

THE EFFECT OF SELF SERVICE TECHNOLOGY AND SERVICE QUALITY ON LOYALTY WITH SATISFACTION AS MODERATION

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ABSTRACT

Loyalty or faithfulness of a consumer is one thing that needs to be considered by financial service companies such as banking. The purpose of this study was to determine the effect of self-service technology and service quality on loyalty with satisfaction as moderation. The population in this study is the largest bank customers in Indonesia. The results showed that self-service technology and service quality had an effect on loyalty. Then, satisfaction as a moderation that is able to moderate self-service technology and service quality on loyalty.

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1. INTRODUCTION

The development of the digital era also occurs in the economic sector, including the financial sector. Digital technology is an opportunity as well as a challenge that must be faced by the financial industry. Digital technology in the financial sector is often referred to as financial technology (fintech). Fintech creates a new ecosystem for financial inclusion and can also generate new innovations. Technological developments also affect financial services companies, such as banks. The current era of digitalization is certainly inseparable from the use of the internet. The financial industry, such as banking, uses the Internet as a competitive strategy. 1 The use of fintech is in line with Bank Indonesia's campaign, the National Non-Cash Movement. GNNT aims to reduce cash payments and switch to cashless payments. Likewise, the payment system runs smoothly, safely, efficiently and effectively.

GNNT can create a cashless society ecosystem. Bank Indonesia has published the 2025 Indonesian Payment System Blueprint (SPI). This SPI supports the digitization of banks as institutions in the digital financial economy, both through open-banking and the utilization of digital technology and data in the financial business. Non-cash transactions can be carried out by utilizing transaction tools in the form of cards such as debit cards, credit cards or electronic money or electronic money, in addition to cards, other electronic devices that have access to transactions at financial institutions and are supported by an internet network can also be used to make transactions. financial, such tools as mobile phones and laptops. The banking industry that is developing in Indonesia is of course also supported by Bank Indonesia, this is so that it can indicate that more and more Indonesian people are doing digital-based transactions.

These independent electronic digital based services continue to develop, where not only transfers but can also be used to open a savings account, without having to go to a bank office. The sophistication of the technology offered makes it easier for customers to carry out financial transactions without any time and place restrictions. Currently, users of digital-based banking services continue to increase. This is supported by the many business sectors that take advantage of technological sophistication, which of course cannot be separated from digital-based banking financial transactions for the convenience of doing business. Based on data from Bank Indonesia, it shows that the value of digital banking transactions from January 2019 - May 2021 has increased and decreased, compared to 2020, in 2023 digital transactions have developed in March 2023, increasing 9.88 percent compared to the same period last year to IDR 4,944.1 trillion.

The level of financial literacy or knowledge of current public financial banking transactions makes the public or customers more critical in choosing a bank. This situation makes competition in banking increasingly stringent. In the end, banking financial institutions must continue to increase creativity and make various good innovations in both the products and the sophistication of the services offered. This is of course to attract people to use their services. The development of digital banking-based banking services in Indonesia is indicated by the launch of a new feature in January 2021. The bank launched the QR Code

or QRIS feature on the Muamalat DIN application. This is also in line with Bank Indonesia and the Financial Services Authority which always encourage industrial banking to maximize the use of non-cash transactions. Therefore, the QR Code feature is available to all banks in order to support the regulator's program while at the same time realizing the wishes of customers who have been waiting for these features.

Loyalty in language means loyalty, namely one's loyalty to an object. Loyalty is a very important concept in marketing, especially in today's increasingly fierce business competition. The existence of loyal consumers will be needed by the company, in order to survive. According to Lovelock in a recent In the context of business, the style loyalty refers to the customer's ambition to commit to the company over the long term by repeatedly and preferably exclusively purchasing and using its goods and dawning and by counseling its products to others. used to represent from the company to close friends and compeers. Customer loyalty can be measured from the attitude of customers, in realizing a loyalty from customers or customers to the company is to create customer satisfaction. In essence, loyalty is related to internal factors within each company. The company sees the importance of positive loyalty for the company[1]. Warsito in his research shows that there is a positive and significant influence between customer satisfaction and loyalty [2].

Self service offered by banks also needs attention, because it is one of the factors that influence the level of customer satisfaction and loyalty. Self-service technology according to Meuter is defined as technology that allows customers to transact or perform services independently as well as services performed by employees directly. Users of self service technology, such as on-line systems, mobile banking, which are usually mobile or gadget-based[3]. According to Lupiyoadi, self-service technology (SST) is a technological intermediary that allows customers to produce their own services without relying on employees. SST replaces direct contact between customers and employees in the service process. Research conducted by Djajanto, et al showed the results that self-service technology has a significant effect on customer satisfaction[4] [5]. And the research by Rosyidah and Andjarwati showed that self-service technology had a positive and significant impact on loyalty [6]. These results are different from the results of research conducted by Tamaruddin, et al. The research results of Tamruddin, et al. shows that there is no direct effect between self-service technology on loyalty[7].

Another factor that influences loyalty is service quality, service quality is a aggressive state that alter articles, convocation, people, processes, and the habitat to meet or outstrip chance, service quality has a direct relationship with competitive ability and the level of company profits. Kotler argues that service quality is a way of working for companies that try to provide quality improvements to processes, products and services produced by companies. According to Tjiptono, service quality is an effort to fulfill consumer needs and desires as well as adjustments to encourage consumer expectations[8]. According to Kotler and Armstrong, service quality will have an impact on customer satisfaction which will make consumers loyal, where every consumer wants the product or service produced to be able to provide satisfaction to their customers. In previous research conducted by Darmawan et al., 2017[8], Supriyanto et al.,2021[9], Venkatakrisnan & Ravikumar, 2022[10] has confirmed that service quality has a positive and significant effect on loyalty. Although on research Lestari & Imanda, 2021[11], Sabrina et al, 2020[12] states that service quality has no effect on loyalty.

Then next is variable satisfaction, according to Kotler and Keller satisfaction is the awareness of joy or blow that arises when one compares one's effect of a product's achievement or results with one's chance. Assuming customer satisfaction can be ensured, the club will succeed in acquiring a large number of customers. Consumer satisfaction with a service company is careful as the position location the consumer's assumption of the service match the existence they receive for the service provided.. In this study the satisfaction variable is intended as a moderation between self-service technology and service quality on loyalty. Putra, in the research conducted showed that satisfaction affects loyalty[13]. This is different from the research conducted by Wahyoedi in that there are other variables that moderate the effect of service quality on loyalty.

Based on the explanation above, there are differences in research results, so researchers in this study want to study related to the influence of self-service technology, service quality on loyalty directly or indirectly with satisfaction as a moderating variable.

2. LITERATURE REVIEW

Self Service Technology

Self-service technology is generally defined as technology that allows customers to transact or perform services independently as well as services performed by employees directly Meuter et al., 2000 [14]. The use of self-service technology (SST), such as on-line systems, mobile banking which is usually

based on mobile phones/gadgets (phone banking), internet banking. The use of ATMs (Automated Teller Machines) is a bank's strategy in maintaining and satisfying its customers, namely customers, as well as to create a competitive advantage as an effort to be able to compete with other banks. The results of several studies indicate that self service technology has a positive effect on loyalty [15]

Service Quality

Quality of Service Specifically in the field of marketing, the variable of service quality alongside the discussion of customer satisfaction variables, service quality has become a major theme in the development of marketing service theory [16]. Anderson and Olsen concluded that the quality of customer service helps absorb the right customers. So building your customers right and keeping them profitable should be your number one priority. Quality of service is considered a competitive advantage for a company to stand out from other competitors. Establishing a abiding organization of the service organization is very important. Good service attracts hidden customers and retains existing customers. Service quality has become the most important tool for determining customer loyalty levels. Several studies show that quality of service has a positive impact on loyalty [17][18].

Satisfaction

Oliver has expressed satisfaction and dissatisfaction with customers respecting consumer expectations not being met. Satisfaction was authentic as the matched of affecting response to the service experience. [19] Therefore, satisfaction based on past blunt action. Kandampully and Huexplained that corporate image is influenced by both service quality and customer satisfaction, which adherence. impacts customer loyalty. According to their research, the key to customer retention appears to be promoting a good corporate image brought about by improved service quality and customer satisfaction. Rubberlock identified customer satisfaction as a key factor in customer retention, and he showed a positive correlation between the two. The results show that customer satisfaction has a direct impact on customer loyalty. Customer satisfaction is the most important variable that determines customer loyalty [14], [15],

Loyalty

Customer loyalty remains one of the most important factors in market competitiveness. Customer Satisfaction According to Griffin [20], he conceptualization of customer loyalty is directed towards behavioral forms rather than attitudes. Griffin argues that frontline employee loyalty to the company leads to higher quality customer relationships. Employees who work on the front line as representatives of the company's products and services. This can lead to customer loyalty through performance. The performance of frontline employees is reflected in the quality of service they provide to customers. Customer retention is considered a cornerstone of business as it is the way to maintain and increase sales. As previous research has shown, the cost of acquiring new customers not only plays an important role in increasing profits, but is much higher than the cost of servicing existing customers. [21]

3. METHODS

This type of research is explanatory research with a quantitative approach. The research population is banking customers in Indonesia. The data in this study uses primary data derived from questionnaires distributed online to banking customers in Indonesia. The sampling technique used purposive sampling, namely individual customers from the five largest banks in Indonesia, namely BRI, BCA, Mandiri, BNI and BTN. Based on (Hair et al., 2014) the minimum number of samples required for 28 questionnaire items is 150 samples, so efforts are made to exceed the minimum number of respondents. After completing this research, researchers managed to get 250 respondents who were taken as many as 50 customers for each bank. Question items based on research variable indicators are self service technology, service quality, satisfaction and loyalty. The basic objective of this research is to find out how respondents respond about self-service technology, service quality, satisfaction and loyalty at each bank.

Smart research statistical analysis tool PLS uses software, because this study uses multivariate statistical techniques using four variables, namely the independent variable, the moderating variable, and the dependent variable. PLS is suitable for confirming indicators of a concept/construct/factor. PLS is a multivariate analysis technique with a series of analyzes of several latent variables simultaneously. PLS is a method that is not based on assumptions Ghozali, 2012. Consistent with the hypotheses that have been formulated, this research starts with evaluating the measurement model (outer model), assessing the structure of the model (inner model), and testing the hypothesis.

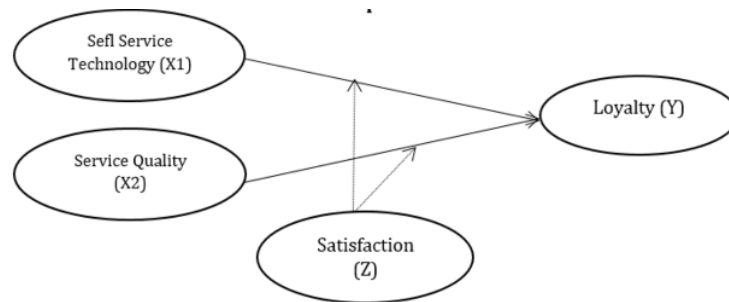


Figure 1. Conceptual Framework

The hypotheses in this study include the following.

- H1: Self Service Technology influences to Loyalty
- H2: Service Quality influences to Loyalty
- H3: Satisfaction is able to moderate the Self Service Technology to Loyalty
- H4: Satisfaction is able to moderate the Service Quality to Loyalty

4. RESULT AND DISCUSSION

Evaluation of Measurement Models or Outer Models

Measurement models evaluation needed For evaluate indicator reflecting variable something construct. Model evaluation can done through test Validity convergent and Composite Reliability. Following is results from the measurement model .

Convergent Validity

Convergent validity is a measurement model that aims to determine the magnitude of the correlation between constructs and latent variables. The standardized loading factor value indicates the magnitude of the correlation value between each indicator and the latent variable and is also used to evaluate the results of convergent validity test values. To achieve the standard value of convergent validity, the loading factor must be greater than 0.70 so it is considered good/valid enough Ghozali, 2012 [22]. The results of the convergent validity test using the loading factor can be seen in table 1 below:

Table 1 Result Convergent Validity

Variables	Question Indicators	Loading Factor	Description
Self Service Quality (X1)	1. Mr / Mrs feel comfortable transacting with self service technology e-banking services	0.789	Valid
	2. Mr / Mrs can do transactions banking can done Where just	0.912	Valid
	3. Mr / Mrs can do transaction banking without must to office banking	0.901	Valid
	4. Mr / Mrs get notes every transactions made	0.874	Valid
	5. Mr / Mrs get evidence receipt every transactions made	0.789	Valid
	6. Mr / Mrs can transact in accordance need	0.791	Valid
	7. Mr / Mrs can add PIN security for Appropriate e-banking transactions desire customer .	0.773	Valid
	8. Mr / Mrs can do transactions banking When just .	0.734	Valid
Service Quality (X2)	1. Personal Data Information Customer protected	0.923	Valid
	2. Performance continuous e-banking services increase	0.873	Valid
	3. E-banking services are increasingly make it easy customers	0.848	Valid
	4. Service process transaction appropriate time	0.789	Valid
	5. Accuracy in deliver information latest	0.871	Valid
	6. System Work with fast	0.888	Valid
	7. Disturbance in system transaction seldom happen	0.901	Valid
	8. Transaction banking customers protected	0.759	Valid

Satisfaction (Z)	1. Mr / Mrs feel satisfied with the facilities provided	0.812	Valid
	2. Facility e-banking services provide impression positive	0.876	Valid
	3. Mr / Mrs feel satisfied with services provided . _	0.765	Valid
	4. Mr / Mrs feel satisfied with system digital banking services .	0.843	Valid
	5. Mr / Mrs feel satisfied with policy banking	0.721	Valid
	6. Policy banking No harm Mr / Mrs	0.798	Valid
Loyalty (Y)	1. Mr / Mrs will recommend to friend , best friend And relatives	0.852	Valid
	2. Mr / Mrs more often buy product with utilise feature electronic banking	0.721	Valid
	3. Mr / Mrs No need cost addition in transact	0.763	Valid
	4. Service this electronic banking can make it easy I For transact more digital banking from once in _ a day	0.813	Valid
	5. Mr / Mrs can do transfer transactions and payment activity business with easy	0.876	Valid
	6. Mr / Mrs No will switch use service other banking	0.774	Valid

Table 1 shows mark the resulting loading *factors* from each variable indicator more of 0.70. With there by indicator the considered valid as gauge variable latent .

Composite Reliability

Composite Reliability used For test mark reliability indicator from construct constituent . Something variable said Good If mark composite reliability more from 0.70 And mark Suggested Cronbach's alpha > 0.60 (Ghozali, 2014). Following significance composite reliability And mark Cronbach's alpha on table below.

Table 2 Result Composite Reliability and Cronbach's Alpha

Variable	Composite Reliability	Cronbach's Alpha	Description
Self Service Technology	0.876	0.888	Reliable
Service Quality	0.912	0.776	Reliable
Satisfaction* Self Service Technology	0.873	0.867	Reliable
Satisfaction* Service Quality	0.879	0.829	Reliable
Loyalty	0.924	0.822	Reliable

Table 2 show that variable Composite Reliability scores latent more from 0.70 whereas mark variable latent Cronbach's alpha shows mark more big from 0.6 up all variable show good reliability.

Evaluation Structure Model (Inner Model)

Testing the structural model (inner model) helps determine the relationship between the significant value of the construct with the R-square research model . The structural model is estimated using the R-square for each independent or dependent latent variable. The results of the R-Square test with SmartPLS are shown in the table below.

Table 3 R Square

	R Square	R Square Adjusted
Loyalty	0.957	0.951

The R-Square results in table 3 give a value of 0.957 , this means that 95.7 % , the Loyalty variable is influenced by the Self Service Technology variable, Service Quality, and Satisfaction, while the remaining 4.3 % is influenced by the variable other than this research model. That is, there are still other variables that have an influence on Loyalty.

Hypothesis Test Results

In testing statistics Smart PLS, every connection Which hypothesized done through simulation . In matter this , method *bootstrap* done on sample . Testing *bootstrap* Also aim For minimize problem data

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survey Which normal. Estimation parameter significant give information Which very useful about connection between variable research.

Hypothesis testing can be seen from the value of the t-statistic and the value of the P-value. If the t-statistic value is > 1.96 and the P-value is < 0.05 .

Table 4 *Path Coefficient*

	Variabel Penelitian	Original Sample (O)	Rata-rata Sampel (M)	Standar Deviasi (STDEV)	Tstatistik (O/STDEV)	P Value	Ket
Influence	X1-Y	0.381	0.373	0.099	3.124	0.000	Accepted
Live	X2-Y	0.343	0.158	0.067	2.225	0.033	Accepted
Moderation	Z-X1-Y	0.320	0.117	0.086	2.391	0.001	Accepted
	Z-X2-Y	0.332	0.337	0.078	3.407	0.004	Accepted

Table 4 shows that self service technology has a direct effect on loyalty with a path coefficient of 0.381. Service quality has a direct effect on loyalty with a path coefficient of 0.343. Satisfaction able to moderate the effect of self service technology on loyalty with a path coefficient of 0.320. Satisfaction able to moderate the effect of service quality on organization loyalty with a path coefficient of 0.332.

DISCUSSION

H1: Self service technology (X1) has a significant positive effect on organization performance (Y)

Table 4 shows that leadership effectiveness has a direct effect on loyalty, with a coefficient of 0.381, so there is a one way self service technology and loyalty when someone does a good job. Administrative efficiency, organization performance is achieved and vice versa. Based on the p-value or estimate of $0.000 < 0.05$ and the t-statistic of $3.124 > 1.96$, it can be said that self service technology has a significant positive effect on loyalty and is significant. Therefore, **H1 is ACCEPTED** in this study.

Digital based banking services are proven to have a layered security and protection system and have legal protection. In the application of the use of digital technology-based service contracts such as mobile banking, it is in accordance with the legal terms of the agreement with the terms of the pillars and terms of the contract. This product uses a wakalah contract accompanied by an imbalance in the use of its services, which is guided by DSN-MUI Fatwa No. 10/DSN-MUI/IV/2000 concerning wakalah. The self service technology variable in this study uses 4 indicators with a total of 8 items. The test results of this variable show that Self Service Technology has an effect on Customer Satisfaction in line with previous research conducted by Wicaksono, et al. Where the results of the study show that there is a significant influence of self-service technology variables on customer trust, satisfaction and loyalty. The trust variable also has a significant effect on satisfaction, but has a non-significant positive effect at $\alpha=5\%$. The satisfaction variable has a significant effect on customer loyalty.

Customers or customers who want fast service at competitive costs will be very grateful for implementing technology-based services or self-service technology. Based on the characteristics of customers who are users of electronic banking services, the majority of whom are private employees will of course often make transactions using self-service technology. Customers who want a service quickly at a competitive cost will be very grateful for the application of self-service technology[4].

H2: Service quality (X1) has a significant positive effect on loyalty (Y)

Table 4 shows that service quality has a direct effect on loyalty, with a coefficient of 0.343, so there is a one way service quality and loyalty when someone does a good job. Administrative efficiency, loyalty is achieved and vice versa. Based on the p-value or estimate of $0.033 < 0.05$ and the t-statistic of $3.225 > 1.96$, it can be said that service quality has a significant positive effect on loyalty and is significant. Therefore, **H1 is ACCEPTED** in this study.

Based on the results of the above analysis, customers who have received good and quality service will certainly be satisfied with the bank's services. Satisfied customers will share their feelings and experiences with others where this will be a profitable reference for the bank, customer satisfaction is one of the goals that must be maintained by the bank to face dynamic challenges in the field of banking services, especially facing competitors with other banks. This study supports previous research conducted by Ozkan et al, 2019, which showed results that service quality affects loyalty. This shows that the customer loyalty variable can be explained by the service quality variable[23]

H3 : Satisfaction (Z) are able to moderate self service technology (X1) to loyalty (Y)

From the test results in Table 4 it can be seen that the test between the variables above shows a significant value of the path of satisfaction (Z) – self service technology (X1) - loyalty (Y) of 0.322. Based on a P value of $0.165 > 0.05$ and and t-statistic $2.391 > 1.96$. From this it can be concluded that the satisfaction variable can moderate the effect of self service technology on loyalty. This means that the level of satisfaction cant increase the self service technology variable in loyalty. Therefore, **H3 was ACCEPTED** in this study.

Research conducted by Chen et al., 2022 shows that the satisfaction variable is able to mediate self-service technology variables on loyalty [24]. Previous research was conducted by Ansah in 2021, that the customer satisfaction variable is a variable that can moderate the self service technology variable in increasing loyalty[25].

H4 : Satisfaction (Z) are able to moderate service quality (X2) to loyalty (Y)

From the test results in Table 4 it can be seen that the test between the variables above shows a significant value of the path of satisfaction (Z) – service quality (X2) - loyalty (Y) of 0.120. Based on a P value of $0.001 < 0.05$ and and t-statistic $1.391 < 1.96$. From this it can be concluded that the satisfaction variable can moderate the effect of service quality on loyalty. This means that the level of satisfaction cant increase the service quality variable in loyalty. Therefore, **H3 was ACCEPTED** in this study.

Service in a business is of course based on a number of key things that are important including a trustworthy and trusted personality, as well as having good skills. namely true and honest, there is never a lie in conducting business activities. In service, one must have the most important quality, namely being honest, besides being creative, courageous and confident. Amanah is returning any rights to the owner, by not taking anything beyond his rights and not exceeding the rights of others. Honesty and trust have a very close relationship, where when someone can act honestly then that person will be trustworthy.

The results of this study are supported by previous studies which show that there is no direct influence between service quality on loyalty with the moderating variable of customer satisfaction. The results of previous research conducted by Rofiqo showed that satisfaction is able to moderate the service quality variable on loyalty[25]

5. CONCLUSION

This study shows that self service technology and service quality affect loyalty. Satisfaction is also able to moderate the effect of self-service technology and service quality on loyalty. Thus it can be interpreted that self-service technology and service quality are the main factors in terms of forming one's loyalty. Banks must be able to retain their customers so that they remain loyal for the company's benefit. It is hoped that they can continue to improve services in digital banking services, also known as electronic banking, both in terms of systems, features that can make it easier for customers to make financial transactions, and so on. This is in order to increase customer satisfaction or the level of customer satisfaction and increase customer loyalty.

For future researchers, it is expected to increase the number of research variables to find out other variables that affect customer loyalty with the satisfaction variable as a moderating variable such as corporate image, company reputation and others. It is hoped that this research can be developed further.

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