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Administrative service quality and digital learning facilities on student satisfaction

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Abstrak

Kepuasan siswa menjadi tolak ukur penting keberhasilan layanan pendidikan kejuruan, sementara studi pendahuluan di SMK Kristen 1 Surakarta menunjukkan bahwa separuh siswa yang disurvei menilai layanan sekolah belum cukup responsif dan mengeluhkan koneksi internet yang kurang stabil. Penelitian ini bertujuan mengetahui pengaruh kualitas layanan administrasi dan fasilitas pembelajaran digital terhadap kepuasan siswa, baik secara parsial maupun simultan. Penelitian menerapkan metode kuantitatif dengan pendekatan asosiatif kausal pada 144 siswa SMK Kristen 1 Surakarta dari populasi 225 siswa, yang ditentukan menggunakan rumus Slovin dengan teknik proportionate stratified random sampling. Data dikumpulkan melalui kuesioner skala Likert empat poin yang telah memenuhi uji validitas dan reliabilitas, kemudian dianalisis menggunakan regresi linear berganda dengan program IBM SPSS 29. Hasil penelitian menunjukkan kualitas layanan administrasi berpengaruh signifikan terhadap kepuasan siswa dengan nilai t_0 5.170 > t_t 1.977 dan signifikansi <0.001 < 0.05, fasilitas pembelajaran digital juga berpengaruh signifikan dengan nilai t_0 5.517 > t_t 1.977 dan signifikansi <0.001 < 0.05, serta kedua variabel secara simultan berpengaruh signifikan terhadap kepuasan siswa dengan nilai F_0 33.879 > F_t 3.058 dan signifikansi <0.001 < 0.05. Nilai R Square sebesar 0.325 menunjukkan bahwa kedua variabel menjelaskan 32.5% variasi kepuasan siswa.

Kata kunci: kepuasan pelanggan pendidikan; mutu kinerja tata usaha; pendidikan vokasi; sarana teknologi sekolah

Abstract

Student satisfaction is a critical benchmark of success in vocational education service delivery. A preliminary study conducted at SMK Kristen 1 Surakarta revealed that half of the surveyed students regarded school services as insufficiently responsive and reported concerns about unstable internet connectivity that hindered their use of digital learning platforms. This study aimed to examine the effects of administrative service quality and digital learning facilities on student satisfaction, both partially and simultaneously. A quantitative approach with a causal associative design was employed, involving 144 students drawn from a population of 225 at SMK Kristen 1

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Surakarta using the Slovin formula and proportionate stratified random sampling. Data were collected through a four-point Likert scale questionnaire that met validity and reliability requirements, and were analyzed using multiple linear regression with IBM SPSS 29. The results indicated that administrative service quality had a significant positive effect on student satisfaction ($t = 5.170 > t_{table} = 1.977$; $p < 0.001$), and digital learning facilities likewise exerted a significant positive effect ($t = 5.517 > t_{table} = 1.977$; $p < 0.001$). The two variables jointly exerted a significant simultaneous effect on student satisfaction ($F = 33.879 > F_{table} = 3.058$; $p < 0.001$). The R^2 value of 0.325 indicates that together the two predictors account for 32.5% of the variance in student satisfaction.

Keywords: administrative staff performance; customer satisfaction in education; digital support facilities; vocational education

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Introduction

Student satisfaction serves as a vital benchmark for evaluating the success of vocational education institutions in meeting the needs and expectations of their learners. Kotler et al. (2022) defined satisfaction as the outcome of comparing pre-service expectations with the actual performance experienced after service delivery. In the context of vocational education, the work-readiness orientation mandated by Presidential Regulation No. 68 of 2022 concerning the Revitalization of Vocational Education and Training leads students at vocational secondary schools (SMK) to hold more specific expectations regarding service quality and facility provision than their counterparts in general secondary education. When these expectations go unmet, student dissatisfaction is likely to rise, which in turn can erode learning motivation and damage the school's institutional reputation.

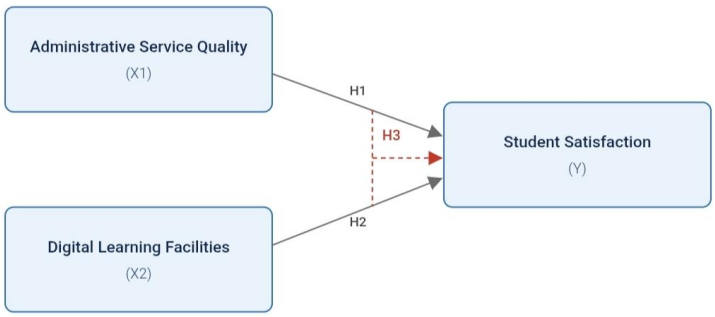
A preliminary study conducted by the researcher at SMK Kristen 1 Surakarta in November 2025, involving ten students from each class, revealed that 50% of respondents considered school services to be insufficiently responsive and voiced complaints about unstable internet connectivity that impeded the use of digital learning platforms. Concern over the quality of educational services is by no means confined to the Indonesian context. Borishade et al. (2021) demonstrated that the quality of higher education services in Nigeria significantly influenced student satisfaction and loyalty, while Wijana and Dwi Rusiawati (2021) reported analogous effects among university students in Indonesia. These findings underscore that the gap between expected and experienced service quality is a challenge facing educational institutions across diverse national contexts, affirming the broader significance of the present inquiry.

A review of prior studies reveals a notable gap in the literature: most existing research has examined either administrative service quality or digital learning facilities in isolation rather than in combination. Sulhak et al. (2020) investigated the influence of administrative service quality on student satisfaction at SMK PGRI 1 Giri Banyuwangi without incorporating a digital facility variable, whereas Putri (2025) focused on the effect of digital learning facilities on student learning satisfaction at the SMK level in the Industry 4.0 era without linking this variable to administrative service quality. Research that simultaneously examines both variables within a single school population remains scarce. The present study addresses this gap by involving students across three grade levels and five vocational programs at SMK Kristen 1 Surakarta, thereby enabling a more comprehensive assessment of the joint and separate effects of administrative service quality and digital learning facilities than previous single-variable studies conducted in different school contexts.

Based on the foregoing background, this study formulates three research questions: (1) Does administrative service quality significantly affect student satisfaction at SMK Kristen 1 Surakarta? (2) Do digital learning facilities significantly affect student satisfaction at SMK Kristen 1 Surakarta? (3) Do administrative service quality and digital learning facilities jointly exert a significant simultaneous effect on student satisfaction at SMK Kristen 1 Surakarta?

Lupiyoadi (2018) maintained that service quality and facilities represent the two primary determinants of customer satisfaction in educational services, yet the simultaneous testing of both factors within a single private vocational school remains uncommon in the literature. This study is therefore expected to enrich the scholarly literature on the relationships among administrative service quality, digital learning facilities, and student satisfaction, while also providing an empirical foundation for school administrators in formulating service quality improvement policies. The conceptual framework delineating the relationships among these three constructs is presented in Figure 1.

Figure 1
Conceptual framework of the relationship between administrative service quality, digital learning facilities, and student satisfaction.



As illustrated in Figure 1, the conceptual framework depicts two direct effect pathways from administrative service quality (X_1) to student satisfaction (Y) and from digital learning facilities (X_2) to Y as well as one simultaneous effect pathway from X_1 and X_2 jointly to Y. The solid arrows represent the partial effects corresponding to Hypotheses H1 and H2, while the dashed line represents the simultaneous effect of both independent variables on student satisfaction corresponding to Hypothesis H3.

Based on the conceptual framework, the following hypotheses are proposed. H1: administrative service quality has a significant positive effect on student satisfaction at SMK Kristen 1 Surakarta. H2: digital learning facilities have a significant positive effect on student satisfaction at SMK Kristen 1 Surakarta. H3: administrative service quality and digital learning facilities jointly exert a significant simultaneous effect on student satisfaction at SMK Kristen 1 Surakarta.

Research Methods

This study employed a quantitative approach with a causal associative design, selected because the research objective was to measure cause-and-effect relationships among variables on the basis of naturally occurring field data without experimental manipulation (Sugiyono, 2019). The study was conducted at SMK Kristen 1 Surakarta, located at Jalan A. Yani No. 2, Tegalharjo, Jebres, Surakarta, Central Java, over the period from September 2025 to July 2026. The independent variables examined were administrative service quality (X_1) and digital learning facilities (X_2), while student satisfaction (Y) was designated as the dependent variable.

The study population comprised all students of SMK Kristen 1 Surakarta enrolled in the 2025/2026 academic year, totalling 225 students: 86 in Grade X, 58 in Grade XI, and 81 in Grade XII. The sample size was determined using the Slovin formula with a 5% margin of error, yielding 144 students. Proportionate stratified random sampling was applied to ensure that each grade stratum was represented in proportion to its share of the total population. Sugiyono (2022) affirmed that this technique is appropriate when a population is divided into proportional strata, and Creswell and Creswell (2018) further noted that the proportion of each subgroup within the sample should mirror its proportion in the population. Accordingly, the proportional sample comprised 55 Grade X students, 37 Grade XI students, and 52 Grade XII students.

Primary data collection was conducted in May 2026 through an online questionnaire distributed via Google Forms to selected students in each class. Homeroom teachers assisted in ensuring that the questionnaire link reached the appropriate number of students corresponding to each stratum's sampling proportion, thereby securing adequate representation across grade levels and vocational programs before the data were considered complete for analysis.

Primary data were collected using a closed-ended questionnaire employing a four-point Likert scale, ranging from 1 (strongly disagree) to 4 (strongly agree). An even-numbered scale without a neutral midpoint was chosen to encourage respondents to provide definitive responses and to reduce central tendency bias — the tendency to select middle options without genuinely considering the available choices. Kusmaryono et al. (2022) established that removing a neutral option does not reduce the reliability of respondent answers. The questionnaire comprised 37 items in total, including 26 positively worded items and 11 negatively worded items.

Student satisfaction (Y) was measured using indicators adapted from Tjiptono (2019): overall satisfaction, conformity to expectations, willingness to recommend, intention to remain enrolled, and customer dissatisfaction. Administrative service quality (X_1) was assessed using the SERVQUAL model of Parasuraman et al. (1988), encompassing the five dimensions of reliability, responsiveness, assurance, empathy, and tangibles. Digital learning facility quality (X_2) was measured using indicators drawn from Putri (2025): facility availability, facility quality, accessibility, ease of use, and technical support.

The validity of each item was evaluated using the Pearson Product Moment correlation technique to determine whether each statement genuinely measured its intended construct. An item was deemed valid if its r-computed value exceeded the r-table value at the 5% significance level (Sugiyono, 2019). Reliability was assessed using Cronbach's Alpha, with a threshold of $\alpha > 0.60$ applied as the criterion for acceptable internal consistency, consistent with the standard used in social science research (Ghozali, 2018).

All instrument testing was conducted through a try-out administered to 30 respondents prior to main data collection. The try-out respondents were SMK Kristen 1 Surakarta students who were not included among the 144 main-sample respondents, thus preserving population characteristics while ensuring that main-sample responses were not influenced by prior familiarity with the questionnaire items. Validity testing yielded r-computed values ranging from 0.436 to 0.897 for administrative service quality (X_1), 0.601 to 0.870 for digital learning facilities (X_2), and 0.462 to 0.801 for student satisfaction (Y), all exceeding the r-table value of 0.361 at N = 30 with a 5% significance level. Three items in the student satisfaction variable were declared invalid (r-computed < r-table) and were therefore removed from the instrument. Reliability testing produced Cronbach's Alpha values of 0.936 for X_1, 0.972 for X_2, and 0.721 for Y, confirming that all three variables met the reliability criterion. The final instrument used for main data collection thus comprised 34 items that satisfied both validity and reliability requirements, following the removal of the three invalid items from the original 37-item questionnaire.

Data analysis began with tabulation, followed by classical assumption testing comprising: normality testing using the One-Sample Kolmogorov–Smirnov test, linearity testing based on the significance value of the Deviation from Linearity, multicollinearity testing via Tolerance and Variance Inflation Factor (VIF) values, and heteroscedasticity testing using the Glejser test. Hypothesis testing was conducted through multiple linear regression analysis using the equation $Y = a + b_1X_1 + b_2X_2 + e$, with the t-test applied to assess partial effects and the F-test applied to assess the simultaneous effect. The coefficient of determination was also computed to ascertain the proportion of variance in the dependent variable explained by the model. The individual

contributions of each independent variable to student satisfaction were further quantified through effective contribution and relative contribution analyses. All statistical analyses were performed using IBM SPSS version 29.

Results and Discussion

Research Results

The study involved 144 students of SMK Kristen 1 Surakarta as the research sample, comprising 55 Grade X students, 37 Grade XI students, and 52 Grade XII students. Descriptive statistics for the three research variables are presented in Table 1.

Table 1
Descriptive Statistics of Research Variables

Statistic	Administrative Service Quality	Digital Learning Facilities	Student Satisfaction
N	144	144	144
Mean	47.60	46.40	15.92
SD	5.356	6.028	2.530
Variance	28.688	36.339	6.399
Minimum	35	28	9
Maximum	60	60	23

As shown in Table 1, the score distributions of all three variables were relatively homogeneous, with standard deviations that were small in relation to their respective score ranges. Categorization into three levels revealed that the majority of respondents fell within the moderate category for all research variables, with the highest proportion observed for the student satisfaction variable.

All classical assumption tests relevant to cross-sectional regression data were satisfied. The One-Sample Kolmogorov–Smirnov test yielded an Asymp. Sig. (2-tailed) value of 0.200 > 0.05, indicating that the residuals were normally distributed. Linearity testing produced Deviation from Linearity significance values of 0.190 for the relationship between administrative service quality and student satisfaction, and 0.810 for the relationship between digital learning facilities and student satisfaction; both values exceeded 0.05, confirming linear relationships among the variables. Multicollinearity testing yielded a Tolerance value of 0.975 and a VIF of 1.025 for each independent variable, indicating the absence of multicollinearity given that Tolerance > 0.10 and VIF < 10. The Glejser test for heteroscedasticity produced significance values of 0.855 for administrative service quality and 0.479 for digital learning facilities, both exceeding 0.05, indicating that the regression model was free from heteroscedasticity.

The Durbin–Watson test for autocorrelation was not conducted, as the data were cross-sectional in nature collected from 144 different respondents simultaneously within a single data-collection period rather than through repeated observations of the same subjects over time. Autocorrelation tests examine correlations among sequentially ordered residuals and are therefore most applicable to time-series data. In cross-sectional data such as those used in this study, respondent order is random and does not reflect a temporal sequence, so residuals across respondents are not assumed to be correlated. The results of the multiple linear regression analysis and t-tests are presented in Table 2.

Table 2
Multiple Linear Regression Coefficients and t-Test Results

Variable	B	*Std. Error*	Beta	t	p
Constant	0.246	1.924	-	0.128	0.898
Administrative Service Quality (X_1)	0.171	0.032	0.362	5.170	< 0.001
Digital Learning Facilities (X_2)	0.162	0.029	0.387	5.517	< 0.001

As shown in Table 2, the regression equation is: $\hat{Y} = 0.246 + 0.171X_1 + 0.162X_2$. The constant of 0.246 represents the predicted level of student satisfaction when both independent variables equal zero. For administrative service quality, the t-value of 5.170 exceeded the t-table value of 1.977, with a significance level of $p < 0.001 < 0.05$, indicating that H1 was accepted. For digital learning facilities, the t-value of 5.517 exceeded 1.977, with $p < 0.001 < 0.05$, indicating that H2 was accepted. Both independent variables thus demonstrated significant positive partial effects on student satisfaction. The results of the F-test for simultaneous effects are presented in Table 3.

Table 3
ANOVA Results for the Simultaneous Effect

Source	Sum of Squares	df	Mean Square	F	p
Regression	296.988	2	148.494	33.879	< 0.001
Residual	618.012	141	4.383		
Total	915.000	143			

As shown in Table 3, the F-value of 33.879 exceeded the F-table value of 3.058 ($p < 0.001 < 0.05$). This result indicates that administrative service quality and digital learning facilities jointly exerted a significant simultaneous effect on student satisfaction, and H3 was therefore accepted. The coefficient of determination is presented in Table 4.

Table 4
Coefficient of Determination

R	R Square	Adjusted R Square	Std. Error of the Estimate
0.570	0.325	0.315	2.094

As shown in Table 4, the R^2 value of 0.325 indicates that administrative service quality and digital learning facilities together explained 32.5% of the variance in student satisfaction, while the remaining 67.5% was attributable to other factors not included in this study. The standardized coefficients, correlations, and contribution values for each predictor are presented in Table 5.

Table 5
Standardized Coefficients, Correlations, and Contributions to Student Satisfaction

Variable	Beta (β)	Correlation (r)	R^2	Effective Contribution	Relative Contribution
Administrative Service Quality	0.362	0.423	0.325	15.31%	47%
Digital Learning Facilities	0.387	0.443		17.14%	53%
Total				32.45%	100%

As shown in Table 5, administrative service quality contributed an effective contribution of 15.31% to student satisfaction, while digital learning facilities contributed 17.14%. The combined effective contribution of both variables totalled 32.45%, consistent with the R^2 value reported in Table 4. The minor discrepancy between the total effective contribution (32.45%) and the R^2 value (32.5%) is attributable solely to rounding of the Beta and correlation coefficients during the effective contribution computation; both values substantively reflect the same magnitude of combined

contribution. In terms of relative contribution, digital learning facilities accounted for 53% and administrative service quality for 47% of the total joint effect of the two predictors on student satisfaction. Mean scores for each indicator of the three research variables are presented in Table 6.

Table 6
R Mean Scores for Each Indicator by Research Variable (Scale 1–4)

Variable	Indicator	Mean Score
Administrative Service Quality (X_1)	Reliability	3.17
	Responsiveness	3.19
	Assurance	3.19
	Empathy	3.17
	Tangibles	3.14
Digital Learning Facilities (X_2)	Facility availability	3.11
	Facility quality	3.05
	Accessibility	3.10
	Ease of use	3.10
	Technical support	3.11
Student Satisfaction (Y)	Overall satisfaction	2.38
	Conformity to expectations	2.28
	Willingness to recommend	2.15
	Intention to remain enrolled	2.17
	Customer dissatisfaction	2.39

Discussion

Effect of Administrative Service Quality on Student Satisfaction

The t-test results demonstrate that administrative service quality exerted a significant positive effect on student satisfaction ($t = 5.170$, $p < 0.001$). This finding aligns with the expectation–disconfirmation framework proposed by Wijana and Dwi Rusiawati (2021), which holds that satisfaction among educational service users is formed by the difference between expectations and actual experience. The significant t-value in the present study indicates that students' perceptions of administrative staff performance at SMK Kristen 1 Surakarta approached and even exceeded their initial expectations. These results corroborate the findings of Sulhak et al. (2020) at SMK PGRI 1 Giri Banyuwangi, Ratnasari et al. (2018) at public SMK schools in Malang, and Borishade et al. (2021) in Nigerian higher education, all of which documented a positive influence of administrative service quality on student satisfaction.

At the indicator level, as shown in Table 6, responsiveness and assurance attained the highest and nearly equal mean scores (3.19 each), while tangibles recorded the lowest mean score (3.14). The high assurance score reflects students' favourable assessment of administrative staff competence; however, this achievement needs to be complemented by improvements in tangibles specifically, the completeness of physical service support facilities in order to elevate overall student satisfaction more substantially.

Effect of Digital Learning Facilities on Student Satisfaction

The t-test results indicate that digital learning facilities exerted a significant positive effect on student satisfaction ($t = 5.517$, $p < 0.001$), with a slightly larger effect size than that of administrative service quality. This result is consistent with the findings of Meilani et al. (2020), who applied the DeLone and McLean information system success model and demonstrated that system quality and technical service quality enhance user satisfaction, a pattern also observed by Putri (2025) among SMK students. At the indicator level, as shown in Table 6, facility availability and technical support attained the highest and nearly equal mean scores (3.11 each), while facility quality recorded the lowest mean score (3.05). Although the school has successfully provided learning platforms and technical support for students, the performance and technical condition of

the available facilities have not yet reached their full potential, suggesting that enhancing the quality of existing digital facilities should be prioritised as the next area of improvement.

Simultaneous Effect of Administrative Service Quality and Digital Learning Facilities on Student Satisfaction

The F-test confirms that administrative service quality and digital learning facilities jointly exerted a significant positive effect on student satisfaction ($F = 33.879$, $p < 0.001$, $R^2 = 0.325$). Kurniawan et al. (2026) identified a comparable pattern among junior high school students in Surabaya, where physical facilities and service quality simultaneously shaped student satisfaction without displacing one another. The effective contributions of the two predictors were nearly equal 15.31% for administrative service quality and 17.14% for digital learning facilities indicating that both factors play substantively comparable roles in determining student satisfaction.

At the indicator level, as shown in Table 6, overall satisfaction and customer dissatisfaction attained the highest and nearly equal mean scores (2.38 and 2.39, respectively), while willingness to recommend the school recorded the lowest mean score (2.15). This pattern suggests that student satisfaction has reached a stage of acceptance but has not yet developed into active loyalty.

A notable contrast exists between the indicator-level scores for administrative service quality and digital learning facilities, which were relatively moderate to good (approximately 3.05-3.19 on a 4-point scale), and the comparatively lower student satisfaction scores across all five indicators. Moreover, the two predictors together explain only 32.5% of the variance in student satisfaction. This divergence is consistent with expectation confirmation theory (Oliver, 1980), which posits that satisfaction is determined not by perceived service performance alone, but by the discrepancy between that performance and users' prior expectations. SMK students, who hold high expectations regarding school service experiences as discussed in the introduction may remain dissatisfied even when service performance is objectively adequate, because their expectations have not been fully met.

The R^2 value of 32.5% also implies that approximately 67.5% of the variance in student satisfaction is attributable to factors outside the scope of the present model, such as teacher instructional competence, family support, tuition costs, or the social environment at school. These factors have not been incorporated into the current model and thus warrant attention in future research.

From a theoretical standpoint, these findings reinforce the applicability of the SERVQUAL model (Parasuraman et al., 1988) and the expectation–disconfirmation framework (Wijana & Dwi Rusiawati, 2021) within the vocational secondary education context. The significant effect of administrative service quality confirms that the five SERVQUAL dimensions reliability, responsiveness, assurance, empathy, and tangibles remain valid and relevant as bases for measuring student satisfaction at the SMK level, not solely in higher education settings as demonstrated by Wijana and Dwi Rusiawati (2021) and Borishade et al. (2021). Simultaneously, the significant contribution of digital learning facilities supports the DeLone and McLean (as applied by Meilani et al., 2020) information system success model, demonstrating that digital facility quality contributes to user satisfaction in the vocational school context. This study adds to the body of empirical evidence that these two theoretical frameworks can be integrated within a single model to yield a more comprehensive explanation of student satisfaction an integration that has rarely been undertaken in prior studies such as those of Sulhak et al. (2020) and Putri (2025), which tended to examine both variables in isolation.

Conclusion

This study demonstrates that administrative service quality and digital learning facilities both individually and in combination exert significant positive effects on student satisfaction. Nevertheless, student expectations regarding the school experience are multidimensional in nature and therefore cannot be fully explained by these two variables alone. Several limitations must be acknowledged: the study was conducted at a single private vocational secondary school and incorporated only two independent variables, necessitating careful interpretation and cautious generalization of the findings. Future studies are encouraged to involve multiple vocational schools

and to incorporate additional variables such as teacher competence or instructional quality in order to provide a more comprehensive picture of the factors that shape student satisfaction at the vocational secondary level. For SMK Kristen 1 Surakarta specifically, the findings highlight two areas requiring simultaneous attention. With respect to administrative services, the school should prioritize improvements in the tangibles dimension, which recorded the lowest mean score among the five SERVQUAL dimensions. Practical improvements could include the provision of a waiting area, a queue management system, and more complete administrative service equipment. With respect to digital learning facilities, the school should prioritize upgrading the quality and technical performance of existing facilities, given that the facility quality indicator recorded the lowest mean score despite adequate platform availability. For vocational education policymakers, the results indicate that investment in administrative services and digital facilities should proceed in a balanced manner, as both factors contributed approximately equally to student satisfaction.

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