Exploring Service Quality in Private Secondary Schools: A Multi-method Analysis Using EduQUAL Framework

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Abstract:
This study delves into the realm of private secondary education, aiming to enhance service quality using the EduQUAL framework. Employing a multi-method approach, the research evaluates essential quality indicators for private schools in India. The research design encompasses document analysis, observations, and a systematic literature review to identify pertinent service quality dimensions. Factor analysis condenses the multitude of educational quality variables into underlying dimensions, while multiple regression analysis predicts student satisfaction and loyalty based on these dimensions. The insights derived offer actionable guidance for school administrators, facilitating the promotion of student satisfaction and loyalty in private school environments.

Keywords: Private Secondary School, Service Quality, EduQUAL framework, student satisfaction, student loyalty.

1. Introduction

Private Secondary Schools (PSS) have become a cornerstone of the educational landscape, often recognized as a social business model by institutions like the World Bank. These secondary schools are dedicated to providing contemporary educational facilities, including ICT, to students, particularly those from low-income families, in pursuit of inclusive development. They strive to ensure that all children, regardless of socioeconomic background, have access to quality education, emphasizing the belief that education is a worthwhile investment. Private secondary schools (PSS) also aim to enhance their service quality, utilizing economies of scale to optimize educational outcomes. The growing preference for superior educational options among parents has transformed education into a distinct business opportunity, leading to the emergence of the private secondary school industry.

India boasts one of the world's largest secondary school education systems, comprising nearly 14.89 lakh schools, over 95 lakh teachers, and approximately 26.52 Crore students across pre-primary to secondary levels. Within this vast network, the private sector plays a significant role, with 33.58 lakh schools educating 8.24 crore students and employing 35.40 lakh teachers (UDISE+ 2021-22). Despite the substantial size of the private school sector in India, investors continue to establish new branches, often operating under a franchise model. This trend reflects both parental demand for quality education and the entrepreneurial spirit of individuals who view education as a competitive service industry. However, financial constraints, primarily driven by tuition fees, often limit secondary school managers' ability to enhance service quality and maintain competitiveness.

In India, most private secondary schools (PSS) rely heavily on tuition fees, primarily from middle and high income families. Unlike the "Low-Cost Private Schooling Model" advocated by the World Bank, tuition fees in Indian private secondary schools are relatively higher, reflecting competitive conditions or differentiation strategies. Private secondary school managers actively differentiate their brands by offering additional or enhanced services, as outlined in the "Reaching the Last Mile (2018)" report by the World Bank. Thus, the quality of education is closely tied to the enrichment of differentiated services.

Despit`e challenges, private secondary schools continue to proliferate, with established brands expanding their footprint through multiple branches or campuses nationwide. This expansion mirrors a franchising model, where strong brands extend their presence. Management of non-educational service quality is crucial for safeguarding corporate brands, increasing revenues, and expanding into new locations. However, there is a noticeable gap in the literature regarding the measurement of service quality in private secondary schools. While instruments like EduQual have been used to assess educational services in secondary schools, their application in private education is limited. This study aims to address this gap by investigating the impact of EduQual dimensions on student attitudes in private secondary schools, bridging the divide and offering insights into service quality measurement in the private education sector.

The Objectives of the study

1. To assess the current service quality dimensions within private secondary schools.
2. To evaluate the applicability of the EduQUAL instrument in measuring service quality in the private education sector.
3. To identify any potential gaps or areas of improvement in the existing service quality dimensions as measured by EduQUAL.
4. To analyse the influences of EduQUAL dimensions on students' attitudes and perceptions towards private secondary schools.
5. To explore the relationship between service quality dimensions and students' overall satisfaction with their educational experience.

2. Student Satisfaction and Loyalty

The tuition fees invested by parents in PSSs underscore the significance of the differentiated services offered by these institutions. Achieving excellence in service delivery is essential for gaining a competitive advantage in the educational sector. High service quality not only ensures repeat patronage but also encourages positive word-of-mouth recommendations. Thus, understanding the drivers of student satisfaction and loyalty is crucial for secondary school managers aiming to maintain their competitive edge. PSS managers recognize students as key stakeholders in the educational equation, emphasizing the importance of adopting a customer-centric approach to tailor services to meet their needs and expectations. Prioritizing student-centric strategies is vital for ensuring the long-term success and sustainability of private educational institutions.

Student satisfaction and loyalty encompass various factors, including academic success, the overall learning environment, and facilities provided by PSSs. Physical facilities play a significant role in generating student satisfaction, contributing to the overall educational experience. Factors such as academic issues, economic considerations, infrastructure, image, and prestige influence student loyalty and satisfaction. Modern infrastructure, effective teaching methods, and the quality of equipment are crucial components that impact both student loyalty and satisfaction. For instance, dissatisfaction with teaching methods or the lack of modern infrastructure can lead to decreased student satisfaction and loyalty.

Student loyalty reflects a sustained commitment over time, indicating a sense of belonging and a willingness to recommend the institution to others. Loyal students contribute to the overall quality of teaching through active participation and positive recommendations. Post-graduation activities, such as alumni associations and financial support, are tangible expressions of loyalty, often tied to the perceived prestige of the secondary school. Schools with a strong reputation and high perceived prestige are more likely to foster active alumni engagement and receive ongoing support.

Research consistently demonstrates a strong association between loyalty and satisfaction. Satisfied students are more likely to develop loyalty to the institution, while loyal students tend to be more satisfied with their educational experience. This mutually reinforcing relationship highlights the importance of addressing key components of student satisfaction, including administrators' experience, quality of education, teacher quality, language education, physical facilities, and empathy.

3. Service Quality Assessment and Private Schools

Assessing the quality of services offered by PSSs is paramount for upholding educational standards and staying competitive in today's market. While established methods like SERVQUAL have been widely used across various sectors, including education, their generic nature may not fully capture the distinct characteristics and demands of PSSs. Given the diverse array of services provided by these schools, it becomes imperative to develop or adapt assessment methods that cater specifically to their unique needs and priorities. These methods should encompass

dimensions such as academic excellence, teacher efficacy, facilities, extracurricular offerings, student support services, and overall school ethos.

Specialized assessment instruments like EduQUAL have been designed to measure service quality in educational contexts, taking into account factors like learning outcomes, responsiveness, physical infrastructure, and character development. Such instruments offer a more tailored approach to evaluating service quality in PSSs, ensuring that all pertinent aspects are adequately addressed. Additionally, qualitative methods such as interviews, focus groups, and observations can complement quantitative assessments by providing valuable insights into stakeholders' perceptions and experiences. This holistic approach allows for a comprehensive understanding of service quality in PSSs, enabling schools to pinpoint areas for improvement and implement targeted strategies to enhance the overall educational experience.

By utilizing a combination of standardized assessment methods and customized approaches, PSSs can effectively assess and enhance service quality, thereby meeting the needs and expectations of students, parents, and other stakeholders. This proactive approach not only enhances the school's reputation and competitiveness but also cultivates a positive learning environment conducive to student success and satisfaction. Given the evolving landscape of private secondary education, there is a pressing need to refine and reassess existing service quality assessment methods. While frameworks like EduQUAL offer a multidimensional structure, past research has revealed inconsistencies in dimensionality, with insufficient emphasis on core educational services. To address these gaps, this study aims to adapt EduQUAL to the private school context, ensuring comprehensive coverage of the specific services provided by these institutions. This adaptation involves integrating dimensions related to core educational services, such as curriculum relevance, course content adequacy, exam preparation, and subject alignment. By amalgamating elements from both EduQUAL and SERVQUAL frameworks, the study seeks to develop an advanced, tailored version of EduQUAL that effectively addresses the unique needs and challenges of PSSs while adhering to established principles of service quality assessment.

4. Methodology
4.1. Research Design
This study employs a multi-method approach to assess service quality in PSSs through the EduQUAL framework. It includes document analysis, observations, and a literature review to identify indicators affecting student satisfaction and loyalty. The approach involves examining organizational standards, conducting on-site observations, and reviewing existing measures.

All scales utilized in the study adhere to a 5-point Likert-type scale, ranging from 1 (strongly disagree) to 5 (strongly agree). This standardized approach ensures consistent measurement and facilitates the comparison of responses across various items and dimensions of service quality.

4.2. Analytical Approach
This study uses factor analysis to condense educational quality variables into underlying dimensions and multiple regression analysis to predict student satisfaction and loyalty. Factor analysis identifies essential service quality dimensions, while regression analysis explores their impact on student outcomes. These techniques provide actionable insights for improving service quality in PSSs, guided by established statistical guidelines.

4.3. Sampling Method
The study utilized a convenient sampling approach to gather data from students across five PSSs in Solapur, India during the year 2024. The decision to employ convenience sampling was motivated by the cooperation of senior management within the secondary schools, who expressed interest in participating in the research to improve their educational services. Convenience sampling involves selecting data from readily available and accessible population members.

In this study, a total of 220 students were surveyed to ensure a broad representation of opinions from within PSSs. Ultimately, 215 questionnaires were completed, resulting in a robust response rate of 97.7%. These valid responses constitute approximately one-fourth of the total student population across the five PSSs included in the study.

Convenience sampling is a widely used approach in business studies, particularly for collecting initial primary data related to potential customers' opinions, such as when introducing new product designs or services. While convenience sampling may not always yield a representative sample of the entire population, it offers practical advantages in terms of accessibility and data collection efficiency, making it well-suited for exploratory research and preliminary investigations.

Table No. 1 presents the demographic characteristics of the participants in the study, based on frequency distributions and percentages.

Table No. 1: Demography of the Participants

Demographic Characteristics		Percentage	N (215)
Gender	Boys	46.0	99
	Girls	54.0	116
Age	15-16	27.9	60
	13-14	39.1	84
	11-12	33.0	71
Class	Class of 6	23.2	50
	Class of 7	28.9	62
	Class of 8	21.9	47
	Class of 9	26.0	56

5. Findings

5.1 Factor Analysis

Two separate factor analyses were conducted to analyse the educational service quality variables, with the latter focusing on the dependent variables. For the exploration of EduQUAL dimensions within PSSs, an exploratory factor analysis was performed. Using the data reduction procedure of SPSS with an eigenvalue cut-off of 1 and Varimax rotation, the analysis revealed five dimensions comprising a total of 36 items. The five-factor solution of EduQUAL, along with individual items, their respective factor loadings, and reliability scores are presented in Table No.2.

For the analysis of independent variables, the data underwent Principal Component Analysis (PCA) with varimax rotation. The results of the PCA aligned with expectations. Table 3 presents the resources of the items related to student loyalty and student satisfaction, along with their respective factor loadings.

Notably, unlike previous research on EduQUAL, the dimension of core educational services emerged as a component of education service quality. The items, sources, and factor loading scores of all resulting variables are detailed in Tables No. 2 and 3.

The table presents the results of a factor analysis conducted on the items related to infrastructure within the EduQUAL questionnaire. The "Score" column displays the factor loading scores, which indicate the strength of the relationship between each item and the underlying factor

Table No. 2: Factor Analysis of EduQUAL

Sr. No.	Variable	Item	Score
Q.1	Infrastructure (.873)	Equipped laboratories	.797
Q.2		Computer laboratories	.692
Q.3		School Building	.759
Q.4		Sports and games.	.783
Q.5		Cultural events and festival organizations	.505
Q.6	Organizations (.730)	Scientific/ Technological activities	.681
Q.7		Sports competition	.582
Q.8		Cultural and Traditional activity	.582
Q.9		Field and Industrial Visit	.682
Q.10	Core Education (.765)	Curriculum for future exams	.572
Q.11		Updated curriculum	.279
Q.12		Study material	.611
Q.13		Course content	.600
Q.14	Empathy (.845)	Access to health services	.679
Q.15		Teachers approach	.640
Q.16		Advisor teachers	.578
Q.17		Feeling of safe	.553
Q.18		Teachers as a role model	.767
Q.19	Environment	Cleanliness and hygiene standards	.842

Q.20	(.913)	Free from noise and dust pollution	.659
Q.21		Safe drinking water	.849
Q.22		Separate toilet facilities	.104
Q.23		Comfortable seating benches	.901
Q.24		Adequate lighting and fan facilities	.853
Q.25	Loyalty (.905)	Strong sense of pride	.804
Q.26		Happy to be a part of School	.737
Q.27		Represent school in extracurricular activities	.779
Q.28		Positive word-of-mouth	.736
Q.29		Defend against criticism	.770
Q.30		Participate in alumni activities	.703
Q.31	Satisfaction (.876)	Communication of administrators	.767
Q.32		Quality of education	.687
Q.33		Quality of teaching	.816
Q.34		Language education	.624
Q.35		Physical facilities of the school	.354
Q.36		Empathy	.605

Moreover, the Cronbach's Alpha scores provided in parentheses next to each dimension in Table 2 demonstrate the reliability of each dimension. These scores surpass the expected threshold of 0.70, indicating strong internal consistency within each dimension. The independent variable of service quality comprises various dimensions, each with a specific number of items. Specifically, the dimensions beginning with infrastructure consist of five items each, organization contains four items, core education services encompass four items, empathy involves five items, environment comprises six items, and both loyalty and satisfaction include six items, totaling 36 items overall.

5.2. Descriptive Statistics

In addition to the main analysis, the study presents descriptive statistics including means, standard deviations, and Cronbach's Alpha scores. These statistics provide valuable insights into the central tendency and variability of the data, while also assessing the reliability of the measured dimensions.

Table No. 3: Descriptive Statistics

Variable	N	Mean		Std. Deviation	Variance
	Statistic	Statistic	Std. Error	Statistic	Statistic
Organisation	215	3.1500	.07203	1.05619	1.116
Satisfaction	215	3.8039	.05026	.73689	.543
Loyalty	215	3.9147	.06608	.96886	.939
Empathy	215	4.0753	.04689	.68747	.473
Environment	215	4.4752	.05265	.77198	.596
Core Education	215	4.5465	.07950	1.16568	1.359
Infrastructure	215	4.6102	.05135	.75287	.567

5.3. Multiple Regression Analysis

Subsequent the data reduction procedure using the SPSS statistical program, the study conducted two separate multiple regression analyses to explore the impact of service quality dimensions on student satisfaction and loyalty. Prior to the regression analyses, the assumption of normality was examined to ensure the validity of the results. The data was assessed for normal distribution, with values within the ±1 interval indicating suitability. Furthermore, the multivariate normality assumption was confirmed through examination of scatter diagram matrices, revealing distributions in elliptical patterns. To address potential multicollinearity issues, correlation values between independent variables were scrutinized. Although no evidence of multicollinearity was found,

the presence of a multicollinearity problem was evaluated using tolerance values before and after transformation, as detailed in Table 4 and 5.

Table No. 4: Correlations and Tolerance (Satisfaction)

Variable	Correlations			Importance	Tolerance	
	Zero-Order	Partial	Part		After Transformation	Before Transformation
Infrastructure	.323	.337	.290	.296	.838	.847
Organisation	.367	.361	.313	.352	.892	.745
Core Education	.303	.254	.212	.201	.863	.706
Empathy	-.090	-.026	-.021	.006	.737	.761
Environment	.204	.156	.128	.088	.731	.612
Loyalty	.195	.116	.094	.057	.876	.752

Dependent Variable: Satisfaction

Table No. 5: Correlations and Tolerance (Loyalty)

Variable	Correlations			Importance	Tolerance	
	Zero-Order	Partial	Part		After Transformation	Before Transformation
Infrastructure	.177	.162	.085	.022	.856	.848
Organisation	.612	.729	.553	.484	.918	.796
Core Education	-.125	-.076	-.039	.007	.925	.678
Empathy	-.124	-.321	-.176	.031	.917	.782
Environment	.636	.681	.483	.450	.872	.645
Satisfaction	.160	.045	.023	.005	.935	.895

Dependent Variable: Loyalty

In the multiple regression analysis conducted, the study regressed the six dimensions of EduQUAL on student satisfaction to evaluate the predictive capability of educational service quality. The findings revealed that three dimensions of EduQUAL significantly predicted student satisfaction, accounting for 34.5% of the variance ($R^2 = 0.345$), as illustrated in Table 6. Moreover, the regression model demonstrated statistical significance (F = 18.297, p < 0.000), indicating that the EduQUAL dimensions collectively contribute to predicting student satisfaction. Specifically, significant t-values of beta coefficients were observed for empathy, support facilities, and core education dimensions, suggesting their noteworthy influence on student satisfaction (see Table No. 6).

Table No. 6: Effects of EduQUAL Dimensions on Student Satisfaction

Variable	Standardized Coefficients		t	Sig.	F	R^2
	Beta	Std. Error				
Infrastructure	.317	.061	26.689	.000		
Organisation	.331	.059	31.140	.000		
Core Education	.228	.060	14.307	.000	18.297	0.345
Empathy	-.024	.065	1.138	.711		
Environment	.149	.066	5.194	.024		
Loyalty	.101	.060	2.833	.094		

Dependent Variable: Satisfaction

In Table No. 7, the results of the multiple regression analysis aimed to investigate the influence of service quality dimensions on students' loyalty are presented. The regression model exhibited statistical significance (F = 18.297, p < 0.000) with an R^2 value of 0.345, indicating that empathy, social activities, and support facilities jointly have a substantial impact on student loyalty.

Table No. 7: Effects of EduQUAL Dimensions on Student Loyalty

Variable	Standardized Coefficients		t	Sig.	F	R^2
	Beta	Std. Error				
Infrastructure	.092	.039	5.521	.005	61.713	0.730
Organisation	.577	.038	232.768	.000		
Core Education	-.041	.038	1.181	.278		

Empathy	-.184	.038	23.589	.000		
Environment	.517	.039	177.199	.000		
Satisfaction	.024	.037	.411	.522		

Dependent Variable: Loyalty

6. Results

In this study, exploratory factor analysis revealed five distinct dimensions, highlighting the multidimensional nature of service quality indicators in PSSs. Notably, the inclusion of "core educational services" as one of these dimensions underscores its significance as an integral component of educational services, deviating from previous research on EduQUAL. With a comprehensive five-dimensional solution comprising 36 items, including core educational services, this study provides valuable insights into the nuanced nature of service quality in PSSs, addressing the primary research question comprehensively.

Descriptive statistics were calculated for each EduQUAL dimension to understand the central tendency and variability of the data. The mean scores ranged from 3.1500 to 4.6102, indicating generally positive perceptions of service quality across all dimensions, while standard deviations ranged from 0.04689 to 0.07950, suggesting moderate variability within the responses.

Furthermore, correlation analysis revealed significant relationships between the EduQUAL dimensions and student satisfaction. Infrastructure, Organisation, and Core Education showed moderate to strong positive correlations with student satisfaction, while Empathy and Environment demonstrated weaker associations. Tolerance values ranging from 0.612 to 0.913 indicated low multicollinearity among the predictor variables.

Finally, multiple regression analysis was conducted to examine the effects of EduQUAL dimensions on both student satisfaction and loyalty. The results indicated that Infrastructure, Organisation, and Core Education significantly predicted student satisfaction, with standardised coefficients of 0.317, 0.331, and 0.228 respectively. Additionally, Infrastructure, Empathy, and Environment emerged as significant predictors of student loyalty, with standardised coefficients of 0.092, -0.184, and 0.517 respectively.

7. Conclusion

In conclusion, this study addresses the critical need to evaluate service quality in PSSs, considering both educational and non-educational dimensions and their impact on student satisfaction and loyalty. By extending the EduQUAL framework to include core educational services, the study enhances our understanding of service quality in this context. The identified EduQUAL dimensions cover various crucial aspects of service quality in PSSs, from empathy and organization to infrastructure and core education. These dimensions reflect not only academic excellence but also the holistic development and well-being of students within the school environment.

Results indicate that prioritizing and excelling in both educational and non-educational services is essential for the sustainability of PSSs. By exceeding EduQUAL standards, secondary schools can enhance student satisfaction and loyalty, contributing to their long-term success. The study emphasizes the importance of considering students' perceptions in driving quality improvement initiatives within PSSs. While findings may not be universally applicable, they offer valuable guidance for administrators of both private and state schools, highlighting key areas that influence student satisfaction and loyalty.

Furthermore, the study underscores the significance of social activities in fostering student loyalty, alongside empathy and support facilities. Investing in core educational services and enhancing social activities can lead to increased alumni donations, ensuring the financial stability and sustainability of schools. In essence, this study provides actionable insights for PSS managers to monitor and improve service quality, ultimately enhancing student satisfaction, loyalty, and overall educational experience.

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