

# The Influence of Service Quality and Infrastructure on Student Satisfaction and Loyalty at SMPIT Muhammadiyah Pangkalan Kerinci

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## ABSTRACT

Student loyalty reflects a strong commitment to their school, demonstrated through continued support for the services provided and influencing prospective students to enroll. This study aims to analyze the effect of service quality and school facilities on student loyalty, with student satisfaction serving as a mediating variable. The research was conducted at SMPIT Muhammadiyah Pangkalan Kerinci using a quantitative approach. The sampling technique employed was a saturated sample, involving the entire population of 34 students. Data were collected through questionnaires and analyzed using Structural Equation Modeling with Partial Least Squares (SEM-PLS). The results indicate that service quality and school facilities have a significant impact on student satisfaction, which in turn affects student loyalty. These findings underscore the importance of enhancing service quality and providing sufficient facilities in promoting student satisfaction and loyalty. The practical implications of this study suggest that schools should prioritize enhancing educational services and infrastructure to promote stronger student engagement and commitment.

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## INTRODUCTION

Education is the primary foundation for shaping civilization. It is not merely a process of knowledge transfer, but also a means to form character, build critical thinking patterns, and instill life values. In a rapidly developing world, education is the key to unlocking a better future. Several indicators can support the achievement of this education, one of which is having good and quality schools, such as excellent schools, strong curriculum, quality teaching and educational staff, organized learning systems, good school management systems, as well as complete infrastructure and facilities, and additional educational programs that help students succeed and develop their character (Sinta, 2019). Every educational institution must adopt this mindset to compete with others, especially private schools (Saputra, A. L., & Sriyanto, 2021).

Private schools are renowned for providing high-quality education. If the services provided by the school meet the needs of students and parents, then the school provides reasonable satisfaction for the students. The level of student satisfaction becomes the spearhead for the school's future, as it will impact the admission of new students who will continue their education at that school. If students are satisfied, it will also impact their loyalty; for example, students feel proud and happy with their school.

Student loyalty is a strong commitment held by students to support the services they have experienced continuously and to influence prospective new students to experience the same services they have already enjoyed. School excellence can also be seen from the quality report card assessment conducted by the National Education Standards (SNP) through 8 education standards. Based on the results of the 2020 quality report card, SMPIT Muhammadiyah Pangkalan Kerinci is in the "pretty good" category, with an average score of 5.43. However, in the eight education standards mentioned, there are still many areas that need improvement to achieve a very good score. From the perspective of implementation, there is still a need for improvement in school infrastructure standards and school services.

Meanwhile, findings from the pre-survey revealed that the school is becoming less attractive to the community, as perceptions from several parents indicated that if their children are not accepted at public schools or other well-known private schools, then this school becomes their last choice. However, currently, private schools, especially IT (Integrated Islamic) schools, have become target schools for the community, particularly parents, because their learning process already includes Tahfiz Al-Quran lessons.

Furthermore, this opinion is reinforced by several confessions from students studying at SMPIT Muhammadiyah, who mentioned that the school was their last choice, and they even stated that they did not want to study there and wished to transfer to another school. Based on the students' assumptions, it can be concluded that there is a lack of interest among students in their school. For example, there is a noticeable absence of joy and a low commitment to the school. Under such conditions, it is unlikely that students will recommend their school to others. Among the many factors that influence consumer satisfaction and loyalty toward service products (such as education), the solution offered for the problems experienced by SMPIT Muhammadiyah school is service quality and infrastructure (Indrawati, 2013).

Service quality refers to the level of excellence or quality that an organization provides to its customers in delivering services (Septiani, Y., Aribbe, E., & Diansyah, 2020). It encompasses various aspects, including speed, accuracy, friendliness, effectiveness, and the ability to meet customer needs and expectations. Good service quality is typically associated with high customer satisfaction (Herman, 2019). According to Foedjiwati and Samuel (2013), service quality is the equivalence of services desired by customers with the services provided, while Ekawarna (2021) states that service quality is the totality of goods or services that can satisfy customer needs (Ekawarna, E., Denmar, D., & Eka Wibawa, 2023). Therefore, it can be understood that service quality can provide a person's sense of satisfaction with goods or services (Kurniawan, F. Y., & Sari, 2017), which is essential for customer Loyalty.

Next is infrastructure, which encompasses everything related to learning, from learning equipment to learning buildings. This infrastructure will significantly determine the smooth running of the learning process, as one of the factors contributing to learning success is the fulfillment of infrastructure needs (Sairi, A., & Safrizal, 2018). Thus, it can be understood that infrastructure is one of the efforts to meet student needs, thereby ensuring satisfaction and loyalty.

Many studies have examined service quality, infrastructure, satisfaction, and student loyalty. For example, Bulkia's (2018) opinion states that student satisfaction is influenced by service quality. According to Rokhani (2021), student happiness is influenced by the quality of services provided. It differs from Budiarno's (2022) statement that customer satisfaction is negatively influenced by service quality (Bulkia, 2018)(Rokhani, S., & Marlianingrum, 2021)(Budiarno, Nyoman Ida Bagus, & Lukitaningsih, 2022). This finding aligns with Naidah's (2015) research, which suggests that customer happiness is generally not significantly influenced by the quality of services provided (Naidah, 2015). Meanwhile, Dhakoril, Apriliani, and Sudibyo (2024) found that service quality can increase customer satisfaction and loyalty (Dakhori, Apriliani, D., & Sudibyo, 2024). Similarly, research conducted by Kurnia (2020) demonstrated that service quality can influence satisfaction, which in turn affects loyalty. This finding aligns with Akbar (2019), who found that service quality, facilities, and infrastructure simultaneously and partially influence customer satisfaction and also affect loyalty (Akbar, 2019). Therefore, each variable has different results. Therefore, the impact of

infrastructure and service quality on student loyalty and satisfaction needs to be re-examined (Sukma, B., C, Murwanto, 2023).

The novelty of this exploration lies in the variation in each variable; additionally, this research focuses on both factors that simultaneously impact student satisfaction and loyalty. Previous research has only examined partial factors that influence student satisfaction and loyalty in the education sector. The reason for choosing this title is that there are problems regarding student satisfaction and loyalty at SMPIT Muhammadiyah school, as evidenced by the decreasing number of students each year and some children transferring (Fardani, 2015). This research must be conducted to obtain the best solution for advancing the school.

Through this research, it is essential to re-examine the factors that influence student satisfaction and loyalty, including service quality and school infrastructure. The research conducted is expected to provide an in-depth picture of the loyalty and satisfaction of SMPIT Muhammadiyah Pangkalan Kerinci students.

## METHODS

This research employs a quantitative descriptive approach to examine the impact of service quality and infrastructure on student satisfaction and loyalty (Sugiyono, 2022). This approach was chosen because it can provide an objective picture based on numerical data obtained from respondents. The research was conducted at SMPIT Muhammadiyah Pangkalan Kerinci from September to December 2024.

The population in this study comprises all students at SMPIT Muhammadiyah Pangkalan Kerinci, with 34 respondents selected using a saturation sampling technique. Data was collected using questionnaire instruments that have been tested for validity and reliability, as well as other supporting documentation.

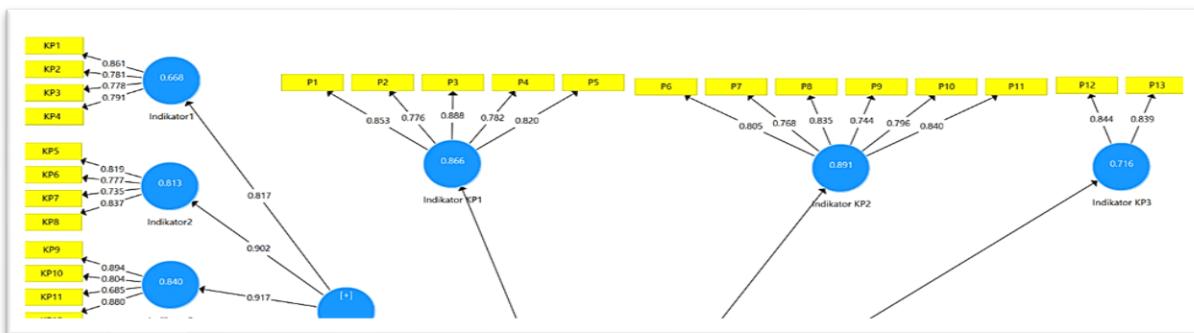
Data analysis was conducted using the variance-based Structural Equation Modeling technique, namely Partial Least Squares (PLS), with the assistance of SmartPLS 4.0 software. Variables in this research include: service quality (X1), infrastructure (X2), student satisfaction (Y), and student loyalty (Z). Variable indicators were arranged based on theory and previous research, with service quality measured through reliability, responsiveness, and empathy; infrastructure measured through completeness, comfort, and accessibility; student satisfaction measured through expectation conformity and fulfilled needs; and student loyalty measured through commitment, sense of pride, and tendency to recommend the school to others

## FINDINGS AND DISCUSSION

### Results of Partial Least Squares (PLS) Model Analysis

The data analysis method employed in this research is qualitative analysis, utilizing the PLS method. In this model, there are two stages in its evaluation: first, the measurement model (outer model), which is used to assess the validity and reliability of each indicator forming the construct, and second, the structural model evaluation (inner model) to examine the relationships between variables.

The following figure displays the results of the full model structural equation test, which evaluates the outer model, as shown in Figure 1.



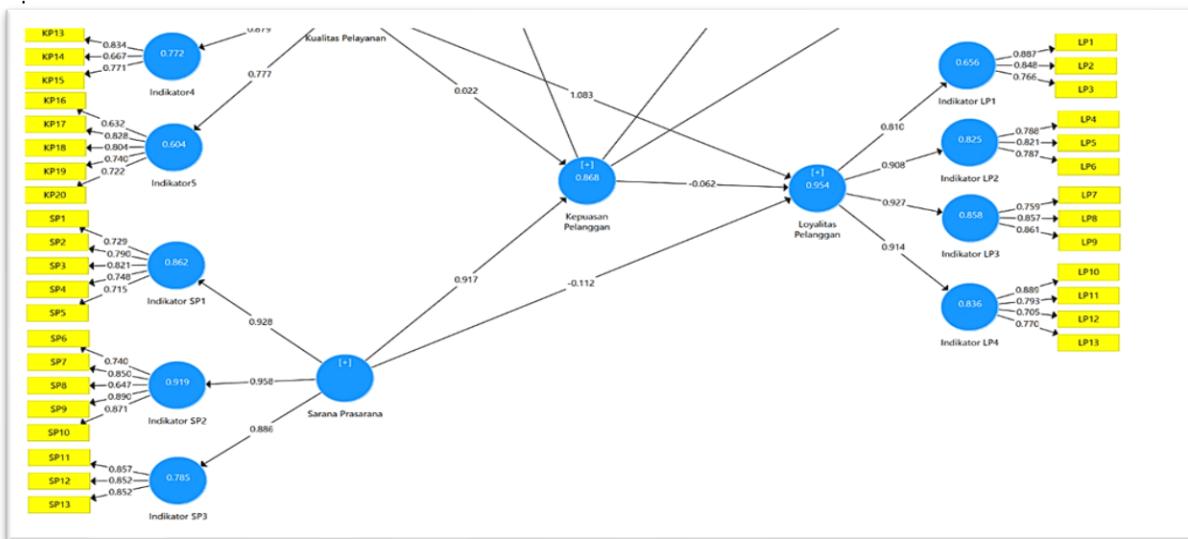


Figure 1. Model Structural Equation Test To Assess The Outer Model

Based on Figure 1, it is evident that the convergent validity test results, using loading factor values and Average Variance Extracted (AVE), provide an overview of the existence of attributes within the tested variables. In this research, all data are valid and can be used to measure the research results. Indicators with small loading factor values indicate small contributions to convergent validity and therefore need to be removed. The loading factor value measured for each indicator used is more than 0.60. The loading factor values are valid and can be used to measure the research results.

The research variables have the most significant cross-loading values on the variables they form, compared to cross-loadings on other variables. For example, the cross-loading for KP1 (Service Quality) is 0.619 on the infrastructure variable (0.687), customer satisfaction variable (0.729), and customer loyalty variable (0.787). Similar patterns are also seen in other dimensions. Thus, latent constructs can predict variables within their own blocks more effectively than dimensions in other blocks.

Another method to examine discriminant validity is the Average Variance Extracted (AVE) value. The recommended value is above 0.50. The following are the AVE values in this exploration, which can be seen in Table 2 as follows:

Table 2. Average Variance Extracted (AVE)

Variable	AVE
Service Quality	0, 566
Infrastructure	0, 576
Customer Satisfaction	0, 614
Customer Loyalty	0, 569

Source: SmartPLS 3 Processed Data (2024)

The values in Table 2 (Average Variance Extracted/AVE) show that the variables of service quality, infrastructure, customer satisfaction, and customer loyalty have AVE values above 0.50. It concludes that each of these constructs (variables) has good validity from each dimension.

Table 3. Composite Reliability

Variable	Composite Reliability
Service Quality	0, 940
Infrastructure	0, 945
Customer Satisfaction	0, 816
Customer Loyalty	0, 765

Source: SmartPLS 3 Processed Data (2024)

As shown in Table 3, the Composite Reliability values for all research variables exceed 0.70. These results indicate that each variable has met the Composite Reliability criteria, indicating that

all variables possess a satisfactory level of reliability.

### 1. Evaluation of Structural (Inner) Model

This research will explain the correlation between each independent variable and the dependent variable, as well as the indirect influence between independent variables and the dependent variable mediated by intervening variables. The evaluation of the PLS structural model begins by examining the R-squared values for each dependent variable. Next, a check is performed on the path coefficient values for the independent variables, which are then assessed for significance based on t-statistic values.

Based on data processing that has been conducted using the SmartPLS 3 program, the R-Square values in Table 4 are obtained as follows:

Table 4. R-Square Value Results ( $R^2$ )

Variable	R-Square Value
Customer Satisfaction	0, 796
Customer Loyalty	0, 559

Source: SmartPLS 3 Processed Data (2024)

Based on Table 4 above, it is known that the R-Square value for the Customer Satisfaction variable is 0.796. This figure indicates that the Service Quality and Infrastructure factors can account for 79.6% of the variance in the Customer Satisfaction variable. Meanwhile, for the Customer Loyalty variable, the R-Square value obtained is 0.556. This value indicates that Customer Loyalty can be explained by 55.6% by the Service Quality, Infrastructure, and Customer Satisfaction factors.

Table 5. Q-Square dan Goodness of Fit (GoF)

Criteria	Value	Category
Q-Square	0, 567	Good
Goodness Of Fit (GoF)	0, 459	High

Source: SmartPLS 3 Processed Data (2024)

Based on Table 5, a Q-Square value of 0.567 is obtained. The research model demonstrates that it can explain 56.7% of the variability in the research data, while other factors outside this model account for the remaining 43.3%. The Q-Square result of 56.7% indicates that the formed PLS model is satisfactory, as it explains 56.7% of the overall information.

In Table 5, a Goodness of Fit (GoF) value of 0.459 is also obtained, which falls into the high category. It indicates that the model has a good observational fit, as the GoF value falls within the high category, ranging from 0.38 to 1. Therefore, based on the inner model testing results, the structural model built in this research is accurate.

### 2. Hypothesis Testing

The following are the hypothesis testing results obtained in this research through direct and indirect testing using SmartPLS 4.0:

Table 6. Path Coefficient

Variable	Original Sample (O)	Sample Mean (M)	Standard Deviation (STADEV)	T-Statistict	P-Value
Service Quality -> Customer Loyalty	0, 879	0, 795	0, 038	23, 139	0,000
Infrastructure -> Customer Loyalty	0, 077	0, 113	0, 232	5, 186	0,000
Customer Satisfaction -> Customer Loyalty	0, 489	0, 578	0, 129	3, 801	0, 000
Service Quality -> Customer Satisfaction	0, 768	0, 766	0, 073	10, 555	0,000

Infrastructure ->	0.877	0.878	0.029	30.388	0.000
Customer Satisfaction					

Source: SmartPLS 3 Processed Data (2023)

The following is the direct hypothesis testing:

**a. Testing the first hypothesis (H<sub>1</sub>)**

The calculation results from SmartPLS 3, as shown in Table 4.14, indicate that the significance level of the service quality variable on customer loyalty is 0.000, which is smaller than 0.05. In addition, the t-calculated value (23.139) is greater than the t-table (2.032). The parameter coefficient value is 0.038. Therefore, it can be concluded that the hypothesis is accepted (H<sub>1</sub>), which means that service quality has a positive and significant impact on customer loyalty.

**b. Testing the second hypothesis (H<sub>2</sub>)**

The calculation results from SmartPLS 3, as shown in Table 4.14, indicate that the infrastructure variable on customer loyalty has a significance level of 0.000, which is smaller than 0.05. In addition, the t-calculated value (5.186) is greater than the t-table (2.032). The parameter coefficient value is 0.232. Therefore, it can be concluded that the hypothesis is accepted (H<sub>2</sub>), which means that infrastructure has a positive and significant impact on customer loyalty.

**c. Testing the third hypothesis (H<sub>3</sub>)**

The calculation results from SmartPLS 3, as shown in Table 4.14, indicate that the significance level of the customer satisfaction variable on customer loyalty is 0.000, which is smaller than 0.05. In addition, the t-calculated value (3.801) is greater than the t-table (2.032). The parameter coefficient value is 0.129. Therefore, it can be concluded that the hypothesis is accepted (H<sub>3</sub>), which means that customer satisfaction has a positive and significant impact on customer loyalty.

**d. Testing the fourth hypothesis (H<sub>4</sub>)**

The calculation results from SmartPLS 3, as shown in Table 4.14, indicate that the significance level of the service quality variable on customer satisfaction is 0.000, which is smaller than 0.05. In addition, the t-calculated value (10.555) is greater than the t-table (2.032). The parameter coefficient value is 0.073. Therefore, it can be concluded that the hypothesis is accepted (H<sub>4</sub>), which means that service quality has a positive and significant impact on customer satisfaction.

**e. Testing the fifth hypothesis (H<sub>5</sub>)**

The calculation results from SmartPLS 3, as shown in Table 4.14, indicate that the significance level of the infrastructure variable on customer satisfaction is 0.000, which is smaller than 0.05. In addition, the t-calculated value (30.388) is greater than the t-table (2.032). The parameter coefficient value is 0.029. Therefore, it can be concluded that the hypothesis is accepted (H<sub>5</sub>), indicating that infrastructure has a positive and significant impact on customer satisfaction.

Indirect testing: The following are the results of the hypothesis testing data from the exploration using SmartPLS.

Table 7. Hypothesis Testing with Intervening Variables

Variable	Original Sample (O)	Sample Mean (M)	Standard Deviation (STADEV)	T-Statistic	P-Value
Service Quality ->					
Satisfaction ->	0,919	0,690	0,135	5,282	0,000
Customer Loyalty					

Infrastructure ->					
Customer Satisfaction -	0,622	0,659	0,161	3,872	0,000
> Customer Loyalty					

Source: SmartPLS 3 Processed Data (2023)

The following is the indirect hypothesis testing:

**f. Testing the sixth hypothesis (H<sub>6</sub>)**

The calculation results through SmartPLS 3, the teacher's teaching style variable through motivation on learning outcomes shown in Table 4.15, indicate that the service quality variable through customer satisfaction on customer loyalty has a value of 0.000, which is smaller than 0.05 and  $t_{table} > t_{calculated}$  ( $2.032 > 5.282$ ), with a parameter coefficient value of 0.135. Then to determine the magnitude of the intervening variable's influence on indirect hypothesis testing can be seen in table 4.14 and Table 4.15 in the original sample column, it shows that during direct hypothesis testing the original sample was 0.879 but after indirect hypothesis testing the original sample changed to 0.919, meaning that after the implementation of intervening, the original sample increased with a difference of 0.040. It can be concluded that the hypothesis is accepted (H<sub>6</sub>), indicating that service quality, as measured by customer satisfaction, has an indirect influence on customer loyalty.

**g. Testing the seventh hypothesis (H<sub>7</sub>)**

The calculation results through SmartPLS 3, the infrastructure variable through customer satisfaction on customer loyalty, shown in Table 4.15, indicate that the infrastructure variable through customer satisfaction on customer loyalty has a significance value of 0.000, which is smaller than 0.05 and  $t_{table} < t_{calculated}$  ( $2.032 < 3.872$ ), with a parameter coefficient value of 0.161. Then to determine the magnitude of the intervening variable's influence on indirect hypothesis testing can be seen in table 4.14 and Table 4.15 in the original sample column, it shows that during direct hypothesis testing the original sample was 0.077 but after indirect hypothesis testing the original sample changed to 0.622, meaning that after the implementation of intervening, the original sample increased with a difference of 0.545. It can be concluded that the hypothesis is accepted (H<sub>7</sub>), indicating a positive and significant influence of the infrastructure variable on customer satisfaction, which in turn has a positive and significant influence on customer loyalty.

The research results demonstrate that service quality has a significant influence on customer loyalty. The quality of a product/service is essential for customers because high-quality products/services will have a direct impact on those who experience them. If reality exceeds expectations, the service can be considered of high quality; conversely, if reality does not meet expectations, the service is considered of poor quality (Alfiyanti, Sari, F., 2022). The results of this research are supported by a study conducted by Lapalelo (2022), who stated that quality and service are means to achieve customer satisfaction and foster customer bonds. Furthermore, research conducted by Sofyan (2013) suggests that service quality serves as a benchmark for determining whether someone will be loyal to a service or not.

The research results show that facilities and infrastructure can influence student loyalty. It means that if a school has complete facilities and infrastructure, both physical and non-physical, it will impact student loyalty to continue their education at that school. The results of this research are supported by a study conducted by Sofyan (2013), which demonstrates that facilities, as part of infrastructure, can impact customer loyalty. Additionally, Herawati's (2019) research results also indicate that facilities and infrastructure have a positive impact on student loyalty. All facilities required in the teaching and learning process, both movable and immovable, can influence the achievement of educational goals and increase student loyalty, whether directly or indirectly.

Furthermore, the research results also indicate that service quality has a significant influence on student satisfaction. If the service received or perceived (perceived service) matches expectations,

then service quality is perceived as good and satisfying. If the service received exceeds expectations, then service quality is perceived as very good and high quality. This research aligns with the findings of Rahareng and Relawan (2017), who stated that academic service quality has a positive and significant impact on student satisfaction. Based on the explanation above, it is concluded that "academic service quality has a partial and significant impact on student satisfaction." Meanwhile, research conducted by Widodo found that good service quality, resulting from effective interaction between service providers and recipients, fosters trust, credibility, mutual respect, honor, responsiveness, and attention. Therefore, service quality has a significant impact on satisfaction.

Similarly, facilities and infrastructure influence satisfaction. Facilities and infrastructure are needs that must be fulfilled by an educational institution (Nastiti, U., 2015). Good facilities and infrastructure play an important role in creating customer satisfaction (students and parents) (Purwati, A., 2018). The results of this research are supported by a study conducted by Mulyasa in Tanjung, which states that inadequate facilities and infrastructure lead to suboptimal teaching and learning activities, ultimately impacting student dissatisfaction. The results of this research are also in line with those of Sofyan (2013), who stated that customer satisfaction is a post-purchase evaluation, where the chosen alternative at least provides results (outcomes) that equal or exceed customer expectations. Conversely, dissatisfaction arises when the results obtained do not meet customer expectations.

Furthermore, the research results also explain that satisfaction influences student loyalty. When customers feel satisfied, they tend to maintain their loyalty for a long time and make repeat purchases when the company launches new products. This statement is consistent with research conducted by Syerlita, R., and Siagian (2024) and Nursal, M. F., and Panday (2021), who found that customer satisfaction has a positive and significant influence on customer loyalty.

The research results also indicate that service quality influences loyalty through student satisfaction, which is in the good category. Services that match what is promised by teachers, including prompt service and individualized attention from each teacher, without discriminating against any student, will make students feel satisfied and comfortable with the school they have chosen. One of the primary strategies for retaining customers and achieving customer satisfaction is by providing high-quality service, thereby fostering loyalty (Saputra, A. L., & Sriyanto, 2021). Research supporting this statement was conducted by Surahman, who found that service quality significantly influences customer loyalty through customer satisfaction as an intervening variable. The results of this research are also in line with those of Sofyan (2013), which show that service quality significantly influences loyalty through consumer satisfaction.

The research results also demonstrate that facilities and infrastructure have a significant influence on customer loyalty (in this case, among students and parents) through enhanced consumer satisfaction. Students will feel satisfied with the facilities provided, which in turn will foster a high level of loyalty. The importance of facilities and infrastructure in creating satisfaction and loyalty shows that good facilities not only improve the quality of the teaching and learning process (Aregawi, 2018). The results of this research are supported by previous studies, which have stated that facilities and infrastructure have a strong relationship with customer loyalty through satisfaction (Risdyanto, A., 2023).

Institutions with sturdy buildings in good condition can enhance the comfort of consumers who directly experience them, making them feel that the chosen location is the best among others. Research was also conducted by Abdullatif, who mentioned that facilities and infrastructure do not impact loyalty through consumer satisfaction. Research conducted by Detry, S. P., Sumarno, and Kartikowat (2023) also provides fascinating insights related to facilities and infrastructure, but with a slightly different context. In that research, facilities and infrastructure were proven to have a weak relationship with loyalty. Institutions with sturdy buildings in good condition can enhance the comfort of consumers who directly experience them, making them feel that the chosen location is the best among others. Research was also conducted by Septiani, Y., Aribbe, E., & Diansyah (2020), who mentioned that facilities and infrastructure do not directly impact loyalty through consumer satisfaction. Research conducted by Detry, S. P., Sumarno, and Kartikowat (2023) also provides

fascinating insights related to facilities and infrastructure, but with a slightly different context. In that research, facilities and infrastructure were proven to have a weak relationship with loyalty.

## CONCLUSIONS

This research confirms that service quality and infrastructure have a significant influence on student satisfaction and loyalty in educational institutions. These findings provide an important contribution to educational management literature by affirming the strategic role of these factors in maintaining student loyalty. The practical implication is that schools, especially private ones, should focus on improving service quality and facilities to enhance customer satisfaction and foster long-term loyalty. However, this research has limitations in aspects of teacher competency and school image that have not been explored in depth, so further studies are recommended to expand these variables and test their impact more comprehensively.

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