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Student Exam Satisfaction: Examining the Impact of Registration, Communication, Center's Infrastructure, and Exam Center Management

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Abstract

Student satisfaction with examination processes serves as a key indicator of academic service quality in higher education. Recognizing that operational dimensions such as registration systems, communication, infrastructure, and management significantly influence student experiences, this study investigates their impact on examination satisfaction within the context of Tribhuvan University. A quantitative cross-sectional design was employed, targeting BBS second-year and MBS second-semester students at Shanker Dev Campus and Nepal Commerce Campus. Using convenience sampling, 538 valid responses were gathered through structured questionnaires. Pearson correlation and multiple regression analyses were conducted to assess the relationships between registration, communication, infrastructure, exam center management, and student exam satisfaction. Model diagnostics were performed to ensure analytical validity. Bivariate analysis revealed significant correlations between all independent variables and student satisfaction with examinations ($p < 0.001$); however, regression analysis identified only three significant predictors: exam center management (ECM) ($\beta = 0.227$, $p < 0.001$), student registration experience (SRE) ($\beta = 0.103$, $p = 0.006$), and communication effectiveness

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(CE) (β = 0.084, p = 0.027), jointly accounting for 17.8% of the variance in satisfaction (F = 38.545, p < 0.001). Diagnostic tests confirmed model adequacy, showing normality (K-S p = 0.193), homoscedasticity, absence of multicollinearity (VIF < 1.5), and no influential outliers (Cook's D < 0.032). The findings suggest that operational efficiency in examination center management, registration systems, and communication channels is more critical to student satisfaction than physical infrastructure or teaching delivery. The study contributes novel insights by: (1) identifying ECM as the dominant predictor (22.7% effect) in resource-limited contexts, (2) demonstrating the statistical insignificance of infrastructure (ECI) when operational variables are controlled, and (3) offering diagnostic validation for satisfaction modeling in developing country settings.

Keywords: Exam center; Exam management; Infrastructure; Satisfaction; Students

INTRODUCTION

Exams represent a fundamental component of education systems worldwide, serving as an important tool to assess learning, measure educational progress and certify merit. It is also an indispensable teaching method to test the teaching level of teachers and teaching effects and examination management quality (French, Dickerson, & Mulder, 2024). It is directly related to the teaching quality of colleges and universities and the broad quality of students (Xu and Lee, 2020). However, beyond their evaluation work, examinations greatly affect students' psychological welfare, academic motivation and overall educational experience. In recent years, students have been focused on satisfaction with examination processes, as educational institutions believe that positive exam experiences contribute to better learning results and institutional reputation (De-Juan-Vigaray et al., 2024).

This study examines four major determinants of student examination satisfaction: registration processes, communication effectiveness, examination center infrastructure and overall examination administration (Gruber, Fuß, Voss, & Gläser-Zikuda, 2010). These factors collectively shape the fairness, convenience and comfort of the students, often the most stressful periods of their academic journey (Sumicad et al., 2024). Understanding these elements is important for educational policy makers and administrators who want to increase the quality of evaluation systems, supporting the success of the student.

The examination registration process constitutes students' first interaction with the assessment system. Complicated, time-consuming, or technologically challenging registration mechanisms can create immediate frustration and anxiety (Smith & Jones, 2022). In the digital age, students increasingly expect seamless online registration systems with clear instructions, minimal technical requirements, and reliable support services.

Communication represents another vital component of exam satisfaction. Effective communication encompasses clarity of exam schedules, transparency in grading criteria, accessibility of examiners, and prompt dissemination of results (Broadfoot & Black, 2004). Poor communication manifests in various forms: ambiguous exam instructions, last-minute changes to exam formats, delayed result announcements, or inadequate channels for addressing student concerns. These communication failures can undermine student confidence and create perceptions of institutional inefficiency (Albalawi & Nadeem, 2020).

Examination center infrastructure plays a surprisingly significant role in student performance and satisfaction. Research indicates that physical environment factors including seating comfort, lighting quality, temperature control, acoustics, and technological reliability can impact cognitive performance by 12-18% (Meng, Zhang, & Wang, 2023). Students consistently report that substandard examination facilities - whether overcrowded rooms, uncomfortable furniture, or inadequate ventilation - negatively affect their concentration and exam performance. In developing countries particularly, infrastructure limitations remain a persistent challenge affecting exam quality (Sapkota, 2023).

The broader examination administration system, encompassing invigilation standards, security measures, and emergency protocols, further influences student perceptions. Fair and consistent invigilation practices help maintain exam integrity while minimizing unnecessary student stress (University of Manitoba, 2024). Conversely, overly aggressive surveillance or inconsistent rule enforcement can create hostile testing environments. Similarly, well-designed contingency plans for technical failures or special needs accommodations demonstrate institutional commitment to equitable assessment practices.

Recent educational trends have amplified the importance of exam satisfaction. The global shift toward student-centered learning approaches emphasizes the need for assessment systems that support rather than hinder learning. Additionally, the competitive

landscape of higher education means institutions must prioritize student experience to maintain enrollment and reputation (Harris & Clarke, 2024). Against this backdrop, this study aims to:

1. Assess factors related to student exam satisfaction;
2. Examine relationships between registration processes, communication effectiveness, examination center infrastructure, and exam center management; and
3. Analyze the impact of these operational dimensions (registration, communication, infrastructure, and exam center management) on students' exam satisfaction.

METHODS

Shanker Dev Campus and Nepal Commerce Campus are two unitary campuses of Tribhuvan University. Both of these campuses are the pioneer campuses of the Faculty of Management, with higher number of students amongst other constituent campuses of Tribhuvan University, especially in Master of Business Studies (MBS) and Bachelor of Business Studies (BBS). Using a convenience sampling method, we have selected these campuses for the study. In this study, BBS second year and MBS second semester students studying at Shanker Dev Campus and Nepal Commerce Campus were taken as the respondents.

Questionnaires were distributed to these students using a convenience sampling method as they exited the classroom. Out of 600 questionnaires distributed in both these campuses, only 538 were accepted for this study and the remaining 62 questionnaires were ruled out as they were incomplete. Since the dependent variable in this research is numeric, the multiple regression model has been used. To develop the model, Pearson's correlation was employed to examine the relationships between the dependent variable and the independent variables, as all variables were numeric. An F-test was conducted to assess the overall significance of the model. Additionally, model diagnostics were performed to evaluate the adequacy and validity of the model assumptions. SPSS (version 25), a statistical software package, was utilized to perform data analysis and fit the models used in this research. The multiple regression model can be mathematically expressed as follows.

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \varepsilon$$

Where, $\beta_i's$ are regression coefficients. The least squares method is employed to estimate the regression coefficients.

$X_i's$ are independent variables.

ε is the error term.

$i = 1, 2, ..., 5$

RESULTS

This section highlights the names of the variables examined, Demographic information, assesses their relationships, and analyzes the impact of exam infrastructure on students' exam satisfaction.

Name of the variables

The determinants selected for this study are directly or indirectly related to the variables outlined by Midgley et al. (2000), serving as a framework for understanding student satisfaction with examinations.

TLD = Teaching learning delivery

SRE = Students registration for exam

CE = Communication of exam

ECI = Exam center infrastructure

ECM = Exam center management

SSE = Students satisfaction in exam

Table 1: Frequency distribution of students by gender wise

Gender	**Frequency**	**Percent**
Male	213	39.6
Female	325	60.4
Total	538	100
Level of Study	Frequency	Percent
Bachelor	230	42.8
Master	308	57.2
Total	538	100

The profile of respondents by gender and level of study they represent are displayed in Table 1. Among the 538 students who answered the survey, 325 were female (60.4%) and 213 were male (39.6%). Master level students made up 308 (57.2% of the respondents, followed by Bachelor level students 230 (42.8%).

Table 2: Scale values assigned to each of the five responses are as:

Level of Agreement	Scale Value
Strongly Agree (SA)	5
Agree (A)	4
Neutral (N)	3
Disagree (DA)	2
Strongly Disagree (SDA)	1

Table 2 illustrates the rank order of variables based on mean score, which was calculated in order to analyze students' satisfaction with exam. As indicated in previous studies, respondents were asked to rank the importance of each variable influencing their level of satisfaction using a five-point Likert scale (Rasul & Bukhsh, 2011). The mean score was then calculated to determine the average significance assigned to each variable.

$$Meanscore = \frac{No.ofSA + No.\text{ofA} + No.ofN + No.ofDA + No.ofSDA}{N}$$

Table 3: Summary statistics of the dependent and independent variables

Variables	N	Minimum	Maximum	Mean	Std. Deviation
TLD_Mean	538	1.14	5.00	3.51	0.60
SRE_Mean	538	1.50	5.00	3.80	0.71
CE_Mean	538	1.00	5.00	3.47	0.72
ECI_Mean	538	1.00	5.00	2.78	0.78
ECM_Mean	538	1.20	5.00	3.18	0.74
SSE_Mean	538	2.20	5.00	3.66	0.58

In accordance with the questionnaire, 5 characteristics were thought to be affecting the student's degree of satisfaction and thus they were examined. The findings indicate that, with a mean score of 3.8, students' registration for exam was the most significant element influencing students' level of satisfaction, followed by teaching learning delivery, communication of exam, exam center management and exam center infrastructure as illustrated in Table 3.

Table 4: Reliability and Item-Total Statistics of students' satisfaction in exam scale

Code	Variable	Cronbach's Alpha	Number of items
TLD	Teaching learning delivery	0.764	7
SRE	Students' registration for exam	0.686	4
CE	Communication of exam	0.677	4
ECI	Exam center infrastructure	0.740	5
ECM	Exam center management	0.723	5
SSE	Students' satisfaction in exam	0.669	5
Overall		0.883	30

The dependability of these group variables is acceptable in academic research since, as Table 4 demonstrates, the Cronbach's Alpha for each group is greater than 0.600. Cronbach's Alpha of groups is 0.883 > 0.700 so this group variable's reliability is good (Son et al., 2018).

Table 5: Correlation matrix of Mean of TLD, Mean of SRE, Mean of AE, Mean of ECI and Mean of ECM with Mean of SSE.

	TLD_Mean	SRE_Mean	CE_Mean	ECI_Mean	ECM_Mean	SSE_Mean
TLD_Mean	1.000					
SRE_Mean	0.382 ($p < 0.001$)	1.000				
CE_Mean	0.358 ($p < 0.001$)	0.481 ($p < 0.001$)	1.000			
ECI_Mean	0.357 ($p < 0.001$)	0.321 ($p < 0.001$)	0.402 ($p< 0.001$)	1.000		
ECM_Mean	.408 ($p < 0.001$)	.359 ($p < 0.001$)	.435 ($p< 0.001$)	.675 ($p < 0.001$)	1.000	
SSE_Mean	0.263 ($p < 0.001$)	0.281 ($p < 0.001$)	0.293 ($p< 0.001$)	0.239 ($p < 0.001$)	0.383 ($p < 0.001$)	1.000

Pearson's correlation coefficient (Table 5) was employed to assess the strength and direction of the relationship between each quantitative independent variable and the dependent variable, students' satisfaction with the examination. Multiple regression analysis was only performed on factors that were substantially correlated with the response variable (at 5% level of significance).

Results of multiple linear regression model

Stepwise regression was conducted on the five variables identified as significant in the bivariate analysis to select the most appropriate predictors for the multiple linear regression model. Three variables: exam center management, students' registration for exam, and communication of exam were selected for use in multiple linear regression as a result of stepwise regression. Table 6 displays the outcomes of the calculated multiple regression model.

Table 6: Model parameter estimates for the selected predictors.

Variables	Unstandardized (β)	S. E.	t- value	p- value	Lower 95% C. I.	Upper 95% C. I.
(Constant)	2.262	0.143	15.872	0.000	1.983	2.543
ECM_Mean	0.227	0.034	6.573	0.000	0.159	0.294
SRE_Mean	0.103	0.037	2.763	0.006	0.030	0.176
CE_Mean	0.084	0.038	2.218	0.027	0.010	0.159
F = 38.545, p < 0.001, R^2 = 0.178, sample size (n) = 538 and Cook's Distance (Maximum) = 0.032 < 1						

These findings suggest that student's satisfaction in exam was positively and significantly affected by the exam center management, students' registration for exam, and communication of exam. At the 5% level of significance, each of these variables was significant in the regression ($p < 0.05$). Independent factors account for 17.8% of the variation in the outcome variable (student's satisfaction in exam). The significance of these independent variables in affecting student's satisfaction in exam is indicated by the F-value (38.545) (Table 6). Additionally, since the highest Cook's distance was 0.032, there were no outliers that may have affected the regression line. When this distance is less than 1, the data is considered as not having any significant outliers.

The exam center management has contributed to the growth of performance of exam and, which has improved students' satisfaction in exam. Additionally, the student's satisfaction in exam was significantly impacted by the exam center management (β = 0.227, 95% C.I.: 0.159, 0.294). Additionally, exam center management would result in an average 22.7% rise in student's satisfaction in exam, if all other factors remained same. Likewise, another significant factor influencing student's satisfaction in exam was students' registration for exam (β = 0.103, 95% C.I.: 0.030, 0.176). Students' registration for exam

would have increased by an average of 10.3% in student's satisfaction in exam, assuming all other factors remain same. Lastly, the student's satisfaction in exam was significantly influenced by the communication of exam (β = 0.084, 95% C.I.: 0.010, 0.159). It came to the conclusion that, assuming all other factors were the same, the communication of exam would be increases an average 8.4 % in student's satisfaction in exam.

Results for regression diagnostics

Various diagnostic charts were employed to assess the regression model. The normal probability plot of residuals (Figure 1) indicates that the residuals are approximately normally distributed, as most of the data points lie along the straight line. This suggests that the assumption of normality has not been violated.

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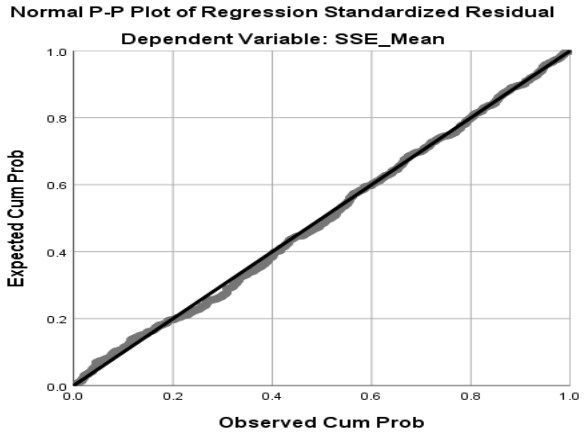


Fig. 1. Normal P-P plot of residuals.

Plotting residuals versus fitted values allowed for the verification of heteroscedasticity (Figure 2). There is no indication of significant heteroscedasticity in the data set, and the residuals are fairly randomly distributed. This demonstrates that there is no correlation between the fitted value and the standardized residuals. As a result, the plot seems to be non-random and lacks any discernible structure.

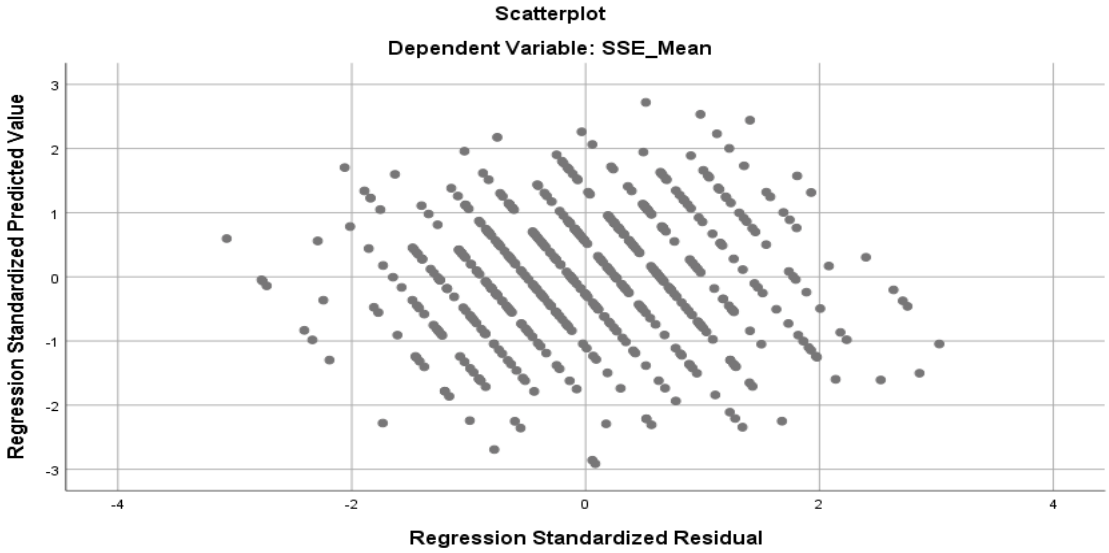


Fig. 2. Scatter plot residuals and regression predicted value.

Table 7: Kolmogorov-Smirnov (K-S) test.

Kolmogorov-Smirnov (K-S) test	Statistics	p - value
Unstandardized Residual	0.034	0.193

Likewise, Kolmogorov-Smirnov test was used to examine the residuals' normality, as seen in Table 7. The p-value of this test was more than 0.05, while the results of the Kolmogorov-Smirnov tests was 0.193. The residuals do not violate the normality assumption, as evidenced by the statistical insignificance of these tests.

Table 8: Collinearity statistics.

Variables	Collinearity Statistics (VIF)
ECM_Mean	1.280
SRE_Mean	1.351
AE_Mean	1.452

By computing VIF for each quantitative variable, multicollinearity in the data set was examined (Table 8). There are no multicollinearity-related problems, as indicated by the extremely low VIF values, which were not even higher than 1.5.

DISCUSSION

No matter how good the teaching learning delivery and examination center infrastructure is, the students were not satisfied with the examination. However, if the management of the examination center is effective, students are more likely to perform well in the examination, provided they have timely access to information and can complete the examination registration process with ease. Overall, examining the reliability of the variables were good. Although all the independent variables were found to be associated with dependent variable, not all variables were fit in the model.

In multiple regression model, only the exam center management, Students' registration for exam and communication of exam were significant. The F-test results indicated that the model provides a good fit to the data. Acharya (2021) reported consistent findings in his research. Furthermore, Cook's distance values suggested that there were no influential outliers affecting the model. A similar finding was reported by Acharya (2024) in his study. The P-P plot, Kolmogorov-Smirnov (K-S) test and the scatter plot showed that all the assumptions of the multiple regression model were satisfied. Likewise, the VIF showed there was no multicollinearity between independent variables. Comparable results were observed in the study conducted by Acharya (2021).

CONCLUSION

The research concludes that exam center management, students' registration for exam and communication of exam significantly and positively affect student's satisfaction in exam. The findings of this study suggest that it is imperative for the Examination Control Office to ensure streamlined and accessible channels through which students can obtain examination-related information and complete the necessary form-filling procedures. Furthermore, the study underscores the critical role of effective examination center management in facilitating optimal student performance during examinations. In a nutshell, the Examination Control Office is one of the primary institutions responsible for addressing the above-mentioned findings.

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