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Model for Sustainability Improvement of Student Satisfaction Based on Service Quality: Testing the American Customer Satisfaction Model in Higher Education

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Abstract

This research aims to empirically investigate the antecedents and consequences of student satisfaction with programs provided by higher education institutions and identify service quality attributes that need to be improved. This research uses the American Customer Satisfaction Model (ACSM) as an analytical lens. The unit of analysis in this research concentrates on students who are studying at Semarang City Universities. Partial Least Squares (PLS) estimation is used to test measurement models, estimate the predictive power of theoretical models, and obtain the SSI score. Although student satisfaction is a complex concept, this model has proven to be an accurate estimator. The research results show that student satisfaction is entirely satisfactory, with an SSI score of 68.75. Through the Structural Measurement Method, it was found that perceived benefits and interactions in the process had the most significant influence on satisfaction. This research contributes to discussions about service quality by highlighting the role of perceived usefulness and aspects of the interaction process as factors shaping service quality. Apart from that, this research also reinforces the discussion regarding the relationship between student satisfaction and complaints by showing that this relationship is negative if managed by producing graduates loyal to the university.

How to Cite

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INTRODUCTION

Several conceptual metaphors about the role of students in higher education have been noted in contemporary literature (Usher & Hershkovitz, 2023). One is the idea that students can be considered customers who interact with universities in exchange for value. In this perspective, students choose institutions that suit their needs, usually based on their perception of the quality or reputation of the university (Calma & Dickson-Deane, 2020). Academic groups that support this view encourage universities to provide services that pay attention to student needs (Fayyaz et al., 2021). However, there is also an approach that sees students as products that must be processed or educated to succeed in the job market (Brown, 2015). Supporters of this view argue that universities should offer services that consider graduate users' needs. Apart from that, there are also other views about students as customers of information, citizens, clients who need expert guidance, and so on. These views emphasize different aspects of the relationship between students and HEIs (Demirbilek & Korkmaz, 2021; Johnston & Lane, 2023; Mouraz et al., 2013; Özyer, 2022).

Although there are various views regarding the role of students in higher education, most academics agree that student satisfaction is paramount in assessing the administration of higher education (Bell, 2022; Hanafiah et al., 2022; Razinkina et al., 2018; Sriyalatha & Appuhamilage, 2019). Student satisfaction also significantly impacts the satisfaction of other stakeholders, such as parents, graduate users, collaboration partners, and policymakers (Ezeokoli & Ayodele, 2014). This interest has resulted in student satisfaction becoming one of the assessment factors in the higher education accreditation process and becoming the primary benchmark for the quality of the institution's service programs.

Currently, the problem is that the measurement of student satisfaction by all Higher Education Institutions at the end of each semester is limited to certain aspects of service quality, as measured by SERVQUAL (Elisa & Juliana, 2015; Juli et al., 2022). Likewise, although various studies have been conducted on student satisfaction by academics, based on the research team's review, there have not been many comprehensive studies that investigate why students feel satisfied or dissatisfied with their universities, how higher education institutions can improve student satisfaction, and how practical the University is in handling student complaints and increasing their satisfaction (Garipagaoglu, 2022; Serenko, 2011a).

The use of the ACSM (Fornell et al., 1996) in educational research is still limited because this model is more often used in non-educational industries such as business and marketing (Morgeson et al., 2023). However, this model has been empirically proven to be effective in accurately and comprehensively presenting studies of the antecedent factors and outcomes of consumer satisfaction (Hult et al., 2019). Searches carried out by the research team showed that only three researchers used the ACSM in an educational context. They are Serenko, who applied this model to a music study program at a university in Canada (Serenko, 2011a), Hafni who conducted research at state and private universities in Riau Province (Hafni et al., 2020); and Garipagaoglu, who used this model in the context of online learning organized by universities in Turkey during the Covid pandemic -19 (Garipagaoglu, 2022).

The ACSM used in this research is an adaptation of three previous studies. The variables service quality (SQ), perceived trust (PT), and perceived value (PV) were used as previous factors (antecedent). Meanwhile, the variables student complaints (SC) and student loyalty (SL) are considered as the result (consequence) of student satisfaction (SS). The model to be tested in this research, which combines current and innovative aspects, is illustrated in Figure 1.

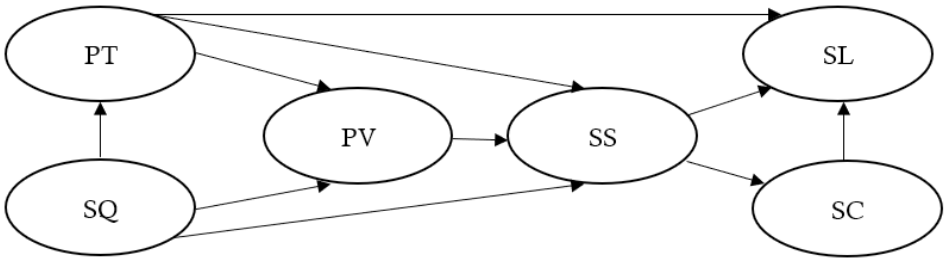

Figure 1. Research Model

The difference between this research model and Serenko's research is the replacement of the variable "Prior Expectations" (PE) with "Perceived Trust" (PT) as the previous factor (antecedent) of student satisfaction (SS). This is due to the findings of several previous researchers which showed that PE does not have a significant influence on "Perceived Value" (PV) and student satisfaction (SS) (Garipagaoglu, 2022; S. H. Hsu, 2008; Hult et al., 2019; Serenko, 2011a). PT is thought to not only have a positive and significant influence on PV and SS, but also on student loyalty (SL) (Garipagaoglu, 2022; Serenko, 2011a). This trust reflects students' evaluation of the quality of services provided by universities. Students who have confidence in higher education tend to produce added value through meaningful relationships that arise from these interactions. The role of PT in the structural model of student satisfaction was not considered in Hafni's research. Therefore, in the aspect of the previous factors, this study is in line with Garipagaoglu's findings (2022).

This research maintains the variables of student complaints (SC) and student loyalty (SL) as outcomes (consequences) of student satisfaction (SS), as proposed in the initial ACSM model introduced by Fornell (Fornell et al., 1996). This is different from Serenko and Hafni's approach which makes adjustments to the results section. The research team considers that "Tuition Change Tolerance" is part or indicator of "Perceived Value" (PV), while "Word of Mouth" is considered an indicator of student loyalty (SL). Previous researchers still have not reached an agreement regarding the form of influence between satisfaction and complaints. Some studies show that both have a negative influence (S. H. Hsu, 2008; Serenko, 2011b), while others show a positive influence (Garipagaoglu, 2022). The findings of Morgeson et al. emphasized that this difference depends on the type of industry that is the object of research (Morgeson et al., 2023). In product-based industries, such as processed food, both tend to have a positive influence, while in service industries, such as banking, airlines, and internet service providers, both tend to have a negative influence. Although Garipagaoglu's research states that student satisfaction (SS) has a positive influence on student complaints (SC), it should be noted that the research was conducted during the online learning period due to the Covid-19 pandemic, so students may be more tolerant of problems that arise (Garipagaoglu, 2022). Therefore, the research team suspects that student satisfaction (SS) tends to have a negative influence on student complaints (SC) when lectures are taking place normally.

Based on this situation, the research team was interested in investigating the previous factors (antecedents) and outcomes (consequences) of student satisfaction using the American Customer Satisfaction Model (ACSM). This model is built based on two tested theories: (1) theory about the relationship between quality, satisfaction, and performance and (2) outgoing sound theory (Fornell et al., 1996; Morgeson et al., 2023). Although this model is more often used in customer satisfaction research in business and marketing (Morgeson et al., 2023), the research team believes that this model can be applied in Higher Education, which is increasingly market-oriented and influenced by market mechanisms, similar to business organizations in general

(Asnawi & Supriyanto, 2022; Li, 2018). This requires performance indicators related to quality assurance. The research team also identified service quality attributes that universities need to improve using the Strategic Management Map (Sheng Hsun Hsu et al., 2006). This research aims to empirically investigate the antecedents and consequences of student satisfaction with programs provided by higher education institutions and identify service quality attributes that need to be improved.

METHODS

This research is a quantitative investigation conducted cross-sectionally (Zangirolami-Raimundo et al., 2018) with an explanatory research design approach (Creswell & Creswell, 2018) because the research group aims to explore problems related to understanding the relationship between the main driving factors of SS (PQ, PT, and PV), as well as the main results SS (SC and SL). The measurement scale and indicators of each variable were adopted from previous studies, adjusting each question item.

Data was collected through an online survey using a Google form for students studying at Private Universities (PU) in Semarang City. The selection of PU as the unit of analysis was based on findings from Truong et al. (Truong et al., 2016) and Kim et al. (Kim et al., 2021), which show that most students at private universities are not satisfied with the quality of services provided. The city of Semarang has the highest number of registered students among all private private universities in Indonesia (Statistik, 2020). Samples were taken using the Multi-Stage Random Sampling method (Fauzy, 2019) with the following steps: (1) Applying Purposive Sampling to select PTS, which will be the unit of analysis. The criteria used are PTS, accredited with an A rating or has a reputation for excellence and supervised by the Ministry of Education, Culture, Research and Technology; (2) Because the population reached 419,660 students (more than 75,000 people), the minimum sample size recommended for research is 384 students (Sekaran & Bougie, 2011). The research team decided to take a sample of 400 students; and (3) Simple random sampling was applied to divide the same number of samples for each selected Private University (PU). Thus, the distribution of the research sample can be shown in the following Table 1.

Table1. Distribution of Research Respondents

PU Name	Number of Samples
Dian Nuswantoro University	80
Semarang University	80
PGRI Semarang University	80
Soegijaprnata Catholic University	80
Sultan Agung Islamic University	80
Total	400

Source: Processed Primary Data (2024)

The data that has been collected is based on the results of filling out the questionnaire by respondents, then analyzed through the following stages: (1) Carrying out confirmatory analysis to ensure that all indicators and constructs are suitable for use in research provided that the construct reliability value for each construct exceeds 0.700, the correlation value for each indicator is above 0.600, and the Average Variance Extracted (AVE) value is greater than 0.500 (Jr et al., 2018); (2) Carry out a Goodness of Fit test to ensure that the SEM model being tested is fit and suitable for use for further analysis. The criteria used in the test are GFI, AGFI, TLI, CFI, NFI, and IFI $\geq$0.90 while RMSEA is 0.05 – 0.08 (Jr et al., 2018); (3) Conduct hypothesis testing using SEM; and (4) Determining the level of satisfaction using the American Customer Satisfaction Index (ACSI) method with the formula (Fornell et al., 1996).

$$ACSI = \frac{\sum_{i=1}^{3} w_i \overline{x_i} - \sum_{i=1}^{3} w_i}{9.\sum_{i=1}^{3} w_i} \times 100$$

In ACSI, there are three indicators of customer satisfaction, each with a value range between 1 and 10. Where wi is the unstandardized weight of the item obtained from the measurement model produced by PLS, while xi is the average weight of the item on the SS construct.

Determine service quality attributes that are of concern for improvement in increasing student satisfaction using SMM. All attributes have coordinates on a Cartesian diagram, obtained from satisfaction scores and weighted weights for each service quality attribute as the abscissa and ordinate, after which all the attributes spread out on the Cartesian diagram will later be divided into four quadrants as presented in the following Figure 2 (Garipagaoglu, 2022).

Service quality attributes in the "Do Better" quadrant are the main priority for higher education leaders because improvements in this quadrant will significantly impact increasing satisfaction. On the other hand, service quality attributes in the "Keep Up" quadrant must be appropriately maintained. Even though the satisfaction score is high for the service quality attribute in the "education" quadrant, the low weight indicates that this attribute is not sufficiently appreciated by students, even though the University has optimally provided this service quality attribute. Persuasive efforts are needed from the University for students to appreciate better the service quality attributes in the "education" quadrant so that these attributes can become a competitive advantage. Meanwhile, finally, service quality attributes in the "no change" quadrant should receive the least attention from leaders because improving attributes in this quadrant have the lowest positive impact on increasing student satisfaction (Garipagaoglu, 2022; Rafik & Priyono, 2018).

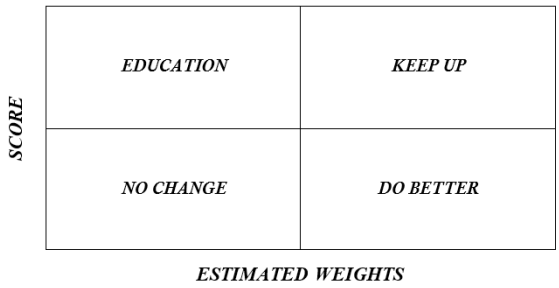

Figure 2. Strategic Management Map

RESULT AND DISCUSSION

Validity dan Reliability Test

Before using the results of this analysis, the questionnaire instrument must be tested first for validity and reliability. The results of validity and reliability testing can be seen in Table 2. Construct reliability is used to measure the consistency and stability of indicators in contributing to the construct. The results of construct reliability measurements are displayed in Table 2, which shows that all constructs have a value of more than 0.900, while the minimum limit set is 0.70 (Jr et al., 2018). Therefore, it can be said that all constructs are reliable. The validity test measures the precision and accuracy of the measuring instrument in carrying out its function as an analytical instrument.

The validity of the analytical instrument can be measured using correlation. The correlation results show that all indicators have a value of more than 0.600, so they are considered valid. Based on the loading factor values obtained, all indicators have a value greater than 0.600 with a p-value of less than 0.000, which means that all indicators significantly contribute to their respective constructs. In confirmatory analysis, convergent validity can also be measured from the loading factor known as the average variance extracted (AVE) of the construct. The AVE results from this analysis show a value above 0.500, which corresponds to the minimum limit of 0.500 (Jr et al., 2018). Therefore, all existing indicators and constructs were declared suitable for use in this research.

Goodness of Fit

In order for the SEM analysis model to be used, it is necessary to test the model. The test results of this model are presented in Table 3. Previous research suggests the use of more than one goodness of fit criterion. In this study, eight goodness of fit criteria were used. From Table 3 it can be seen that the five criteria, namely TLI, CFI, NFI, IFI, and RMSEA, meet the fit standards. Meanwhile, chi-square, GFI, and AGFI only get marginal results. The GFI value reached 0.825 and AGFI was 0.838, close to the critical value of 0.9 so it is still acceptable. The large chi-square value and probability of 0.002 are caused by the very large sample size (n = 400), so the probability cannot be calculated (Sarstedt et al., 2020). Overall, the goodness of fit test shows that the data from the SEM model tested is good and suitable for use for further analysis.

Table 2. Validity and Realibility Testing Results

Constructs	Indicators	Correlation	Loading Factor	AVE	CR
Service Quality (SQ)	SQ1-Subject Knowledge	0.774	0.768	0.715	0.824
	SQ2-Communication Skills	0.685	0.694		
	SQ3-Teaching Style	0.627	0.656		
	SQ4-Behaviour with Students	0.612	0.642		
	SQ5-Curriculum Quality	0.752	0.787		
	SQ6-Learning Facilities	0.723	0.754		
	SQ7-Supportive Facilities	0.764	0.792		
	SQ8-Cleanliness & Maintence	0.702	0.743		
	SQ9-Behaviour with Student	0.663	0.688		
	SQ10-Administrative Work	0.742	0.784		
	SQ11-Links with Employers	0.692	0.704		
	SQ12-Employability Training	0.732	0.756		
	SQ13-Security Measures	0.742	0.782		
	SQ14-Safety Equipment	0.646	0.674		
	SQ15-Extra-Curricular Activities	0.689	0.713		
	SQ16-Personal Development	0.806	0.842		
Perceived Trust (PT)	PT1-Consider Students' Needs	0.772	0.802	0.768	0.841
	PT2-Trustworthiness	0.821	0.857		
Perceived Value (PV)	PV1-Tuition paid relative to service quality	0.876	0.882	0.786	0.893
	PV2 Service quality relative to tuition paid	0.853	0.877		

Constructs	Indicators	Correlation	Loading Factor	AVE	CR
Student Satisfaction (SS)	SS1-Overall satisfaction	0.842	0.862	0.742	0.856
	SS2-Satisfaction relative to student expectation	0.802	0.832		
	SS3-Satisfaction relative to student experience	0.821	0.846		
Student Complaint (SC)	SC1-Formal student complaint	0.782	0.802	0.786	0.862
	SC2-Informal student complaint	0.775	0.796		
Student Loyality (SL)	SL1-Wish to advance to a higher level at the same university	0.684	0.742	0.738	0.836
	SL2-Students' perceptions of the suitability of choices	0.722	0.756		
	SL3-Persist in their studies despite the rise in tuition	0.754	0.774		
	SL4-Wish to transfer to a another cpllage with cheaper tuition	0.765	0.792		
	SL5-Recommend acquaintances to study in this college	0.752	0.788		
	SL6-Expressed positive testimonials about this college	0.676	0.724		

Source: Processed Primary Data (2024)

Table 3. Goodness of Fit Result

Goodness of Fit Index	Cut-off	Result	Conclusion
Chi-Square		2422.875	
Probability	≥ 0.05	0.002	Marginal
G F I	≥ 0.90	0.825	Marginal
A G F I	≥ 0.90	0.838	Marginal
T L I	≥ 0.90	0.922	Fit
C F I	≥ 0.90	0.946	Fit
N F I	≥ 0.90	0.911	Fit
I F I	≥ 0.90	0.908	Fit
RMSEA	0.05 - 0.08	0.067	Fit

Source: Processed Primary Data (2024)

Previous research suggests the use of more than one goodness of fit criterion. In this study, eight goodness of fit criteria were used. From Table 3 it can be seen that the five criteria, namely TLI, CFI, NFI, IFI, and RMSEA, meet the fit standards. Meanwhile, chi-square, GFI, and AGFI only get marginal results. The GFI value reached 0.825 and AGFI was 0.838, close to the critical value of 0.9 so it is still acceptable. The large chi-square value and probability of 0.002 are caused by the very large sample size (n = 400), so the probability cannot be calculated (Sarstedt et al., 2020). Overall, the goodness of fit test shows that the data from the SEM model tested is good and suitable for use for further analysis.

Structural Equation Model

After ensuring the measurement model is fit, we examined the main effects. Structural equation model testing includes estimating path coefficients and R2 values. The path coefficient shows the strength of the relationship between the dependent and independent variables, while the R2 value shows the amount of variance explained by the independent variable. The model overall explains 76% of the variation in student satisfaction and 64% of the variation in student loyalty. Given that multiple factors may influence this construct, the amount of variance explained by this model is quite good, adding support to the existing theory.

To test the significance of the path, bootstrap analysis was carried out. All path estimates were found to be statistically significant (see Figure 3). SQ showed a positive influence on PT (b = 0.54, p < 0.05), PV (b = 0.46, p < 0.05), and SS (b = 0.62, p < 0.05). PT was found to have a positive effect on SL (b =0.14, p <0.05), SS (b = 0.21, p <0.01) and PV (b = 0.18, p <0.05). PV has a positive effect on SS (b = 0.24, p <0.05). SS was found to be positively associated with SL (b = 0.58, p < 0.05), but negatively associated with SC (b = -0.47, p < 0.05). The path coefficient from SC to SL is positive and statistically significant (b = 0.22, p < 0.05). This shows that the university is effectively handling student complaints so that students who complain will turn into loyal students.

To examine the influence of antecedent constructs on SS, the total influence of each construct was calculated The total effects of PQ, PT, and PV on overall SS were 0.48, 0.17, and 0.24, respectively. Therefore, PQ has the greatest impact on SS as a whole. The R2 values for SS, SL, and SC were 0.62, 0.52, and 0.07, respectively. Considering the complexity of SSI, SL, and SC, these results are considered quite high. The SS index produces a score of 68.75 with satisfied criteria.

Strategic Management Map (SMM)

Analyzing the relative contribution of each quality item to SS is very important because it helps educational institutions address quality issues from the student's perspective. To achieve this goal, the importance and contribution of each quality attribute to the satisfaction score is estimated, and a SMM is constructed based on significance-satisfaction analysis (S. H. Hsu, 2008). The SMM consists of four quadrants: "do better," "keep moving forward," "education," and "no change". Based on the SMM results, university can pri-

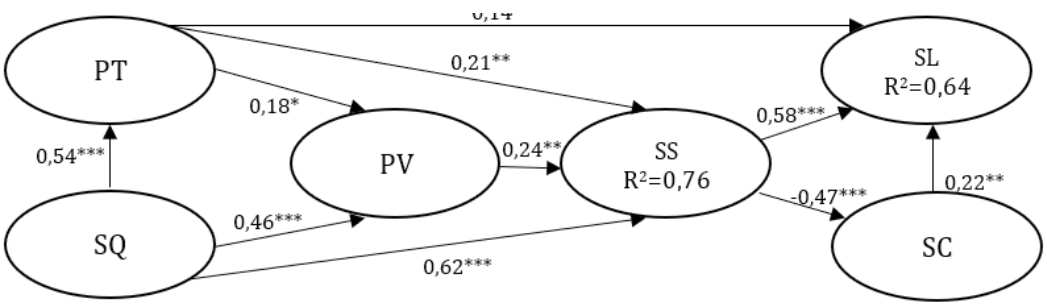

Figure 3. Path Estimates of The ACSM Model (*p < 0.05, **p < 0.01, ***p < 0.001)

oritize areas that need improvement and strategically determine the size of each quadrant based on the university's needs and resources. For example, universities with limited resources may want to prioritize only the most important items for improvement, and to identify those items, they may choose to focus on "do better" areas by assigning higher threshold values to the weights and lower threshold on scores (Sheng Hsun Hsu et al., 2006).

Based on Figure 4, it can be seen that the 16 Service Quality Indicators are divided into four quadrants with the following details.
(1) Do Better Quadrant

All indicators that mark the quality of service in this category are the main focus for higher education management to improve because the current service performance assessment is low or unsatisfactory for students. In contrast, student expectations regarding these factors are high. This category includes six factors: SQ6, SQ8, SQ9, SQ10, SQ11, SQ12.

The learning facilities provided by higher education significantly impact student satisfaction levels (Bueno, 2023). This satisfaction is paramount as an indication of the success of managing higher education services. The better the facilities available on campus, the smoother the learning process and the higher student satisfaction. Various facilities, especially those related directly or indirectly to learning, can play a role in increasing student satisfaction (Aman et al., 2023; Amoako et al., 2023). Therefore, it is essential for institutions always to prioritize the availability and optimization of these facilities.

Higher education institutions need to ensure that classrooms and campus environments are always clean and orderly because cleanliness and room maintenance are non-spatial factors that influence student satisfaction (Dixon et al., 2022; Hill & Kathryn, 2010; Sapri & Finch, 2009). Leaders and teaching staff in higher education must also provide optimal services to students, both in academic and non-academic matters, fairly and evenly to increase their level of satisfaction (Herman, 2022; Nasrullah et al., 2022; Permana et al., 2020; Tanjung et al., 2019).

For today's students, having the certainty of getting a job is a significant factor in choosing higher education. They tend to be pragmatic in choosing a college. Students who study at higher education institutions that of-

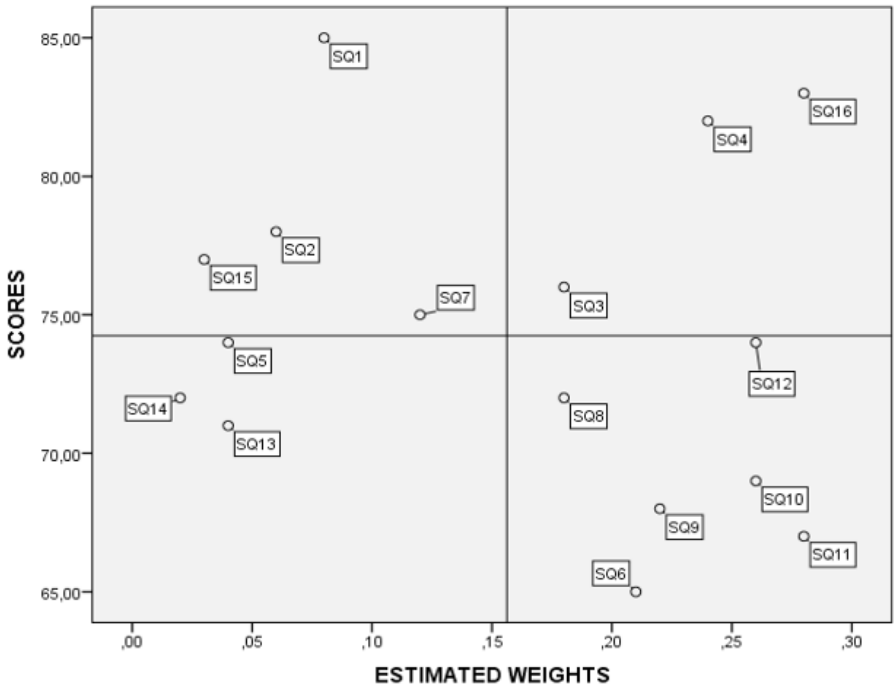

Figure 4. Strategic Management Map

fer job guarantees tend to feel more satisfied and loyal than those who do not (Kromydas, 2017; Szromek & Wolniak, 2020). Collaboration between universities and industry, government, society and other institutions is an effective way to provide opportunities for students to engage in internships, collaborative projects and joint research with industry. Through this experience, students can develop practical skills and understand how academic knowledge can be applied in real life. Collaboration between universities and industry can also facilitate applied research and provide solutions to problems faced by industry. Universities that actively collaborate with industry will be considered more relevant and valued by stakeholders, including prospective students and graduate users (Muh. Ibnu Sholeh et al., 2023).

(2) Keep Up Quadrant

All service quality indicators in this quadrant have the same high score and weight. These indicators are SQ3, SQ4, and SQ16. This research shows that students are satisfied with the lecturers' teaching style, the lecturers' attitudes towards them, and the self-development programs provided by the collage. These three aspects are part of the quality of service students consider essential. Therefore, collage must maintain this quality to keep these three aspects in the excellent category. Teaching style and positive lecturer attitudes greatly influence overall student satisfaction with the learning process in class (EminaTerzic & AmnaAščic, 2018). Collage must also continue to provide adequate facilities for students' self-development according to their talents and interests through strengthening student organizations, soft skills training, and seminars and workshops held regularly. The easier it is for students to channel their talents and interests, the higher their satisfaction level (Alyoussef & Omer, 2023; Turan et al., 2022).

(3) No Change Quadrant

Indicators in this category are not a priority for improving the quality of campus services because students consider them unimportant. These indicators are SQ5, SQ13, and SQ14. Interestingly, the results of this research show that students are less interested in the quality of the curriculum offered by the campus. This differs from previous research stating that curriculum quality has a positive and significant influence on student satisfaction (Hirsch et al., 2015). However, student satisfaction is a complex aspect to analyze. Differences in respondents' socio-demographics are one factor that causes the relationship between curriculum quality and student satisfaction to differ (Rossini et al., 2021). The policy of continuously changing the curriculum makes students feel antipathetic and less concerned about the curriculum offered (Jannah, 2023; Muliana Setia Hapsari & Hesty Widiastuty, 2023). For them, the certainty of getting a job after graduating is the main priority (Szromek & Wolniak, 2020).

(4) Education Quadrant

Several indicators in this quadrant are considered indicators that receive excessive attention from universities because students consider them unimportant even though the university has provided high service levels. Four indicators fall into this category, namely SQ1, SQ2, SQ7, and SQ15. The development of digitalization in learning at universities increases interaction between students and lecturers through electronic learning (Carstens et al., 2021). In addition, the demand for implementing project-based learning models and case study methods as part of achieving Key Performance Indicators (IKU-7) in Indonesia makes students more often study independently using various literature available on the internet relevant to their courses (Maros et al., 2023; Zhang & Ma, 2023; Zhao & Wang, 2022). This condition causes current students to need to consider the knowledge and communication skills lecturers possess. The phenomenon of decreasing interest of students in Indonesia in participating in extracurricular activities (Hidayat & Murni, 2023; Muhammad Abduh Farras Gibran Nasution & Randa Putra Kasea Sinaga, 2023) causes the SQ7 and SQ15 indicators to receive less attention from respondents.

CONCLUSION

Since the field of educational research was established, attention to Student Satisfaction (SS) has increased significantly. This study is important considering the major challenges facing the education sector, such as the emergence of online programs, globalization, limited funds, and government regulations. In addition, with the internet, prospective students have the ability to compare offers from various educational institutions, assess the programs offered, and evaluate testimonials from alumni. Today, students often share their learning experiences through online media such as forums, mailing lists, and surveys. With increasing transparency in the education industry and more choices for students, universities and colleges must achieve high SS standards in order to compete in today's competitive education environment.

The results of this study indicate that SQ is the most dominant antecedent factor that positively influences SS. For consequence factors, this research supports the conventional academic view (Fornell et al., 1996), which found a negative relationship between SS and SC. Furthermore, if universities can handle student complaints effectively, they can create a precious competitive advantage through loyalty from alumni. Even though the ACSI calculation results show that the SS index is in the satisfied category (68.75), the results of the SMM analysis show that there is a need to improve service quality in indicators SQ6, SQ8, SQ9, SQ10, SQ11, and SQ12 as an effort to increase student satisfaction sustainably.

Despite making significant theoretical and practical contributions, this research has several limitations. Firstly, the respondents were exclusively from private universities in Semarang. To generalize the findings to all higher education institutions, the respondent pool should be expanded to include a more diverse socio-demographic sample. Secondly, the study's data is cross-sectional, offering a snapshot of a specific point in time. Given the complexity of the relationship between SQ and student SS, it is necessary to replicate this study in various contexts and times to verify the consistency of the results. Nevertheless, despite these limitations, the research provides valuable insights for higher education leaders about key service quality indicators that need improvement to sustainably enhance student satisfaction.

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