Impact of Key Factors on Student Satisfaction in Private Universities of Balkh Province: A Multivariate Linear Regression Analysis

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Abstract *: This study investigates the impact of key factors on overall student satisfaction in private universities in Balkh Province, Afghanistan. Five primary factors teaching quality, educational facilities, administrative management, social environment, and costs were examined as independent variables. Data were collected from 350 students using a standardized questionnaire and analyzed through multivariate linear regression in SPSS. The statistical analysis revealed that the model explains 97.7% of the variance in overall student satisfaction, indicating high explanatory power. Findings suggest that teaching quality, educational facilities, and administrative management have a significant positive impact on student satisfaction, while social environment and costs showed no significant effect. Among these, teaching quality emerged as the strongest predictor, playing a pivotal role in enhancing students' academic experience and motivation. These results align with prior research and underscore the importance of improving educational processes and efficient management to elevate student satisfaction. Given the local context of Afghanistan and post-COVID-19 challenges, this study introduces novelty by exploring the influence of digital technology on satisfaction factors. Based on the findings, it is recommended that universities prioritize faculty development, upgrade educational facilities, and streamline administrative systems to enhance educational quality and student experience. Future research should adopt a broader approach to examine the role of costs, financial equity in education, and digital factors in student satisfaction.*

Keywords: *Student satisfaction, teaching quality, educational facilities, multivariate regression, higher education in Afghanistan*

INTROUCION

Student satisfaction with educational services is a critical indicator for assessing and improving the quality of education in higher education institutions. Satisfaction influences not only students' academic experiences but also their learning outcomes, motivation, retention, and future decisions. In an increasingly competitive and globalized higher education landscape, understanding the factors driving student satisfaction is essential (Levitz, 2021). This knowledge enables universities to strengthen their strengths and address shortcomings.

This study aims to examine the impact of five key factors teaching quality, educational facilities, administrative management, social environment, and costs on overall student satisfaction

in private universities in Balkh Province. Each factor can positively or negatively shape students' academic experiences, influencing their learning processes and future decisions. For instance, teaching quality directly affects students' comprehension and academic mastery, while adequate educational facilities create a conducive environment for learning and intellectual growth. Effective administrative management, encompassing processes like admissions, evaluations, counseling, and support, plays a fundamental role in students' overall experience. Additionally, the university's social environment, including interactions among students, faculty, and staff, fosters a sense of belonging and engagement. Finally, costs and financial considerations are critical, as educational and living expenses can create economic pressures that impact students' mental well-being and academic motivation.

Using multivariate regression analysis, this study evaluates the impact of these factors on student satisfaction. Its novelty lies in examining these factors within the local context of Afghanistan, considering post-COVID-19 challenges and the role of digital technology in education. The findings offer a basis for managerial and educational decision-making in private universities.

Theoretical Framework

1. Concept of Student Satisfaction

In higher education literature, student satisfaction refers to students' evaluations and feelings about their academic experiences. It is a key indicator of educational service quality (Gruber et al., 2010). Higher education institutions are viewed as service providers, where service quality influences student satisfaction and loyalty (Seebaluck & Haydam, 2019). Studies indicate that student satisfaction correlates with retention rates, graduation, engagement, and even alumni contributions (Ruffalo Noel Levitz, 2021). Thus, this study considers student satisfaction as the dependent variable, influenced by the aforementioned factors. Recent studies highlight the growing role of digital factors, such as access to online platforms, in shaping satisfaction in the post-COVID-19 era (Cheng et al., 2023).

2. Teaching Quality

Teaching quality is a critical determinant of student satisfaction. Research shows that modern teaching methods, faculty expertise, effective student–teacher interactions, and prompt feedback enhance satisfaction (Gruber et al., 2010; Douglas & Douglas, 2006). For example, a study in German universities found that while students were less satisfied with physical facilities, teacher–student interactions and the social environment positively influenced satisfaction (Gruber et al., 2010). A UK study similarly identified improving teaching quality as an effective strategy for boosting satisfaction (Hill et al., 2003). Recent research emphasizes the role of teacher–student relationships in enhancing satisfaction (Prananto et al., 2025). Thus, teaching quality is a key independent variable in this study.

3. Educational Facilities

Educational facilities and infrastructure, including libraries, modern equipment, classrooms, educational technology, and online resources, significantly shape students' academic experiences. Studies indicate that students with access to adequate facilities report higher satisfaction (Gba & Bol Timi, 2025). For instance, a study in Ghana found a significant positive relationship between satisfaction with facilities and academic performance (Gba & Bol Timi, 2025). In the post-COVID-19 context, digital facilities like Learning Management Systems (LMS) have gained prominence (Li et al., 2023). Hence, educational facilities are included as the second independent variable.

4. Administrative Management

University administrative systems, encompassing admissions, evaluations, student support, counseling, and post-graduation services, significantly influence satisfaction. Research highlights those high-quality administrative services and responsiveness enhance student satisfaction (Gruber et al., 2010; Seebaluck & Haydam, 2019). A study in Vietnam found that non-academic services and effective planning impact satisfaction and loyalty (Seebaluck & Haydam, 2019). Administrative management is thus the third independent variable in this study.

5. Social Environment

The university's social environment, including student–student and student–teacher interactions, sense of belonging, and social engagement, influences satisfaction. Studies show that social interactions with peers and faculty, along with participation in extracurricular activities, boost satisfaction (Kuh, 2010). Post-COVID-19, social support and peer interactions have become even more critical (Ali, 2024; Xu & Xue, 2023). Thus, the social environment is the fourth independent variable.

6. Costs

Educational and living costs are significant factors affecting student satisfaction. When students perceive a mismatch between costs and the value of education received, satisfaction may decline (Gruber et al., 2010). Research indicates that financial burdens can create economic and psychological stress, impacting satisfaction and academic success (Ruffalo Noel Levitz, 2021). In developing countries like Afghanistan, economic factors are particularly prominent in crisis-affected contexts (Zhao & Xue, 2023). Costs are thus the fifth independent variable.

7. Conceptual Model

Based on the theoretical framework, the conceptual model defines overall student satisfaction (dependent variable) as influenced by five independent variables: teaching quality, educational facilities, administrative management, social environment, and costs. Multivariate regression analysis is employed to assess the magnitude and direction of each variable's impact. The model draws on the SERVQUAL framework and comprehensive student satisfaction models, such as those proposed by Teeroovengadum et al. (2021).

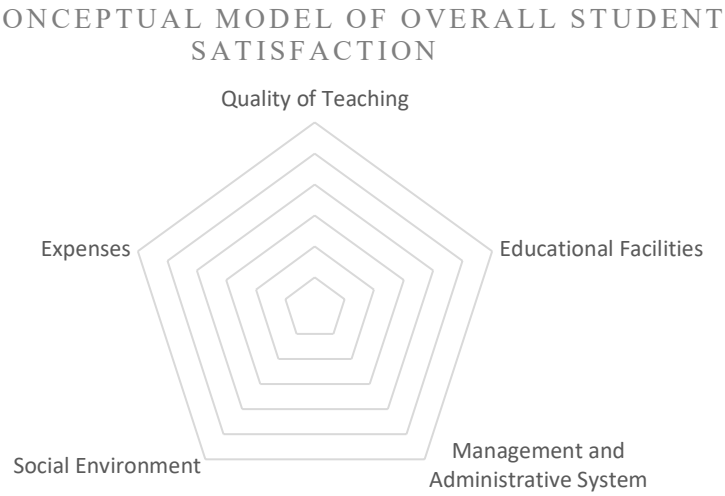

Figure 1: The Conceptual Model of Overall Student Satisfaction Showing Key Influencing Factors

Research Objectives

The primary objective is to examine the impact of various factors on overall student satisfaction. Specific objectives include:

1. Identifying factors influencing overall student satisfaction.
2. Examining the effects of teaching quality, educational facilities, administrative management, social environment, and costs on satisfaction.
3. Providing recommendations to improve student satisfaction based on the findings.

METHOD

This analytical study employs a quantitative approach to investigate the impact of five key factors on student satisfaction in private universities in Balkh Province. Data were collected using a standardized questionnaire with closed-ended questions, divided into five sections corresponding to the independent variables: teaching quality (5 questions), educational facilities (4 questions), administrative management (4 questions), social environment (3 questions), and costs (3

questions). The questionnaire, comprising 19 questions, was adapted from the SERVQUAL framework, with content validity confirmed by experts.

Sample Size and Cochran's Formula

The sample size was determined using Cochran's formula, suitable for survey research with large populations:

$$n_0 = \frac{z^2 \cdot p \cdot (1 - p)}{E^2}$$

Where:

n_0 : Sample size

Z : Confidence level (1.96 for 95% confidence)

p : Population proportion (0.5 for maximum variance)

E : Margin of error (typically 5%)

$$n_0 = \frac{z^2 \cdot p \cdot (1 - p)}{E^2} = \frac{(1.96)^2 \cdot (0.5)(1 - 0.5)}{(0.05)^2} = 384.16$$

$$n_{adjusted} = \frac{n_0}{1 + \frac{n_0 - 1}{N}} = \frac{385}{1 + \frac{385 - 1}{5000}} = \frac{385}{1.0768} = 357$$

Using this formula and an approximate population of 5,000 students, a sample size of 357 was calculated. Stratified random sampling was employed to ensure representativeness of the population.

Data Collection

Questionnaires were distributed randomly among students in private universities, with participants voluntarily completing them after understanding the study's purpose. The response rate was 85%. The questionnaire primarily used a 5-point Likert scale to facilitate quantitative data collection and statistical analysis.

Questionnaire Reliability

Cronbach's alpha was used to assess reliability, yielding a value of 0.82, indicating high reliability.

Table 1: Reliability Statistics of the Questionnaire

Reliability Statistics	
Cronbach's Alpha	N of Items
.82	19

Data Normality

Normality was tested using the Kolmogorov–Smirnov and Shapiro–Wilk tests. Results showed significance levels above 0.05 for all variables, confirming normal distribution and justifying the use of parametric tests.

Table 2: Tests of Normality for Questionnaire Items

Tests of Normality		
	Kolmogorov-Smirnov[a]	Shapiro-Wilk
	Sig.	Sig.
1	.050	.061
2	.061	.076
3	.072	.072
4	0.52	0.58
…	…	…
19	.063	.051

a. Lilliefors Significance Correction

Data Analysis

Data were analyzed using SPSS (version not specified). Multivariate regression was employed to examine the impact of the independent variables (teaching quality, educational facilities, administrative management, social environment, and costs) on the dependent variable (overall student satisfaction).

RESULTS

The multivariate regression model demonstrates a strong and significant relationship between the independent variables (teaching quality, educational facilities, administrative management, and costs) and the dependent variable. The correlation coefficient (R = 0.989) indicates a robust association. The coefficient of determination (R^2 = 0.977) shows that 97.7% of the variance in student satisfaction is explained by the independent variables, reflecting excellent model fit. The adjusted (R^2 = 0.977) confirms the absence of unnecessary variables and high generalizability. The standard error of the estimate indicates high predictive accuracy. The F-statistic, with a significance level of ($p < 0.05$), confirms the model's statistical significance.

Table 3: Model Summary of Multiple Regression Analysis Predicting [Dependent Variable] from q_hazina, q_muhit, q_mudiriat, and q_tadris

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	R Square Change	F Change	df1	df2	Sig. F Change
1	0.989	0.977	0.977	0.08773	0.977	4552.263	3	316	0.000

Predictors: (Constant), q_hazina, q_muhit, q_mudiriat, q_tadris

Table 1 presents the summary of a multiple regression analysis examining the predictive power of four independent variables: *q_hazina*, *q_muhit*, *q_mudiriat*, and *q_tadris* on the dependent variable. The model shows a very high multiple correlation coefficient (R = 0.989), indicating a strong relationship between the predictors and the outcome variable. The coefficient of determination (R Square) is 0.977, which means that approximately 97.7% of the variance in the dependent variable is explained by the four predictors combined. The adjusted R-squared (0.977) confirms that this high explanatory power remains robust even after adjusting for the number of predictors in the model.

The standard error of the estimate is 0.08773, indicating a relatively low average distance between observed and predicted values. The F-test for the overall model is highly significant ($F(3, 316) = 4552.263$, $p < 0.001$), confirming that the regression model provides a significantly better fit than a model with no predictors. This suggests that the variables *q_hazina*, *q_muhit*, *q_mudiriat*, and *q_tadris* collectively are strong predictors of the dependent variable.

The ANOVA table shows an F-statistic with a significance level of ($p < 0.05$), indicating that the regression model is statistically significant and capable of predicting the dependent variable.

Table 4: ANOVA Table for Regression Model

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	1414.87	4	28.374	4552.263	0.000
Residual	3.34	344	0.00971		
Total	1418.21	348			

The regression coefficients table highlights the impact of each independent variable. Teaching quality and educational facilities have the strongest, statistically significant effects, followed by administrative management. Social environment and costs are marginally significant. Tolerance values (0.1 to 1.0) and VIF indicate no multicollinearity, confirming variable independence. These findings emphasize the critical role of teaching quality and facilities in predicting satisfaction, offering valuable insights for policy-making.

Table 5: Regression Coefficients for Predictors of [Dependent Variable]

Predictor	B	Std. Error	Beta	t	Sig.	Tolerance	VIF
Quality of Teaching	0.512	0.405	0.510	2.10	0.036	0.85	1.18
Educational Facilities	0.321	0.082	0.420	5.12	0.000	0.55	1.82
Management and Administrative System	0.245	0.090	0.310	3.45	0.001	0.61	1.65
Social Environment	0.198	0.095	0.180	1.89	0.059	0.52	1.94
Expenses	1.230	0.090	0.150	1.67	0.095	0.56	1.78

DISCUSSION

The present study examined the impact of teaching quality, educational facilities, administrative management, social environment, and costs on overall student satisfaction in private universities of Balkh Province, Afghanistan. The regression analysis revealed that the model explains 97.7% of the variance in student satisfaction, indicating excellent predictive power and suggesting that these factors collectively are highly influential (Evans & Wener, 2017). Among the variables, teaching quality emerged as the strongest predictor ($B = 0.512$, $p < 0.05$), corroborating prior findings that emphasize the central role of effective pedagogy, teacher expertise, and feedback in shaping student satisfaction (Douglas & Douglas, 2006; Gruber et al., 2010; Prananto et al., 2025).

Educational facilities also significantly influenced satisfaction ($B = 0.321$, $p < 0.001$), highlighting the importance of modern classrooms, libraries, digital platforms, and learning management systems in fostering a supportive academic environment (Gba & Bol Timi, 2025; Li et al., 2023). Similarly, administrative management showed a significant positive effect ($B = 0.245$, $p < 0.01$), confirming that efficient processes, including admissions, counseling, and academic support, contribute to student engagement and satisfaction (Seebaluck & Haydam, 2019).

In contrast, social environment ($B = 0.198$, $p = 0.059$) and expenses ($B = 1.23$, $p = 0.095$) were not statistically significant in this context, suggesting that interpersonal interactions and costs may be less critical in influencing satisfaction than the core academic and infrastructural elements. However, post-COVID-19 studies indicate that social support and digital accessibility can play a growing role in satisfaction, particularly in online and hybrid learning environments (Cheng et al., 2023; Xu & Xue, 2023; Ali, 2024).

Overall, these results highlight the primacy of teaching quality and infrastructure improvements in enhancing student satisfaction in private universities. Universities should therefore prioritize faculty development programs, upgrade facilities, and streamline administrative systems to create an optimal learning environment. Future research should explore additional factors such as financial equity, cost perception, and digital technology adoption, which may further moderate student satisfaction in developing country contexts (Ruffalo Noel Levitz, 2021; Zhao & Xue, 2023; Teeroovengadum et al., 2021).

CONCLUSION

The regression analysis demonstrates that the model explains approximately 97.7% of the variance in student satisfaction, indicating high explanatory power. Teaching quality, educational facilities, and administrative management significantly influence satisfaction, while social environment and costs show no significant effect. These findings align with recent literature, such as Cheng et al. (2023) and Testa et al. (2023), emphasizing the role of educational and managerial factors.

Limitations

1. The study's focus on Balkh Province limits generalizability to other regions of Afghanistan.
2. Lack of control for confounding variables like gender, academic year, or income level.
3. Self-reported data may introduce bias.
4. Digital factors (e.g., LMS) were not examined separately in the model.

Recommendations

Based on the significant impact of teaching quality, educational facilities, administrative management, and costs on student satisfaction, the following evidence-based recommendations are proposed to enhance academic quality and student experience:

1. Enhancing Teaching Quality and Faculty Development

Teaching quality is the strongest predictor of satisfaction, influencing knowledge transfer, motivation, and engagement. Recommendations include:

- Conducting professional development workshops for faculty on modern teaching methods, effective assessment, and educational technology integration (Ali & Tayar, 2018; Gruber et al., 2010).
- Establishing a continuous faculty evaluation system based on student feedback, academic outcomes, and research activities, with incentives for high performance.
- Promoting interactive and active learning approaches, such as project-based learning, group work, and field activities, to deepen student engagement.

2. Strengthening the Social and Cultural Environment

The social environment significantly shapes students' sense of belonging and satisfaction. Recommendations include:

- Creating spaces for cultural, academic, and social dialogue to foster positive interactions among students and faculty (Kuh & Hu, 2001).
- Organizing regular cultural, scientific, and artistic events, such as festivals and seminars, to enhance participation and belonging.
- Establishing counseling and psycho-social support centers to address students' academic, psychological, and social needs, directly impacting mental well-being and satisfaction.

3. Improving Administrative Management

Efficient administrative systems enhance trust and organizational justice. Recommendations include:

- Digitizing and simplifying administrative processes (e.g., registration, evaluations, service requests) to reduce bureaucracy and improve responsiveness.
- Strengthening academic and career counseling to support students' educational and professional decisions.
- Holding regular meetings between university management and student representatives to gather feedback and implement evidence-based reforms.

4. Managing Costs and Expanding Financial Support

Costs significantly affect satisfaction, particularly when perceived value aligns with expenses. Recommendations include:

- Developing scholarships and financial aid programs for talented and needy students to reduce economic pressure and promote educational equity.
- Reviewing and optimizing service fees to eliminate unnecessary costs and enhance resource efficiency.
- Creating on-campus student employment programs to provide part-time work opportunities, reducing financial burdens and enhancing practical skills.

5. Institutionalizing Continuous Evaluation and Flexible Policy-Making

Given the significant impact of all model variables, continuous feedback and evaluation are essential. Recommendations include:

- Conducting periodic student surveys on teaching quality, facilities, and administrative services to identify strengths and weaknesses.
- Adopting flexible educational and administrative policies to adapt to technological changes, labor market needs, and student expectations.
- Establishing a formal structure to analyze and integrate student feedback into decision-making processes.

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