

The Effect of Ease of Use, Product Quality, and Service Quality of SmartQ Queuing Services on Users' Satisfaction

Gabriel Shan Filbert^{1*}, Raden Aditya Kristamtomo¹, Satria Fadil Persada¹, Yoseph Benny Kusuma¹, Meilinda Trisilia¹, and Zainiyah Alfirdaus¹

¹Entrepreneurship Department, BINUS Business School Undergraduate Program, 11480 Bina Nusantara University, Indonesia

Abstract. The present research study is aimed to evaluate the influential and general description of ease of use (EoU), product quality (PQ), and service quality (SQ) on users' satisfaction in SmartQ queuing service providers. The research method is quantitative research with an explanatory research paradigm. Three hypotheses are proposed. The subjects used from the survey research were 45 respondents. The eligible respondents are the ones who are partners of SmartQ services. The analysis presented in the current study has consisted of a detailed descriptive evaluation as well as a multiple linear regression approach. The findings revealed in this study indicate that the ease of use of SmartQ services affects the satisfaction of SmartQ partner users. The quality of SmartQ service products affects the satisfaction of SmartQ partner users. The three proposed hypotheses are proven to be positive and significant. The overall model shows the representation of R² of 84.4%. The 15.6% is affected by potential outside variables not included in this study.

1 Introduction

In the era of the accelerating digital technology industry, companies can compete in creating creative and innovative ideas to be superior to their competitors. The progression is marked by changes in technological progress, lifestyles, and people's mindsets that cannot be divided independently from the influence of advanced globalization. Therefore, companies must always be ready to face competitive conditions in the business world because only companies that focus on consumer-oriented can successfully attract consumers. Attracting consumers' attention takes a quality service and product quality provided to business actors to create satisfaction with the community's needs [1]. Many products and services have sprung up, offering various advantages and uniqueness of these products and services. One of them is improving product quality and service quality provided by business actors to consumers and providing ease of use. The ease of provides benefits for consumers in operating the system refers to the individual working. In other words, consumers will feel more satisfied in using the system compared to someone who has not used the system.

The importance of product quality and service quality produced by a company or business actor impacts customer satisfaction. It is intended that the company can measure how much customer loyalty by defining it as a regular customer by using products and services continuously. Providing satisfaction to consumers, improving service quality, product quality

both in terms of features and value, and providing ease of use for consumers and business actors are needed. One of them is by providing a much more effective and efficient queuing system by utilizing the current development of digital technology. However, the high demand for the service sector causes the number of consumers to continue to increase while the number of existing service providers does not increase. The proportion is the reason for waiting in lines or queues. As we all know, the queuing culture in Indonesia is essentially still using the traditional queuing system. Many business institutions still do not understand how to manage a much better queuing system. Let us look at the current condition of the Covid-19 pandemic. The queuing system in every business actor does not have good coordination with the community. Many people are still traumatized to leave the house due to avoiding crowds in every queue at the place of business actors. As a result, these problems will impact the Indonesian economy, one of which is a decrease in daily income by the owner of the business actor.

Seeing the problems listed above, we need an alternative in the form of a queuing system that can manage queues much more effectively and efficiently without causing a crowd condition in one place. One of them is presenting a new technology that can provide a much better-queuing service system at every place of business. Therefore, we present a queuing service called SmartQ to help minimize crowds of people at business locations. The SmartQ can also help improve the existing queuing system at every place of business, and

* Corresponding author: gabriel.filbert@binus.ac.id, aditya.putra@binus.edu, satria.fadil@binus.ac.id, ykusuma@binus.edu, meilinda.trisila@binus.ac.id, zainiyah.alfirdaus@binus.ac.id

increase SmartQ customer satisfaction with much better service quality, coordinated, and orderly. SmartQ has several advantages such as cost leadership, differentiation, and focus compared to similar competitors. SmartQ has provided several services in applications and websites to achieve customer satisfaction so that consumers and business actors have easy access to SmartQ services. SmartQ also provides helpful customer service in building good relationships between consumers and business actors. SmartQ features can be in online queue services or online queue services. However, with the advanced idea, the users' perception is still important to be analyzed to ensure their satisfaction.

1.1 Objectives

The present research evaluates the determinant factors influencing the users' satisfaction with the SmartQ product. The output of this research can be used as a reference to a similar industry to better understand the queuing application ecosystem.

2 Literature review

2.1 Ease of use (EoU)

EoU is defined as the level of trust from users in technology or systems that can be used more efficiently [2]. The ease of use of a product or service evaluates consumers for products and services. The more frequently used system indicates that it is better known, easier to operate, and easier to use by its users. Someone who believes in the ease of using technology will find it easier to do work when using the system. The ease of the system means that the system's existence makes someone more interested, less confusing, and easy to understand.

2.2 Product quality

PQ is a fluctuation situation that is linked. While PQ definitions may vary, PQ will lead to how satisfaction is developed. Customers are interested in buying quality products, especially in fulfilling consumer expectations to have a sense of satisfaction and loyalty to these products and services [3]. If a consumer is satisfied with the product or service, then there is hope for the consumer to make a repeat purchase. The product is the first and most crucial element in the marketing mix, so one of the central values expected by consumers is quality because quality is closely related to consumer satisfaction. Maintaining the quality of a company's products and services will provide convenience for companies in carrying out marketing activities and the operation of a product or service. Dimensions of product quality are as follows [4]:

1. Product in terms of performance

The fundamental indicators come from the essential products owned, where performance comes from products that are advantageous to consumers.

Consumers can get benefits from products that have been consumed.

2. Features with additional

The additional features mean the attached or supplementary characteristics of the essential product. Features with additional can also be projected as unique characteristics that distinguish them from similar competitor products. The contents offered may influence consumer satisfaction with the selected product.

3. Reliability

The slight possibility of failure or damage due to the potential of a broken product will affect the level of consumer satisfaction obtained from a product. The bigger the risk accepted by consumers with their product, the lower level of satisfaction perceived by consumers.

4. Conformance to Specification

Conformity of performance and product quality with the desired standard. Thus, every product reveals its nature to standard or specs that has been influenced. Operational design characteristics meet pre-determined standards.

5. Durability

Related to using the period and how far the selected product can last for usage. Durability is generally attached to products that can be consumed in the long term.

6. Usability (Serviceability)

The indicators consider speed, work competence, calmness, ease to fix, and good complaints management.

7. Aesthetics (Aesthetics)

The attractiveness of the product to the consumer's eyes. Consumers take an interest in a product quite attracted by the appearance of the initial or cover of the product.

8. Perceived Quality

Perceived quality can be judged as the impression of the quality of a product perceived by consumers. The quality indicators are related to consumer perceptions of the attached quality product or brand.

2.3 Service quality

Service quality is suitably interpreted as how distance the uniqueness between the practical received by customers and the expected perceived by the customers [5]. Service quality should be known by comparing customers' perceptions of their services. If the service received by the customer is below adequate service, the customer will feel disappointed. Meanwhile, if the service touched by the customer exceeds the desired service, the customer will feel delighted. In service, customer satisfaction is a determining factor for quality, so every business actor must be able to provide the expected quality of service to consumer needs in providing satisfaction to their customers. Customers will judge the quality of service based on what they feel, and then they describe it through the results of the feedback given. Customers will feel satisfied and will not switch to competing products or service providers if the company can understand the customer's specific needs and provide far better service to consumers. There

are five dimensions or characteristics of service quality, especially in the service sector, namely: Tangibles (physical elements and appearance), Reliability (performance accuracy, reliability), Responsiveness (speed and willingness to help), Assurance (competence), courtesy, security, credibility), and Empathy (easy access, good communication, and understanding to consumers).

2.4 Customers' satisfaction

Satisfaction is a consideration of a product or service that provides likeliness regarding fulfilling user desires at the lower or upper level [6]. User satisfaction is defined as a user's level of feeling, which results from a comparison between the user's expectations of a product with the actual results obtained by the user from the product. The dimensions of user satisfaction are consist of Product Quality, Emotional, Price, and Service Quality. Meanwhile, a company that cannot meet user satisfaction compared to its competitors will not survive running the business for a long time. Creating satisfaction with a product or service requires an experience and direct use by each individual of the product or service.

3 Methods

The research design used in this study was quantitative research. Specifically, the research approach used in this study uses explanatory research. The research will examine the hypothesized relationship between variables, wherein this case is the relationship between perceived ease of use, product quality, and service quality to users' satisfaction. The illustration of the hypotheses is projected in Figure 1, where the hypotheses are stated as follows.

- H1: Ease of use significantly influences SmartQ user's satisfaction.
- H2: Product quality significantly influences SmartQ user's satisfaction.
- H3: Service quality significantly influences SmartQ user's satisfaction.

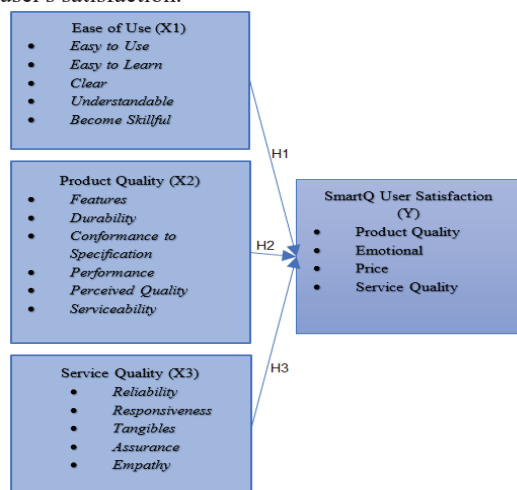


Fig. 1. The hypotheses model.

4 Data collection

The hypotheses data analysis is projected with questionnaire data collection with 45 respondents. The number of 45 exceeds the minimum treatment for the central limit theorem, which imply for normality and other tests. Further, Maximum Likelihood Estimation (MLE) allows the possible number to 50 [7]. The 10% error tolerance is generally accepted, of which 45 is tolerable to be used. Online and offline questionnaires are exposed to the experienced respondents using the SmartQ application (purposive sampling). The indicators were instrumented with a five-point Likert scale, ranging from 1 as "I strongly disagree" to 5 as "I strongly agree".

5 Result and discussion

The descriptive statistics show that the lowest value on the Ease-of-Use variable falls to number 3. The highest value indicates the number 5, with an average score of 17.38 and a standard deviation of 1.585. The product quality variable has the lowest value indicating the number 3 and the high value indicating the number 5 with an average score of 26.27 with a standard deviation of 2.178. The service quality variable has the lowest value showing a number of 4 and a high value indicating a number of 5 with an average score of 22.84 with a standard deviation of 2.383. The user satisfaction variable has the lowest value showing a number of 3 and a high value indicating a number of 5 with an average score of 17.64 with a standard deviation of 1.351.

The instrument test shows that the validity test of the questionnaire questions is valid because it has r count, which is greater than r table. While the reliability test shows that all indicators of each variable are reliable because they have Cronbach's alpha value above the minimum value of 0.6 [8-18]. Classical regression assumption tests consist of normality, multicollinearity, and heteroscedasticity. The normality test results are normally distributed because they have an asymp value of Sig (2-tailed), more significant than 0.200. The multicollinearity test shows that there is no multicollinearity in this model. The insight is that each independent dimension in the research has a VIF score < 10 with a tolerance score > 0.10, as shown in Table 1.

Table 1. Multicollinearity result.

Model	Tolerance	VIF
Total X1	24	2.122
Total X2	56	2.164
Total X3	39	1.056

The heteroscedasticity test in this study uses the glejser test. The data can have no heteroscedasticity problems if each independent variable has a Sig value > 0.05. Based on generated analysis of the Glejser test, the projected significance value of the ease-of-use variable (X1) = 0.748, product quality (X2) = 0.815, and service quality (X3) = 0.975. because the significance value of all variables is more significant than 0.05, it is concluded that there is no heteroscedasticity problem.

Based on the results of multiple regression analysis, a regression problem is obtained in the form of: $Y = -0.038 + 0.460 X1 + 0.296 X2 + 0.084 X3$ and shown in Figure 2. Based on the regression model, the results of multiple regression can be explained as follows:

1. The constant value is -0.038. The negative constant indicates that if there are variables of Ease of Use (X1), Product Quality (X2), and Service Quality (X3), SmartQ Partner User Satisfaction (Y) will experience a change of -0.038.
2. Ease of use coefficient (X1) is 0.460, the Ease of Use regression coefficient is positive and significant so that it can explain that if Ease of Use (X1) has increased, SmartQ Partner User Satisfaction (Y) will have increased by 0.460.
3. The product quality coefficient (X2) is 0.296. The product Quality regression coefficient is positive, explaining that if Product Quality (X2) increases, SmartQ Partner User Satisfaction will increase by 0.296.
4. The service quality coefficient (X3) is 0.084. The service quality coefficient, which is positive, explains that if Service Quality (X3) has increased, SmartQ Partner User Satisfaction will increase by 0.084.

Further hypothesis test was conducted in the form of a t-test and F test. The following results were obtained in Table 2 and Table 3. Based on the simultaneous F test results, it can be seen that the calculated F value is $80.2 > 2.83$. The value shows that it is accepted, which concluded that ease of use (X1), product quality (X2), and service quality (X3) have a simultaneous and significant effect on partner user satisfaction (Y). The following details are information about the T-test.



Fig. 2. The variation shapes.

Table 2. ANOVA test.

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	68.629	3	22.876	80.287	.000
Residual	11.682	41	.285		
Total	80.311	44			

Table 3. T-test assessment.

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1 (Constant)	-.038	1.438		-.026	.979
TotalX1	.460	.074	.540	6.224	.000
TotalX2	.296	.054	.477	5.445	.000
TotalX3	.084	.035	.148	2.412	.020

a. Dependent Variable: Total Y

1. Ease of Use (X1)
 From the analysis, it can be interpreted that the ease-of-use variable projects a t-count value of 6224. This value is greater than the t-table (2.01), $6.224 > 2.019$, and Sig. variable (.000) is smaller than (0.05) which is $0.000 < 0.05$. We could understand that the ease-of-use variable provides a significant relationship with user satisfaction with SmartQ partners. From a practical perspective, SmartQ can provide an easy and clear interface to users, which leads to their satisfaction. Thus, the next update of the application system must maintain the easiness of operations. The software industries can interpret this finding by creating the interface uniqueness without reducing the easiness. Thus, the consumer will remember, but they also feel at ease in using the particular system.
2. Product Quality (X2)
 Based on the t-test related to product quality testing (X2) on user satisfaction (Y), it can be interpreted that the Product Quality variable projects a t-count value of 5,445. This value is greater than the t-table (2.01), generating $5.445 > 2.019$, and Sig. variable (.000) is smaller than (0.05). We could see that the product quality variable provides a significant relationship with user satisfaction with SmartQ partners. The result projects how quality will make the consumers tend to use this particular system. The situation is plausible because the queueing system is a long-term investment. Thus, quality in operations has become the necessary dimension for this industry. Other providers in the same industry should not avoid this parameter being included in their selling system.
3. Quality of Service (X3)
 Based on the t-test related to service quality testing (X3) on user satisfaction (Y), it can be interpreted that the service quality variable projects a t-count value of 2.412. This value is greater than the t-table (2.01), $2.412 > 2.01954$, and Sig. variable (.020) is smaller than (0.05) that is equal to $0.02 < 0.05$. We could get the insight that the service quality variable has a significant relationship with the user satisfaction variable of SmartQ partners. Although the SmartQ is a service type, the supporting service such as responsiveness in supporting the SmartQ usage becomes necessary. Other companies will use this insight to evaluate their supporting service to be as best as possible to solve the consumers' problems.
 The final assessment in the study is the Rsquare test, as shown in Table 4. The regression coefficient test table reveals that the adjusted R square value is 0.844, which indicates that the entire variables, namely customer review and customer relationship

management, contribute together by 84.4% to the dependent variable, namely the decision to purchase Brightindo products. In contrast, the value of 15.6% is explained by other variables not included in this study.

Table 4. R-square result.

Model	R	R Square	Adjusted R Square	Std. Error of the Es
1	.924 ^a	.855	.844	
a. Predictors: (Constant), TotalX3, TotalX1, TotalX2				
b. Dependent Variable: TotalY				

6 Conclusion

Based on the data test results in this study, it can be concluded that ease of use has a significant relationship with user satisfaction. The conclusion is extracted with the basis for making decisions on the t-test, which concludes that the value of t count (6.224) > t table (2.019). The result projected that Ho is accepted and Ha is rejected. The ease-of-use variable significantly affects user satisfaction with SmartQ partners. Ease of use is also a fundamental dimension in technology acceptance research areas ([2], [19-20]). Further results can be drawn that product quality has a significant relationship with user satisfaction as the basis for making decisions on the t-test. The generated value is t count (5.445) > t table (2.019). The result will accept Ho and reject Ha. The product quality variable significantly influences user satisfaction with SmartQ partners. The subsequent result of the test data in this study shows that service quality has a significant relationship with user satisfaction. The result is drawn from the t-test, which concludes that the value of t count (2.412) > t table (2.019). Thus, the result will accept Ho and reject Ha. The service quality variable significantly affects user satisfaction with SmartQ partners. Finally, the present research concluded that ease of use, product quality, and service quality simultaneously have a significant effect on purchasing decisions based on F-test, where F-count (80.2) > F-table (2.83). Creating the interface uniqueness without reducing the easiness, which the consumer will remember, is suggested. The product quality should be maintained as well as possible to avoid crashes or problems. A further suggestion is attaching the service support in case there are problems that the consumers encounter.

References

1. R. Ekasari, D. Agustya, N. Yucha, D. Arif, D. Retnowati, A. A. Mandasari, E. Ratnasari, S. N. H. Yusmiati, L. P. Lestari, *Effect of price, product quality, and service quality on customer satisfaction on online product purchases*, J. Physics: Conference Series **1175**, 1, 012287 (2019)
2. F. D. Davis, *Perceived usefulness, perceived ease of use, and user acceptance of information technology*, MIS Quarterly, pp. 319–340 (1989)
3. N. Fatmawati, E. Soliha, *Kualitas produk, citra merek dan persepsi harga terhadap proses*

keputusan pembelian konsumen sepeda motor matic "Honda.", J. Manajemen Teori dan Terapan **10**, 1, pp. 1–20 (2017)

4. F. Tjiptono, *Pemasaran jasa* (2019)
5. N. I. Febriana, *Analisis kualitas pelayanan bank terhadap kepuasan nasabah pada bank muamalat Indonesia kantor cabang pembantu Tulungagung*, IAIN Tulungagung Research Collections **3**, 1, pp. 145–168 (2016)
6. L. W. Oliver, *Research integration for psychologists: an overview of approaches I*, J. Applied Social Psychology **17**, 10, pp. 860–874 (1987)
7. J. F. Hair, W. C. Black, B. J. Babin, R. E. Anderson, *Multivariate data analysis cengage learning* (Hampshire, United Kingdom, 2019)
8. J. P. Alegre Perez, Y. T. Prasetyo, M. I. Norona, M. N. Young, S. Fadil Persada, R. A. C. Robielos, R. Nadlifatin, *Determinant factors for consumers' intention in choosing a shopping center: an extended theory of planned behavior approach*, 2022 The 3rd International Conference on Industrial Engineering and Industrial Management, pp. 108–114 (2022)
9. D. B. M. Bekti, Y. T. Prasetyo, A. A. N. P. Redi, A. S. Budiman, I. M. P. L. Mandala, A. R. Putra, S. F. Persada, R. Nadlifatin, M. N. Young, *Determining factors affecting customer intention to use rooftop solar photovoltaics in Indonesia*, Sustainability **14**, 1, pp. 280 (2021)
10. M. M. Cahigas, Y. T. Prasetyo, S. F. Persada, A. K. S. Ong, R. Nadlifatin, *Understanding the perceived behavior of public utility bus passengers during the era of COVID-19 pandemic in the Philippines: application of social exchange theory and theory of planned behavior*, Research in Transportation Business & Management, 100840 (2022)
11. T. Chuenyindee, A. K. S. Ong, Y. T. Prasetyo, S. F. Persada, R. Nadlifatin, T. Sittiwatethanasiri, *Factors affecting the perceived usability of the COVID-19 contact-tracing application "Thaichana" during the early COVID-19 omicron period*, International J. Environmental Research and Public Health **19**, 7, pp. 4383 (2022)
12. T. Chuenyindee, R. B. Torres, Y. T. Prasetyo, R. Nadlifatin, S. F. Persada, *Determining factors affecting perceived quality among shoe manufacturing workers towards shoe quality: a structural equation modeling approach*, J. Open Innovation: Technology, Market, and Complexity **8**, 2, pp. 82 (2022)
13. J. D. German, A. A. N. P. Redi, Y. T. Prasetyo, S. F. Persada, A. K. S. Ong, M. N. Young, R. Nadlifatin, *Choosing a package carrier during COVID-19 pandemic: an integration of pro-environmental planned behavior (PEPB) theory and service quality (SERVQUAL)*, J. Cleaner Production **346**, 131123 (2022)
14. M. Gumasing, J. Janice, Y. T. Prasetyo, S. F. Persada, A. K. S. Ong, M. N. Young, R. Nadlifatin, A. A. N. P. Redi, *Using online grocery applications during the COVID-19 pandemic: their relationship*

- with open innovation*, J. Open Innovation: Technology, Market, and Complexity **8**, 2, pp. 93 (2022)
15. M. Gumasing, J. Janice, Y. T. Prasetyo, A. K. S. Ong, S. F. Persada, R. Nadlifatin, *Analyzing the service quality of e-trike operations: a new sustainable transportation infrastructure in Metro Manila, Philippines*, Infrastructures **7**, 5, pp. 69 (2022)
 16. Y. B. Kurata, Y. T. Prasetyo, A. K. S. Ong, R. Nadlifatin, S. F. Persada, T. Chuenyindee, M. M. L. Cahigas, *Determining factors affecting preparedness beliefs among Filipinos on taal volcano eruption in Luzon, Philippines*, International J. Disaster Risk Reduction, 103035 (2022)
 17. R. Nadlifatin, S. F. Persada, J. H. Munthe, B. Ardiansyahmiraja, A. A. N. P. Redi, Y. T. Prasetyo, P. F. Belgiawan, *Understanding factors influencing traveler's adoption of travel influencer advertising: an information adoption model approach*, Business: Theory and Practice **23**, 1, pp. 131–140 (2022)
 18. A. A. Santosa, Y. T. Prasetyo, F. Alamsjah, A. A. N. P. Redi, I. Gunawan, A. R. Putra, S. F. Persada, R. Nadlifatin, *How the COVID-19 pandemic affected the sustainable adoption of digital signature: an integrated factors analysis model*, Sustainability **14**, 7, pp. 4281 (2022)
 19. S. C. Lin, S. F. Persada, R. Nadlifatin, *A study of student behavior in accepting the blackboard learning system: a technology acceptance model (TAM) approach*, Proceedings of the 2014 IEEE 18th International Conference on Computer Supported Cooperative Work in Design (CSCWD), pp. 457–462 (2014)
 20. R. Nadlifatin, B. Miraja, S. Persada, P. Belgiawan, A. A. N. Redi, S. C. Lin, *The measurement of university students' intention to use blended learning system through technology acceptance model (TAM) and theory of planned behavior (TPB) at developed and developing regions: lessons learned from Taiwan and Indonesia*, International J. Emerging Technologies in Learning (IJET) **15**, 9, pp. 219–230 (2020)