

MEDIATING ROLE OF STUDENT SATISFACTION IN THE RELATIONSHIP OF EDUCATIONAL SERVICE QUALITY TO STUDENT RETENTION IN HIGHER EDUCATION (Study on Students of Ciputra University Surabaya)

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ABSTRACT

This study focuses on the importance of service quality in enhancing student satisfaction and retention in higher education, with the Management Department of the Faculty of Economics and Business at Ciputra University as the research subject. The objective of this study is to analyze the impact of service quality on student satisfaction and retention. The theoretical framework underpinning this research is the SERVQUAL model, which measures service quality through the dimensions of tangibles, reliability, responsiveness, assurance, and empathy. A quantitative approach is employed, targeting a population of 500 students from the 2022-2023 academic year, with a sample size of 217 respondents determined using the Krejcie and Morgan table. The research instrument consists of 40 indicators adapted from relevant journals, utilizing a five-point Likert scale to measure service quality, student satisfaction, and retention. Data analysis was conducted using Partial Least Square (PLS) with the aid of SmartPLS software, allowing for simultaneous evaluation of both the measurement and structural models. The findings of this study are expected to provide valuable insights for department management to enhance service quality and, consequently, improve student satisfaction and retention at Ciputra University.

INTRODUCTION

Higher education plays an important role in preparing individuals for certain professions as well as becoming educated and socially conscious members of society (Yusuf, 2023) . A quality higher education is not only able to produce competent graduates, but also strengthen the institution's capacity to face today's challenges for future progress. To achieve this, higher education institutions must be well managed and make a significant contribution to education, research, and society, to continue to maintain service quality in order to increase customer satisfaction (Phonthanukitithaworn et al., 2022) . The quality of educational services is one of the important factors affecting the success of higher education institutions, especially in the midst of the increasingly competitive education industry, both nationally and globally (Ngo et al., 2021) .

The quality of higher education services has received a lot of attention for research in various countries. According to Afridi et al. (2016) , high service quality is one of the determinants of higher education competitiveness, especially in the midst of increasingly fierce competition in the education sector. Service quality plays an important role in shaping customer perceptions and satisfaction. Good service quality not only has an impact on satisfaction levels, but also has a direct effect on retention (Afridi et al., 2016) . Customer retention is a major challenge faced by universities in Indonesia. According to statistics from the Directorate General of Higher Education, Research and Technology (Ditjen Diktiristik) in 2022, there were 375,134 people who dropped out of various levels of higher education, either due to expulsion or resignation. This figure indicates a serious problem with retention in Indonesian higher education, and is an indicator that various factors such as the quality of education services to provide satisfaction still need improvement. Moreover, the country has made retention as one of the indicators to assess the quality of universities and study programs by the National Accreditation Board of Higher Education (Dwi K. et al., 2017) .

Ciputra University Surabaya is one of the private universities in East Java that has been established since 2006 with Excellent accreditation. In maintaining accreditation and institutional image, Ciputra University continues to strive to improve student satisfaction which is influenced by various factors, such as teaching quality, supporting facilities, and academic and non-academic experiences. Currently, the majority of students come from generation Z who have unique characteristics in the learning process. They tend to be more responsive to learning methods that are interactive, technology-based, and provide flexibility in accessing materials and discussions. Therefore, universities need to adjust teaching approaches to be more innovative, such as the use of blended learning, experiential learning, and the integration of digital technology in lectures. In addition, a campus environment that supports collaboration, creativity, and the development of practical skills is an important factor in increasing student satisfaction. By understanding the needs of today's students, universities can design more effective strategies to improve the quality of educational services and ensure student retention until they complete their studies on time.

In research by Eresia-Eke et al. (2020) regarding service quality on retention in South Africa resulted in a positive significant effect. Likewise, research in the realm of private universities in Vietnam by Oanh & Tho (2024) shows a positive relationship

between service quality in universities in Vietnam and satisfaction. Someone will tend to look for a service provider that has good service quality and is a major factor in influencing customer decisions to continue using these services (Ngo et al., 2021) . Therefore, service quality is an important aspect in improving retention which can include service in any aspect.

Another factor that acts as a key precursor in customer retention is the level of customer satisfaction. Service recipients who are satisfied with the service received are more likely to stay, and this is the case in education where customers are more likely to stay to complete their education (Oanh & Tho, 2024) . This satisfaction acts as an important element in ensuring that customers not only stay at the university, but also contribute to the improvement of the institution's reputation. Satisfaction can act as an intervening variable in the relationship between service quality and retention. This implies that the higher the quality of service provided, the higher the level of satisfaction, which in turn will increase customer retention. Differences appear in research by Chandra et al. (2019) . which obtained the results that there was no positive or significant effect of service quality on retention at tertiary institutions in Australia.

Most studies conducted in developing countries show significant and positive results regarding the effect of service quality on satisfaction and retention. For example, studies conducted in several developing countries such as Vietnam, Malaysia, and South Africa show a strong correlation between university service quality and satisfaction levels. However, in developed countries some studies show different results. Some studies conducted in countries such as the United States and the United Kingdom do not always show significant results regarding the relationship between service quality and retention. For example, Pariseau & McDaniel (1997) and Ford et al. (1999) in America show that service quality is not always the main factor in increasing retention, although it still has an effect on satisfaction. Ford et al. (1999) also found that satisfaction regarding the quality of university services can vary depending on cultural background and this difference in view is more towards developed countries than developing countries.

Studies on retention discussions tend to be based on the quality of service provided by service providers. Various studies have suggested different dimensions to measure service quality and its relationship with customer satisfaction. Research on service quality began with research conducted by Parasuraman et al. (1988) who investigated service quality in various sectors such as equipment repair and maintenance, retail banking, securities brokerage, long-distance telephone, and credit cards. In this study, five dimensions were proposed to measure service quality known as the SERVQUAL instrument. Research on this model was created and developed on studies conducted by Parasuraman et al. (1988) . These dimensions consist of *tangibility*, *responsiveness*, *assurance*, *reliability*, and *empathy*. These five dimensions have been commonly applied in almost all types of service providers. SERVQUAL focuses on the gap between user expectations and perceptions, which helps researchers identify factors that affect satisfaction and retention so as to evaluate expectations and perceptions of service quality (Putra & Zulkarnain, 2024) .

In Indonesia itself as a developing country, there have not been many similar

studies conducted within the scope of private universities. This is a great opportunity for researchers to dig deeper into how service quality can affect retention through customer satisfaction. With the growing competition among educational institutions, especially in Indonesia, further research on service quality in private universities such as Ciputra University is needed. This research will not only enrich the literature, but also provide useful insights for educational institutions to improve service quality, especially in the era of globalization where the expectations of the academic community are getting higher. This research will explore how service quality can affect satisfaction levels which then have an impact on retention. So it is expected to make a significant contribution to the development of literature on service quality and retention in private universities...

LITERATURE REVIEW

Service Quality

In the higher education sector, service quality is a key factor that determines the performance of educational institutions. Yusof et al. (2022) define service quality as "the degree to which the needs and aspirations of students receiving higher education services from their university are met." The literature on service quality in higher education identifies various important dimensions, such as staff competence, institutional reputation, teaching style, resource adequacy, administrative services, and attitudinal support (Onditi & Wechuli, 2017). Perceived service quality is the belief about the level of service excellence achieved through a comparison between expectations and perceived performance (Sudiharto et al., 2020).

The SERVQUAL model introduced by Parasuraman, Zeithaml, and Berry in 1988 and developed in 1991 is one of the most commonly used tools to measure service quality in various sectors, including education. This model identifies five main dimensions, namely *tangibles* (physical aspects), reliability, responsiveness, *assurance*, and empathy. This service quality includes aspects such as physical facilities, administrative systems, lecturer interactions, and support services that contribute to student satisfaction (Parasuraman et al., 1988). Sianipar et al. (2022) detail the five dimensions of service quality for the SERVQUAL model in the educational context as follows:

- *Tangibility*: *Tangibility* refers to the physical aspects of the service that the customer can see, feel, and assess. It includes all the elements that can be observed before and after the service experience.
- *Reliability*: *Reliability* relates to the service provider's ability to deliver the promised service consistently and accurately. This dimension emphasizes the importance of integrity and reliability in service delivery.
- *Responsiveness*: *Responsiveness* refers to the speed and willingness of the service provider to respond to student needs and expectations. This includes the ability of staff to provide timely assistance and feedback.
- *Assurance*: *Assurance* encompasses the knowledge, expertise, and friendliness of the service provider actors who provide customers with a sense of trust and confidence. This dimension emphasizes the importance of competence and positive attitude of the staff.

- Empathy: *Empathy* relates to the individual attention and care given by service providers to customers. This dimension reflects the ability to understand and feel the experiences and needs of customers.

These dimensions form a framework for evaluating and improving service quality and provide guidance for service providers to meet and exceed customer expectations.

Satisfaction

Research conducted by Saif (2014) defines satisfaction as a feeling of pleasure that a person feels when his needs and desires are met. Weerasinghe et al. (2017) states that customer satisfaction can be defined as a short-term attitude that arises from evaluating user experience, services, and facilities provided by service providers. According to Brady et al. (2002) satisfaction is defined as an evaluation of emotions, which indicates that the measurement of satisfaction is related to the extent to which consumers feel that goods or services provide positive benefits. Satisfaction is generally viewed as a function of consumer expectations, i.e. the extent to which actual experience meets preconceived expectations. Customer satisfaction in higher education refers to their feelings of satisfaction with the quality of the educational experience and the services provided by the university.

Universities as service providers are certainly very concerned about customer satisfaction because of its impact on motivation, retention, recruitment, and academic success. Sari et al. (2022) identified a number of key factors that influence customer satisfaction levels, including students' perceptions of higher education learning and teaching processes, such as the availability of library, computer and laboratory facilities. In addition, learning environment factors, such as lecture halls, laboratories, social areas, and university buildings, are also influential. Other supporting facilities, such as health services, accommodation, and various additional services, are important aspects in determining the level of satisfaction. In addition, external factors that affect students' lives, such as finances and transportation, also contribute to their satisfaction.

By addressing all these aspects, service providers can meet customer expectations and function competitively in the education sector. The process of assessing customer satisfaction is not only a method to collect feedback on customer experience, but also to understand the perceptions and expectations held towards the service provider. Thus, satisfaction measurement becomes a tool that is able to assess the extent to which a service provider can meet the expectations and needs of its customers.

Retention

Customer retention refers to the ability of an organization or institution to keep customers using their products or services on an ongoing basis over a long period of time (Arizal & Listihana, 2018). In the context of higher education, customer retention can be interpreted as the ability of universities to retain students until they reach graduation. This retention is a crucial issue because it is directly related to the long-term success of customers, the reputation of the institution, and the effectiveness of the college's programs.

Cabrera et al. (1993) were the first researchers to develop an integrated retention

model, which is measured by five indicators. According to Chong & Ahmed (2015), retention in higher education is the behavior of staying until students successfully complete their studies. In contrast, college dropout is a phenomenon where students leave higher education for a short period of time without obtaining a degree. The issue of dropping out of college is a major challenge in various countries, including Indonesia. A person who decides to drop out of college is often faced with difficulties in adjusting to academic demands, lack of preparation, or psychological and financial pressures. One of the main factors influencing retention is the individual's own characteristics, such as self-efficacy, motivation, and commitment to the institution. McCoy & Byrne (2017) explain that students with positive psychological characteristics tend to be more committed and academically and socially integrated, thus having a greater chance of completing their studies. Conversely, students who face difficulties in self-adjustment, or have low levels of motivation, tend to find it easier to withdraw or withdraw from college.

In addition, the role of the institution is also very important in efforts to improve retention. Institutions that are able to provide a supportive learning environment, both academically and socially, as well as provide adequate support services, are more likely to retain their students. As stated by McCoy & Byrne (2017), retention is not just about staying or dropping out of college, but is a complex process influenced by various internal and external factors that institutions must understand.

Service Quality to Satisfaction

Research by Arizal & Listihana (2018) found that service quality, which includes aspects of teaching, interaction with staff, as well as the quality of physical facilities, has a direct impact on the level of customer satisfaction. This service quality influences customers' overall perception and experience, which impacts their positive view of the institution and increases loyalty to the organization. Various studies support these findings, such as the study of Latif et al. (2019) in Malaysia which showed that staff reliability and empathy strongly influence customer satisfaction. Phonthanukitithaworn et al. (2022) also found that efficient services, including quality teaching and access to support facilities, significantly increased customer satisfaction. Research in Vietnam by Oanh & Tho (2024) confirmed that institutions that are able to provide high-quality services tend to have more satisfied customers. Research in Indonesia by Eresia-Eke et al. (2020), shows that interactions with staff, administrative services, and supporting facilities play an important role in influencing customer satisfaction. Customers who feel adequate support from staff and smooth administrative services show higher levels of satisfaction. Therefore, based on previous research, a hypothesis can be concluded as follows.

H1 : Service quality affects satisfaction

Service Quality on Retention

Service quality plays an important role in determining the success of an institution, especially in terms of customer satisfaction and retention. Customer retention is a key indicator of institutional success because organizations that are able to retain

customers until they achieve their goals demonstrate good service quality and support. According to Eresia-Eke et al. (2020) , good service quality directly improves customer retention, where those who are satisfied with the services received tend to continue their relationship with the institution. Research in Malaysia by Latif et al. (2019) confirms that service quality dimensions such as reliability and assurance from staff play an important role in customer retention. Customers who get adequate support from staff are more likely to be loyal and continue the relationship with the institution. Phonthanukitithaworn et al. (2022) also found that efficient administrative services and high quality in service delivery strengthen customers' decision to stay. Similar research by Oanh & Tho (2024) in Vietnam shows that institutions with high-quality services, both in academic and non-academic aspects, have higher customer retention rates. In Indonesia, research by Eresia-Eke et al. (2020) found that services that include interaction with staff, administration, and good supporting facilities play an important role in retaining customers. This is reinforced by research Afridi et al. (2016) that Good service quality not only has an impact on satisfaction levels, but also has a direct effect on retention. Based on previous research, the next hypothesis is formulated as follows.

H2 : Service Quality Affects Retention

Satisfaction to Customer Retention

Customer satisfaction acts as a key factor that significantly affects customer retention, as supported by various studies. Joseph et al. (2005) showed that customers who are satisfied with the quality of service, teaching, and facilities are more likely to continue their relationship with the service provider until they achieve their desired goals. They emphasized that satisfaction creates an emotional attachment between the customer and the institution, which becomes a key driver in retention. Similar research by Afridi et al. (2016) confirms that customer satisfaction created from positive interactions with service providers, responsive administrative services, as well as the availability of adequate facilities, plays a major role in increasing retention of service providers. In Malaysia, Latif et al. (2019) also found that customers who were satisfied with the reliability and support of the staff showed a higher propensity to keep using the institution's services. Phonthanukitithaworn et al. (2022) in their research found that services that cover key aspects, such as accessibility, teaching quality, and fast and efficient administrative services, greatly contribute to the level of customer satisfaction, which in turn has a direct impact on retention. Research by Oanh & Tho (2024) in Vietnam adds that customers who are satisfied with quality services, both in key aspects and other supporting facilities, are more likely to continue their relationship with the institution. In Indonesia, Eresia-Eke et al. (2020)) also found that customer satisfaction, resulting from service quality such as interaction with staff, easy access to administrative services, and availability of adequate facilities, is a major factor in increasing retention. Based on these studies, the following hypothesis was formed.

H3 : Satisfaction Affects Retention

The Mediating Role of Student Satisfaction in the Relationship between Service Quality and Retention

Customer satisfaction acts as a key factor that significantly affects customer retention, as supported by various studies. Joseph et al. (2005) showed that customers who are satisfied with the quality of service, teaching, and facilities are more likely to continue their relationship with the service provider until they achieve their desired goals. They emphasized that satisfaction creates an emotional attachment between the customer and the institution, which becomes a key driver in retention. Similar research by Afridi et al. (2016) confirms that customer satisfaction created from positive interactions with service providers, responsive administrative services, as well as the availability of adequate facilities, plays a major role in increasing retention of service providers. In Malaysia, Latif et al. (2019) also found that customers who were satisfied with the reliability and support of the staff showed a higher propensity to keep using the institution's services. Phonthanukitithaworn et al. (2022) in their research found that services that cover key aspects, such as accessibility, teaching quality, and fast and efficient administrative services, greatly contribute to the level of customer satisfaction, which in turn has a direct impact on retention. Research by Oanh & Tho (2024) in Vietnam adds that customers who are satisfied with quality services, both in key aspects and other supporting facilities, are more likely to continue their relationship with the institution. In Indonesia, Eresia-Eke et al. (2020) also found that customer satisfaction, resulting from service quality such as interaction with staff, easy access to administrative services, and the availability of adequate facilities, is a major factor in increasing retention. Based on these studies, the following hypothesis is formed.

H4 : Student satisfaction acts as a mediating influence of service quality on retention

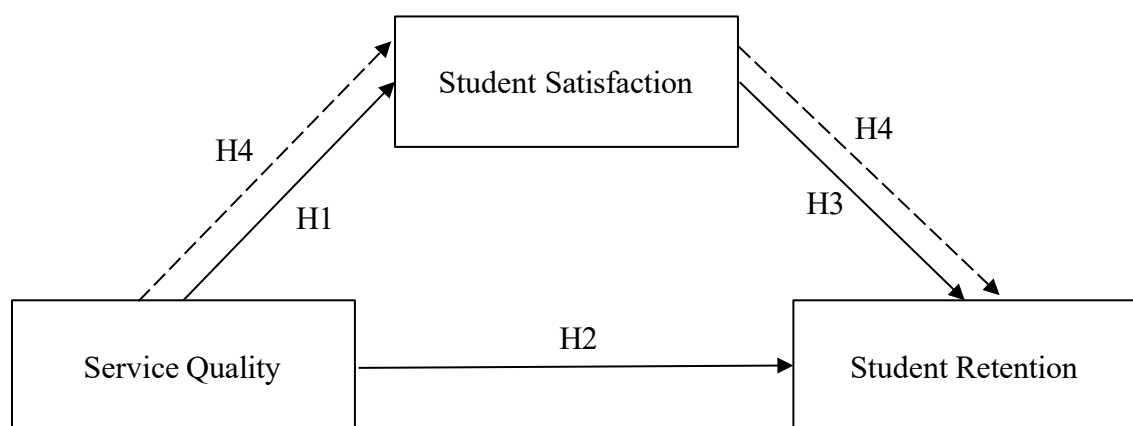


Figure 1. Research Model

RESEARCH METHOD

This study uses a quantitative approach, which aims to measure the relationship between the variables studied objectively through numerical data analysis. The population in this study included all students of the Management Study Program at the Faculty of Economics and Business, Ciputra University. The Management Study Program at Ciputra University has the largest number of students compared to other study programs. Based on this population, the target population determined is students of the Management Study Program from 2022 to 2023 who have taken higher education. The total population that matches the target criteria is 500 students of the Management Study Program. Sample calculation is done by determining the appropriate sample size. Based on the Krejcie and Morgan table, the sample size for a population of 500 is 217 respondents. The sampling method is done randomly (random sampling) so that every student in the population has an equal chance of being selected as a respondent. With this approach, no fixed proportion should be set for each batch, so the sample distribution between batches 2022 and 2023 is determined randomly. The preparation of research instruments was carried out by selecting indicators relevant to this case study, based on a literature review of various previous research journals. This study measures service quality using a combination of SERVQUAL scales. All statements in the measurement of service quality, student satisfaction, and student retention use a five-point Likert scale, ranging from 'strongly disagree' (score 1) to 'strongly agree' (score 5). Through this process, 5 indicators for service quality, 4 indicators for customer satisfaction, and 5 indicators for retention were obtained, which were adapted from related journals. These instruments are presented in the table below.

Table 1. Variables and Measurements

Variabel	Indicator	Item
Service Quality	<i>Tangible</i>	8
	<i>Reability</i>	8
	<i>Responsiveness</i>	8
	<i>Assurance</i>	9
	<i>Empathy</i>	7
Customer Satisfaction	Overall quality	4
	Competence	3
	Physical Facilities	4
	Neighborhood Facilities	3
	Academic integration	5
	Social integration	4
	Curriculum suitability	4
	Family or peer encouragement	4
	Goal commitment	3

This study uses Partial Least Square (PLS) data analysis techniques, where instrument testing is carried out first because the data obtained is primary data sourced directly from respondents. Instrument testing includes validity and reliability tests. PLS itself is known as the second generation multivariate technique (Morales, . 2011) According to Maulana (2022) , the validity test is a measure that indicates the level of accuracy or validity of a research instrument. An instrument is considered valid if it has a high level of validity, while an instrument with a low level of validity does not reflect the accuracy of the measured indicators (Maulana, 2022) .

Different from the validity test, the reliability test aims to measure the consistency of the instrument used as a research tool. Reliability testing is carried out to ascertain whether the instrument can consistently measure all indicators in the questionnaire. The reliability value is in the range 0 to 1, where the closer to the value 1, the instrument is considered reliable or consistent (Maulana, 2022) .

Partial Least Square (PLS) is one of the regression analysis methods used to test cause-and-effect relationships. This technique adopts a component-based equation model in *Structural Equation Modeling* (SEM) on variable indicators. According to Tenaya & Utami (2015) , PLS is a variant-based approach that arises from the development of covariance-based approaches. If covariance-based SEM is generally applied for theory testing, then PLS is more focused on developing predictive models. Basically, PLS is an analytical method that does not require many assumptions, such as data normality or large sample size. In addition, PLS is able to evaluate the existence of relationships between construct variables. In general, PLS analysis consists of two main stages, namely testing the outer model and inner model.

a. Outer Model

Outer model testing includes three main parameters, namely: *indicator reliability*, *convergent validity*, and *composite reliability*. *Indicator reliability* is used to assess how much the indicator can represent its construct, provided that the *outer loading* value must be more than 0.7 (Hair et al., 2014) . Indicators with a *loading* value below 0.4 can be removed from the construct because they do not contribute strongly enough to the construct. *Convergent validity* serves to measure the extent to which the indicator score correlates with the latent variable score it represents, which is evaluated through the *Average Variance Extracted* (AVE) value with a minimum threshold of 0.5 (Hair et al., 2014) . *Composite reliability* is used to evaluate internal consistency between indicators in one construct, with the criteria for a minimum *composite reliability* value of ≥ 0.7 to indicate good reliability (Hair et al., 2014) .

b. Inner Model

Goodness of fit model is assessed based on the R-square (R^2) value on the dependent latent variable, which shows how much variation in the dependent variable can be explained by the independent variables in the model. The GoF value is said to be strong if it is above 0.36 *moderate* at a value of 0.25 and a value of 0.1 for a relatively small one. Hypothesis testing is carried out using the bootstrapping method where the significance of the estimated parameters provides important information

about the strength of the relationship between variables in the study. The use of the *bootstrapping* method allows the analysis to be carried out without having to fulfill the assumption of normal distribution, making it suitable for samples with medium to small sizes. Testing is done using the t-test, where the hypothesis is considered significant if the p-value ≤ 0.05 (alpha 5%). In addition to testing path significance, *effect size* (f^2) was also calculated to evaluate the magnitude of the influence of each construct on other constructs. The f^2 value indicates a substantive change in the R^2 value when the independent construct is removed from the model. The interpretation of the f^2 value follows Cohen's (1988) guidelines, i.e. 0.02 indicates a small effect, 0.15 indicates a medium effect, and 0.35 indicates a large effect. Thus, f^2 helps to understand the importance of the role of each variable in the structural model, not only based on statistical significance but also the magnitude of the practical contribution to the model.

RESEARCH RESULTS AND DISCUSSION

In this section, the results of the data analysis conducted to test the research model that has been formulated previously will be presented. The analysis stages in this study include three main steps, namely *outer model* testing, *inner model* testing, and hypothesis testing. *Outer model* testing aims to evaluate the validity and reliability of research instruments through *indicator reliability*, *convergent validity*, and *composite reliability*. After ensuring that the measurement model has met the eligibility criteria, proceed with *inner model* testing to evaluate the relationship between constructs based on the R-square (R^2) value, *path coefficients*, and *effect size* (f^2). The last stage is hypothesis testing using the *bootstrapping* method to test the significance of the relationship between variables in the structural model. Each stage of this analysis aims to ensure that the model built has empirical feasibility and can provide accurate information in answering research objectives.

Evaluation of the Measurement Model (*Outer Model*)

Evaluation of the measurement model (*outer model*) in this study was carried out to ensure that the indicators used were truly valid and reliable in measuring the latent construct under study. The evaluation is carried out through several stages. First, internal consistency reliability is tested using the *Composite Reliability* value with the criterion that the accepted value must be more than 0.70. *Composite Reliability* is taken from the calculation of consistency between indicators in the same construct. Then further indicator reliability is tested through the *Outer Loadings* value, where each indicator must have a loading value above 0.70 to show that the indicator has a strong contribution to the measured construct. Then convergent validity is tested using *Average Variance Extracted* (AVE), where the AVE value for each construct must be greater than 0.50, which indicates that the construct is able to explain most of the variance of its indicators. Finally, discriminant validity is tested using the *Fornell-Larcker* criterion, which is by comparing the square root value of the AVE with the correlation between constructs. Discriminant validity is considered fulfilled if the root value of AVE is greater than the correlation of other constructs. All these stages aim to ensure that the measurement model used in this study has met the eligibility standards and can proceed to the structural model analysis stage.

Internal Consistency Reliability

Table 2: Internal Consistency Reliability Results

	Cronbach Alpha	Composite Reliability
Satisfaction	0,943	0,9591
Retention	0,958	0,9676
Service Quality	0,970	0,9769

All three Composite Reliability values are greater than the minimum threshold of 0.70, which means that all constructs in this study have excellent reliability. This shows that all indicators in each variable have high internal consistency in measuring the intended concept.

The Cronbach's Alpha value of each variable is above the value of 0.90, indicating that the constructs in this study have excellent reliability.

Indicator Reliability

Table 3. Indicator Reliability Results

	Outer Loadings
KP	0,942
FTC	0,960
KPE	0,927
KPEL	0,948
KPELF	0,910
KPELL	0,902
KPELM	0,936
KPRB	0,949
KPRP	0,950
RA	0,956
RD	0,931
RJ	0,900
RS	0,921
RU	0,918

Based on the results of the *outer loading* analysis, all indicators in this research model show values above 0.70, with a value range of 0.900 to 0.960. This indicates that all indicators have excellent reliability in measuring their respective constructs. Thus, all indicators are declared valid and can be used for further analysis in the structural model.

Convergent Validity

Table 4. Convergent Validity Results

	AVE
Satisfaction	0,854
Retention	0,857
Service Quality	0,894

These values meet the minimum requirement set at ≥ 0.7 , which means that the indicators in this study are convergently valid. This shows that each indicator has a strong correlation with the construct it represents, so it is able to explain the variables accurately and consistently.

Discriminant Validity

Table 5. Discriminant Validity Results

	Satisfaction	Retention	Service Quality
	n		
Satisfaction	0,9240		
Retention	0,8780	0,9260	
Service Quality	0,9100	0,8320	0,9460

Since the root AVE value for each variable is higher than the correlation value between variables, it can be concluded that all constructs in this model have good discriminant validity. Each variable really measures different concepts and does not overlap with each other, so it can be trusted to be used in testing the relationship between variables in the structural model.

Structural Model Evaluation

After the measurement model (*outer model*) is declared to meet the validity and reliability criteria, the next stage is to evaluate the structural model (*inner model*). Structural model evaluation aims to assess the predictive power and relationship between latent constructs in the research model. The stages carried out include testing the R-square (R^2) value to assess the magnitude of the contribution of the independent variable

in explaining the dependent variable, *effect size* analysis (f^2) to determine how much influence each construct has on other constructs, hypothesis testing using the bootstrapping method to determine the significance of the relationship between constructs, and calculation of *Goodness of Fit* (GoF) to assess the level of fit of the entire model. Thus, this evaluation provides an overall picture of the quality and feasibility of the structural model used in the study.

R Square

Table 6. R-Square Results

	R Square	R Square Adjusted
Satisfaction	0,827	0,826
Retention	0,777	0,775

The adjusted R-Square value of the Satisfaction variable is 0.826, this indicates that the Service Quality variable is able to explain the satisfaction variable by 82.6%. So it can be concluded that the model is considered *moderate*. Meanwhile, the adjusted R-Square value of the Retention variable of 0.775 concludes that the Service Quality variable is able to explain the retention variable by 77.5%, this shows that the research model is classified as strong.

Effect Size

Table 7. Effect Size Results

	Satisfaction	Retention
Service Quality	4,792	0,030
Satisfaction		0,379

The results of the *effect size* analysis in this study show variations in the strength of influence between variables. The effect of Service Quality on Student Satisfaction has an *effect size* value of 4.792, which is classified in the strong category. This value indicates that most of the variation in student satisfaction can be explained by their perceptions of the quality of services provided by the institution, such as facilities, interactions with lecturers, and administrative services. Meanwhile, Service Quality on Student Retention shows an *effect size* value of 0.030, which is classified as small to *moderate*. Although this relationship is not statistically significant ($p > 0.05$), the effect is still present and relevant, especially in the context of an indirect relationship mediated by satisfaction. Furthermore, Student Satisfaction on Student Retention has an effect size of 0.379 which falls into the strong category. Nevertheless, this relationship is statistically significant ($p < 0.05$), which means that student satisfaction still makes a real contribution to their decision to stay and complete their studies at the institution.

Goodness of Fit (GoF)

Table 8. Goodness of Fit (GoF) Results

	AVE	R-Square
Satisfaction	0,854	0,827
Retention	0,857	0,777
Service Quality	0,894	
Average	0,868	0,802

$$GoF = \sqrt{rata - rata AVE \times rata - rata R^2}$$

$$GoF = \sqrt{0,868 \times 0,802}$$

$$GoF = 0,835$$

Based on the calculation results, the GoF value is 0.835, indicating that the research model has a very high level of fit and is able to explain the relationship between variables as a whole well.

Hypothesis Test

Table 9. Hypothesis Test Results

Path	Path Coefficient	T Statistics	P Value
Service Quality -> Satisfaction	0,910	52,888	0,000
Service Quality -> Retention	0,196	1,336	0,181
Satisfaction -> Retention	0,700	5,245	0,000
Service Quality -> Satisfaction -> Retention	0,636	5,369	0,000

Effect of Service Quality (X) on Satisfaction (Z)

The results showed that service quality has a significant and positive effect on student satisfaction. The very high coefficient value (0.910) with a significance level <0.05 indicates that the better the quality of service provided by educational institutions as measured using these 5 dimensions states that the higher the level of satisfaction felt by students, thus H1 is accepted.

Effect of Service Quality (X) on Retention (Y)

This hypothesis is rejected because the p value > 0.05, which means that statistically

service quality has no direct effect on student retention. Although the institution may have provided good service, it is not enough to directly increase students' decision to stay until graduation, thus H2 is rejected.

Effect of Satisfaction (Z) on Retention (Y)

These results support the hypothesis that student satisfaction has a significant and strong influence on retention. With a coefficient of 0.700, it can be concluded that students who are satisfied with institutional services tend to have loyalty and commitment to continue their education until they graduate. Therefore, H3 is accepted.

Satisfaction (Z) can mediate the relationship between Service Quality (X) on Retention (Y)

The results show that student satisfaction significantly mediates the effect of service quality on retention. This means that service quality does not directly increase retention, but through increasing satisfaction first. This mediation is classified as full (full mediation) because the direct path from service quality to retention (H2) is not significant, so H4 is accepted.

Discussion

The results showed that service quality has a significant effect on student satisfaction. This means that the better the quality of services provided by universities, the higher the level of satisfaction felt by students. This positive relationship indicates that students assess their academic experience based on service aspects such as the completeness of facilities, responsiveness of lecturers and staff, reliability of academic systems, and safety of the campus environment. This finding is in line with previous research by Latif et al. (2019) and Phonthanukitithaworn et al. (2022), which showed that service quality plays an important role in shaping students' positive perceptions of higher education institutions. This research strengthens the evidence that in the context of private universities in Indonesia, quality service factors are the main basis for shaping student satisfaction.

Hypothesis testing shows that service quality does not have a significant direct effect on student retention. This means that even though students assess campus services as good enough, this does not necessarily make them decide to stay until graduation. The decision to stay does not only depend on the perception of the service, but is influenced by the satisfaction formed from the service experience. This result is consistent with the findings of Chandra et al. (2019) who found that in some contexts, particularly in developed countries, service quality has no direct impact on student retention. This research indicates that there are other factors that are more decisive in the decision of students to stay, in this case the level of satisfaction.

This research has proven that student satisfaction has a significant effect on retention. This means that students who are satisfied with the services and academic experience they receive are more likely to continue their studies until they graduate. Satisfaction creates emotional attachment and increases students' retention of the institution. This finding is in line with research by Oanh & Tho (2024), which confirms that satisfaction is a key driver of student retention. In addition, this result also supports the findings of Latif et al. (2019) that satisfaction acts as an important bridge between perceptions of service quality and the decision to stay in college.

Student satisfaction was shown to fully mediate the relationship between service quality and student retention. This means that service quality will impact students' decision to stay only if the experience creates strong satisfaction. Without satisfaction, even if the service is good, retention cannot be guaranteed. This full mediation confirms the importance of universities focusing not only on improving service quality, but also on how the service is processed into a satisfying experience for students.

This study shows that to increase student satisfaction and retention, universities need to focus on improving service quality across all SERVQUAL dimensions, namely *tangibles, reliability, responsiveness, assurance, and empathy*. In particular, universities are advised to continue to improve the quality of physical facilities and digital learning platforms, maintain the reliability of academic services, accelerate responses to student needs, ensure data security and clarity of academic processes, and strengthen attention and emotional support for students. This can be done by conducting regular evaluations of facilities and infrastructure, strengthening the training of administrative staff and lecturers in providing excellent service, and opening more two-way communication channels so that students feel more heard. By paying attention to these factors, universities will not only increase student satisfaction, but also build long-term student retention.

CONCLUSIONS

Service quality affects student satisfaction, and student satisfaction can have an influence on student retention. Service quality and student retention can be mediated by student satisfaction variables. The research conducted found that service quality does not directly affect student retention, but there is an alternative path, namely service quality affects retention through student satisfaction. Thus, student satisfaction can be one of the important factors that encourage students to continue their studies until completion.

The results also show that the mediating effect of student satisfaction is full (full mediation), because the value of the direct effect of service quality on retention is not statistically significant. This means that the effect of service quality on retention will only be optimal if students are satisfied with the services received. In this context, student satisfaction not only acts as an intermediary, but is the main key in creating retention.

Most of the respondents in this study are students from the Management Study Program class of 2022 and 2023, which are dominated by generation Z. The characteristics of this generation that tend to expect flexible, technology-based, and responsive educational services to individual needs are also factors that strengthen the importance of service quality and satisfaction in determining the continuation of student studies in higher education.

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