

The Moderating Effect Of Gender On The Relationship Between Service Quality And Student Satisfaction Using A Hesqual Model: Evidence From A Private University In East Borneo

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Haryadi Jaka Susila^{1,2*}, Iramani³

¹Sekolah Tinggi Ilmu Ekonomi Balikpapan, Balikpapan, East Kalimantan, Indonesia

²Master of Management Student at the Program Faculty of Economics and Business, Universitas Hayam Wuruk Perbanas, Surabaya, East Java, Indonesia

³Universitas Hayam Wuruk Perbanas, Surabaya, East Java, Indonesia

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ABSTRACT

This study examines the impact of service quality on student satisfaction using the HESQUAL model, focusing on gender as a moderating factor. Higher education institutions face challenges in meeting student expectations, and a gap exists in research regarding the role of gender in service quality models. This research addresses this gap by using a quantitative approach, collecting data from 290 respondents at STIE Balikpapan, a private university in East Borneo, through proportional random sampling. The data were analyzed using SEM-PLS. Results show that administrative services, infrastructure, and lecturer quality significantly impact student satisfaction, while academic services related to the Academic Information System (SIKAD) do not. Gender was not found to significantly moderate the relationship between service quality and student satisfaction. This highlights the importance of focusing on service improvements in areas that directly influence student satisfaction, such as administrative services and lecturer quality. Practical implications include improving administrative processes, maintaining infrastructure, and ensuring high-quality teaching. Theoretical contributions emphasize the role of gender in understanding student satisfaction in higher education.

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ABSTRAK

Penelitian ini mengkaji pengaruh kualitas layanan terhadap kepuasan mahasiswa dengan menggunakan model HESQUAL, dengan fokus pada gender sebagai faktor moderasi. Institusi pendidikan tinggi menghadapi tantangan dalam memenuhi ekspektasi mahasiswa, sementara terdapat kesenjangan penelitian terkait peran gender dalam model kualitas layanan. Penelitian ini berupaya mengatasi kesenjangan tersebut melalui pendekatan kuantitatif, dengan mengumpulkan data dari 290 responden di STIE Balikpapan, sebuah perguruan tinggi swasta di Kalimantan Timur, melalui teknik proporsional random sampling. Data dianalisis menggunakan SEM-PLS. Hasil penelitian menunjukkan bahwa layanan administrasi, infrastruktur, dan kualitas dosen berpengaruh signifikan terhadap kepuasan mahasiswa, sedangkan layanan akademik yang terkait dengan Sistem Informasi Akademik (SIKAD) tidak berpengaruh signifikan. Gender juga tidak terbukti memoderasi hubungan antara kualitas layanan dan kepuasan mahasiswa. Temuan ini menegaskan pentingnya peningkatan layanan pada aspek-aspek yang secara langsung memengaruhi kepuasan mahasiswa, seperti layanan administrasi dan kualitas dosen. Implikasi praktis meliputi peningkatan proses administrasi, pemeliharaan infrastruktur, serta memastikan kualitas pengajaran yang tinggi. Kontribusi teoretis menekankan peran gender dalam memahami kepuasan mahasiswa di pendidikan tinggi.

Keywords: Student Satisfaction, HESQUAL, Administrative Services, Facilities and Infrastructure Services, Lecturers' Services, Academic Services.

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1. INTRODUCTION

Higher education plays a crucial role in shaping quality human resources. However, many studies have not explored gender as a moderating factor in the relationship between service quality and student satisfaction. This study fills that gap by analyzing the moderating effect of gender in the context of STIE Balikpapan, a private university in East Borneo. In an increasingly competitive educational environment, the quality of services provided by higher education institutions plays a vital role in attracting and retaining prospective students who are now faced with various choices of educational institutions that can support the achievement of their academic goals. One of the key factors influencing the selection of a university by prospective students is the quality of services provided by the institution. High-quality educational services not only contribute to student satisfaction but also have the potential to foster loyalty and enhance the reputation of the institution. Service Quality (SERVQUAL) is a model used to measure service quality. This model was developed by Parasuraman, Zeithaml, and Berry (1985) and has been widely used in various industrial sectors to determine how well a company provides services to its customers. SERVQUAL compares customer expectations of a service with customer perceptions of the service they actually receive. If there is a large gap between the two, then the service quality is considered low. Conversely, if customer expectations and perceptions are in line, then service quality is considered good. SERVQUAL identifies five main dimensions that affect customer perceptions of service quality, namely: Tangibility, Reliability, Responsiveness, Assurance, and Empathy. This study uses the HESQUAL (Higher Education Service Quality) model. Unlike SERVQUAL, HESQUAL is a model specifically designed to measure the quality of services provided by higher education institutions. This model was developed to understand more deeply what students expect and how they perceive the services they receive in a higher education environment. Just like SERVQUAL, HESQUAL also compares student expectations of service quality with student perceptions of the services they actually receive. The gap between the two will show the quality of service provided by educational institutions. HESQUAL has several key dimensions that cover various aspects of service quality in higher education, including: Academic Quality, Administrative Service Quality, Facility Quality, and Social Interaction Quality.

Since this research was conducted in higher education, the model used was HESQUAL. The HESQUAL model includes several important dimensions, such as administrative quality, physical environment conditions, core education quality, supporting facilities, and the process of educational transformation (Teeroovengadum *et al.*, 2019).

The quality of services in higher education significantly impacts students' learning experiences, which, in turn, influences their level of satisfaction with the various services provided. Several studies have shown that the quality of administrative services, supporting facilities, lecturers' services, and academic systems play a significant role in determining student satisfaction (Amoako, *et. al.*, 2023; Harahap, Makhdalena, & Zulkarnain, 2019; Sudirman, *et. al.*, 2023). For instance,

good administrative services, including friendly and responsive interactions between staff and students, are crucial in creating a positive experience. Additionally, the quality of educational facilities, such as classrooms and other infrastructure, greatly affects students' comfort during the learning process. Competent lecturers' services, attention to students' needs, and the accessibility of academic information systems also contribute to higher student satisfaction.

Sekolah Tinggi Ilmu Ekonomi Balikpapan (STIE Balikpapan), as a private higher education institution, plays an important role in providing quality higher education. However, based on complaints received by the Student Representative Council in June 2023, several issues related to the quality of services at STIE Balikpapan have been identified. These complaints include administrative services being considered unfriendly and slow, poorly maintained facilities, and inadequate teaching quality, such as lecturers' services who are not well-versed in the subject matter or are frequently distracted by using mobile phones during classes. These complaints reflect student dissatisfaction with the services provided by the campus.

This study aims to analyze the impact of various dimensions of service quality, such as administration, facilities, lecturers' services, and academic services, on student satisfaction. In addition, this study also examines the moderating effect of gender in strengthening the effect of service quality on student satisfaction of STIE Balikpapan, which is a well-known private university in East Borneo. Previous research conducted was limited to examining the effect of service quality on student satisfaction. This study also examines the moderating effect of gender on the relationship between service quality and student satisfaction. Therefore, the novelty in this research is the use of gender as a moderating variable in the HESQUAL model.

2. THEORETICAL FRAMEWORK AND HYPOTHESES

Expectation Disconfirmation Theory (EDT)

EDT is a concept in psychology that explains how a person's feelings and behavior are influenced by how much an experience or result matches their expectations (Hien *et al.*, 2024). EDT started from the study of consumer behavior. A person has certain expectations of a product or service used. When someone experiences something, they will compare the experience with their expectations. EDT consists of five main constructs, namely perceived performance, expectations, confirmation, satisfaction, and repurchase intention. If the product/service performance is above or equal to expectations, it causes positive disconfirmation or satisfaction; otherwise, if the product/service performance is below expectations, it causes negative disconfirmation or dissatisfaction. A lot of evidence shows that consumer expectations and disconfirmation play a significant role in influencing consumer responses after using a product or service. Therefore, confirmation or disconfirmation influenced by expectations is an important factor for satisfaction.

The student satisfaction

University students are often the subject of research focusing on their satisfaction, with various studies exploring the factors that influence this satisfaction. In this context, Kotler, Kartajaya, & Setiawan (2021) argue that student satisfaction, as customers, arises from evaluating the performance of the products or services received, which is then compared to the expectations they held beforehand. This research aligns with the understanding that student satisfaction is not solely determined by the outcomes they receive but also by the alignment between their expectations and the actual experiences they encounter during the educational process (Parasuraman, Zeithaml, & Berry, 1985). According to Nguyen *et. al.*, (2024), student satisfaction is influenced by the extent to which universities can meet their expectations in various aspects, such as academic quality, teaching, facilities, and the overall experience during their studies. This satisfaction is closely related to the gap between student expectations – what they want – and the reality they experience throughout their education. When students perceive that the university meets or even exceeds their expectations in these various areas, their level of satisfaction tends to increase. This study also emphasizes that student satisfaction is a valuable investment for universities, as satisfied students are more likely to continue their studies and recommend the institution to others (Kumar, 2020).

Higher Education Service Quality Model (HESQUAL)

HESQUAL is a model used to measure the quality of services provided by higher education institutions. The HESQUAL tries to understand what students expect and how they perceive the services they receive in the higher education environment where they study. The HESQUAL model, developed by Teeroovengadum, Kamalanabhan, & Seebaluck (2016), offers a comprehensive approach to assessing the quality of educational services in higher education institutions. This model divides service quality into five main dimensions: administrative quality, physical environment quality, core educational quality, supporting facilities quality, and transformation quality. The model provides a highly useful framework for identifying areas that need improvement to enhance student satisfaction and overall service quality in education.

The purpose of applying the HESQUAL model in this study is to offer a measurement scale that not only considers the final outcomes of educational services but also takes into account the processes that occur throughout the educational experience. With this approach, the study aims to gain a deeper understanding of the various factors influencing service quality in higher education, which in turn facilitates the development of more effective strategies to improve student satisfaction and educational outcomes. HESQUAL has proven to be an invaluable tool for evaluating and enhancing service quality in higher education institutions (Koren, Sokoli, and Kujtim, 2019).

Previous research has also emphasized the importance of both functional and technical aspects of service quality in enhancing student satisfaction. Teeroovengadum, Kamalanabhan, & Seebaluck (2016)

stress that the quality of educational services must include an evaluation of how services are delivered technically, through facilities and infrastructure, and how these services are applied in practice, such as the interaction between lecturers' services and students. The transformative aspect of service quality, which relates to the impact of services on students' personal and academic development, also plays a significant role in shaping students' perceptions of the quality of services they receive. This further strengthens the argument that service quality in higher education should be assessed comprehensively, considering both the educational outcomes and the processes that occur during the students' educational journey.

The relationship between HESQUAL and student satisfaction

The importance of service quality in influencing student satisfaction has been discussed in numerous previous studies. Kotler, Armstrong, & Balasubramanian (2024) state that quality encompasses the totality of characteristics of a product or service that can affect its ability to meet customer needs and expectations. In the context of higher education, service quality is not only related to the final outcomes of education but also to the quality of the process that occurs throughout the educational journey. Existing research indicates that educational quality is assessed not only by academic outcomes but also by the quality of teaching, the interactions between lecturers' services and students, and the quality of available campus facilities (Kerin and Hartley, 2023). High service quality in higher education institutions can enhance student satisfaction, which in turn fosters loyalty and improves the image and competitiveness of the institution.

The relationship between administrative services and student satisfaction

Administrative services in higher education institutions play a crucial role in determining student satisfaction, encompassing services such as registration, document management, financial services, and academic support. The student experience is highly influenced by several key factors, including efficiency, accuracy of information, ease of access, and service quality, all of which, if managed well, can reduce student frustration, improve satisfaction, and strengthen their loyalty to the institution. The success of administrative services relies on the ability to complete administrative tasks quickly and accurately, the accuracy of the information provided, and the quality of the relationship between administrative staff and students, which affects students' trust in these services (Hui, 2020; Wahyuni, 2023). Furthermore, the accessibility of administrative services, whether in person or through digital platforms, makes it easier for students to manage various administrative tasks. Positive interactions, marked by professionalism, effective communication skills, and responsiveness to complaints, can create a more enjoyable experience, where friendly and empathetic service has the potential to enhance satisfaction and strengthen students' loyalty to the university (Kotler, Armstrong, & Balasubramanian, 2024; Tari, Liufeto, & Koroh, 2022).

According to Kotler, Kartajaya, & Setiawan (2021), the quality of administrative services plays a crucial role in student satisfaction, encompassing services such as registration, document management, and academic support. When administrative services are managed efficiently, accurately, and swiftly, students are more likely to have a positive experience, which boosts their satisfaction with the educational institution (Hui, 2020; Wahyuni, 2023). Therefore, the quality of administrative services is expected to have a significant impact on student satisfaction.

H1: The quality of administrative services significantly affects student satisfaction.

The relationship between facilities and infrastructure services and student satisfaction

Educational facilities, including classrooms, laboratories, and libraries, play a significant role in supporting the success of the learning process. Proper management of these facilities can create a comfortable environment for students, reduce disruptions caused by inadequate facilities, and ultimately improve the quality of learning. Conversely, poor facilities can hinder the learning process and reduce student satisfaction with their campus experience. Research shows that efficient management of facilities can improve the quality of the learning experience and create a more conducive and productive educational atmosphere (Hanifa, Sentosa, & Armiami, 2019; Ikram & Kenayathulla, 2023). Additionally, the quality of facilities also greatly impacts student satisfaction, with adequate amenities such as comfortable classrooms, clean toilets, and the availability of prayer facilities contributing to a better learning experience. Therefore, efforts to improve facilities, including providing appropriate amenities and maintaining them continuously, are crucial in enhancing student satisfaction with their educational institution (Thapa, 2022; Tari, Liufeto, & Koroh, 2022).

Educational facilities, such as classrooms, laboratories, and libraries, play an essential role in creating a conducive learning environment. Research by Hanifa, Sentosa, & Armiami (2019) indicates that high-quality facilities and infrastructure can enhance student comfort and learning effectiveness, ultimately improving their satisfaction. Well-maintained and comfortable facilities contribute to a better learning experience, which positively influences students' satisfaction levels.

H2: The quality of facilities and infrastructure services significantly affects student satisfaction.

The relationship between lecturers' services and student satisfaction

Lecturers' services play a critical role in higher education as they significantly affect students' academic experiences. The quality of lecturers' services is related to subject mastery, delivery skills, and teaching methods, all of which directly contribute to student satisfaction. Lecturers who are well-versed in their subjects, can communicate information clearly, and use engaging teaching methods can create an effective and enjoyable learning experience. Conversely, lecturers who lack teaching skills may reduce student satisfaction and disrupt the

learning process (Afzal, Rafiq, & Kanwal 2023; Ahmed, 2021). Key indicators for evaluating lecturers' services include professionalism, subject expertise, teaching delivery methods, and teaching skills. Lecturers who possess good teaching abilities and can effectively interact with students will enhance students' satisfaction with their learning experiences. Therefore, the quality of lecturers' services is critical in creating a fulfilling academic experience for students (Suryanto, 2023).

Quality lecturers' services involve subject expertise, effective communication, and teaching skills. Afzal, Rafiq, & Kanwal, 2023; Ahmed, 2021) state that lecturers who are knowledgeable, able to deliver content effectively, and who engage positively with students enhance the academic experience and satisfaction. Therefore, the quality of lecturers' services is anticipated to have a positive influence on student satisfaction.

H3: the quality of lecturers' services significantly affects student satisfaction.

The relationship between academic services and student satisfaction

Academic services based on the Academic Information System (SIKAD) are essential for improving the efficiency and effectiveness of academic data management, facilitating students' access to information related to registration, class schedules, and grades, while reducing reliance on manual procedures prone to errors. The quality of academic services is highly influenced by accessibility, system speed, and clarity of information, all of which contribute to increased student satisfaction (Saputri & Mulyani, 2022). The use of technology in academic systems allows higher education institutions to reduce administrative errors and expedite data management processes. Academic services supported by efficient information systems help students complete administrative tasks more quickly and accurately. The speed of the system and the clarity of the information provided will enhance students' experiences in accessing academic services, thereby improving their satisfaction with the institution (Rahayu, 2018).

Efficient academic services, supported by an SIKAD, enable students to access important information such as registration, schedules, and grades. The speed and clarity of the academic information system directly contribute to student comfort in accessing these services (Saputri & Mulyani, 2022; Suroso, Suherman, & Sumarni, 2022). As such, the quality of academic services is expected to positively impact student satisfaction

H4: The quality of academic services significantly affects student satisfaction.

The role of gender in moderating the influence of service quality on student satisfaction

Kumar (2020) find that perceptions of satisfaction can differ based on demographic characteristics, including gender. In the context of administrative services, gender may influence how satisfied students feel with the quality of services provided, such as in terms of speed, accuracy, or accessibility. As Ikram & Kenayathulla (2023) explain, factors

such as classroom comfort, availability of prayer facilities, and cleanliness of campus facilities may be perceived differently by male and female students. Therefore, gender may moderate the impact of facilities and infrastructure services on student satisfaction. Research by Yunusa & Umar (2021) indicates that gender can influence students' perceptions of lecturers' services, particularly regarding communication, teaching approaches, and interactions with students. For instance, male and female students may have differing expectations about how lecturers convey material, which means gender could moderate the relationship between lecturers' services and student satisfaction. Gender may influence students' perceptions of academic services, such as the accuracy and speed of information systems. Male and female students might have different preferences regarding how academic services are delivered, whether through online platforms or other technology-based administrative systems. Therefore, gender is expected to moderate the impact of academic services on student satisfaction (Suroso, Suherman, & Sumarni, 2022).

H5a: Gender moderates the effect of administrative services on student satisfaction.

H5b: Gender moderates the effect of facilities and infrastructure services on student satisfaction.

H5c: Gender moderates the effect of lecturers' services on student satisfaction.

H5d: Gender moderates the effect of academic services on student satisfaction.

The research model that will be tested in this study is presented as a conceptual framework as shown in Figure 1 as follows:

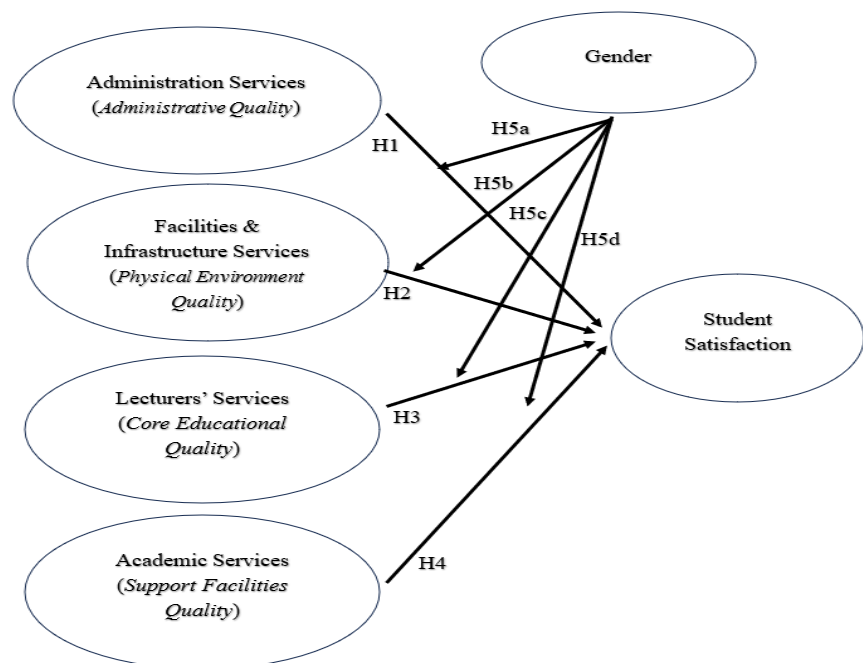


Figure 1.
Conceptual Research Model

3. RESEARCH METHOD

This study employs a quantitative approach with statistical analysis using SEM-PLS. Data were collected from 290 respondents at STIE Balikpapan through proportional random sampling. To achieve the research objectives, an appropriate methodology was employed to ensure that the data collected accurately represents the population and supports the analysis of the proposed model. This research is descriptive in nature, describing the variables without making comparisons between them, and utilizes an online questionnaire survey. The research is cross-sectional, collecting data at a single point in time (Bell, Bryman, & Harley, 2019; Creswell and Creswell, 2018; Arundel, 2020).

The variables observed in the research consist of endogenous variables (Y), namely student satisfaction, exogenous variables (X) including administrative services (X1), facilities and infrastructure services (X2), lecturers' services (X3), academic services (X4), and the moderating variable namely gender (Z). All variables are measured using a Likert scale, with the exception of gender using a nominal scale. The research instrument was developed from previous research and discussions with experts in the fields of marketing and higher education with the aim of ensuring that the research instrument has high validity. The research instrument grid can be seen in the Appendix.

This research was conducted at STIE Balikpapan which is one of the universities in the field of business that is very well known in East Kalimantan with a very good rating. The sampling technique used in this research is proportional random sampling considering that this research was conducted on a population with a limited number of elements. Apart from that, the use of random or probability sampling techniques produces conclusions with a high level of generalization. The sampling process began by making a list of the entire list of 960 active students and grouped into groups of male students and female students.

The next stage is to determine the number of samples using the Slovin formula:

$$n = \frac{N}{1 + Nxe^2} \dots\dots\dots (1)$$

$$n = \frac{960}{1 + 960 \cdot 0.05^2} = 282.35$$

n = minimum number of samples

N = number of population elements = 960 students

e = sampling error = 0.05

This formula is used in survey research and sample selection to ensure that the sample taken is representative of the general population. Based on formula (1), the minimum sample size is 283. Furthermore, 145 persons are taken randomly from each group. The samples taken were then determined as respondents and asked to fill out a questionnaire. Data collection in this research used a survey method, namely by distributing questionnaires to respondents selected as samples during September-October 2024.

The data analysis was conducted using Partial Least Squares-Structural Equation Modeling (SEM-PLS) with SmartPLS version 4.0. The analysis process consisted of two stages: first, the measurement model analysis, and second, the structural model analysis. SEM-PLS was chosen due to its efficiency in measuring high probability estimates, as well as its ability to ensure the validity and reliability of the results (Hair *et. al.*, 2022).

4. DATA ANALYSIS AND DISCUSSION

The analysis revealed that administrative services, facilities, and lecturers' services significantly influence student satisfaction, while academic services do not. Gender does not moderate these relationships, suggesting that service quality impacts all students equally regardless of gender.

Results of Validity and Reliability Tests

In reliability testing, two indicators are used to determine the reliability of a construct. A construct is deemed reliable if both the composite reliability and Cronbach's alpha values are above 0.70 (≥ 0.70). Additionally, in the convergent validity test, the factor loading (outer loading) must exceed 0.70 (≥ 0.70); if it falls below 0.70, the outer loading should be removed to improve the model's fit. The Average Variance Extracted (AVE) must be greater than 0.50 (≥ 0.50) to confirm that all constructs meet the recommended threshold.

Table 1
Outer loading, Composite Reliability, dan Average Variance Extracted

Variable	Item	Outer Loading	Cronbach's Alpha	Composite Reliability (rho_c)	AVE
Student Satisfaction	KM1	0.717	0.917	0.933	0.635
	KM2	0.751			
	KM3	0.767			
	KM4	0.806			
	KM5	0.798			
	KM6	0.820			
	KM7	0.849			
	KM8	0.859			
Administrative Services	LAD1	0.841	0.920	0.940	0.758
	LAD2	0.879			
	LAD3	0.892			
	LAD4	0.861			
	LAD5	0.880			
Facilities & Infrastructure Services	LSP1	0.874	0.808	0.887	0.724
	LSP2	0.891			
	LSP3	0.784			

Lecturer vices	Ser-	LD1	0.775	0.895	0.923	0.707	JBB 15, 1
		LD2	0.880				
		LD3	0.899				
		LD4	0.867				
		LD5	0.776				
Academic vices	Ser-	LA1	0.858	0.929	0.946	0.779	
		LA2	0.893				
		LA3	0.889				
		LA4	0.849				
		LA5	0.921				

Source: survey results, data processed

Table 1 shows that the results of the tests conducted on each variable show that the outer loading and AVE for each measurement item meet the required standards for validity and reliability. For instance, the Average Variance Extracted (AVE) value for the student satisfaction variable is 0.635, exceeding the threshold of 0.5, which indicates strong convergent validity. Similarly, the composite reliability and Cronbach's Alpha values, both above 0.70, confirm excellent internal consistency. In summary, all the variables assessed demonstrate that the services at STIE Balikpapan meet high standards of validity and reliability, reflecting exceptionally high levels of student satisfaction with the services provided in various areas.

Discriminant Validity test.

The discriminant validity assessment is based on the criteria established by Fornell and Larcker and the Heterotrait-Monotrait Ratio (HTMT). This type of validity test is conducted to confirm that the variables are conceptually distinct and can be verified through statistical or empirical analysis. According to Fornell and Larcker's criteria, the square root of the AVE must exceed the correlations between variables and HTMT less than 0.90 (Hair, *et al.*, 2022).

Table 2
Fornell dan Larcker

Variable	JK	KM	LAD	LA	LD	LSP
JK	1					
KM	-0.052	0.797				
LAD	-0.014	0.743	0.871			
LA	-0.118	0.586	0.566	0.882		
LD	-0.089	0.672	0.64	0.7	0.841	
LSP	-0.086	0.659	0.542	0.56	0.605	0.851

Source: Data Processed

As shown in Table 2, each variable's square root of the AVE is greater than the correlation with other variables, demonstrating that the discriminant validity requirement for all variables is met. For instance, the administrative services variable has a square root of AVE value (0.871) that is greater than its correlations with academic services (0.566), lecturers' services (0.640), and facilities and infrastructure services (0.542).

Table 3
Heterotrait-Monotrait Ratio (HTMT)

	JK	KM	LAD	LA	LD	LSP	JK x LD	JK x LAD	JK x LA	JK x LSP
JK										
KM	0.063									
LAD	0.059	0.809								
LA	0.123	0.627	0.608							
LD	0.093	0.731	0.704	0.769						
LSP	0.110	0.765	0.628	0.644	0.706					
JK x LD	0.079	0.458	0.419	0.625	0.752	0.548				
JK x LAD	0.014	0.574	0.657	0.485	0.477	0.504	0.637			
JK x LA	0.102	0.455	0.424	0.758	0.623	0.549	0.826	0.645		
JK x LSP	0.074	0.465	0.411	0.514	0.509	0.807	0.680	0.627	0.679	

Source: survey results. data processed

Referring to Table 3 on the Heterotrait-Monotrait Ratio (HTMT) measurement, it was observed that all HTMT values for the construct pairs in the model fall below the recommended threshold of 0.90 (< 0.90). This suggests that each construct in the model satisfies the requirements for discriminant validity. In other words, the constructs in the model can be distinctly identified from each other. As a result, the research model demonstrates a valid structure, where each construct accurately represents a separate concept and shows no significant overlap with other constructs. Therefore, this model is deemed appropriate for further analysis.

Hypothesis test

Hypothesis testing is conducted to analyze the relationships between variables based on the proposed hypotheses. This testing involves examining the path coefficient, t-value, and p-value. If the calculated statistic is greater than 1.96 (t-table) or the p-value from the test is less than 0.05, there is a significant effect between the variables. The path coefficient is then evaluated to determine the strength of the effect between the variables. Furthermore, the f-square value measures the direct influence of a variable at the structural level. with thresholds of 0.02 for a small effect, 0.15 for a moderate effect, and 0.35 for a large effect.

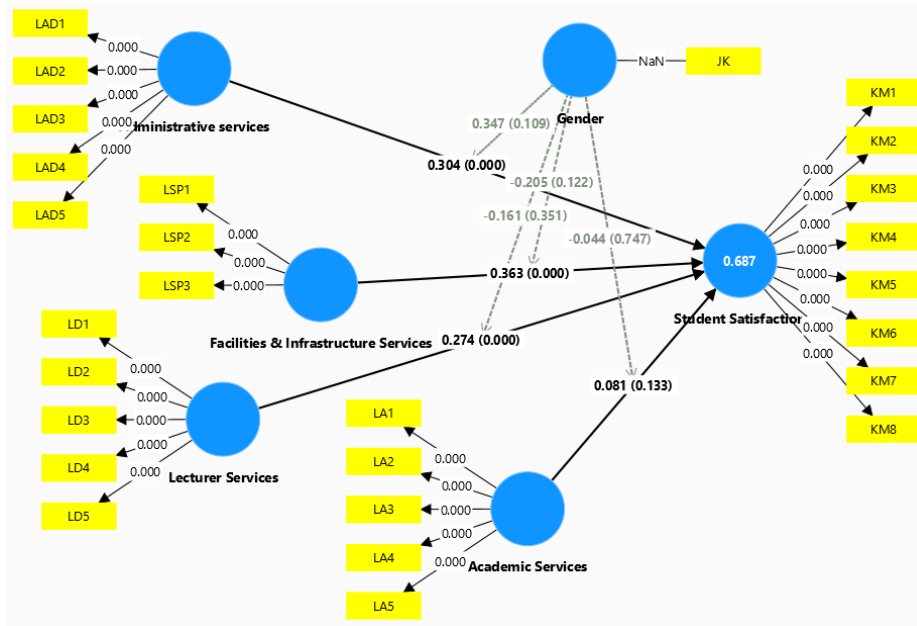


Figure 2

Pattern of Variable Significance Test Results (p-value)

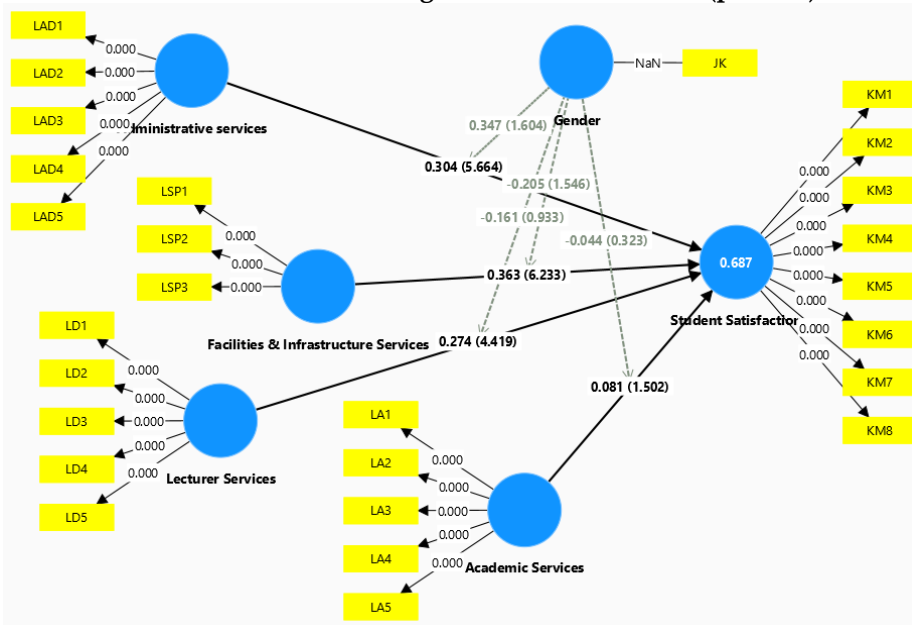


Figure 3

Pattern of Variable Significance Test Results (t-value)

Table 4
Results of Hypothesis Testing

Hypothesis	Path Coef- ficient	p- value	t- value	f- square	Result
H1. Administrative Services → Student Satisfaction	0.304	0.000	5.664	0.094	Accepted
H2. Facilities and Infrastructure Ser- vices → Student Satisfaction	0.363	0.000	6.233	0.135	Accepted

Student Satisfaction

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H3. Lecturer Services → Student Satisfaction	0.274	0.000	4.419	0.055	Accepted
H4. Academic Services → Student Satisfaction	0.081	0.133	1.502	0.006	Rejected
H5a. Administrative Services*Gender → Student Satisfaction	0.374	0.109	1.604	0.047	Rejected
H5b. Facilities and Infrastructure Services*Gender → Student Satisfaction	-0.205	0.122	1.546	0.018	Rejected
H5c. Lecturer Services*Gender → Student Satisfaction	-0.161	0.351	0.933	0.007	Rejected
H5d. Academic Services *Gender → Student Satisfaction	-0.044	0.747	0.323	0.001	Rejected

R-squared = 0.687

Goodness of Fit Index (GoF) = 0.703

Source: survey results. data processed

R-squared measures the proportion of variation in the endogenous variables that can be explained by other exogenous or endogenous variables in the model. The interpretation values for R-squared are 0.19 (low), 0.33 (moderate), and 0.66 (high) (Chin, 1998). Based on Table 4, it can be seen that the R-squared value is 0.687. This means that 68.7% of the variation in endogenous variables can be explained by exogenous variables. This indicates that the contribution to student satisfaction is 68.7%, while the remaining percentage is explained by other variables outside of the model.

The Goodness of Fit (GoF) index provides an overall evaluation of the model. calculated based on the reflective measurement model. It is derived from the square root of the geometric average of the mean communality and the mean R-squared (Henseler *et al.*, 2014). As stated by Wetzels, Odekerken-Schröder, and Van Oppen (2009), the GoF index values are interpreted as 0.1 (low), 0.25 (medium), and 0.36 (high). In this study, the average communality is 0.720, and the average R-squared is 0.687. According to Table 4, it is evident that the GoF value shows a value greater than 0.36. This indicates that the overall evaluation of the model using the data is accepted, which suggests a high level of model fit with a value of 0.703.

The Influence of Administrative Services on Student Satisfaction

The findings of this study highlight that Administrative Services have a notable positive effect on Student Satisfaction. The path coefficient of 0.304 and the very low p-value (0.000) suggest that students who are satisfied with administrative services tend to report higher levels of overall satisfaction. The hypothesis positing that administrative services influence student satisfaction is supported, indicating that an im-

provement in the quality of these services correlates with increased student satisfaction. Consequently, it is recommended that STIE Balikpapan prioritize enhancing the quality of administrative services by ensuring clear procedures, employing competent staff, and providing timely services. Effective and responsive administrative services are crucial for fostering student comfort and trust, which in turn boosts satisfaction. This conclusion aligns with studies by Amoako *et al.* (2023), Suryanto (2023), Tari *et al.* (2022), and Widawati & Siswohadi (2021), which emphasize the role of administrative services in enhancing student satisfaction. Proper management of administrative functions, such as registration, information dissemination, and support services, can significantly improve students' satisfaction and contribute to positive perceptions of educational quality. A smooth and accessible administrative system enriches the overall academic experience, supporting students' educational achievements. Therefore, optimizing administrative operations is essential for delivering a satisfying educational experience. Key factors such as the speed of service, clarity of communication, and staff responsiveness are critical drivers of student satisfaction.

The Influence of Facilities and Infrastructure Services on Student Satisfaction

Facilities and Infrastructure Services have a more substantial effect on student satisfaction than some other service dimensions. The path coefficient of 0.363 and a p-value of 0.000 demonstrate that adequate facilities, such as comfortable classrooms, clean restrooms, and sufficient religious and parking facilities, significantly contribute to students' comfort and satisfaction with their academic activities. As such, the hypothesis that facilities and infrastructure services influence student satisfaction is accepted. STIE Balikpapan should continue to invest in maintaining and improving its facilities to ensure an environment that supports academic comfort. This finding is consistent with studies by Harahap *et al.* (2019), Shahbana *et al.* (2021), Sudirman *et al.* (2023), Suryanto (2023), and Amoako *et al.* (2023), which underscore the importance of facilities and infrastructure in student satisfaction. Well-maintained facilities, such as comfortable classrooms and well-equipped laboratories, create an environment conducive to learning and positively influence students' perceptions of educational quality. Efficient infrastructure not only enhances the learning experience but also motivates students and helps build positive relationships between students and the institution.

The Influence of Lecturers' Services on Student Satisfaction

Regarding Lecturers' Services, the study reveals a significant positive impact on student satisfaction. With a path coefficient of 0.274 and a p-value of 0.000, the results show that students who are satisfied with their lecturers' performance tend to report higher levels of satisfaction. This suggests that lecturers' services have a significant effect on students' overall satisfaction. Students feel more satisfied when lecturers not only demonstrate mastery of the subject but also communicate ef-

fectively and foster a positive learning environment. Although this effect is somewhat smaller compared to the impact of administrative services and facilities, the quality of teaching is still a vital factor in enhancing student satisfaction. Therefore, STIE Balikpapan should focus on improving the quality of its teaching, both in terms of subject matter expertise and creating a supportive learning environment. These results are in line with the findings of Syefudin (2019), Sudirman *et al.* (2023), and Suryanto (2023), which emphasize the importance of lecturers' services in student satisfaction. Effective teaching, clear communication, and positive interactions between lecturers and students help to strengthen academic relationships and improve student satisfaction. Lecturers who are responsive to academic needs and provide proper guidance contribute to a conducive and enjoyable learning environment. This not only increases satisfaction with individual courses but also enhances students' overall perception of the quality of education.

The Influence of Academic Services on Student Satisfaction

In contrast to the other service dimensions, Academic Services did not demonstrate a significant influence on Student Satisfaction. The path coefficient for this relationship is 0.081, with a p-value of 0.133, which is above the typical significance threshold of 0.05. This suggests that academic services do not have a substantial impact on students' overall satisfaction. Although academic services, particularly the academic management system (SIKAD), are important, they do not significantly affect student satisfaction. The specific dimensions measured, such as system quality, information, and communication, do not cover all the factors that influence student satisfaction. Similar conclusions were found in studies by Setiawan & Hasbullah (2018) and Aditya & Agustini (2019). Other factors, such as interactions with staff, facilities, supporting resources, and system updates, also play an important role in shaping student satisfaction. When the measured dimensions are too narrow, the connection between SIKAD and student satisfaction becomes insignificant. Moreover, the questionnaire's emphasis on the technical aspects of SIKAD does not fully reflect students' overall satisfaction with academic services, which is also shaped by non-technical elements such as human interaction and the learning experience (Parasuraman *et al.*, 1988).

The Influence of Gender as a Moderating Variable

The study also indicates that gender does not significantly influence the relationship between various services (administrative facilities and infrastructure, lecturers and academic) and student satisfaction, with p-values exceeding 0.05. This suggests that gender differences do not affect the degree to which these service dimensions contribute to student satisfaction. As a result, STIE Balikpapan can focus on improving the quality of services without considering gender as a moderating factor in their impact on student satisfaction. The results showed that gender did not significantly moderate the relationship between various services (administration, facilities and infrastructure, lecturers, and academics) and student satisfaction, with p-values greater than 0.05. This

suggests that gender differences do not affect the extent to which these service dimensions contribute to student satisfaction. Consequently, STIE Balikpapan can focus on improving service quality without considering gender as a moderating factor in its impact on student satisfaction. This result does not support the research of Ikram & Kenayathulla (2023) which successfully proved that factors such as classroom comfort, availability of prayer facilities, and cleanliness of campus facilities are perceived differently by male and female students, meaning that gender can moderate the impact of facilities and infrastructure services on student satisfaction. This is also not in line with the results of research by (Suroso, Suherman, & Sumarni, (2022) that proves that gender can moderate the impact of academic services on student satisfaction.

5. CONCLUSION, IMPLICATIONS, RECOMMENDATIONS, AND LIMITATIONS

Conclusion

The results show that the quality of administrative services, facilities, and infrastructure, and lecturers has a positive effect on student satisfaction. However, academic services, especially related to the Student Information System (SIKAD) and information services, did not show a significant impact on student satisfaction. This result implies that higher education service providers should improve administrative services, facilities and infrastructure, and lecturer services. The excellent service provided is proven to maximize student satisfaction. Furthermore, another result obtained in this study is that gender is unable to moderate the relationship between services and student satisfaction. The implications of this result will strengthen the importance of implementing inclusive policies that do not discriminate between male and female students. These are the new findings in this study.

Implication

The theoretical implications are as follows: This study strengthens existing theories linking service quality to student satisfaction, such as the HESQUAL model and customer satisfaction theory. The findings contribute to the development of student satisfaction theory and open avenues for future research, particularly in comparing services between public and private institutions. Furthermore, the discovery that administrative services and facilities and infrastructure services have a greater impact on student satisfaction than academic services provides new insights into the existing literature. This finding broadens the focus of student satisfaction research, which has traditionally concentrated on academic services. The finding that gender does not moderate the effect of endogenous variables on student satisfaction, especially within the higher education context. It challenges previous understandings that demographic factors, such as gender, might influence student satisfaction. Overall, this research enriches educational service theory by introducing interrelated service dimensions that collectively enhance

student satisfaction and open the door for further studies in broader contexts, such as large universities or private institutions.

This study offers several practical implications. First, administrative services should be carried out with clear procedures, competent and responsive staff. Efficiency improvements can be made through staff training, better process design, and optimization of administrative systems. Second, facilities and infrastructure need to be well managed. It should be ensured that facilities such as classrooms and restrooms are in good condition and comfortable. Regular maintenance and development of new facilities should be prioritized to create an optimal learning environment. Third, high-quality lecturer services play an important role in improving student satisfaction. Continuous training for lecturers to improve teaching skills and the use of technology to support learning is essential.

Limitations

This study has several limitations that should be taken into account. First, the evaluation of academic services was limited to the dimensions of the Student Information System (SIKAD) and the quality of information, which may not cover all aspects that influence student satisfaction with academic services. Second, this research was conducted at STIE Balikpapan, meaning the findings cannot be directly generalized to other higher education institutions with different characteristics. Third, the measurement of the gender moderation variable indicated that gender differences did not significantly affect students' perceptions of the services provided. Fourth, the sample had an unbalanced gender distribution, with male students comprising 37.6% and female students 62.4% at STIE Balikpapan.

Suggestion

This study offers several important recommendations to deepen the understanding of factors influencing student satisfaction, particularly by emphasizing the roles of administrative services and facilities and infrastructure services. Future research could examine other relevant factors, such as social interactions between students and faculty, as well as non-technical aspects of academic services that were not extensively covered in this study. Additionally, comparing the quality of services between public and private institutions could provide new insights into the different dynamics of student satisfaction across various types of educational institutions.

At STIE Balikpapan, the primary focus should be on enhancing the quality of administrative services and facilities and infrastructure services, which have been shown to significantly influence student satisfaction. Steps that could be taken include improving staff training, enhancing the maintenance of campus facilities, and developing teaching quality through ongoing faculty training programs. On the other hand, academic services, particularly those related to the timeliness and accuracy of information, need to be assessed and improved to better meet student expectations.

Furthermore, it is essential for the institution to adopt inclusive and non-discriminatory service policies to ensure that all students, regardless of gender, feel valued and have equal access to the services provided. The findings of this study also lay the groundwork for further in-depth research, contributing to the development of student satisfaction theories that take into account more variables influencing students' academic experiences. Future studies could focus on developing a more comprehensive service model that not only considers administrative services and physical facilities but also other factors that influence student experiences, such as psychological and social support in the academic environment.

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*** Corresponding Authors:**

Penulis dapat dikontak pada e-mail: jaka@stiebalikpapan.ac.id