

# Effect of E-Service Quality, Customer Perceived Value, and Price on Customer Satisfaction in Healthcare Application

Agung Sudjatomoko, Leo Andri Yulius Caesar, Samuel Yohan Gumuljo and Richard Jeremy

BBS Undergraduate Program  
Binus University  
Jakarta, Indonesia

[agung.sudjatomoko@binus.edu](mailto:agung.sudjatomoko@binus.edu) **Error! Hyperlink reference not valid.**, [leo.caesar@binus.edu](mailto:leo.caesar@binus.edu),  
[samuel.yohan@binus.ac.id](mailto:samuel.yohan@binus.ac.id), [richard.jeremy001@binus.ac.id](mailto:richard.jeremy001@binus.ac.id)

## Abstract

Indonesian healthcare application is growing and more people are relying on healthcare application for their needs especially during COVID-19 pandemic, customers can get professional help and order medicine without visiting hospitals. However, there are still problems affecting customer satisfaction mainly because they can't get the same interaction as face to face meeting with a doctor. This research proposed E-Service Quality, Customer Perceived Value, and Price as antecedents of Customer Satisfaction for healthcare application users in Indonesia. 154 samples were collected on April 2022 using purposive sampling and data was analyzed using Partial Least Square. Result shows that E-Service Quality and Price positively affect Customer Satisfaction while Customer Perceived Value has no significant effect. This result provides insight for healthcare application to maintain or increase their customer satisfaction. Research result also provides opportunity for future research in reconfirming the results or develop new model for customer satisfaction in healthcare application.

## Keywords

Customer Satisfaction, Service Quality, Price, Customer Perceived Value and Healthcare.

## 1. Introduction

During COVID-19 pandemic, travel and mobilities are less convenient compared to before. There were several restrictions on mobilities preventing people to visit places like hospitals or doctors except for emergency situations or appointments. With the development of technology, healthcare applications become alternative for outpatients in consulting their health and getting medical advices without physically visiting hospitals or doctors. Indonesia saw the rise of healthcare application users with 57% people surveyed are healthcare application users, the third in the world behind China and India (Burhan 2020).

Although the prospect looks promising, there are still several problems faced by healthcare application users. Security issues, below expectation service level, unfulfilled patient's needs, and different prices of medicine between regions are problems faced by healthcare users. These problems affect users' satisfaction on using healthcare application. Da Fonseca et al (2021) found that mobile health and telemedicine are the most common e-health practices in the world. Yuan et al (2015) found that expected performance, habit, and price affect customers' preference in using healthcare application. Fransiska & Bernarto (2021) found that service quality positively affect customer satisfaction. Mangkunegara et al (2018) found that perceived usefulness and perceived behavioral control effect healthcare application users.

While the users of healthcare application in Indonesia is big, there are still problems affecting their satisfaction especially the difference between face to face interaction and online interaction. To address this, healthcare application need to identify factors influencing their users' satisfaction because their users are their customers. This research proposes E-Service Quality, Customer Perceived Value, and Price as factors influencing Customer Satisfaction in healthcare application. By understanding these factors, healthcare application can maintain or increase their user satisfaction to ensure sustainable growth in the future.

## 1.1 Objectives

These research aims to identify factors influencing customer satisfaction for healthcare application in Indonesia. To fulfill the aim, this research has several objectives:

1. Identify effect of E-Service Quality on Customer Satisfaction for healthcare application
2. Identify effect of Customer Perceived Value on Customer Satisfaction for healthcare application
3. Identify effect of Price on Customer Satisfaction for healthcare application

## 2. Literature Review

Oliver (1999) defined customer satisfaction as pleasant way of needs fulfilment which means that customer will feel that their needs is fulfilled in pleasant way. Westbrook & Reilly (1983) defined customer satisfaction as emotional response on experience related to the purchase of goods or services. Kotler & Keller (2012) provide more detailed explanation of customer experience as the feeling that arise after comparing the value felt after consumption from goods or services versus the expected value. These researches showed that customer satisfaction is the feeling or emotional state experienced by customer after consuming goods or services.

Santos (2003) defined e-service quality as customers' overall evaluation on electronic service quality on virtual market. Parasuraman et al (2005) defined e-service quality as involving all interaction between customer and website starting from service level in performing purchase up to the quality of package delivery. These definitions show that e-service quality must involve service performed using electronic media, in the past the media is mostly website but nowadays the media can be application. Older researches by Baker et al (2002) found that overall service quality can affect customer satisfaction when performing online purchase. Lee & Lin (2005) also found that e-service quality has significant effect on customer satisfaction. More recent researches by Oktavianus & Megawati (2022) found that service quality has significant and positive effect on customer satisfaction. Fransiska & Bernarto (2021) also found that service quality positively affect customer satisfaction. Previous researches showed consistent findings regarding relationship between service quality or e-service quality and customer satisfaction. So, this research proposes the first hypothesis:

Hypothesis 1: E-Service Quality has positive significant effect on Customer Satisfaction.

Zeithaml (1988) defined customer perceived value as the overall evaluation from customer on what is received versus what is given. Kotler & Keller (2012) proposed that value is important in formulating managerial strategy to provide offering for customers. Clemes et al (2011) found that perceived value is significantly affecting customer satisfaction. Lai & Chen (2011) found that perceived value affect customer satisfaction in transportation industry. Kusumawati & Rahayu (2020) also found that perceived value significantly affect restaurant's customer satisfaction. Studies across several industries showed that perceived value is an important factor that can affect customer satisfaction. So, this research proposes the second hypothesis:

Hypothesis 2: Customer Perceived Value has positive significant effect on Customer Satisfaction.

Ramli (2013) in Indrasari (2019) argued that price is the relative value of goods or services, not the cost to produce goods or services. Bei & Chiao (2001) found that price can affect customer satisfaction, price can also increase customer satisfaction (Malik et al 2012; Kumar et al 2021). Another reseach by Fernandes & Calamote (2016) found that unfairness in price can negatively affect customer satisfaction. This research shows that if the price is perceived as unfair, customer will not be satisfied. Previous researches showed strong relationship between price and customer satisfaction. So, this research proposed the third hypothesis:

Hypothesis 3: Price has positive significant effect on Customer Satisfaction.

## 3. Methods

To fulfill research objectives, this research will be conducted using quantitative method and analyzed using Partial Least Square technique. Hypothesis will be tested by analyzing p-value and t-statistics of each relationship with 95% confidence level. There are three independent variables in this research and one dependent variable, the research model for this research is shown in Figure 1.

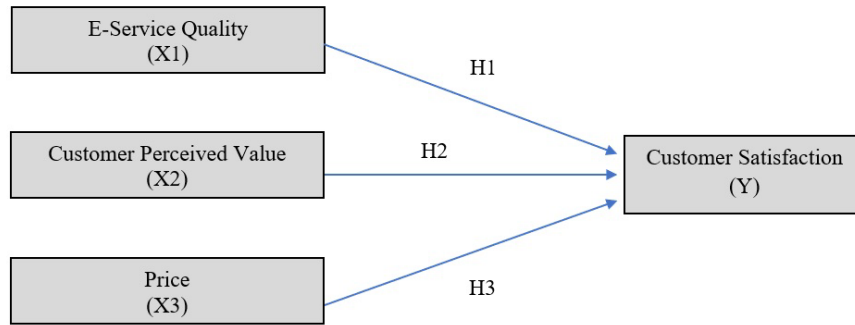


Figure 1. Research Model

#### 4. Data Collection

This research was conducted using primary data collected using non-probability sampling, specifically purposive sampling. By using purposive sampling, this research can ensure that data was collected from customers of healthcare application. Time frame of data collection was cross sectional and was collected on April 2022. 154 samples were collected with 59.70% are males and 71.40% are between 20-30 years old.

#### 4. Results and Discussion

##### 5.1 Numerical Results

Before conducting hypotheses testing, validity and reliability tests were performed to ensure quality of data used in this research and robustness of the variables in this research. Through validity test, 11 indicators were removed from the research and the remaining 24 were valid. These valid indicators have loading factor of 0.7 or above and will be included in further testing. The valid indicators are shown in Table 1.

Table 1. Valid Indicators

Variable	Indicators	Variable	Indicators	Variable	Indicators	Variable	Indicators
E-Service Quality (X1)	Response	Customer Perceived Value (X2)	Satisfactory	Price (X3)	Service price	Customer Satisfaction (Y)	Medicine quality
	Information		Pride		Medicine price		Doctor quality
	Security		Meet expectation		Price variation		Quick service
	Delivery		Consistency		Patent drugs		Service quality
	Design				Generic drugs		Medicine variability
	Feature				Competitive price		Customer recommendation
			Expectation	Customer story			

Reliability test was performed by measuring cronbach's alpha and composite reliability, result showed that all variables in this research are valid. Reliability result is shown in Table 2.

Table 2. Reliability

Variable	Cronbach's Alpha	Composite Reliability
E-Service Quality	0.879	0.917
Customer Perceived Value	0.894	0.916
Price	0.862	0.897

Customer Satisfaction	0.889	0.913
-----------------------	-------	-------

After ensuring validity and reliability, relationships were tested using Partial Least Square to determine relationship between variables. There were 3 hypotheses tested in this research and result showed that 2 out of 3 hypotheses were accepted as shown in Table 3.

Table 3. Hypotheses testing

Hypotheses	T statistics	P value	Result
H1	5.167	0.000	Accepted
H2	1.383	0.167	Rejected
H3	4.810	0.000	Accepted

Based on hypotheses testing, hypothesis 1 was accepted because t-statistics is bigger than 1.96 and p-value is lower than 0.05. Hypothesis 2 was rejected because t-statistics is lower than 1.96 and p-value is lower than 0.05. Hypothesis 3 was accepted because t-statistics is bigger than 1.96 and p-value is lower than 0.05. E-Service Quality and Price has positive effect on Customer Satisfaction while Customer Perceived Value has no significant impact on Customer Satisfaction.

### 5.2 Graphical Results

Relationship between variables have been determined through hypotheses testing with E-Service Quality and Price having positive impact on Customer Satisfaction. The next step is to understand the effect of both variables on Customer Satisfaction.

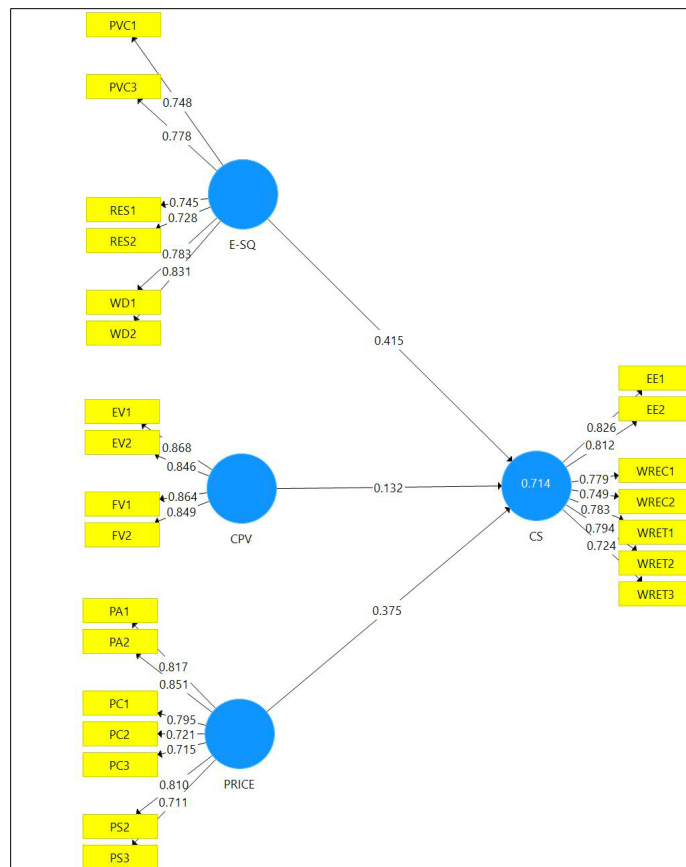


Figure 2. Partial Least Square test

Test result as shown in Figure 2. showed that E-Service Quality has 0.415 effect on Customer Satisfaction and Price has 0.375 effect on Customer Satisfaction. The effect of Customer Perceived Value can be neglected because the relationship is not significant. R Square for the model is 0.714 meaning that this model can predict 71.4% of Customer Satisfaction, the model is robust with relatively high predictive value.

### 5.3 Proposed Improvements

Based on statistical result, E-Service Quality has positive significant effect on Customer Satisfaction, this result means that customers of healthcare application are affected by E-Service Quality. Businesses who utilize healthcare application to reach their customers must understand that their customers' satisfaction can be affected by the quality of their service with response, information, security, delivery, design, and feature as the valid indicators. When a healthcare application wants to maintain or increase their customers' satisfaction, the healthcare application must provide their users with good design and feature in their application and provide detailed information on their products. Customers are also concerned with their data security meaning healthcare application must ensure safety of their customers. Quick response on customers demand and quality delivery method are also important for customers. Healthcare application can't neglect these factors to maintain or increase their customer satisfaction.

Price also has positive significant effect on Customer Satisfaction, this result means that customers of healthcare application are affected by price. Service price, medicine price, price variation, patent drugs, generic drugs, competitive price, and expectation are valid indicators for Price. These indicators showed that users of healthcare application are considering price as important factor and they might compare prices between healthcare applications and brick and mortar drugstore. Good pricing is important to maintain customer satisfaction while ensuring that the price meet their expectation level. To maintain and increase customer satisfaction, healthcare application must provide good price level for their customers.

### 5.4 Discussion

This research proved relationship of E-Service Quality and Customer Satisfaction, adding another reference for future researchers. Previous researches by Baker et al (2002), Lee & lin (2005), Oktavianus & Megawati (2022), and Fransiska & Bernarto (2021) found relationship between E-Service Quality and Customer Satisfaction, and this research further confirmed this finding. For Indonesian healthcare application customers, E-Service Quality is important and companies must address this in maintaining or increasing customer satisfaction.

Price also has positive and significant relationship with Customer Satisfaction as argued by Bei & Chiao (2001), Malik et al (2012), Kumar et al (2021), and Fernandes & Calamote (2016). This research further strengthen the relationship between price and customer satisfaction and can be used as reference for future research. From the timeline of previous researches and this research, it can be seen that e-service quality and price has consistent results, these two variables always significantly affect customer satisfaction. Through this research, the relationships are reconfirmed and strengthened.

Another interesting finding in this research is relationship between Customer Perceived Value with Customer Satisfaction. Previous researches by Lai & Chen (2011) and Kusumawati & Rahayu (2020) showed significant relationship between the two variables. But, this research confirmed that there is no significant relationship between Customer Perceived Value and Customer Satisfaction. This result is interesting because it is different compared to previous researches, creating different point of view. Different result compared to previous research might happen because this research was conducted 2 years since the start of COVID-19 pandemic. Customers' priority might shift and their habit might have changed, this idea needs further investigation. Future research can try to reconfirm this finding by testing this relationship with different population or different method.

## 6. Conclusion

Statistic tests in this research resulted in two hypotheses accepted and one hypothesis rejected, confirming two relationships. The aim of this research was to identify factors influencing customer satisfaction for healthcare application users in Indonesia. This aim was fulfilled through this research and the objectives were fulfilled as such:

1. E-Service Quality has positive significant effect on Customer Satisfaction
2. Customer Perceived Value has no significant effect on Customer Satisfaction
3. Price has positive significant effect on Customer Satisfaction

By fulfilling the aim and objectives, this research also contributes interesting findings adding more reference for researches on Customer Satisfaction and healthcare application. Furthermore, this research was conducted in Indonesia with healthcare application users as population. Previous researches didn't combine E-Service Quality, Customer Perceived Value, and Price as antecedents for Customer Satisfaction. This research combined those variables as antecedents and contributed a more comprehensive model for customer satisfaction in Indonesian healthcare application. Another interesting contribution is the finding showing there is no significant relationship between Customer Perceived Value and Customer Relationship, this can spark another research to reconfirm this finding in another industry or another population.

## References

- Baker, J., Parasuraman, A., Grewal, D., Voss, G.B., The Influence of Multiple Store Environment Cues on Perceived Merchandise Value and Patronage Intentions, *Journal of Marketing*, Vol. 66, pp.120-141, 2002.
- Bei, L. T., & Chiao, Y. C., An integrated model for the effects of perceived product, perceived service quality, and perceived price fairness on consumer satisfaction and loyalty, *The Journal of Consumer Satisfaction, Dissatisfaction and Complaining Behavior*, 14, 2001.
- Burhan, F.A., 2021. Taktik Halodoc & Alodokter Dorong Transaksi Meski Kasus Corona Menurun. September 7, 2021. <https://katadata.co.id/desysetyowati/digital/613726874ddb/taktik-halodoc-alodokter-dorong-transaksi-meski-kasus-corona-menurun>. Accessed: June 15, 2022.
- Clemes, M. D., Gan, C., & Ren, M., Synthesizing the effects of service quality, value, and customer satisfaction on behavioral intentions in the motel industry: An empirical analysis, *Journal of Hospitality & Tourism Research*, 35(4), 530-568, 2011.
- Fernandes, T., & Calamote, A., Unfairness in consumer services: Outcomes of differential treatment of new and existing clients, *Journal of Retailing and Consumer Services*, Elsevier, vol. 28(C), pages 36-44, 2016.
- da Fonseca, M.H.; Kovaleski, F.; Picinin, C.T.; Pedroso, B.; Rubbo, P. E-Health Practices and Technologies: A Systematic Review from 2014 to 2019, *Healthcare*, 9, 1192, 2021.
- Fransiska, C., & Bernarto, I., Pengaruh Kualitas Layanan terhadap Kepuasan Pelanggan dan Keberlanjutan Penggunaan pada Pengguna Aplikasi Kesehatan, *Jurnal Administrasi Bisnis*, Vol. 11 (2), 132-142, 2021.
- Indrasari, M., *Pemasaran dan Kepuasan Pelanggan*, Unitomo Press, 2019.
- Kotler, P., and Keller, K.L., *Marketing Management*, 14th, Prentice Hall, 2012.
- Kumar, D., Haque, A., & Dhar, P., Exploring the Critical Influencing Factors of Customer Satisfaction in Telecommunication Sector in Bangladesh, *Asia-Pacific Journal of Management and Technology (AJMT)*, 1(4), 11-21, 2021.
- Kusumawati, A., & Rahayu, K. S., The effect of experience quality on customer perceived value and customer satisfaction and its impact on customer loyalty, *The TQM Journal*, 2020.
- Lai, W. T., & Chen, C. F., Behavioral intentions of public transit passengers—The roles of service quality, perceived value, satisfaction and involvement, *Transport policy*, 18(2), 318-325, 2011.
- Lee, G. G., & Lin, H. F., Customer perceptions of e-service quality in online shopping, *international journal of retail & distribution management*, 161-176, 2005.
- Malik, M. E., Ghafoor, M. M., & Iqbal, H. K., Impact of Brand Image, Service Quality and price on customer satisfaction in Pakistan Telecommunication sector, *International Journal of Business and Social Science*, Vol. 3 (23), 123-129, 2012.
- Mangkunegara, C. N., Azzahro, F., and Handayani, P. W., Analysis of Factors Affecting User's Intention in Using Mobile Health Application: A Case Study of Halodoc, In *2018 International Conference on Advanced Computer Science and Information Systems (ICACSIS)*, 87-92, 2018.
- Oktavianus, L., Megawati, Pengaruh kualitas produk, harga, kualitas pelayanan dan customer value terhadap kepuasan pelanggan pada springbed procella di palembang, *Jurnal Ilmiah Ekonomi dan Bisnis Universitas Multi Data Palembang*, vol. 11, 2022.

- Oliver, R. L., Whence Consumer Loyalty. *Journal of Marketing* Vol. 63, 33-44, 1999.
- Parasuraman, A., Zeithaml, V. A., and Malhotra, A., E-S-QUAL: A Multiple-Item Scale for Assessing Electronic Service Quality, *Journal of service research*, Vol. 7 (3), 213-233, 2005.
- Santos, J., E-service quality: a model of virtual service quality dimensions, *Managing Service Quality: An International Journal*, Vol. 13 (3), 233-246, 2003.
- Westbrook, R. A., & Reilly, M. D., Value-Percept disparity: an alternative to the disconfirmation of expectations theory of customer satisfaction, in Bogozzi, P. R. and Tybouts, A. (eds) *Advances in Consumer Research, Association for Consumer Research*, 10, Ann Arbor, MI: 256-61, 1983.
- Yuan S., Ma W., Kanthawala S., and Peng W., Keep Using My Health Apps: Discover Users' Perception of Health and Fitness Apps with the UTAUT2 Model, *Telemedicine and e-Health*, Vol. 21, pp. 735-741, 2015.
- Zeithaml, V.A., Consumer perceptions of price, quality, and value: a means-end model and synthesis of evidence. *Journal of marketing*, 52(3), pp.2-22, 1988.

## Biographies

**Agung Sudjatmoko** is the Lecturer Specialist in Faculty of Management of Bina Nusantara University. He got his Doctorate degree in management from Universitas Pasundan in 2018. Before becoming a lecturer, he pursued professional career in education field and cooperative. He was the Chief of Dekopin (Indonesian Cooperative Board) from 2014 to 2019. His research interests range from SMEs, marketing, service industry, and cooperative.

**Leo Andri Yulius Caesar** is Subject Content Coordinator in Faculty of Management of Bina Nusantara University. He got his Doctorate degree in management from Bina Nusantara University in 2019. His professional experiences in industry include consulting, tobacco industry, palm oil industry, SMEs and media. His expertise ranges from human resources, business intelligence, sales and marketing. His research interests are in digital business, technology adoption, service industry, and SMEs.

**Samuel Yohan Gumuljo** is an undergraduate student in Faculty of Management of Bina Nusantara University.

**Richard Jeremy** is an undergraduate student in Faculty of Management of Bina Nusantara University.