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Telemedicine Service Quality, Customer Satisfaction and Continual Usage during the Covid-19 Pandemic

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Abstract

The use of telemedicine through health applications has increased since the COVID-19 pandemic. It is important to understand more deeply about people's experiences using telemedicine and explore the hospitality component of telemedicine. Objective: This study aims to determine the effect of telemedicine service quality on customer satisfaction and continual usage during the COVID-19 pandemic. Research Method: Data analysis using PLS-SEM technique with SmartPLS application. First, the measurement model test was conducted by testing the validity and construct reliability of each indicator, then testing the structural model to determine the relationship between the variables in the research model. Data was collected by distributing a 5-point Likert scale questionnaire, obtained 400 respondents who had done telemedicine with health applications at least once during the pandemic. Research results: system quality and interaction quality shape telemedicine service quality, telemedicine service quality has a positive effect on customer satisfaction and continual usage, customer satisfaction has a positive effect on continual usage. In addition, it was found that telemedicine service quality fully mediates in influencing system quality and interaction quality on customer satisfaction., customer satisfaction fully mediates in influencing telemedicine service quality on continual usage of health applications. Managerial Implications: as an evaluation material for health applications in maintaining and increasing customer satisfaction and continual usage.

Keywords
telemedicine; service quality; customer satisfaction; continuous usage

I. Introduction

Coronavirus disease 2019 (COVID-19) has spread significantly throughout the world since its emergence in Wuhan City, Hubei Province, China, at the end of 2019 (WHO, 2022). To reduce the spread of COVID-19, almost all countries have imposed some restrictions on the public (Nicholls, 2020). The Indonesian government has given its policies, namely social distancing, large-scale social restrictions (PSBB) and the implementation of community activity restrictions (PPKM) (Kompas, 2021; Roziqin et al., 2021). All activities are recommended to be done online, including the need to go to the hospital. *Telemedicine* is one of the first alternatives that can be done if you need health care, especially if you are infected with COVID-19 disease (Sari & Wirman, 2021; Shahrul & Abd Rahman, 2021). The outbreak of this virus has an impact of a nation and Globally (Ningrum *et al*, 2020).

Telemedicine is the use of electronic communications and software to provide clinical services to patients without the need for in-person visits. *Telemedicine* has become very important during the COVID-19 pandemic. In response to the enforcement *of social distancing* and the public's fear of uncertainty, *telemedicine* offers an alternative to

vulnerable communities to seek medical assistance (Hollander & Carr, 2020). Health applications used in Indonesia such as Halodoc, Alodokter, *Grab Health powered by Good Doctor*, Klik Doctor, Yesdok, GetWell and KlinikGo (CNN Indonesia, 2021).

In Indonesia itself, the number who use health applications has grown very rapidly. This is because the number of doctors is still insufficient in Indonesia and the number of *smartphones* in Indonesia, which is the third largest in Asia Pacific. In addition, to get medicine from the government, you must *telemedicine* using a health application in collaboration with the government (CNN Indonesia, 2022).health applications *telemedicine* has increased (Sunjaya, 2019).

Hospitable service in the healthcare environment is a reflection of the *hospitality culture* (Quinan & Costa Filho, 2021). Thus, the COVID-19 pandemic emphasizes the importance of hospitality in healthcare. Understanding more deeply about people's experiences using *telemedicine* during COVID-19 and exploring how hospitality in *telemedicine* is a topic that needs further research.

The purpose of this study was to determine the effect of telemedicine service quality on customer satisfaction and continual usage during the COVID-19 pandemic.

II. Review of Literature

2.1 System Quality Forms Telemedicine Service Quality

System quality. is one of the most important constructs of the information system success model and refers to the extent to which a system has the necessary functions to support its use related to system performance, reliability, efficiency, integration with other systems, security, and convenience (Akter et al., 2019). . Regarding *telemedicine*, *system quality* reflects how the application of information systems in a *telemedicine* is able to function according to the response expected by patients, so that the better the *system quality* assessment of *telemedicine service quality* the overallSeveral previous studies have linked *system quality* in shaping *telemedicine service quality*. Thus, the following hypothesis can be established:

H_1: *System quality* has a positive and significant impact on *telemedicine service quality*

2.2 Interaction Quality Forms Telemedicine Service Quality

Interaction quality is an antecedent to *e-service quality* that describes perceptions of relationship quality and service delivery from system providers to users or accessors (Akter et al., 2019). *Interaction quality* can conceptualize *telemedicine service quality* because it relates to the reciprocal quality of service interactions that occur between patients and service providers when using *telemedicine* as a measure of *service quality* in general (Morozov et al., 2018). Several previous studies link *interaction quality* in shaping *telemedicine service quality*. dimension *interaction quality* through *responsiveness*, *assurance*, *empathy*, and *hedonic* forms a construct that can shape the *telemedicine service quality* (Oppong et al., 2021). *Interaction quality* shapes *telemedicine service quality* construct will be *telemedicine service quality* (Tantarto et al., 2020). *Interaction quality* forms a positive and significant impact on *telemedicine service quality* because interaction through good relationships shows the company's high commitment to serving users seriously as a form *quality telemedicine service* (Ko & Chou, 2020). Thus, the following hypothesis can be established:

H_2: *Interaction quality* forms a positive and significant impact on *telemedicine service quality*

2.3 Telemedicine Satisfaction

Customer is a significant performance indicator (Nelson et al., 2005). *Customer satisfaction* is generated from a comparison between expectations and the reality received (Oh & Kim, 2017). *Service quality* is an important indicator and can lead to increased patient retention and profitability. (Säilä et al., 2008). In the health sector, service quality and patient satisfaction are important for health service providers (Atinga et al., 2011). In this study it was found that communication and doctor-patient relationship are key indicators of the quality of health services that lead to patient satisfaction. Thus, the following hypothesis can be established:

H_3: *Telemedicine service quality* has a positive effect on *customer satisfaction*

2.4 Telemedicine Service Quality Continual Usage

Continual usage is a fundamental and important indicator of customer loyalty. *Continuous usage* can be defined as the use of a second service by customers, etc. Continuous usage greatly affects the sustainability and success of a company. (Cho, 2016) Previous research by Inan et al., 2021 stated that *service quality* positively affects the continual usage of *mobile banking applications.* In the health sector, research by Meng et al., 2022 also says that *service quality* in health applications is one of the keys that can affect the *continual usage* of health applications. Service quality and trust generate positive behavioral intentions and hence play an important role in promoting the continuation of healthcare application services. (Akter et al., 2013). Thus, the following hypothesis can be established:

H_4: *Telemedicine service quality* has a positive effect *on continual usage of health applications*

2.5 Customer Satisfaction on Continual Usage

Previous research on the continuity of electronic commerce services shows that satisfaction is the strongest predictor of continuance intention (Bhattacherjee, 2001). Research by (Han et al., 2018), which examines a *brand*, also states that *customer satisfaction* can cause *continual usage*. Research by (Hadji & Degoulet, 2016) also shows that *customer satisfaction* is an important indicator that can lead to *continual usage*. Research by (Abdullateef et al., 2015) found that *customer satisfaction* has a positive effect on *continual usage*, so that customers as users of information systems who are satisfied with the services offered tend to show *continual usage*. (Lin et al., 2019) in his research implies that *customer satisfaction* can determine the intention of continuous use or *continual usage* by showing a loyal attitude towards a health application. Thus, the following hypothesis can be established:

H_5: *Customer satisfaction* has a positive effect on *continuous usage of health applications*

2.6 Effect of Mediation *Telemedicine Service Quality*

Telemedicine service quality which consists of the dimensions of *system quality* and *interaction quality* encourages several user behaviors related to satisfaction, loyalty, added *value*, sustainable use, and so on (Morozov et al., 2018). Evaluation of the *service quality* of an information system is based on the dimensions of *system quality* and *interaction quality* that direct these qualities to user attitudes, including *customer satisfaction* (Rahi et al., 2021). The constructs of *system quality* and *interaction quality* form *telemedicine service quality* through measurement indicators that are intended to determine the extent to which users are satisfied with the *telemedicine* offered (LeRouge et al., 2014). Several studies have tested the relationship between *system quality* and *interaction quality* on

customer satisfaction through *telemedicine service quality* as a mediator. Research (Ko & Chou, 2020) in his research found that *telemedicine service quality is able* to mediate the effect of *system quality* and *interaction quality* on *customer satisfaction*. Research (Oppong et al., 2021) indicates that *system quality* and *interaction quality* shape *service quality* which can be an intermediary factor for *customer satisfaction*. Thus, the following hypothesis can be established:

H_6: *Telemedicine service quality* mediates *system quality* on *customer satisfaction*

H_7: *Telemedicine service quality* mediates *interaction quality* on *customer satisfaction*

2.7 Effect of Mediation *Customer Satisfaction*

Customer satisfaction and *service quality* are factors that greatly affect the continuity of use (Meng et al., 2022). Research has addressed the indirect relationship between service quality and social outcomes through satisfaction (Choi et al., 2007). It is important to understand how *customer satisfaction* mediates the relationship between *service quality* and *continuous usage*. Despite the natural relationship between these variables, few studies have assessed this relationship. Veeramootoo et al., (2018) in their research found that *customer satisfaction* was able to significantly mediate the effect of *service quality* on *continual usage*. Ashraf et al., (2018) provide research implications, namely *customer satisfaction* is a determining factor in involving *service quality* with the intention of *continual usage* as a form of *customer loyalty*. Research by Shankar and Jebarajakirthy (2019) indicates that the factors in *service quality* have a strong enough influence on continuous *usage* which is part of the *customer loyalty*. Thus, the following hypothesis can be established:

H_8*: Customer satisfaction* mediates the effect of *telemedicine service quality* on *continual usage* of health applications

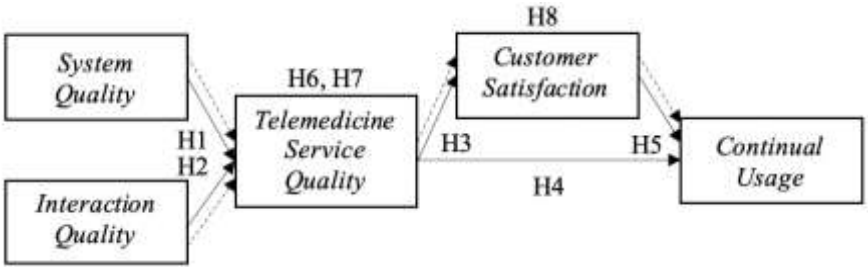


Figure 1. *Research Framework*

III. Research Method

The type of research conducted in this study was quantitative descriptive with a *cross-sectional*. The mediating variable in this study is *customer satisfaction* and the dependent variable in this study is *continual usage*. The population in this study are all users of health applications and have done *telemedicine* through health applications in Indonesia in the period March 2020 to May 2022. Users are at least 17 years old who are considered adults and have at least used health application services once. In this study, the unit of analysis is the individual with the research subject, namely users of health applications in Indonesia. In this research, data collection was carried out using a questionnaire. Data was collected by distributing Likert-scale questionnaires given via *google form* sampling technique used in this study was *non-probability sampling* and *a convenience sampling technique*. In this study, the minimum sample size was determined

using the *inverse square root* used in PLS-SEM, which is 180 (Kock & Hadaya, 2018). In this study they managed to get as many as 400 respondents.

IV. Results and Discussion

4.1 Respondent

Respondent's profile showed that female respondents had more numbers than men, as many as 205 people (51.3%), this indicates that the use of health applications is more widely used by women. Based on age, most of the respondents aged 18 to 25 years as many as 208 people (52%), indicating that the use of health applications is widely used by adolescents. Based on domicile, most of the respondents in this study live in DKI Jakarta as many as 180 people (45%) and West Java as many as 93 people (23.3%). Based on the level of education, most of the respondents had undergraduate education as many as 210 people (52.5%), while the remaining 108 people (27%) had high school education, 62 people (15.5%) postgraduate and 20 people (5%) diploma. Based on this, it can be concluded that the respondents have a good level of knowledge. Based on occupation, it is known that the majority of respondents work as other than the listed jobs, as many as 115 people (29%), then TNI/Polri as many as 79 people (19.8%), BUMN employees as many as 78 people (19.5%), and private employees as many as 75 people (18.8%), shows that most of the respondents have a fixed income every month. Based on the health application used, it is known that the majority of respondents used the Halodoc health application as many as 322 people (80.5%), indicating that the health application that was in great demand and used by respondents in this study was Halodoc. The details can be seen in Table 1.

Table 1. Profile of Respondents

Gender		
Characteristics	Frequency	Percentage
Male	195	48.8%
Female	205	51.3%
Total	400	100%
Age		
18-25 Years	208	52.0%
26-35 Years	63	15.8%
36-45 Years	46	11.5%
>45 Years	83	20.8%
Total	400	100%
Domiciled		
DKI Jakarta	180	45.0%
West Java	93	23.3%
Kalimantan	55	13.8%
Banten	40	10.1%
Sumatra	14	3.5%
East Java	8	2.0%
Central Java	3	0.8%
Jambi	2	0.5%
Sulawesi	2	0.5%
Aceh	1	0.3%

Bali	1	0.3%
Papua	1	0.3%
Total	400	100%
education level		
Undergraduate	210	52.5%
SMA	108	27.0%
Postgraduate	62	15.5%
Diploma	20	5.0%
Total	400	100%
occupation		
TNI/Polri	79	19.8%
BUMN	78	19.5%
Private Employees	75	18.8%
Entrepreneurs	27	6.8%
Public Employees	14	3.5%
Doctors/Dentists	10	2.5%
Advocates	2	0.5%
Others	115	29%
Total	400	100%
Health Application		
Halodoc	322	80.5%
Alodokter	35	8.8%
Grab Health powered by Good Doctor	17	4.3%
Click Doctor	17	4.3%
KlinikGo	7	1.8%
Prosehat	2	0.5%
Total	400	100%

Source: Results of Questionnaire Distribution (data processed by the author, 2022)

4.2 Measurement Model

Convergent Validity in this study was assessed using the value of *outer loading* and *average variance extraction*. The test criteria are if the outer loading value must be greater than 0.700, it can be concluded that the research indicators are valid, but the *outer loading* 0.500 – 0.600 is considered sufficient (Hair et al., 2017). Furthermore, the *average variance extraction* (AVE) value must be greater than 0.500 (Kante et al., 2018). The *outer loading* for all indicators in each variable has a value greater than 0.500 – 0.600, so it can be concluded that all indicators in this study are valid (Table 2). The AVE value in each variable has a value greater than 0.500 so it can be concluded that all variables have met the requirements for the AVE value (Table 3).

Table 2: Results *Outer Loading*

Variable	Indicator	*Outer*	0.59513889 / Criteria	Conclusion
Interaction Quality	AS1	0.34722222	0.5875	Valid
	AS2	0.34722222	0.53541667	Valid

	AS3	0.34722222	0.58611111	Valid
	EP1	0.34722222	Valid	EP2
	0	, 0	_	_
	_	_	_	_
	_	_	_	_
	_	_	_	_
	_	_	_	_
	_	_	_	_
	_	_	_ ,34722222	Valid
	SQH3	0.5375	0.34722222	Valid
System quality	SQE1	0.46180556	0.34722222	Valid
	SQE2	0.53819444	0.34722222	Valid
	SQE3	0.55347222	0.34722222	Valid
	SQE4	0.55208333	0.34722222	Valid
	SQP1	0.55416667	0 ,34722222	Valid
	SQP2	0.50694444	0.34722222	Valid
	SQP3	0.51805556	0.34722222	Valid
	SQR1	0.46736111	0.34722222	Valid
	SQR2	0.49444444	0.34722222	Valid
	SQR3	0.52152778	0.34722222	Valid
	SQR4	0.49226667	0.34722222	Valid
Continual usage	CU1	0.59722222	0.34722222	Valid
	CU2	0.58541667	0.34722222	Valid
	CU3	0.60416667	0.34722222	Valid
	CU4	0.60486111	0.34722222	Vali d
Customer Satisfaction	CUST1	0.6375	0.34722222	Valid
	CUST2	0.6472222	0.34722222	Valid
	CUST3	0.65347222	0.34722222	Valid

Source: SmartPLS Data Processing Results, (Author, 2022)

Table 3: Results *Average Variance Extraction* (AVE)

Variable	AVE
Continual usage	0.51458333
Customer Satisfaction	0.60138889
Interaction Quality	0.46666667
System quality	0.38263889
Service Quality	0.37430556

Source: SmartPLS Data Processing Results, (Author, 2022)

In this study the assessment of *discriminant validity* criteria *cross loading, namely* by comparing the *loading* on the construct to be assessed with others, the assessment criteria is that the *loading* on the latent variable must be higher than its correlation with other

variables (Ghozali, 2017). Based on Table 4 shows that the *loading* indicators on each latent variable is greater than its correlation with other variables, so based on these results it is concluded that each indicator is valid and well discriminated against in measuring the latent variable.

Table 4. Results of *Discriminant Validity*

Variable/ Indicator	*Continual usage*	*Customer Satisfaction*	*Interaction Quality*	*System quality*	*Telemedicine Service Quality**
CU1	0.5972222	0.49027778	0.48541667	0.47777778	0.51527778
CU2	0.58541667	0.42361111	0.43194444	0.40486111	0.44930556
CU3	0.60416667	0.39583333	0.40069444	0.39027778	0.42361111
CU4	0.60486111	0.43472222	0.4375	0.45416667	0.475
CUST1	0.46041667	0.6375	0.52152778	0.46944444	0.53402778
CUST	0.48333333	0.6472222	0.55972222	0.48055556	0.5625 CUST3
0.47847222	0.65347222	0.53263889	0.46180556	0.5375	0.42222222
AS1	0.48333333	0.59513889	0.42847222	0.56111111	AS1
0	, 42222222	0.4833333	0.59513889	0.42847222	0.56111111
AS2	0.47638889	0.5875	0.42430556	0.55416667	0.425
AS2	0.47638889	0.5875	0.42430556	0.55416667	0.36944444
AS3	0.43680556	0	, 53541667	0.42847222	0.52291667
AS3	0.36944444	0.43680556	0.53541667	0.42847222	0.52291667
SQH1	0.47152778	0.5083333	0.57569444	0.43402778	0.55277778
SQH1	0.47152778	0.50833333	0.57569444	0 ,43402778	0.55277778
SQH2	0.47291667	0.52152778	0.57708333	0.45555556	0.56319444
SQH2	0.47291667	0.52152778	0.57708333	0.45555556	0.56319444
SQH3	0.50347222	0.52152778	0.5375	0.45555556	0 ,53888889
SQH3	0.50347222	0.52152778	0.5375	0.45555556	0.53888889
EP1	0.41458333	0.46597222	0.58611111	0.42291667	0.55208333
EP1	0.41458333	0.46597222	0.5861111	0.42291667	0.55208333
EP2	0.38958333	0.48402778	0.57777778	0.40763889	0.54027778
EP2	0.38958333	0.48402778	0.57777778	0.40763889	0.54027778
EP3	0.44930556	0.51666667	0.6	0.43888889	0.56875
EP3	0 ,44930556	0.51666667	0.6	0.43888889	0.56875
RP1	0,36597222	0.41180556	0.52916667	0.41111111	0.51041667
RP1	0,36597222	0.41180556	0.52916667	0,41111111	0.51041667
RP2	0.35833333	0.41597222	0.55555556	0.40416667	0.52361111
RP2	0.35833333	0.41597222	0.55555556	0.40416667	0.52361111
RP3	0.38819444	0.43888889	0.56736111	0.42569444	0.54097222
RP3	0.38819444	0, 43888889	0.56736111	0.42569444	0.54097222
SQE1	0.34097222	0.33611111	0.361111111	0.46180556	0.42916667
SQE1	0 ,	0.33611111	0.36111111	0.46180556	0.42916667
SQE2	0.41458333	0.41666667	0.40416667	0.53819444	0.49027778
SQE2	0.41458333	0.41666667	0.40416667	0.53819444	0.49027778

SQE2	34097222	0.39236111	0.40486111	0.55347222	0.49791667
SQE3	0.42777778	0.39236111	0.40486111	0.55347222	0.49791667
SQE4	0.4222222	0.42638889	0.4472222	0.55208333	0.52361111
SQE4	0.42222222	0, 42638889	0.4472222	0.55208333	0.52361111
SQP1	0.39583333	0.40486111	0.40208333	0.55416667	0.49652778
SQP1	0.39583333	0.40486111	0.40208333	0.55416667	0.49652778
SQP2	0.38333333	0.37777778	_ ,39236111	0.50694444	0.46944444
SQP2	0.38333333	0.37777778	0.39236111	0.50694444	0.4694444
SQP3	0.40486111	0.39930556	0.42430556	0.51805556	0.49444444
SQP3	0.4048611	0.39930556	0.42430556	0.51805556	0.49444444
SQR1	0.32569444	0.32152778	0.33263889	0.46736111	0.41319444
SQR1	0.32569444	0.32152778	0.33263889	SQR2	0.325
0.325	0.41319444	0.46736111	0.33680556	0.49444444	0.42777778
SQR2	0.33680556	0.49444444	0.325	0.325	0.42777778
SQR3	0 ,35277778	0.35625	0.35347222	0.52152778	0.45069444
SQR3	0.35277778	0.35625	0.35347222	0.52152778	0.45069444
SQR4	0.30694444	0.35486111	0.39166667	0.49166667	0.45972222
SQR4	0.30694444	0.35486111	0.39166667	0.49166667	0.45972222

Source: SmartPLS Data Processing Results, (Author, 2022)

In this study, the reliability test was carried out by looking at the *composite reliability*. The criteria for this test are that the *composite reliability* greater than 0.700 for the model is adequate for confirmation purposes and equal to or greater than 0.800 has been considered good in confirmation research (Kante et al., 2018). Based on Table 5, it is known that the *reliability* for each variable.

Table 5. composite *value*

is	so
0.800	that
are	all
>	reliable
declared	variables
Telemedicine Service Quality	0.6694444 4

Source: SmartPLS Data Processing Results, (Author, 2022)

Based on the evaluation of the model above, it is stated that the indicators and variables in this study are valid and reliable, so it can be continued with the evaluation of the structural model *(inner model)* which includes several tests namely VIF and R *Square.* R *Square* is a value in measuring the model's ability to explain the variation of the dependent variable (Ghozali, 2017). The R *Square* has a range of 0 to 1. The R *Square* of 0.75 is identified as a strong model, 0.50 moderate model and 0.25 weak model (Hair et al., 2017).

Table 6. Results R *Square*

Variable	R *Square*	*Adjusted* R *Square*
Continual usage	0.43958333	0.43819444
Customer Satisfaction	0.49375	0.49305556

Source: SmartPLS Data Processing Results, (Author, 2022)

Based on table 6 above it is known that the value of R *Square* variable *usage* is 0.631, which means that variations or changes in *continual usage are influenced* by *customer satisfaction*, and *service quality* is 63.1% while the remaining 36.9% is influenced by other variables outside the model. Based on this, it is said that the value of R *Square* variable *continual usage* is a moderate to strong model. Furthermore, the value of R *Square* variable *customer satisfaction* is 0.710, which means that variations or changes in *customer satisfaction are influenced* by service *quality* by 70.1% while the remaining 29.90% is influenced by other variables outside the model. Based on this, it is said that the value of R *Square* on the customer *satisfaction* model is close to strong.

Variance Inflation Factor (VIF) is a value in analyzing the presence or absence of collinearity between research variables. The criteria for the VIF value in this study are the VIF value must be < 5, if more than 5 indicates the existence of collinearity between variables (Hair et al., 2017). Based on table 7, it is known that the VIF value for all variables is <5 so it can be concluded that there is no collinearity between research variables.

Table 7. Results *Variance Inflation Factor* (VIF)

	Continual usage	*Customer Satisfaction*	*Interaction Quality*	*System quality*	*Telemedicine Service Quality*
Continual usage					
Customer Satisfaction	3,462				
Interaction Quality					2.304
System quality					2,304
Telemedicine Service Quality	3,462	1,000			

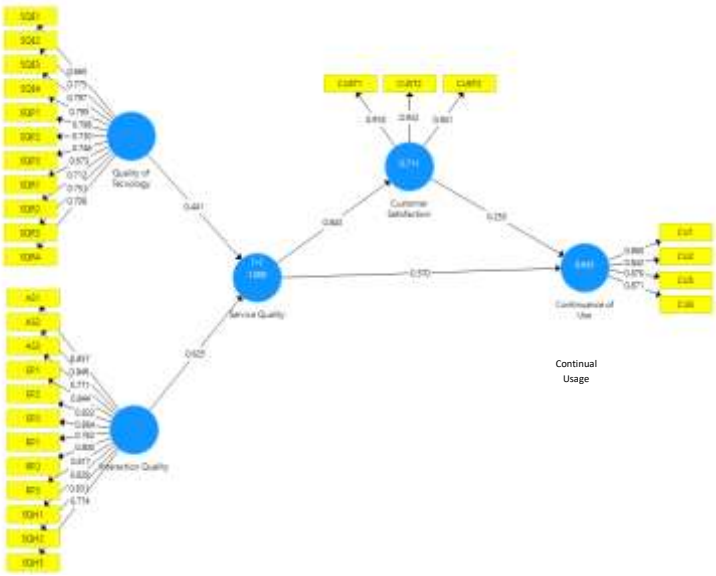
Source: SmartPLS Data Processing Results, (Author, 2022)

Model fit test or model fit is a test used to find out whether a model already has a match to the data. In this study, the suitability of the model was reviewed using the *Standardized Root Mean Square Residual* (SRMR) value. The criteria in this study are if the SRMR value of 0.1 the model is declared fit. Based on the table above, it is known that the SRMR value is 0.095 < 0.1 so it can be concluded that the model can be declared fit.

Table 8. Results Fit Model

	Saturated	Estimation Model
SRMR	0.095	0.095

Source: SmartPLS Data Processing Results, (Author, 2022)



Source: SmartPLS Data Processing Results, (Writers, 2022)
Figure 2. *Data Processing Results*

Table 9. Descriptive Statistical Analysis Results

System Quality			
No	Indicator	Statement	Mean
1	SQR1	The health app that I use is always accessible	4,565
2	SQR2	I can access the health app that I use whenever I want	4,605
3	SQR3	I can immediately receive services after I access the health app	SQR4
4	4.408	I don't have to wait long to use the health app (<1 minute)	4.228
5	SQE1	The health application that I use is easy to use (without having to register a user, just by using an email)	SQE2
6	4098	It is very easy to get services from the health application that I use	4,405
7	SQE3	The health application that I use is flexible to meet my various health needs	4,323
8	SQE4	Information on health applications huhI use are well organized	4.295
9	SQP1	The health apps I use protect my personal information	4.220
10	SQP2	The health apps I use don't share my personal information with others	4.263
11	SQP3	The health apps I use give me meaningful assurances not to share my information	4.180
		Mean	4.326

Interaction Quality			
No	Indicator	Statement	Mean
1	RP1	Doctor provides timely health consultation (<15 minutes)	4,090
2	RP2	Doctor responds quickly to questions related to my health	4,123
3	RP3	Doctor responds quickly to my requests regarding health	4,145
4	AS1	I feel comfortable when interacting with doctors	4.210
5	AS2	I feel warm and easy when interacting with doctors	4.135
6	AS3	Doctors answer my questions in a friendly and courteous manner	4.350
7	EP1	Doctors give me personal attention (personal attention) during consultation	4.0 50
8	EP2	The doctor pays attention to my feelings and opinions	4,040
9	EP3	The doctor prioritizes the best treatment and solution for me	4,220
10	SQH1	I am optimistic because I have received the information I need	SQH2
11	4,203	I feel excited because I have received the information I need	4,250
12	SQH3	Using health applications has increased my chances of improving my health	4.290
		Mean	4.175
Customer Satisfaction			
No	Indicator	Statement	Mean
1	CUST1	I am satisfied with the quality of the health application services I use	CUS T2
2	4.280	I am satisfied with the attitude and performance of the health application service personnel that I use	4.253
3	CUST3	I am satisfied with my experience using the health application that I use	4.313
		Mean	4.282
Continual Usage			
No	Indicator	Statement	Mean
1	CU1	I will use the health application that I currently use to get medical information services	4.338
2	CU2	I will use the health application service that I am currently using, rather than looking for other alternatives	4.115
3	CU3	I will use the health application that I am currently using as the first choice if I have health problems	4.065
4	CU4	I will encourage friends, family and others to use the health apps I use	4.168
		Mean	4.171

Table 10. Hypothesis Test Results

Description	Estimation Coefficient	P Values	Decision
System quality has a positive and significant formation on *telemedicine service quality*	0.30625	0.000	H1 Supported
interaction quality arranging positive and significant formations on telemedicine	0.4340277 8	0.000	H2 Supported

service quality			
telemedicine service quality a positive effect on *customer satisfaction*	0.58541667	0.000	H3
telemedicine service quality a positive effect on *continual usage*	00.57	0.000	H4 Supported
Customer satisfaction a positive effect on *continual usage*	0.17569444	0.000	H5 Supported
Telemedicine service quality mediating *system quality* on *customer satisfaction*	0.25833333	0.000	H6
Telemedicine service quality mediating *interaction quality* on *customer satisfaction*	0.3697222	0.000	H7 Supported
Customer satisfaction mediating the effect of *telemedicine service quality* on *continual usage* of health applications	0.14791667	0.000	H8 Supported

The first hypothesis (H1), namely *system quality* positive and significant formation on *telemedicine service quality,* is supported.

The second hypothesis (H2), namely *interaction quality* positive and significant formation on *telemedicine service quality,* is supported.

The third hypothesis (H3), namely *telemedicine service quality* has a positive effect on *customer satisfaction,* is supported.

The fourth hypothesis (H4), namely *telemedicine service quality* has a positive effect on *continuous usage,* is supported.

The fifth hypothesis (H5), namely *customer satisfaction* has a positive effect *on continuous usage,* is supported.

The sixth (H6) and seventh (H7) hypotheses, namely *telemedicine service quality* mediating *system quality and interaction quality* on *customer satisfaction,* are supported.

The eighth hypothesis (H8), namely *customer satisfaction* mediating *the effect of telemedicine service quality* on *continuous usage of health applications,* is supported.

Although all hypotheses in this study are supported, there are things to note. The coefficient of estimation with the lowest number is in H5, which is 0.253. In addition, on H8 there is also a low number of 0.213. It should be noted that the way to build patient loyalty will be different from customer loyalty because the services provided are very different. In healthcare, providers don't always want to see their patients again because good results are of the utmost importance. However, if the customer has another health problem, of course the service provider, in this case the health application, must provide the best facilities, the best quality doctors, and access to good care to ensure that customers will continue to be loyal (Mubarok et al., 2022). In addition, from the customer side, of course, they also don't want to go back to doing *telemedicine* because in the hope of not having health problems anymore, routine checks are also rarely done (Ju and Zhang, 2020). Thus, even though customers are satisfied with the services provided, the *continual usage* of health applications is low.

V. Conclusion

Based on the data analysis and discussion that has been done, in this study it can be concluded that all research hypotheses are supported. Improved *system quality*, *interaction quality* can improve the formation of telemedicine *service quality*. The more *telemedicine service quality* in health applications increases, the *customer satisfaction*. *Telemedicine service quality* is the most important aspect in increasing *customer satisfaction,* the more *telemedicine service quality* in health applications, the more *continual usage increases*, the more *telemedicine service quality* also increases *customer satisfaction* fully mediates in influence *system quality* on *customer satisfaction, telemedicine service quality* fully mediates in influencing *system quality* and *interaction quality* on *customer satisfaction.* The role *interaction quality* is greater than *system quality*, and *customer satisfaction* fully mediates in influencing *telemedicine service quality* on *continuous usage* of health applications.

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