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A Comparative Study Of Private And Public Institutions With Special Reference To Educational Quality In Surat City

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Abstract: The purpose of this study is to compare public and private institutions of higher education (HE) with respect to quality of education (QE). The study comprises both empirical aspects by examining a wide range of variables such as Academic Performance Score, Infrastructure Score, Governance Score, Teaching Effectiveness, Faculty Qualification, Administrative Support, Curriculum Quality, Career Support and Stakeholder Satisfaction in Surat city of Gujarat, and subjective insights regarding the perceived strengths and weaknesses of public and private institutions, particularly with reference to learning environment, institutional growth and overall educational effectiveness. Statistical techniques like Mann–Whitney U test and Chi-square test were used to examine differences in QE and stakeholder's satisfaction across public and private institution. The results demonstrate significant differences between both institutions. Private institutions excelled in infrastructure and modern teaching methods, while public institutions stood out for affordability and faculty expertise. An ordinal regression model was used to identify predictors of perceived QE, with ridge regression addressing multicollinearity among variables. Infrastructure, teaching effectiveness, curriculum quality and administrative support emerged as the strongest predictors of overall QE across institutions. The findings offer valuable insights for policymakers and educators, highlighting areas needing strategic focus to enhance QE and competitiveness in both sectors.

Keywords - Quality of education; Public universities and private universities; Higher Education; Surat City.

I. INTRODUCTION

Education is essential for the personality development of individual (Ghafoor et al., 2015). Higher education is a catalyst of economic development in every nation. Universities provides to the key components of a knowledge-driven economy by providing skilled professionals for the employment landscape and by undertaking, fostering and assisting research and scientific endeavours.(Brzezicki, 2020a). Strengthening education system is widely acknowledged as a essential element of a country's development strategy. Governments all over the world allocate substantial resources to their education sector. This is especially relevant in developing countries.(Bedi & Garg, 2000a). The Government of India has allocated Rs 1.20 lakh crore to the education sector, from which Rs 47,619.77 crore on higher education. A total of 1168 universities, out of which 685 are government managed and 483 are private registered under All-India Survey of Higher Education (AISHE) 2021-22. Enrolment of students has grown fastly because of the large number of youths. Notably, government Universities constituting 58.6% of total Universities, contribute 73.7% of total enrolment, Private Universities account for 26.3% of total enrolment (AISHE 2021-22). Student's satisfaction is often analysed based on the quality of education that they gain from these education institutions. Quality or service quality as some would believe is an crucial criteria which helps students in choosing the colleges or universities. One of the factors that distinguishes a favourable university from the unfavourable ones is to outperform the competitors by increasing quality education. Also, the preferences of a specific college depend

on the performance and teaching capability of the lecturers.(Naidu & Derani, 2016a). Whether to choose a public or private institution, is one of the critical decision student faces. Public institutions are known for their affordability, size, diversity and research opportunities. While private institutions are known for infrastructure, facilities, quality curriculum, student-teacher ratio, strong placement support. Many studies has been conducted which explores the quality of education of public and private institutions.

II. LITERATURE REVIEW

(Dronkers & Avram, 2009), conducted a cross-national Analysis of the Relations between School Choice and Effectiveness Differences between Private-Dependent and Public Schools. This paper uses probability score matching on data from 26 countries to compare school effectiveness between publicly funded private and public schools, at the same time reducing selection bias. Findings show two school choice patterns: families improving their social status choosing private education and middle-class parents choosing separation. After controlling for selectivity, publicly funded private schools show significant academic success in reading in 10 of the 26 countries. (Brzezicki, 2020b), conducted The Efficiency of Public and Private Higher Education Institutions in Poland. This paper provides an analysis of the efficiency of public and private universities in Poland and the role of specified factors in the subsequent years. Efficiency was estimated using a Banker, Charnes and Cooper (BCC) model within the Data Envelopment Analysis (DEA) framework. (Ramachandran et al., 2009), conducted the practice of knowledge management processes: A comparative study of public and private higher education institutions in Malaysia. This study analysed knowledge management (KM) activities between public and private higher education institutions (HEIs) in Malaysia, using 594 academic's data. Results show that whereas all six KM processes—creation, capture, organization, storage, dissemination, and application are moderately practiced, significant differences exist between public and private HEIs. The study highlights effects for HEIs as knowledge-based organizations and plays a role in a unique comparative framework to KM research. (Othman & Othman, 2014), conducted higher education institutions and social performance: evidence from public and private universities. This paper examines how public and private universities in a developing country focus on social responsibility within the triple bottom line framework. Analysing annual reports from 2000 to 2009 using Puukka's (2008) social performance categories, the study finds that the public university mainly focused on internal responsibilities toward students and staff, while the private university strategically use social responsibility to maintain authenticity and adjust to external demands. Overall, the findings highlight social responsibility as essential for institutional sustainability and authenticity. (Bedi & Garg, 2000b), (Zanna Cernostana, 2017), conducted a study on the effectiveness of private versus public schools: the case of Indonesia. This study evaluates the relative effectiveness of public and private secondary schools in Indonesia using job sector earnings as an indicator and finds that private school graduates achieve better job market outcomes than public school graduates, challenging the view that public schools are more effective and focusing on the need for a larger role for private institutions in education. (Zanna Cernostana, 2017), conducted financial sustainability for private higher education institutions. This study explores the financial sustainability of private higher education institutions (PHEIs) in Latvia. Using economic and statistical methods, it focuses on the need for an integrated indicator system to evaluate sustainability. Findings show that there is a significant gap between the assessment of financial performance and educational activities, as quality indicators treat them as separate and poorly connected areas. The paper focuses on the importance of developing systematic approaches to provide long-term sustainability of PHEIs. (Gordon et al., 2002), conducted a comparative empirical examination of extent of disclosure by private and public colleges and universities in the United States. This study analyses annual reports of 100 U.S. higher education institutions to identify factors which are affecting disclosure practices. Using a weighted disclosure score, results indicate that institution size and public/private status significantly affect disclosure level but operational capacity and audit firm size do not significantly affect disclosure level. Non-financial information disclosures are connected to high tuition rates, reduced tuition fees, and scrutinise by state auditors. Findings show that accountability and basic criteria for public advantage and highlight greater disclosure among larger, more recognizable institutions.

(Alomenu, 2023), conducted quality service delivery in tertiary institutions in Ghana: a comparative study of public and private universities. This study examines service quality in Ghana's public and private universities using a country-specific scale developed through mixed methods. Based on qualitative discussions and a survey of 800 students, five key dimensions are environmental capacity, governance, teaching methodology, placement, and availability were identified as important criteria of interpreted high performance service. Findings show that the differences between public and private universities in governance, teaching, and placement, with student estimated value indirect effect satisfaction. The study highlights the major role of service quality for competitive ability and introduces university governance as a

new factor in measuring higher education service quality in Ghana. (Yirdaw, 2016), conducted quality of education in private higher institutions in Ethiopia: the role of governance. This study focuses on how leadership and governance factors affect education quality in Ethiopia's private higher education institutions. Using a qualitative case study of six institutions, findings identify key challenges such as limited funding, lack of qualified faculty members, poor infrastructure, limited study duration and partial regulation frameworks. The study concludes that strong leadership, improve resource allocation and fair regulation are necessary to improving education quality and sustainability.

(Paudyal, 2016), conducted higher education academic standard in Nepal: a comparative study on public and private higher education institutions of Tribhuvan university. This study analyses academic quality indicators of public and private campuses under Tribhuvan University, which represents the majority of Nepal's higher education. Using qualitative methods, the analysis considers graduation rates, faculty qualification, facilities, professional and research activity. Results show that high failure rates (over 50%), weak research and career integration, and poor infrastructure. On other the hand public campuses perform slightly better, private campuses focus mainly on graduation rates, ignoring other quality factors. The study concludes that major changes are needed to improve Nepal's higher education standards. (Brunello & Rocco; Lorenzo, 2005), conducted educational standards in private and public schools. This study examines a model of school quality that obtaining educational standards requires costly effort. Private schools usually provide higher quality but the model shows that public schools can also offer higher quality, while private schools attract students less ready to reach high expectations. Using U.S. micro-evidence, results predict majority support for high-quality to private and low-quality to public schools, though a social planner would support the opposite. (Feng, 2023), conducted education curriculum comparison between private and public schools in China. This study compares curriculum in China's public, private, and foreign schools. Findings show that private schools focus on customised learning, innovation, and extracurricular activities, while public schools focus on exam preparation and core subjects. Foreign schools focus on English communication skills and global awareness. The study shows the importance of both the teaching methods and flexible systems to address students' individual needs and whole development. (Naidu & Derani, 2016b),conducted a comparative study on quality of education received by students of private universities versus public universities. This study compares public and private universities in Malaysia with a focus on education quality and student satisfaction among second-year undergraduates. Findings show variation between the two sectors, affecting awareness of quality and satisfaction. The study provides comparative knowledge of how students evaluate universities based on these factors. (Atnafu & Shete, 2004), conducted quality of education in private and public higher education institutions: a comparative analysis. this study analyses the quality of education based on national education and training policy in Ethiopia's public and private institutions. The results show main differences in facilities, faculty qualification, classrooms, and staff replacement between public and private colleges. and these differences are also existed in private colleges and creating challenges to observe which sector delivers better quality. Both public and private institutions need stronger efforts to improve outcomes.

While international and national studies highlight differences in efficiency, governance, stakeholder satisfaction, and teaching methodologies between public and private institutions, there is limited area-focused evidence explaining how these factors show unique socio-economic and cultural contexts within Surat. In Surat city, the education sector has observed major growth in private institutions and increasing challenges for public institutions, increasing important challenges about the comparative quality of education provided by both sectors. The increasing preference for private institutions, joined with decreasing trust in public institutions, demands a systematic study to examine not only educational quality but also the satisfaction of key stakeholders such as students, parents, and faculty. Additionally, understanding the factors playing a role in the growth of private institutions and the relative decreasing of public ones are key for developing a balanced and sustainable educational framework. Without such area-specific analysis, policymakers and administrators risk depending on overall assumptions that may not deal with the actual condition in Surat. Therefore, there is an urgent need to evaluate the relationship between educational quality and playing a role in factors and to propose effective methods to improve the overall quality and competitive strength of both public and private institutions in Surat City.

III. RESEARCH METHODOLOGY

This study utilized a quantitative research approach to explore differences in educational quality between private and public institutions. The study adopted a convenience sampling technique to select respondents, assuring access to participants within the research with reference to Surat city. A total sample size of 138 participants was obtained, which consists of students, faculties or related stakeholders from both private and public institutions. Convenience sampling was selected for its feasibility, allowing the researcher to competently collect data with available resources and timeframe. Data was collected through structured questionnaires focusing on multiple factors of educational quality. The gathered data was then considered for statistical analysis, including non-parametric and ordinal regression techniques, to examine differences and relationships. Overall, this methodology assisted a focused investigation of educational quality in Surat City's institutions, balancing practical constraints with systematic analytical procedures to provide meaningful comparative insights.

3.1 Research Objectives

- To Compare the Educational Quality in Private and Public Institutions in Surat City.
- To Examine Stakeholder Satisfaction in Both Private and Public Institutions.
- To Explore the Factors Contributing to the Growth of Private Institutions and the Decline of Public Institutions.
- To Assess the Impact of Different Factors on Educational Quality.
- To know the relationship of Educational Quality and Different factors.
- To Propose Strategies for Improving Educational Quality in Both Private and Public Institutions.

3.2 Analysis

3.2.1 Educational Quality and Stakeholder's Satisfaction

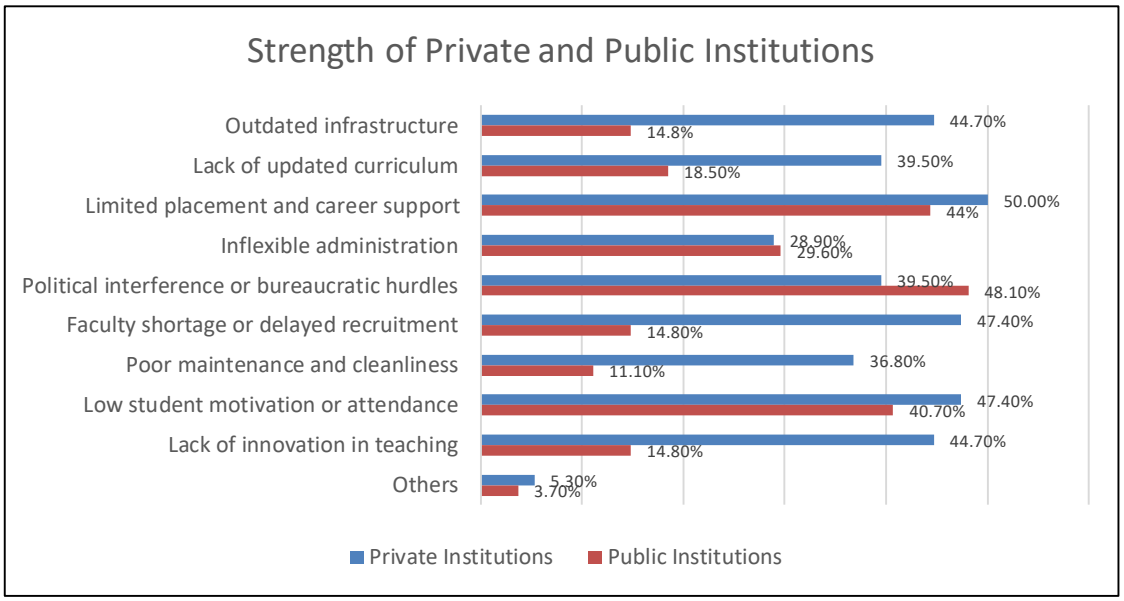
To examine whether there was a significant difference in Educational Quality Scores and Stakeholder's Satisfaction between the two types of institutes, a Mann–Whitney U test was conducted. This non-parametric test was selected as the variable under study was measured on an ordinal scale, and hence the assumptions of parametric test such as the independent samples *t*-test (normality of distribution, interval/ratio measurement) were not met. The Mann–Whitney U test is suitable in such cases, as it compares the distributions of ranks between two independent groups.

The results showed a statistically significant difference between the institute types in terms of their Educational Quality Scores ($U = 1886.50$, $Z = -2.14$, $p = 0.032$). An inspection of the mean ranks showed that private institutions (Mean Rank = 76.55) reported higher Educational Quality Scores as compared to public institutions (Mean Rank = 62.24). This suggests that private institutions have relatively higher perceived educational quality than public institutions. Similarly, the results for Stakeholder's Satisfaction indicated a statistically significant difference between the institute types ($U = 1798$, $Z = -2.581$, $p = 0.010$). A review of the mean ranks showed that private institutions (Mean Rank = 77.81) reported higher Stakeholder's Satisfaction scores compared to public institutions (Mean Rank = 60.94). This indicates that private institutions have relatively higher perceived stakeholder's satisfaction than public institutions.

3.2.2 Strengths and Weaknesses of Public and Private Institutions

This section presents an analysis of the strengths and weaknesses of public and private institutions, derived from the frequency distribution of surveyed responses. By examining these frequencies from the *Figure 1 and 2*, the study aims to offer an insightful comparison that highlights key areas where each institution type excels or faces challenges. This analysis serves as a foundational step in understanding the distinct characteristics and performance indicators of public and private educational institutions, enabling more informed discussions and potential policy considerations.

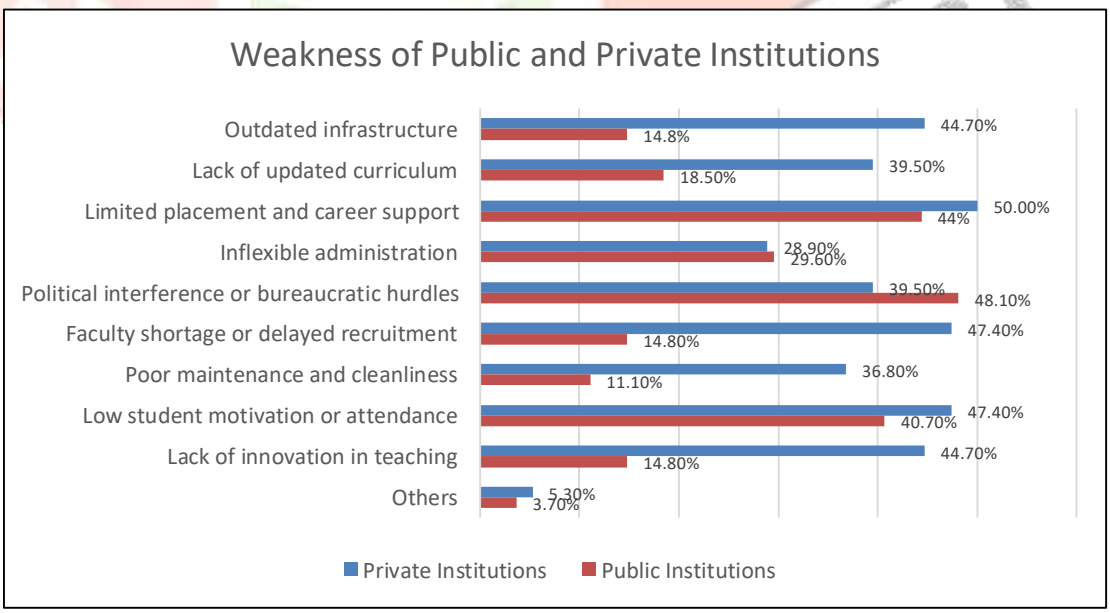
Figure 1: Strength of Private and Public Institution



38 participants perceived strengths of private institutions that contribute to their growth. Respondents perceive private institutions' strongest advantages to be in their infrastructure (73.7%), teaching methods (60.5%), student-teacher ratios (57.9%), discipline (52.6%), and employability support (50%). This suggests that investments in facilities, adoption of modern educational practices, maintaining smaller class sizes, and providing robust placement support are seen as key drivers of growth and differentiation in the private education sector.

According to 27 respondents, public institutions are perceived to excel mainly in faculty recruitment (51.9%), maintaining favourable student-teacher ratios (40.7%), providing solid infrastructure (37%), and supporting student placements (37%). Their adaptability in administration (33.3%) and adoption of modern teaching practices (29.6%) are also seen positively, although to a lesser extent. Affordability (3.7%), though typically a hallmark of public institutions, was not a major highlight in this particular group's responses.

Figure 2: Weakness of Public and Private Institution



38 respondents perceive public institutions' main weaknesses to be in placement and career support (50%), faculty recruitment (47.4%), student motivation (47.4%), outdated infrastructure (44.7%), and lack of innovation in teaching (44.7%). Curriculum stagnation (39.5%), bureaucracy (39.5%), and poor facility maintenance (36.8%) are also seen as persistent challenges. These findings suggest that, to grow and remain competitive, public institutions should prioritize improvements in staffing, infrastructure, career services, administrative agility, and modernization of curricula and teaching methods.

27 participants perceived the weaknesses of private institutions. The findings suggest that administrative challenges such as bureaucracy (48.1%) and inflexible governance (29.6%), limitations in placement or career support (44.4%), and low student motivation (40.7%) are regarded as key weaknesses of private institutions. Issues related to curriculum (18.5%), teaching innovation (14.8%), infrastructure (14.8%), and faculty recruitment (14.8%) are also present but less frequently highlighted. Interestingly, cost does not appear to be a predominant concern among the respondents in this survey.

3.2.3 Assessing the Association between Educational Quality and Respondents' Perceptions

A Chi-Square Test of Independence was conducted to examine if there is a statistically significant association between educational quality and respondents' views on the learning environment, academic performance, infrastructure, teaching effectiveness, administrative support, academic outcomes, curriculum quality, feedback system, career support, governance. The hypothesis can be defined as follows:

H_0: *There is no significant association between educational quality and other factors.*
H_1: *There is significant association between educational quality and other factors.*

The results are as below:

Table 1: Chi-square test of independence results

Factors (with educational quality)	p-value	Conclusion
Learning Environment	0.000 (<0.05)	Significant association
Academic Performance	0.000 (<0.05)	Significant association
infrastructure	0.000 (<0.05)	Significant association
Teaching Effectiveness	0.000 (<0.05)	Significant association
Administrative Support	0.000 (<0.05)	Significant association
Academic Outcomes	0.000 (<0.05)	Significant association
Curriculum Quality	0.000 (<0.05)	Significant association
Feedback System	0.001 (<0.05)	Significant association
Career Support	0.000 (<0.05)	Significant association
Governance	0.000 (<0.05)	Significant association

All the factors show significant results. This suggests respondents' satisfaction with all the factors influence perceived overall educational quality.

3.2.4 Assessing the Association between Educational Quality and Respondents' Perceptions

An ordinal regression model was applied to investigate the influence of various predictors on the overall quality of education, which was measured on an ordinal scale. This aims to identify significant factors that affect education quality and quantify their impact. Here is the fitted model,

$$\hat{y} = \beta_0 + \beta_i X_i \quad (1)$$

where $\hat{y}$ = Response variable (Educational Quality)
X = Predictor variables (Different factors)
β_0 = Intercept of the model
β_i = Slope of the model
i = j = 1,2, … ,10
These results present the output of an ordinal regression analysis, which examines how various predictors influence overall education quality, measured on an ordinal scale.
H_0: *The model is not significant.*

$H_1: The\ model\ is\ not\ significant.$

The Chi-Square value for the final model is 156.695 (df = 10, p < .001), showing that the model as a whole is statistically significant and provides a better fit than a model with only the intercept. R-squared is 0.719 (Nagelkerke value) which indicates that the predictors collectively explain a substantial proportion of the variation in overall education quality. Further, to test whether the individual parameters are significant or not, Wald test is applied. The hypothesis can be given as follows.

H_0: The coefficient (β) for the predictor variable (overall educational quality) is equal to zero.

H_1: The coefficient (β) for the predictor variable (overall educational quality) is not equal to zero.

The significance of individual parameters is shown in *Table 2*.

Table 2: Parameter Estimates and their significance

Parameters	Estimate	p-value	Conclusion
Learning Environment	0.499	0.223 (>0.05)	H_0 is accepted
Academic Performance	1.982	0.000 (<0.05)	H_0 is rejected
Infrastructure	0.533	0.030 (<0.05)	H_0 is rejected
Teaching Effectiveness	0.566	0.043 (<0.05)	H_0 is rejected
Administrative Support	-0.427	0.115 (>0.05)	H_0 is accepted
Academic Outcomes	-0.289	0.446 (>0.05)	H_0 is accepted
Curriculum Quality	0.298	0.201 (>0.05)	H_0 is accepted
Feedback System	0.434	0.032 (>0.05)	H_0 is accepted
Career Support	0.322	0.155 (>0.05)	H_0 is accepted
Governance	-0.131	0.657 (>0.05)	H_0 is accepted

Since many of the parameters are not significant, but as the overall model is significant, the problem of multicollinearity may be present. Also, it was found that the individual parameters were correlated with each other. This was checked using Spearsman Rank Correlation. In the results, the presence of several related educational quality measures means multicollinearity may be present.

Multicollinearity among predictor variables poses a significant challenge in regression analysis, including ordinal regression, as it inflates the variance of coefficient estimates, undermining the stability and interpretability of the model. In the present study, preliminary diagnostics indicated high correlations among several independent variables measuring overlapping constructs of educational quality, which raised concerns about multicollinearity affecting the regression results. To mitigate these effects and improve model estimation, ridge regression was applied. Ridge regression introduces a penalty term that shrinks the estimated coefficients, reducing their variance without eliminating variables, thereby stabilizing the parameter estimates despite the presence of multicollinearity. This regularization approach enhances the reliability of inference by producing more robust coefficient estimates and prevents overfitting, enabling a more accurate understanding of the relationships between predictors and the ordinal educational quality outcome.

The fitted ridge regression model relating the outcome $\hat{y}$ (e.g., overall education quality score) to predictors $X_1, X_2, \ldots, X_{10}$ is:

$$\hat{y} = -0.8676 + 0.1541X_1 + 0.6582X_2 + 0.1670X_3 + 0.1394X_4 - 0.1645X_5 - 0.1423X_6 + 0.1157X_7 + 0.2213X_8 + 0.1017X_9 - 0.0209X_{10} \quad (2)$$

where, -0.8676 is the intercept.

0.1541, 0.6582, …., -0.0209 are the fitted regression coefficients corresponding to each predictor variables.

The estimated coefficients ranged in magnitude, with positive values indicating predictors that increase the expected outcome and negative values denoting inverse relationships. The model's predictions closely aligned with observed values, as evidenced by a mean squared error (MSE) of approximately 0.492,

indicating a reasonable level of accuracy in prediction given the complexity of the data. The shrinkage effect of ridge regression ensures these coefficients are more stable and less prone to variance inflation than ordinary regression estimates, making the results more reliable in the presence of correlated predictors. The ridge regression approach provided robust parameter estimates and acceptable predictive performance, supporting its suitability for modelling the ordinal education quality outcome while mitigating multicollinearity concerns.

IV. Limitations Of The Study

The sample size was perhaps rather small, as the aspect of the study is on an important topic such as education. The sample size was taken only from one particular area, which was Surat city. Hence, it would do good to perhaps get a larger area for this study. Besides that, the study only covered one private university and one public university. This may in fact limit the researcher's respondents, who are generally all students from Surat, which means other universities in Surat should be taken as examples too.

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