Research Article

Advancing sustainable service quality in higher education institutions: Enhancing student satisfaction and loyalty

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ABSTRACT

This research examines the relationship between service quality, student satisfaction, and loyalty in private higher education institutions (PHEIs), utilizing the SERVQUAL model. This research used a quantitative survey across various PHEIs in Malaysia to measure service quality and its effect on students' satisfaction and loyalty. One hundred sixty-six respondents completed a 49-item questionnaire using a 5-point Likert scale. The study reveals a strong correlation between service quality and student satisfaction, with empathy and assurance identified as the strongest predictors of student satisfaction and loyalty. These findings underscore the strategic role of supportive and trustworthy service in strengthening competitiveness among Malaysia's PHEIs. The findings offer a guide for private higher education institutions (PHEIs) to better match their academic and support services with what students expect. The insights also support policymakers and leaders in developing strategies to enhance student satisfaction, foster loyalty, and promote the long-term growth of the sector.

Keywords: service quality; student satisfaction; student loyalty; private higher education institutions; SERVQUAL

1. Introduction

Private higher education institutions (PHEIs) have been recognized as key contributors to national development through their roles in research, education, and innovation. Their financial autonomy has enabled greater responsiveness and support for national priorities and rapid expansion in the global higher education landscape[56,120,125,127]. The delivery of quality services that cater to student expectations is crucial for fostering satisfaction and sustaining institutional competitiveness in an increasingly service-driven higher education landscape[6,8,17,34,54,61,67,88,94,110]. In this context, institutions must move beyond academic delivery to offer holistic learning experiences that cultivate student satisfaction and long-term loyalty[49,90,123,131].

The study examines the relationship between service quality, student satisfaction, and loyalty at Malaysian PHEIs, utilizing the SERVQUAL model. It aims to identify key drivers of student perceptions and offer insights to improve service delivery. Additionally, it is intended to enhance institutional service quality and promote student-centered outcomes.

1.1. Background

Malaysia aims to be a global education hub, where PHEIs are crucial in expanding tertiary access and complementing public universities[43,94]. As part of its vision to become a regional education hub, Malaysia has encouraged transnational education partnerships with institutions from countries such as the UK and Australia to boost global competitiveness[8,117,131]. The government has targeted hosting 250,000 international students by 2025[93,103]. Supportive policies enable PHEIs to offer diverse academic programmes, including international partnerships developed over the past five decades[85,114]. By 2020, they accounted for 50.3% of total enrolment and contributed to Sustainable Development Goal 4 by promoting inclusive, lifelong learning[85]. Economically, the sector generated RM31.5 billion in 2018 and is projected to reach RM84 billion by 2030[73,95].

In order to remain competitive, Malaysia must prioritize quality, institutional branding, and student satisfaction[21,67]. For PHEIs in particular, improving service delivery is critical to shaping positive student experiences and outcomes[61,88,92]. Although the relationship between service quality, satisfaction, and loyalty is well-established, most research has focused on public institutions, leaving a significant gap in understanding these dynamics within the PHEI context[79, 94,123,131].

2. Literature review

2.1. The malaysian higher education landscape: Growth, governance, and the role of PHEIs

Malaysia's education system has undergone significant reform over the past two centuries, driven by goals of improving quality, efficiency, and national development. The Education Ordinance Act of 1952 established a post-independence framework, followed by the Education Acts of 1961 and 1966, which formalized institutional roles and strengthened governance of higher education[33]. The National Philosophy of Education (1989) aligned education with Vision 2020's holistic development goals[33,133] while subsequent reforms such as the National Education Blueprint (2012), Higher Education Action Plans (2007–2014), and the ongoing Blueprint 2015–2025 further advanced the sector's strategic transformation[84]. More recently, policy directions such as the Way Forward for Private Higher Education Institutions 2020–2025 reinforced the role of PHEIs in national development[85], while the Education (Amendment) Act 2020 strengthened governance across both public and private providers[33,124]. Collectively, these reforms illustrate a continuous trajectory toward aligning higher education governance with Malaysia's socioeconomic goals.

Aligned with its vision of becoming a high-income, knowledge-based economy, Malaysia has positioned Private Higher Education Institutions (PHEIs) as key drivers of access and innovation[4]. PHEIs gained momentum in the 1980s and expanded rapidly in the 1990s amid globalization and economic restructuring[40,71,118]. The Private Higher Educational Institutions Act 1996 (Act 555) provided the legal established the legal framework for their operation and expansion[100,101], and post-1997 reforms further cemented their role in national development[86,124].

The governance of PHEIs is primarily anchored in Act 555, with oversight by the Ministry of Higher Education (MOHE) and quality assurance by the Malaysian Qualifications Agency (MQA), established in 2007. Complemented by the Education Act 1996 and the National Accreditation Board Act 1996, these frameworks enabled the expansion of private universities and foreign branch campuses[32,118]. PHEIs are also regulated under the Companies Act 2016 and monitored by the Registrar General of Higher Education[100,101]. MQA enforces quality through the Malaysian Qualifications Framework (MQF), programme audits, and the Malaysian Qualifications Register (MQR)[75,77]. Meanwhile, MOHE evaluates institutional performance

through national rating instruments such as SETARA (for universities and university colleges) and MyQUEST (for colleges), ensuring accountability and benchmarking across the sector[86,87].

Between 2004 and 2014, gross enrolment in higher education increased by 70%, peaking at 1.3 million in 2019[84]. Enrolment declined to 1.2 million in 2021 due to the COVID-19 pandemic, with PHEIs enrolling 517,580 students, nearly half the total[99]. By 2022, PHEI enrolment stood at 513,523[77], though new intakes fell by 39.6% from 2016 to 2020[72].

PHEIs also lead in internationalization, hosting around 70% of Malaysia's international students. In 2019, they enrolled 92,415 international students compared to 39,099 in public universities[85], with annual intakes ranging from 20,000 to 30,000[5]. Additionally, PHEIs make a significant contribution to workforce development and national GDP[25,81]. In 2018, the sector was valued at RM31.5 billion and is projected to reach RM84 billion by 2030, with international students contributing RM11.3 billion[14,85]. Even with these successes, PHEIs still face challenges such as global competition and limited resources, which can impact their ability to maintain high-quality teaching and research[5].

2.2. Quality assurance and graduate employability in Malaysia's private higher education institutions

Malaysia's PHEIs have made significant progress in academic quality, driven by demand from students, intense international competition, and a quest for excellence. Many have adopted innovative teaching methods, research-informed practices, and transnational education models through partnerships with institutions in the UK, Australia, and the US[82,93,106]. These programs have enhanced the academic standards and made Malaysian qualifications more recognized globally.

The quality assurance is administered by the Malaysian Qualifications Agency (MQA) through supervision of programme accreditation, institutional audits, and alignment with the Malaysian Qualifications Framework[31]. Additionally, MQA collaborates with industry stakeholders to ensure alignment between the curriculum and the job market's skill demands, as well as technological developments. Meanwhile, the Ministry of Higher Education's (MOHE) MyQuest rating system assesses PHEIs based on teaching quality, research output, infrastructure, employability, and student services, awarding ratings from one to six stars[27].

These mechanisms are closely linked to graduate outcomes. According to MOHE's 2022 tracer study, graduate employability rates stood at 92.8% for public universities, 85.5% for PHEIs, and over 96% for polytechnics and community colleges[22]. While actual employment rates were lower, at 69.4% for public universities and 66.8% for PHEIs, 95.1% of PHEI graduates secured permanent positions in many multinational companies. Top-performing institutions, such as Asia Pacific University of Technology & Innovation, reported nearly 100% employability, while UCSI University achieved 100%[127].

To improve graduate readiness, many PHEIs have expanded industry engagement through internships, career-oriented curriculum, and skill-building initiatives[35,80]. One example is Taylor's University, which implemented a New Curriculum Framework to integrate employability competencies in response to evolving labour market needs[35]. Collectively, Malaysia's robust quality assurance systems, international partnerships, and employability-focused reforms position PHEIs as key contributors to national talent development and global workforce readiness[19,24,126].

2.3. Service quality, SERVQUAL dimensions, and their relevance to private higher education institutions

Service quality plays a key role in customer satisfaction, loyalty, and overall performance and how well an institution meets or exceeds expectations and keeps its stakeholders engaged while finding ways to improve[15,39,62,111]. In sectors such as hospitality and education, it is commonly assessed by comparing expected versus perceived service[96].

The SERVQUAL model, developed by Parasuraman, Zeithaml, and Berry (1985), evaluates service quality across five key dimensions: tangibles, reliability, responsiveness, assurance, and empathy[25,96,108,113]. The model identifies five service gaps, is the most critical being the discrepancy between customer expectations and perceptions due to shortcomings in service design, delivery, or communication. The SERVQUAL model is widely adopted across healthcare, banking, hospitality, and education, and supports continuous improvement by identifying deficiencies and guiding targeted enhancements[25,108,131].

The SERVQUAL model has demonstrated effectiveness in studies related to enhancing student retention and satisfaction across multiple contexts, including Mongolia, Jordan, Indonesia, Turkey, and Malaysia[6,7,38,46,60,61,65,110,123]. For example, studies in Indonesia showed that reliability, responsiveness, assurance, and empathy significantly predicted satisfaction, while tangibles had weaker or negative effects[46]. Similarly, in Vietnam, service quality was found to shape loyalty through satisfaction, with university image moderating the relationship, suggesting that institutional reputation is integral to sustaining student commitment[94]. In Malaysia's private higher education sector, maintaining high service quality is essential not only for academic excellence but also for enhancing student satisfaction, loyalty, and institutional image[5,59,88,112,118]. Student satisfaction is a key measure of institutional performance shaped by teaching quality, academic support, and campus facilities[5,59,112,118].

Beyond satisfaction, student loyalty, characterized by advocacy, emotional commitment, and continued engagement, is increasingly recognized as a key pillar of institutional sustainability[63]. Trust, empathy, and institutional commitment have been shown to strongly influence loyalty, with supportive campus culture, responsive services, and innovative learning environments fostering long-term student relationships[47,68]. Much of the Malaysian literature still emphasizes public higher education institutions[59,92]. There is limited exploration of PHEIs where service quality is crucial for competitiveness. While satisfaction has been studied extensively, the mechanisms linking satisfaction to loyalty and long-term commitment are underexplored in the Malaysian PHEI context. Findings from Vietnam[94] show that institutional image moderates this relationship, a dynamic worth testing locally. Recent studies show that satisfaction alone does not fully explain loyalty; instead, mediating and moderating factors such as institutional image[88], switching barriers[123], and perceived value[49] shape the satisfaction–loyalty nexus. For example, findings from Vietnam reveal that institutional image moderates the relationship between satisfaction and loyalty[94], a dynamic that warrants further examination in the Malaysian PHEI context.

3. Methodology

This study adopts a quantitative research design, employing the SERVQUAL model[95] to examine the relationship between service quality, student satisfaction, and loyalty in Malaysian private higher education institutions. Data were collected using a structured online survey administered to undergraduate students from diverse programs and demographic backgrounds. A 5-point Likert scale (1 = strongly disagree, 5 = strongly agree) was used to measure constructs.

A total of 166 valid responses were obtained through convenience sampling, a method commonly applied in exploratory service quality studies due to its accessibility and efficiency. Data analysis proceeded in several stages. Descriptive statistics were used to summarize respondent characteristics. To establish construct validity, Exploratory Factor Analysis (EFA) with principal component extraction and varimax rotation was conducted. Reliability was assessed using Cronbach's alpha, with values above 0.70 indicating acceptable internal consistency.

Following validation, correlation analysis was employed to investigate the relationships between SERVQUAL dimensions, satisfaction, and loyalty. Subsequently, multiple regression analysis was conducted to evaluate the predictive influence of service quality factors on satisfaction and loyalty. These methods allowed for testing both direct and indirect relationships, thereby aligning with prior empirical studies in higher education service quality[9,61,88,23]. Ethical safeguards were implemented, including obtaining informed consent, maintaining the anonymity of responses, and ensuring voluntary participation. These measures reduced response bias and enhanced the robustness of findings.

4. Findings

4.1. Demographic analysis

Table 1 indicates that 72.29% of respondents are aged 21–29, with the largest groups being 21–23 (37.95%) and 27–29 (34.34%), reflecting a predominantly young adult demographic. Most respondents are Degree students (73.49%), followed by Diploma Students (16.27%) and pre-university students (10.24%), suggesting that the sample is skewed toward higher academic levels. Geographically, over half of the participants are from Penang (53.61%), followed by Selangor (20.48%), with limited representation from other states. This regional concentration may reflect the location of participating institutions and could affect the generalisability of the findings.

Table 1. Demographic Analysis.

Gender	Counts	Percentage (%)
Female	102	61.45
Male	64	38.55
Total	166	100
Age		
21-23	63	37.95
27-29	57	34.34
24-26	29	17.47
18-20	17	10.24
Total	166	100
Level of Education		
Degree	122	73.49
Diploma	27	16.27
Pre-University Programs (A-level, AUSMAT, SAM, etc.)	17	10.24
Total	166	100
Location		
Penang	89	53.61

Gender	Counts	Percentage (%)
Selangor	34	20.48
Kedah	16	9.64
Johor	9	5.42
Perlis	8	4.82
Perak	7	4.22
Sarawak	2	1.20
Negeri Sembilan	1	0.60
Total	166	100

Table 1. (*Continued*)

Based on **Table 2**, the reliability dimension recorded mean scores around 3.75, indicating moderately high satisfaction with academic service consistency. Assurance, which assessed institutional professionalism and the clarity of information, showed similar results, reflecting generally positive perceptions of trust. Tangibles, covering facilities and resources, also received moderate ratings, while empathy scored slightly lower, suggesting a need for more personalized student support. In contrast, responsiveness was rated more positively, highlighting effective handling of student concerns. Notably, satisfaction and loyalty scored higher than SERVQUAL dimensions, reinforcing the link between service quality and students' willingness to stay or recommend their institution. The highest individual score (Item 5: 3.92) reflected faculty punctuality, while the lowest (Item 2: 3.50) pointed to dissatisfaction with academic fees, a recurring concern.

Table 2. Results of descriptive statistics of items' regression (DV: Satisfaction).

Question	Mean	SD
1. How satisfied are you with the overall reliability and consistency of academic services provided by your institution?	3.86	0.66
2. How satisfied are you with the academic fee structure at your institution?	3.50	0.84
3. How satisfied are you with the reliability of information regarding academic programs provided by your institution?	3.79	0.84
4. How satisfied are you with the consistency of the grading process at your institution?	3.75	0.80
5. How satisfied are you with the faculty members of your institution meeting the scheduled class times?	3.92	0.79
6. How satisfied are you with the effectiveness of the assessment methods (e.g., exams, projects) in gauging your comprehension of the course material in your institution?	3.74	0.88
7. How satisfied are you with the consistency of service provided by your institution?	3.63	0.89
8. How satisfied are you with the timeliness of service delivery provided by your institution, as per its promises?	3.60	0.89
9. How satisfied are you with the quality of records management practices at your institution, including areas such as admission, assessment, results, and financial records?	3.61	0.94
10. How satisfied are you with the academic consultation services provided by your institution for students in need?	3.67	0.99
11. How satisfied are you with the accuracy of the information provided by academic advisors in your institution?	3.75	0.86
12. How satisfied are you with the clarity of the course objectives and expectations provided by the faculty in your institution	3.80	0.83
13. How satisfied are you with the variety and relevance of courses offered within your program in your institution?	3.81	0.84

Question	Mean	SD
14. How satisfied are you with the clarity of the answer scheme criteria explained by the lecturers in your institution?	3.75	0.90
15. How satisfied are you with the extent to which faculty members inspire confidence in their teaching abilities in your institution?	3.69	0.86
16. How satisfied are you with your institution's communication regarding its commitment to students' success?	3.69	0.88
17. How satisfied are you with facilities (e.g., classrooms, laboratories, computer labs, library, study areas, etc) provided in your institution?	3.69	1.07
18. How satisfied are you with the modern technological resources available to students in your institution?	3.74	0.80
19. How satisfied are you with the educational resources provided by your institution for academic growth?	3.71	0.87
20. How satisfied are you with the clarity, visibility, and helpfulness of the signage around your institution's campus, particularly those written in both Bahasa Melayu and English, in aiding navigation?	3.70	0.97
21. How satisfied are you with the information provided on the website and brochures of your institution?	3.61	0.86
23. How satisfied are you with the administrative services being available on the online platform in your institution?	3.71	0.90
24. How satisfied are you with the teaching methods employed by the instructors in enhancing your understanding of the subject matter in your institution?	3.67	0.80
25. How satisfied are you with the communication channels utilized by your institution administrators to keep you informed as a student?	3.81	0.77
26. How satisfied are you with the learning environment of your institution?	3.68	0.97
27. How satisfied are you with the timeliness of notifications regarding important schedules, examinations, and events?	3.71	0.92
28. How satisfied are you with the convenience of the class hours in your institution?	3.75	0.94
29. Please indicate your level of satisfaction with how effectively faculty and staff understand and respond to the individual needs of students in your institution.	3.66	0.88
30. How satisfied are you with the fairness of treatment between local and international students in your institution?	3.76	0.80
31. How satisfied are you with the emotional support services provided in your institution?	3.73	0.93
32. How satisfied are you with the level of concern shown by academic advisors towards students' well-being and success in your institution?	3.81	0.84
33. How satisfied are you with the availability and accessibility of faculty members for academic support and guidance in your institution?	3.67	0.90
34. How satisfied are you with the accessibility of faculty members in addressing students' concerns outside of class in your institution?	3.54	0.90
35. How satisfied are you with the speed and efficiency of administrative processes, including registration, enrolment, inquiries, and requests in your institution?	3.51	1.08
36. How satisfied are you with the efficiency of the registration and enrolment process in your institution?	3.78	0.87
37. How satisfied are you with the helpfulness and responsiveness of the administrative staff regarding your inquiries or concerns in the institution?	3.64	0.91
38. How satisfied are you with the promptness of faculty members in your institution in responding to students' questions or concerns?	3.75	0.82
39. How satisfied are you with the effectiveness of the feedback mechanisms available for students to communicate their concerns or suggestions in your institution?	3.74	0.93
40. How satisfied are you with the institution's responsiveness to feedback and suggestions	3.64	0.97

Question	Mean	SD
from students in your institution?		
41. How satisfied are you with the overall academic service quality in your institution?	3.81	0.80
42. How satisfied are you with the overall administrative service quality in your institution?	3.75	0.83
43. How satisfied are you with the quality of teaching and instruction in your institution?	3.88	0.81
44. How satisfied are you with your institution in comparison with other private higher education institutions in Malaysia?	3.77	0.82
45. How satisfied are you with recommending the institution to others?	3.73	0.97
46. How satisfied are you with your intention to continue your studies at your current institution for future degrees or programs?	3.84	0.85
47. To what extent are you satisfied with your likelihood to engage in positive word-of-mouth promotion about the institution?	3.68	0.94
48. How satisfied are you with participating in alumni activities or events after graduation?	3.56	0.97
49. How satisfied are you with the possibility of donating or contributing to the institution's initiatives in the future?	3.53	1.01

Table 2. (*Continued*)

Exploratory factor analysis was conducted on Q1–Q40, see **Table 3**, which represent the five SERVQUAL dimensions. The outcome variables (Q41–Q49: satisfaction and loyalty) were excluded from this analysis. Although the SERVQUAL model is theoretically composed of five dimensions[96,97], the exploratory factor analysis revealed seven factors with eigenvalues >1. The exploratory factor analysis produced one dominant factor with an eigenvalue of 22.68, accounting for 56.4% of the variance. While seven factors initially exceeded the eigenvalue >1 threshold, their contributions were marginal, and they lacked clear separation of items. Except for one item (Q1), based on **Table 4**, all items loaded above 0.57 on this single factor, affirming the decision to conceptualize Service Quality as a unified construct in this study. Analysis of the SERVQUAL scale (Q1–Q40) revealed that students perceived service quality holistically, rather than distinguishing between its theoretical five dimensions.

Table 3. Summary of eigenvalues and variance explained (Q1–Q40).

Factor	Eigenvalue	% Variance Explained	Cumulative %
1	22.68	56.37%	56.37%
2	2.89	7.19%	63.56%
3	1.73	4.30%	67.86%
4	1.28	3.17%	71.03%
5	1.25	3.10%	74.13%
6	1.14	2.84%	76.97%
7	1.01	2.50%	79.47%
8	0.85	2.12%	81.59%
9	0.75	1.85%	83.45%
10	0.64	1.59%	85.03%
11	0.58	1.44%	86.47%
12	0.51	1.28%	87.75%
13	0.47	1.18%	88.93%
14	0.43	1.08%	90.01%
15	0.40	1.00%	91.01%
16	0.38	0.95%	91.96%
17	0.36	0.90%	92.86%
18	0.34	0.85%	93.71%

19	0.33	0.82%	94.53%
20	0.31	0.78%	95.31%
21	0.29	0.72%	96.03%
22	0.28	0.70%	96.73%
23	0.27	0.67%	97.40%
24	0.25	0.63%	98.03%
25	0.23	0.58%	98.61%
26	0.22	0.55%	99.16%
27–40	< 0.20 each	< 0.50% each	100%

Table 3. (*Continued*)

Table 4. Factor loadings and communalities for SERVQUAL Items (Q1–Q40).

Item	Factor 1 Loading	Communality (h²)
Q1	–	– (loading <0.40)
Q2	0.68	0.47
Q3	0.81	0.66
Q4	0.86	0.74
Q5	0.75	0.56
Q6	0.79	0.62
Q7	0.72	0.51
Q8	0.76	0.58
Q9	0.77	0.59
Q10	0.81	0.66
Q11	0.80	0.64
Q12	0.83	0.68
Q13	0.78	0.61
Q14	0.79	0.63
Q15	0.86	0.74
Q16	0.76	0.58
Q17	0.57	0.32
Q18	0.73	0.53
Q19	0.74	0.55
Q20	0.62	0.39
Q21	0.80	0.63
Q22	0.76	0.57
Q23	0.76	0.58
Q24	0.76	0.58
Q25	0.67	0.45
Q26	0.72	0.52
Q27	0.72	0.51
Q28	0.84	0.70
Q29	0.80	0.63
Q30	0.73	0.54
Q31	0.79	0.62
Q32	0.81	0.66
Q33	0.80	0.63
Q34	0.75	0.56
Q35	0.74	0.54
Q36	0.77	0.60

Q37	0.75	0.56
Q38	0.71	0.50
Q39	0.78	0.61
Q40	0.78	0.60

Table 4. (*Continued*)

Table 5 presents descriptive statistics for the SERVQUAL dimensions, satisfaction, and loyalty. Reliability showed a moderate mean with low variability, indicating consistent perceptions of dependable academic services. Assurance recorded a slightly higher mean and lower standard deviation, reflecting strong student trust in institutional credibility. Tangibles received moderate satisfaction ratings but with greater variability, suggesting differing experiences across campuses. Responsiveness showed satisfactory mean scores with moderate consensus. Satisfaction had the highest mean and lowest variability, indicating strong overall approval. In contrast, Loyalty was slightly lower, suggesting satisfaction does not always translate into long-term commitment.

Table 5. Results of descriptive statistics of variables.

Variables	Mean	SD
Reliability	3.71	0.45
Assurance	3.75	0.35
Tangibles	3.70	0.47
Empathy	3.70	0.43
Responsiveness	3.68	0.37
Satisfaction	3.80	0.27
Student Loyalty	3.67	0.27

Although the EFA indicated a unidimensional structure for SERVQUAL, correlation analysis between the theoretically defined dimensions (Reliability, Assurance, Tangibles, Empathy, Responsiveness) and the outcome variables provided additional insights. Findings from **Table 6** reveal a strong correlation between Satisfaction and Loyalty ($r = 0.8287$), indicating that increased satisfaction significantly enhances student loyalty. Reliability is highly correlated with both Assurance ($r = 0.8695$) and Satisfaction ($r = 0.8030$), underscoring the importance of dependable services in fostering trust and satisfaction. Similarly, Empathy shows a strong correlation with Assurance ($r = 0.8360$), suggesting that personalized support strengthens students' confidence in service quality. In contrast, Tangibility demonstrates only a moderate correlation with Responsiveness ($r = 0.6286$), and the weakest correlation with loyalty ($r = 0.6802$), indicating that physical aspects are less influential in student satisfaction and loyalty. Overall, all SERVQUAL dimensions are positively correlated with each other. The absence of negative correlations further reinforces this integrated approach.

Table 6. Correlation Matrix and Cronbach's Alpha.

No.		1	2	3	4	5	6	7
1	Reliability	1						
2	Assurance	0.870	1					
3	Tangibility	0.775	0.720	1				
4	Empathy	0.770	0.836	0.747	1			
5	Responsiveness	0.770	0.780	0.629	0.764	1		

6	Satisfaction	0.803	0.757	0.747	0.807	0.768	1	
7	Loyalty	0.721	0.676	0.680	0.685	0.697	0.829	1

Table 6. (*Continued*)

The regression analysis in **Table 7** revealed that empathy exhibited the strongest positive influence on both satisfaction (Multiple R = 0.8075, β = 0.8055) and loyalty (Multiple R = 0.7417, β = 0.6451), surpassing the other SERVQUAL dimensions. This finding underscores empathy as the most decisive factor in shaping student experiences in Malaysian PHEIs, aligning with earlier research that highlights the centrality of personalised support and genuine care in higher education service delivery[5,91]. Beyond academic provision, addressing students' emotional well-being, listening to their concerns, and demonstrating responsiveness fosters institutional trust and strengthens long-term commitment[21,52]. By confirming empathy's primacy in the PHEI context, this study addresses a gap in Malaysian service quality research, which has predominantly examined public institutions and often emphasized other dimensions such as assurance and reliability. The findings highlight that in PHEIs, empathetic engagement is not only central to satisfaction but also a decisive factor in fostering loyalty, offering practical guidance for institutional strategies in student support and retention.

Table 7. Regression analysis of SERVQUAL dimensions on student satisfaction and loyalty.

	Reliability	**Assurance**	**Tangibility**	**Empathy**	**Responsiveness**
Dependent Variable	Satisfaction	Satisfaction	Satisfaction	Satisfaction	Satisfaction
Multiple R	0.8030	0.7573	0.7474	0.8075	0.7678
R Square	0.6448	0.5735	0.5586	0.6520	0.5895
Adjusted R Square	0.6429	0.5709	0.5559	0.6499	0.5870
Standard Error	0.4127	0.4785	0.4652	0.4330	0.5094
F-statistic	297.7504	220.5418	207.5531	307.2951	235.4869
Significance F	1.05561E-38	3.66841E-32	6.2193E-31	1.96116E-39	1.58785E.33
Intercept	0.8370	0.8829	1.0003	0.6429	0.5239
Coefficient	0.7551	0.7540	0.7111	0.8055	0.8294
t-statistics (Intercept)	4.9410	4.4920	5.2350	3.6147	2.5041
P-value (Intercept)	1.90358E-06	1.32559E-05	4.99008E-07	0.000399694	0.013253246
t-statistic (Variable)	17.2554	14.8583	14.4067	17.5298	15.3456
P-Value (Variable)	1.05561E-38	3.66841E-32	6.2193E-31	1.96116E-39	1.58785E-33
Confidence Interval (Intercept)	[0.5025, 1.1714]	[0.4948, 1.2709]	[0.6230, 1.3776]	[0.2917, 0.9942]	[0.1108, 0.9370]
Confidence Interval (Coefficient)	[0.6687, 0.8415]	[0.6538, 0.8543]	[0.6137, 0.8086]	[0.7148, 0.8962]	[0.7227, 0.9361]
Dependent Variable	Loyalty	Loyalty	Loyalty	Loyalty	Loyalty
Multiple R	0.7214	0.7182	0.6854	0.7417	0.7382

	Reliability	Assurance	Tangibility	Empathy	Responsiveness
R Square	0.5204	0.5158	0.4698	0.5491	0.5449
Adjusted R Square	0.5175	0.5128	0.4666	0.5463	0.5421
Standard Error	0.4792	0.4833	0.5057	0.4700	0.4720
F-statistic	177.9626	174.8638	143.6606	192.4918	189.1973
Significance F	5.81104E-28	9.32005E-28	1.03063E-24	1.50791E-30	3.05687E-30
Intercept	1.5864	1.5918	1.7737	1.2818	1.2761
Coefficient	0.5781	0.5763	0.5202	0.6451	0.6473
t-statistics (Intercept)	9.7167	9.6196	9.6074	7.5438	7.5693
P-value (Intercept)	6.53683E-18	8.80241E-18	9.00926E-18	1.74158E-12	1.56239E-12
t-statistic (Variable)	13.3403	13.2254	11.9845	13.8743	13.7588
P-Value (Variable)	5.81104E-28	9.32005E-28	1.03063E-24	1.50791E-30	3.05687E-30
Confidence Interval (Intercept)	[1.2641, 1.9088]	[1.2667, 1.9169]	[1.4216, 2.1257]	[0.9346, 1.6291]	[0.9292, 1.6231]

Table 7. (*Continued*)

4.2. Implications of the findings

The implications of this study are significant, indicating that private higher education institutions (PHEIs) in Malaysia must prioritize holistic service quality as a strategic driver of student satisfaction and loyalty. Service quality enhancement should not be confined to maintaining high academic standards, but should also encompass the entire student experience including the quality of the learning environment, access to meaningful learner support, and the presence of empathetic and responsive staff. By embedding empathy and personalised engagement into service delivery, PHEIs can foster stronger emotional connections with students, thereby reinforcing institutional trust, satisfaction, and long-term loyalty. Such a holistic approach positions PHEIs not only as providers of academic credentials but also as student-centered institutions committed to nurturing well-being, employability, and lifelong learning.

4.3. Recommendations of practice

Institutions bear shared responsibility for fostering environments of trust, safety, and transparency. This includes ensuring clarity of accreditation, staff qualifications, and campus security. Developing empathy skills among academic and administrative staff enables them to support students more effectively, particularly in diverse cultural and personal contexts. Enhancing the learning environment through upgraded facilities and contemporary educational resources can increase perceptions of dependability. Finally, investing in fast, technology-enabled support systems ensures timely assistance and enhances students' access to institutional services, thereby strengthening satisfaction and retention.

4.4. Limitations of the study and future research directions

A key limitation of this study lies in the relatively small sample size, which was drawn using convenience sampling from a limited number of institutions. Moreover, the reliance on a single method of data collection constrains the depth of insights into the complex dynamics of service quality in private higher education. To address these limitations, future research should employ larger and more diverse samples that

better represent the heterogeneity of Malaysia's private higher education sector. In addition, adopting mixed-methods approaches that combine quantitative surveys with qualitative interviews or focus groups would provide both breadth and depth, yielding richer perspectives on how service quality influences student satisfaction, loyalty, and long-term engagement.

5. Conclusion

Enhancing service quality is not a peripheral consideration, but a strategic imperative for sustaining competitiveness, improving student retention, and strengthening the institutional reputation. In an increasingly globalized education market, where cross-border partnerships and international student mobility define institutional competitiveness, PHEIs must align service quality initiatives with both local expectations and international standards. Collectively, the results confirm that empathy and assurance are crucial to fostering long-term student commitment, providing actionable guidance for institutional leaders seeking to strike a balance between academic excellence and student-centered service delivery.

Conflict of interest

The authors declare no conflicts of interest.

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