

Teacher performance and laboratory facilities as determinants of student satisfaction in vocational education

Doni Firmansyah*, Patni Ninghardjanti

Office Administration Education, Sebelas Maret University, Surakarta, Indonesia

Email: donikartoe33@student.uns.ac.id

Abstrak

Kepuasan siswa merupakan indikator penting keberhasilan pendidikan kejuruan. Penelitian ini bertujuan mengetahui pengaruh kinerja guru berdasarkan persepsi siswa dan fasilitas laboratorium ruang praktik terhadap kepuasan siswa program MPLB di SMKN 1 Sukoharjo. Desain penelitian kuantitatif dengan pendekatan asosiatif kausal digunakan dalam penelitian ini. Populasi penelitian adalah 105 siswa kelas XI MPLB dengan sampel 83 siswa yang dipilih menggunakan proportional random sampling berdasarkan rumus Slovin. Data dikumpulkan melalui kuesioner tertutup berskala Likert empat poin dan dianalisis menggunakan regresi linier berganda berbantuan IBM SPSS versi 27. Hasil penelitian menunjukkan: (1) kinerja guru berpengaruh positif dan signifikan secara parsial terhadap kepuasan siswa ($t = 2,717, p = 0,008$); (2) fasilitas laboratorium ruang praktik berpengaruh positif dan signifikan secara parsial terhadap kepuasan siswa ($t = 4,625, p < 0,001$); dan (3) kedua variabel secara simultan berpengaruh signifikan terhadap kepuasan siswa ($F = 27,537, p < 0,001$) dengan kontribusi bersama sebesar 40,8% terhadap variasi kepuasan siswa. Fasilitas laboratorium ruang praktik merupakan prediktor yang lebih dominan dengan sumbangan efektif 27,27%, dibandingkan kinerja guru sebesar 13,47%. Penelitian ini merekomendasikan peningkatan fasilitas laboratorium ruang praktik secara prioritas disertai pengembangan profesional guru yang berkelanjutan..

Kata kunci: asosiatif kausal; persepsi siswa; regresi linier berganda; SERVQUAL

Abstract

Student satisfaction serves as a pivotal indicator of vocational education effectiveness. This study examines the effects of teacher performance as perceived by students and laboratory practice room facilities on the satisfaction of students enrolled in the Office Management and Business Services (MPLB) program at SMKN 1 Sukoharjo. A quantitative research design with a causal associative approach was employed. The study population comprised 105 Grade XI MPLB students, from which 83 participants were selected using proportional random sampling based on the Slovin formula. Data

* Corresponding author

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were collected through a four-point Likert-scale questionnaire and analyzed using multiple linear regression with IBM SPSS version 27. The findings revealed that: (1) teacher performance exerted a positive and significant partial effect on student satisfaction ($t = 2.717$, $p = .008$); (2) laboratory practice room facilities had a positive and significant partial effect on student satisfaction ($t = 4.625$, $p < .001$); and (3) both variables jointly exerted a significant simultaneous effect on student satisfaction ($F = 27.537$, $p < .001$), collectively accounting for 40.8% of the variance in student satisfaction. Laboratory practice room facilities emerged as the more dominant predictor, contributing an effective share of 27.27%, compared to 13.47% for teacher performance. The study recommends prioritizing laboratory facility improvements alongside continuous professional development for teachers.

Keywords: causal associative; multiple linear regression; SERVQUAL; student perception

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Introduction

Student satisfaction represents a critical indicator for evaluating the success of educational institutions. Students who are satisfied with school facilities and the quality of educational services provided are more motivated to learn and to develop their potential optimally (Nauraida et al., 2024). Student satisfaction is defined as an attitude demonstrated by learners whether positive or negative reflecting the degree of alignment between their expectations and the educational services actually received (Safak, 2021).

Teachers, as the primary agents of the learning process, play a strategically vital role in establishing a conducive, effective, and engaging learning environment. Teacher performance constitutes a central element with significant implications for student outcomes (Pujoandika & Sobandi, 2021). Teachers who possess strong pedagogical competence are capable of designing and implementing instruction that is responsive to student needs, thereby positively influencing student satisfaction (Baeruma et al., 2025).

In addition to teacher performance, laboratory facilities represent a crucial component in supporting learning quality, particularly in vocational education programs such as Office Management and Business Services (MPLB). Well-equipped, modern, and well-maintained laboratories enhance student participation, foster a comfortable and safe learning environment, and significantly contribute to increased student motivation and satisfaction (Maghanoy & Codilla, 2025). The Indonesian government, through Ministerial Regulation No. 34 of 2018 (Permendiknas No. 34/2018), has established standards for MPLB laboratory infrastructure, encompassing typing laboratories, archiving facilities, office machinery rooms, office simulation spaces, and instructor and storage areas (Saifudin & Pramusinto, 2024).

To obtain a concrete baseline assessment of student satisfaction at SMKN 1 Sukoharjo, the researchers conducted a preliminary study comprising a brief survey administered to 27 Grade XI MPLB students drawn from three classes (XI MPLB 1, XI MPLB 2, and XI MPLB 3), using 10 items and 8 statements pertaining to students' satisfaction levels with instructional services and practical facilities. The preliminary findings revealed that only approximately 25% of respondents reported satisfaction, while 75% expressed dissatisfaction with instructional services and school infrastructure. This condition indicates that students' expectations regarding teaching quality, classroom comfort, and the adequacy of laboratory facilities had not yet been fully realized. Prior research consistently demonstrates that high teacher performance and adequate learning facilities are positively associated with student satisfaction (Muflihaturun & Suryani, 2020; Sudarman, 2023). However, international evidence on the role of physical facilities in shaping vocational student

satisfaction remains inconsistent. A large-scale study involving more than 10,000 vocational secondary school students in China identified a negative relationship between tangible elements including physical facilities such as laboratories and students' learning satisfaction, suggesting that intangible factors, such as teaching competence and instructional interaction, are more dominant in shaping satisfaction (Guo et al., 2024). This divergence in findings indicates that the relationship among laboratory facilities, teacher performance, and vocational student satisfaction is not yet consistent across educational contexts, thereby leaving considerable room for further empirical investigation particularly in practice-intensive programs such as MPLB. At SMKN 1 Sukoharjo, no prior study has simultaneously examined both variables in relation to MPLB students' learning satisfaction, making this study a new empirical contribution to testing the consistency of these relationships.

The novelty of this study lies in its being the first to simultaneously analyze the effects of student-perceived teacher performance and laboratory practice room facilities on student satisfaction within the specific context of the MPLB program a program whose learning outcomes are highly dependent on direct practice using office equipment thus distinguishing it from comparable studies conducted in general education settings or other vocational programs. The research gap addressed herein is the absence of prior research specifically and concurrently examining the influence of student-perceived teacher performance and laboratory practice room facilities on MPLB student satisfaction at SMK Negeri 1 Sukoharjo. The novelty of this study rests on at least three dimensions: first, the use of student perspectives as the evaluative lens for teacher performance, which provides a more authentic account of instructional quality than external assessments; second, a focus on the MPLB program, which possesses distinctive practical learning characteristics that differ from those of other vocational programs; and third, the simultaneous examination of two theoretically complementary predictor variables. The findings of this study are expected to contribute meaningfully to the body of knowledge on vocational education in Indonesia and to yield practical recommendations that school administrators may use as a basis for formulating evidence-based policies for improving instructional quality and managing laboratory facilities in a targeted, measurable, and sustainable manner.

Based on the foregoing, this study aims to: (1) examine the effect of student-perceived teacher performance on MPLB student satisfaction; (2) examine the effect of laboratory practice room facilities on MPLB student satisfaction; and (3) examine the simultaneous effect of teacher performance and laboratory practice room facilities on MPLB student satisfaction at SMKN 1 Sukoharjo.

Student satisfaction is defined as a positive attitude held by students toward school services, arising from the congruence between their expectations and the reality of what they receive (Sumarno et al., 2024). Safak (2021) further defines student satisfaction as the feeling expressed by learners whether positive or negative based on the extent to which their expectations regarding their educational experience align with what they actually receive through their learning journey. Etymologically, satisfaction derives from the Latin *satis*, meaning "adequate" or "pleasing," and *facio*, meaning "to do" or "to create," signifying the successful fulfillment of a task. Satisfaction reflects an individual's interpretation of an experience as either beneficial or unfavorable and may be conceptualized as the emotional response generated after comparing actual outcomes against prior expectations (Patricia et al., 2023). According to Safak (2021), the determinants of student satisfaction include reliability, responsiveness, assurance, empathy, and tangibles. The indicators of student satisfaction employed in this study are drawn from Sitorus et al. (2023) and encompass: (1) reliability of instructional services; (2) responsiveness of teachers and school staff; (3) assurance of learning quality; (4) empathy in understanding student needs; and (5) tangible evidence of learning facilities. Student satisfaction constitutes a critical benchmark for evaluating institutional effectiveness (Nauraida et al., 2024), and students who are satisfied with school resources and service quality are more strongly motivated to learn and to optimize their potential (Nauraida et al., 2024).

Teacher performance may be understood as the level of success achieved by teachers in carrying out their educational responsibilities in accordance with established performance standards and the scope of their professional authority (Sudarman, 2023). Baeruma et al. (2025) characterize teacher performance as a form of professional responsibility manifested through the activities of

instructional planning, implementation, and evaluation in the classroom. Drawing on Ministerial Regulation No. 16 of 2022 (Permendikbud Ristek No. 16/2022), the teacher performance indicators employed in this study encompass three primary dimensions: (1) systematic and curriculum-aligned instructional planning; (2) active and conducive instructional delivery; and (3) objective and ongoing assessment and evaluation of learning outcomes (Chaerany, 2024). As the principal actor in education, teachers play a profoundly strategic role in building a conducive, effective, and meaningful learning environment. Teacher performance exerts a substantial impact on student achievement (Pujoandika & Sobandi, 2021), and competent, committed educators facilitate impactful and valuable learning experiences that promote student growth (Wenison, 2025). Teachers occupy a pivotal position in developing exceptional human resources and stand at the forefront of realizing effective educational practices and outcomes (Nur'aini & Ruslau, 2023).

Laboratory practice room facilities are defined as all hardware, software, furniture, and physical room infrastructure provided to support practical learning activities in office administration and business services (Patricia et al., 2023). Professionally managed laboratories have been shown to exert a positive effect on student academic achievement (Sahidah et al., 2021), and the effective availability and utilization of laboratory equipment have been empirically demonstrated to influence student performance meaningfully. The laboratory practice room facility indicators in this study are drawn from Ministerial Regulation No. 24 of 2007 (Permendiknas No. 24/2007) and comprise: (1) laboratory building or room; (2) laboratory furniture; (3) educational equipment; (4) experimental tools and materials; (5) educational media; and (6) other supplementary equipment (Saifudin & Pramusinto, 2024). The Office Administration Automation (OTKP) laboratory was established to enhance the teaching and learning process and to facilitate the attainment of optimal educational outcomes through the application of OTKP competencies in pursuit of learning objectives defined at the outset of the semester (Solihin & Armianti, 2022). Laboratory facilities in education may be broadly conceptualized as all physical and material resources that facilitate the teaching and learning process, including computer laboratories that support technology-based learning (Feladi, 2021). Empirical evidence further supports the significance of laboratory facilities: Saputri et al. (2023) demonstrated that educator performance and learning facilities exert a significant combined effect on student satisfaction, and Maghanoy and Codilla (2025) found that the availability of adequate laboratory facilities positively and significantly influences students' learning interest and satisfaction. Well-equipped and well-maintained laboratories have been shown to foster a conducive learning atmosphere while promoting increased student participation and satisfaction with the learning process.

Based on the literature review and conceptual framework presented, three research hypotheses are formulated. H1 postulates that student-perceived teacher performance has a positive and significant effect on MPLB student satisfaction at SMKN 1 Sukoharjo. H2 posits that laboratory practice room facilities have a positive and significant effect on MPLB student satisfaction at SMKN 1 Sukoharjo. H3 proposes that teacher performance and laboratory practice room facilities simultaneously exert a positive and significant effect on MPLB student satisfaction at SMKN 1 Sukoharjo.

Research Methods

This study was conducted at SMK Negeri 1 Sukoharjo, located at Jalan Jenderal Sudirman No. 151, Gabusan, Jombor, Bendosari District, Sukoharjo Regency, Central Java, Indonesia. The study was carried out over approximately nine months, from October 2025 to June 2026. A quantitative research design with a causal associative approach was employed. As Sugiyono (2025) explains, quantitative methods are grounded in positivist philosophy and are used to investigate specific populations or samples, with data analyzed statistically for the purpose of both describing phenomena and testing pre-formulated hypotheses. The independent variables consisted of student-perceived teacher performance (X_1) and laboratory practice room facilities (X_2), while the dependent variable was MPLB student satisfaction (Y). The study population comprised all Grade XI MPLB students at SMKN 1 Sukoharjo, totaling 105 students. Sample size was determined using the Slovin formula with a 5% margin of error, yielding a sample of 83 students. Proportional random sampling

was used, with the following distribution: XI MPLB 1 (27 students), XI MPLB 2 (28 students), and XI MPLB 3 (28 students).

Data were collected using a closed questionnaire measured on a four-point Likert scale with no neutral option, comprising Strongly Agree (4), Agree (3), Disagree (2), and Strongly Disagree (1). The research instrument was developed by adapting indicators from the theoretical framework and regulations outlined in the literature review: teacher performance indicators were drawn from Ministerial Regulation No. 16 of 2022 as referenced by Chaerany (2024); laboratory practice room facility indicators were drawn from MPLB laboratory infrastructure standards as referenced by Saifudin and Pramusinto (2024); and student satisfaction indicators were drawn from Sitorus et al. (2023), which is grounded in the SERVQUAL theoretical framework (Parasuraman et al., 1988). The instrument consisted of 44 items covering teacher performance (12 items), laboratory facilities (16 items), and student satisfaction (16 items), with all items formulated from a student perception standpoint. Validity was assessed using Pearson Product Moment correlation, and reliability was assessed using Cronbach's Alpha, both conducted with IBM SPSS version 27. Instrument piloting was conducted with 33 Grade X MPLB 1 students at SMKN 1 Sukoharjo who were outside the main research sample.

Grade X students were selected as pilot subjects because they share the same program (MPLB) and have undertaken productive subjects and laboratory practice activities comparable to those experienced by Grade XI students, rendering their learning experience characteristics sufficiently analogous despite the difference in year level. The use of a different cohort (Grade X) from the research sample (Grade XI) was intended to prevent pilot data from contaminating the primary research data, in accordance with standard instrument development procedures in quantitative research (Sugiyono, 2025). With an r -table value of .355 at the 5% significance level, all 44 items were confirmed valid. Reliability analysis yielded Cronbach's Alpha values of .688 for teacher performance, .766 for laboratory facilities, and .810 for student satisfaction, indicating that all instruments were reliable.

Data analysis included prerequisite tests normality (Kolmogorov-Smirnov), linearity, multicollinearity, and heteroscedasticity (Glejser test) followed by multiple linear regression analysis, following multivariate analysis procedures outlined by Ghazali (2021). The Durbin-Watson autocorrelation test was not conducted in this study because the research design was cross-sectional, with data collected from 83 independent respondents at a single point in time via questionnaire, rather than through repeated measurements of the same subjects over time. As affirmed in the econometric literature, the Durbin-Watson test is specifically designed to detect serial correlation among residuals in time series or panel data possessing a temporal ordering structure and is therefore not applicable to cross-sectional data with independent respondents (Ghazali, 2021). Accordingly, autocorrelation does not constitute a relevant threat to the validity of the regression model in this study. Hypothesis testing was conducted using partial t -tests, simultaneous F -tests, the coefficient of determination (R^2), and calculations of effective and relative contribution for each variable.

Results and Discussion

Research Results

Descriptive analysis of the 83 respondents, as shown in Table 1, revealed that all three variables exhibited a relatively homogeneous score distribution, with standard deviation values that were not excessively large relative to their respective means, indicating a generally consistent pattern of respondent perceptions. Laboratory practice room facilities recorded the highest mean score among the three variables. In terms of frequency distribution, the majority of scores were concentrated in the ranges of 54–56 for student satisfaction (26%), 38–40 for teacher performance (39%), and 52–55 for laboratory facilities (30%), reflecting respondents' tendency to rate all three aspects at moderate to high levels.

Table 1
Descriptive Statistics of Research Variables

Statistic	Teacher Performance (X ₁)	Laboratory Facilities (X ₂)	Student Satisfaction (Y)
N Valid	83	83	83
Mean	37,07	52,12	51,71
Median	38	52	52
Std. Deviation	3,773	5,429	4,774
Minimum	26	36	42
Maximum	47	64	63

Source: Primary data, 2026..

The Kolmogorov-Smirnov normality test yielded an Asymp. Sig. (2-tailed) value of .200 > .05, indicating that the residual data were normally distributed. The linearity test showed that the relationship between student-perceived teacher performance and student satisfaction produced a Deviation from Linearity value of .246 > .05, while the relationship between laboratory practice room facilities and student satisfaction yielded a value of .076 > .05, confirming that both relationships were linear. The multicollinearity test produced Tolerance values of .750 > .10 and VIF values of 1.333 < 10 for both variables, indicating the absence of multicollinearity. The Glejser heteroscedasticity test produced significance values of .474 for teacher performance and .319 for laboratory facilities, both exceeding .05, thereby confirming the absence of heteroscedasticity. As noted in the Research Methods section, the Durbin-Watson autocorrelation test was excluded from the classical assumption testing sequence given the cross-sectional nature of the data. With all relevant prerequisite assumptions satisfied, the data were deemed suitable for multiple linear regression analysis.

Multiple linear regression analysis yielded the following equation: $\hat{Y} = 17.997 + 0.341X_1 + 0.404X_2$. The constant of 17.997 indicates that, when both independent variables equal zero, the predicted student satisfaction score is 17.997. The regression coefficient for X₁ (0.341) indicates that for each one-unit increase in student-perceived teacher performance, student satisfaction is predicted to increase by 0.341 units, with other variables held constant. The coefficient for X₂ (0.404) indicates that for each one-unit increase in laboratory practice room facilities, student satisfaction is predicted to increase by 0.404 units, with other variables held constant. The full regression coefficient estimates are presented in Table 2.

Table 2
Multiple Linear Regression Coefficients

			Coefficients ^a				
Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
	B	Std. Error	Beta			Tolerance	VIF
(Constant)	17,997	4,627		3,890	0,000		
Teacher Performance (X ₁)	0,341	0,126	0,270	2,717	0,008	0,750	1,333
Laboratory Facilities (X ₂)	0,404	0,087	0,459	4,625	0,000	0,750	1,333

Source: Primary data processed with IBM SPSS 27, 2026.

As presented in Table 3, the simultaneous F-test produced an F-value of 27.537, which exceeds the F-table value of 3.11 ($p < .001$), supporting the acceptance of H3: student-perceived

teacher performance and laboratory practice room facilities simultaneously exert a significant positive effect on MPLB student satisfaction at SMKN 1 Sukoharjo.

Table 3
Analysis of Variance (F-Test)

ANOVA ^a					
Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	762,082	2	381,041	27,537	,000 ^b
Residual	1106,978	80	13,837		
Total	1869,060	82			

Source: Primary data processed with IBM SPSS 27, 2026.

The results of the partial t-tests are presented in Table 4. The coefficient of determination (R^2) of .408 indicates that the two predictors jointly account for 40.8% of the variance in student satisfaction, while the remaining 59.2% is attributable to variables outside the scope of this model.

Table 4
Partial t-Test Results

Variable	t-calculated	t-table	p	Decision
Teacher Performance (X_1) → Student Satisfaction (Y)	2,717	1,990	0,008	Significant
Laboratory Facilities (X_2) → Student Satisfaction (Y)	4,625	1,990	0,000	Significant

Source: Primary data processed with IBM SPSS 27, 2026.

The effective and relative contributions of each predictor variable are detailed in Table 5. Laboratory practice room facilities accounted for an effective contribution of 27.27% (relative contribution: 66.93%), while student-perceived teacher performance contributed 13.47% (relative contribution: 33.07%), confirming laboratory facilities as the more dominant predictor in this model.

Table 5
Effective and Relative Contributions of Predictor Variables

Variable	Effective Contribution (%)	Relative Contribution (%)	R Square
Teacher Performance (X_1)	13,47%	33,07%	0,408 (40,8%)
Laboratory Facilities (X_2)	27,27%	66,93%	
Total	40,74%	100%	

Source: Primary data processed with IBM SPSS 27, 2026.

Discussion

The partial effect of student-perceived teacher performance on MPLB student satisfaction was positive and significant ($t = 2.717$, $p = .008$), with a regression coefficient of 0.341, indicating that improvements in student-perceived teacher performance are associated with corresponding increases in student satisfaction. This finding is consistent with the results of Sudarman (2023), who reported a significant partial effect of student-perceived teacher performance on student satisfaction ($t = 13.593$). Teachers who are proficient in planning, implementing, and evaluating instruction directly shape students' perceptions of and satisfaction with the learning process received (Mulyasa, 2013, as cited in Baeruma et al., 2025).

The partial effect of laboratory practice room facilities on student satisfaction was likewise positive and significant ($t = 4.625$, $p < .001$), with a regression coefficient of 0.404—the largest among the study's predictors establishing laboratory facilities as the most dominant variable in this model. The effective contribution of this variable reached 27.27%, with a relative contribution of 66.93%. The dominance of laboratory practice room facilities over student-perceived teacher performance can be attributed to the nature of vocational learning in the MPLB program, wherein competency attainment is highly dependent on direct practice using office equipment, office machinery, and simulation rooms. Consequently, the quality and completeness of facilities are experienced by students in a more immediate and tangible manner than teacher performance, whose influence is more mediative and operates through pedagogical interaction. Furthermore, given the low baseline satisfaction level identified in the preliminary study with only 25% of respondents reporting satisfaction deficiencies in physical facilities were likely the most readily identifiable and salient sources of student dissatisfaction, while the quality of teacher performance tends to be more challenging for students to evaluate objectively due to its more abstract nature. These findings support Patricia et al. (2023), who identified a positive and significant effect of learning facilities on student satisfaction, and Nuzulul and Andrean (2026), who reported that infrastructure conditions and room comfort are important factors in enhancing laboratory user satisfaction. For MPLB vocational students, the practice laboratory constitutes the primary arena for developing vocational competencies; therefore, the completeness of equipment and the comfort of the room directly and concretely influence student satisfaction.

Taken together, the simultaneous positive and significant effect of student-perceived teacher performance and laboratory practice room facilities on MPLB student satisfaction ($F = 27.537$, $p < .001$) collectively accounts for 40.8% of the variance in student satisfaction. This finding is aligned with Muflihatun and Suryani (2020), who identified a combined effect of learning facilities and teacher professional competence on the satisfaction of OTKP students at SMK Negeri 2 Semarang, and with Wulandari and Suyatmini (2017), who reported a joint contribution of teacher performance and school infrastructure of 55.8% to student satisfaction. The remaining 59.2% of unexplained variance may be attributable to other factors such as learning motivation, curriculum quality, school environment, and additional variables not examined in this study.

Conclusion

The findings of this study demonstrate that student-perceived teacher performance and laboratory practice room facilities exert positive and significant effects on the satisfaction of MPLB students at SMKN 1 Sukoharjo, both in partial and simultaneous analyses. Laboratory practice room facilities emerged as the more dominant determinant of student satisfaction relative to teacher performance, consistent with the highly practice-dependent nature of MPLB vocational learning. The two variables were found to be mutually complementary rather than substitutive in shaping student satisfaction. School administrators are advised to prioritize the improvement and equitable provision of laboratory practice room facilities particularly with respect to ventilation and the completeness of practical equipment while concurrently enhancing teacher competence through academic supervision and continuous professional development programs. Future researchers are encouraged to incorporate additional relevant variables and to expand the study population to obtain more comprehensive findings.

Theoretically, these findings reinforce the relevance of the expectancy disconfirmation approach in explaining student satisfaction within the vocational education context, and affirm that student-perceived teacher performance and laboratory practice room facilities constitute two mutually complementary determinants rather than substitutes in shaping MPLB student satisfaction. This study is subject to several limitations that should be considered when interpreting the findings. First, the cross-sectional research design captures conditions at a single point in time and cannot establish definitive causal relationships among variables. Second, data collected through self-report questionnaires may introduce perceptual bias or social desirability bias. Third, the study was conducted at a single institution SMKN 1 Sukoharjo necessitating caution in generalizing findings to other school contexts. Fourth, an R^2 value of .408 indicates that 59.2% of the variance in student satisfaction remains unexplained by the model and may be attributable to other factors such as

learning motivation, curriculum quality, and school environment that warrant examination in future research.

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