730	
9.		Halodoc provides timely information	0,714	
10.		The information provided is always up to date	0,648	
11.		The app features are always updated	0,689	
12.		Halodoc application is easy to operate	0,718	
13.		Halodoc provides easy-to-understand information	0,802	
14.		Halodoc has an attractive appearance and by the theme	0,695	
15.		Halodoc provides the information I need	0,690	
16.		Interaction in the application is easy to understand	0,696	
17.	**Trust**	I believe in the benefits of Halodoc during the pandemic	0,719	0,742
18.	Kamal (2020) dan Alharbi, Wu (2021)	I can count on Halodoc during a pandemic	0,680	
19.		I believe in Halodoc during a pandemic	0,749	
20.		Halodoc helps me to be more careful about using technology	0,726	
21.		I'm sure the person who communicates with me on the Halodoc (Doctor) application is an expert and trusted person	0,499	
22.		I believe that doctors provide the best service through this health application	0,632	
23.	**Decision to use**	I use the Halodoc application because of a need	0,637	0,759
24.	Yunita (2019) dan Hahn (2002)	I believe Halodoc is more useful for me than other health apps	0,676	
25.		I regularly use health apps	0,752	
26.		I believe in Halodoc's quality when I decide to use it	0,784	
27.		I believe in the benefits of Halodoc when I decide to use it	0,784	

Validity and reliability tests were conducted on the same 30 people. To measure the feasibility, it can be measured from the correlated item-total and Cronbach

alpha values for each of the questions made. In this research, the r table used is 0.361 with the assumption of an error of 5%. If r count > r table and is positive, it can be explained that each question item used in the study is valid. Based on the results of this test, it is declared valid because r count > r table (0.361). Reliability testing in this research used the Cronbach alpha (α) statistical test. A variable reliable if the Cronbach alpha value is > 0.70 (Ghozali, 2016). Based on the results of this test, all variables are reliable because Cronbach's alpha is > 0.70.

Furthermore, the multiple analysis test was carried out by passing the stages of the classical assumption test are the normality test, multicollinearity test, and heteroscedasticity test. The normality test in this study used the one-sample Kolmogorov Smirnov test with significant results of more than 0.05, which was 0.62. So that the residuals are normally distributed. The multicollinearity test in this study uses VIF with a value of < 10 or a tolerance value of 0.01, and the results of each independent variable are perceived fear 1.079 < 10, information quality 2.557 < 10, and trust variable 2.460 < 10, meaning that there is no multicollinearity between variables. independent. The results of the heteroscedasticity test in this study did not show the existence of heteroscedasticity which was indicated by the existence of residual equations in one observation period with another observation period.

Based on the results of the coefficient of determination R square results in this study amounted to 49.6%. It concluded that there is a structural relationship of the variables studied by 49.6% and the remaining 51.4% is caused by other variables. Furthermore, for the hypothesis test, that is by comparing the calculated CR with the standard CR at 0.05, which is 2.00. A hypothesis is significant and there is an influence between the dependent variable and the independent variable if the CR count is ≥ 2.00 and the level of significance (P) ≤ 0.05.

Hypothesis Test

Tabel 2. Hypothesis Test Result
Source: Primary data processed by researchers

				C.R	Sig
H1	Perceived Fear	⟶	Purchase Decision	0,628	0,531
H2	Information Quality	⟶	Purchase Decision	3,269	0,001
H3	Trust	⟶	Purchase Decision	3,935	0,000

The relationship between perceived fear of the decision to use the CR value of 0.628 < 2.00 and a significance value of 0.531 > 0.05 then the perceived fear has no significant effect on the decision to use. In the relationship between information quality on the decision to use the CR value of 3.269 > 2.00 and a significance value of 0.001 < 0.05, information quality has a significant effect on the decision to use. In the relationship

between trust in the decision to use the CR value of 3.935 > 2.00 and a significance value of 0.000 <0.05, trust has a significant effect on the decision to use.

Discussion

In the results of the tests that have been carried out, the researchers found that perceived fear had no significant effect on usage decisions. There are still many Indonesians who do not believe and underestimate COVID-19, this is in line with Indonesia which is the country with the 5th largest COVID-19 case in the world. The results in this study do not support previous research that when there is COVID-19 perceived fear has a significant influence on decisions to use technology (Eder *et al*., 2021; Alhumaid *et al*., 2021; Al-Maroof *et al*., 2020) . Associated with users of the Halodoc health application, women aged 21-30 and most of the respondents are students who are adult users with high technology used for daily use, such as the use of the Halodoc health application. Most technology users in Indonesia are of productive age, so users can use the Halodoc application because they perceive technology as a necessity that is considered more effective and efficient, fear is not the main cause of users using the Halodoc health application.

The results in this study show that information quality affects the decision to use, the results of this study support previous research, regarding information quality affecting the decision to use telemedicine (Rahi *et al*., 2021; Guo *et al*., 2020; Gu *et al*., 2021). The average Halodoc application user is a woman aged 21-30 years with a job as a student, in reality, women tend to be more careful in using technology and details in viewing information. The quality of information is a consideration in using technology and due to increasingly advanced technology, most users search for information via the internet and related applications, such as the use of health applications to find information about the latest health, especially during the COVID-19 pandemic. Most internet users will choose the information that is easy to understand, this is in line with the answers of respondents who agree because the application is easy to understand and has complete information. It can be concluded that the better information quality from an application, the more respondents' answers agree to use the Halodoc application because it is easy to use, provides complete information, has a suitable theme, easy to understand interactions and the features provided are always upgraded.

Trust in this study has a significant effect on usage decisions, and this study supports the research of Lee *et al*.,(2021); Hoque *et al*., (2017); Mbete & Tanamal (2020) which states that trust has a significant effect on decisions to use, and rejects the results of the statement from Kamal *et al*., (2020) which states that trust has no significant effect on decisions to use telemedicine. The results of the majority of

respondents are women, students and are still between the ages of 21-30 years with an average income below <1,500,000, respondents as users of the Halodoc application tend to use the application because the price is considered cheaper to consult a doctor than having to come to the doctors directly, and one of the important things in consumer decisions to use the Halodoc application is trust in the benefits and service providers who will provide services through this application, as well as the Halodoc application which provides information related to the experience of existing doctors, and information on the party in charge.

Considering the current situation, the lockdown and restrictions on community activities are advised to stay at home, this encourages the maximum use of technology such as in the education sector having to learn from home (online) and also the impact on the health sector with the use of health applications which are considered more effective and efficient.

Conclusion

The huge impact of COVID-19 is changed a lot of consumer behavior. When everything has to be done effectively and efficiently, such as the replacement can be done online and at home to overcome transmission of the virus, technology develops rapidly. Not only in the education and economic sector, but the health sector also gets the impact. Indonesia occupies the position of the 3rd highest health application user in the world. Based on the results of the analysis and discussion in this research, it can be concluded perceived fear because of COVID-19 does not affect to use of Halodoc health applications. Meanwhile, information quality and trust have a significant effect on the decision to use the Halodoc health application. Most Halodoc users are women, aged 21-30, working as students, and income less than IDR 1,500,000. It means supporting Halodoc's demographic strategy, which targets the market over 21 years old.

The limitations of this study are, use respondent from Halodoc users who use this application during the COVID-19 pandemic, the industrial revolution 4.0 and current technological advances change many things, a person uses technology not only because of a situation or when facing danger. For future research, a wider range of research respondents can be used, and other variables that have a percentage of 51.4% in influencing a person's decision to use technology can also be used. This research can be used to assist the marketing of Halodoc, the results of the research prove that there is an influence of information quality on the decision to use the Halodoc application, consumers will be more interested in deciding to use Halodoc because the required information is available in a complete and easy to understand manner so in the future Halodoc can continue to maintain and improve information

quality in the application. Furthermore, consumer trust influences decisions to use the Halodoc application. Consumer trust in a health application which is consumers have hope, the application provides benefits especially to doctors as service providers, Halodoc must always provide more advanced information and quality to maintain consumer confidence in the decision to use the application compared to other competitors. If there is already trust in consumers, then consumers will indirectly provide recommendations to other consumers. Although Halodoc is the most popular health application used in Indonesia, Halodoc must always be up to date and upgraded to maintain quality and consumer trust.

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