Shahjalal University of Science & Technology, Sylhet
Department of Statistics

Title: Exploring the Involvement in Freelancing/Tuition Activities of Students in SUST

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Course Code: STA430

Submitted to:

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Abstract

University students in Bangladesh are increasingly participating in freelancing and private tuition work to earn extra income while completing their studies. This study analyzed the dynamics and factors influencing students' involvement in freelancing and private tutoring at Shahjalal University of Science and Technology (SUST) in Bangladesh. Quantitative analysis of survey data from 400 students were collected to found association and characteristics of the students. Engagement patterns vary across disciplines - specialized fields like Computer Science and Economics demonstrate higher freelancing inclination compared to humanities and engineering subjects that depend more on tutoring. Active participation in co-curricular activities correlates positively with increased freelancing and tutoring activities, suggesting ambition and confidence also influence engagement. However, factors like loneliness, smoking, and course dropping associate more with freelancing, underscoring financial drivers. Key recommendations include - providing financial assistance and tailored career support to students, and conducting comparative research across universities to further understand these trends.

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1. Introduction

1.1 Background of the Study

Private tutoring has a longstanding presence in the historical context of Bangladesh and has undergone significant growth within the country's education system, extending from primary to higher secondary levels (Alam and Zhu, 2021). According to the UNESCO report titled "The Culture of Testing: Sociocultural Impacts of Learning in Asia and the Pacific," a significant 92 percent of students in Bangladesh engage in private tuition. In contrast, this figure is 50 percent in India and reaches the lowest point in Fiji, where only five percent of students opt for private tutoring (Sun, 2019). Private tutoring serves as a primary avenue for financial independence among university students. Renowned educationist Prof Dr Syed Anwar Husain estimates the coaching sector's value at BDT 50,000 crore. The Education Household Survey of 2014 indicates that slightly over 29 percent of total education expenses are allocated to coaching or private tutors (Khan, 2015). Currently, university students dominate this sector, a role previously held by school or college teachers. Initiating coaching classes emerges as a pathway for university students to achieve early financial autonomy with reduced risks (Ifti, 2023).

Presently, undergraduate students across all universities in Bangladesh are actively participating in the gig economy, taking on roles as both full-time and part-time freelancers, serving as a source of inspiration for their peers. This collective effort is contributing to the transformation of Bangladesh into a significant hub for freelance talent, sparking a revolution in freelancing. The ICT division reports approximately 650,000 active freelancers in the country, utilizing digital platforms like Upwork, Fiverr, and Freelancer. The aggregate annual income generated by these freelancers is estimated to be around US$100 million (KULSUM, 2020).

In this report, the researcher tried to find out the characteristics, association and factors affecting the involvement in freelancing and tuition activities of students of Shahjalal University of Science and Technology, Sylhet which may provide valuable insights for the researchers, students and educational institution.

1.2 Rationale of the Study

Gaining insight into the traits of the students of SUST and comprehending the factors influencing the growing inclination towards freelancing and tutoring is crucial for a range of stakeholders, including educational institutions, policymakers, and the students themselves. This research endeavors to illuminate the socio-economic, educational, and personal aspects motivating students to participate in these activities.

1.3 Objectives of the Study

The specific objectives are:

1. To assess the frequency of freelancing and tuition activities among the students of SUST.

2. To find the background characteristics of the students of SUST.
3. To find the association among various factors related to freelancing/ tuition activities of the students in SUST.

4. To compare what factors are affecting most in involvement of freelancing/ tuition activities of the students in SUST.

2. Review of Literature

Previous studies offer valuable insights into the reasons behind university students engaging in freelancing and tutoring activities in Bangladesh. Khan and Joshi (2019) found that economic considerations played a significant role, with 60% of students citing the need to supplement their income for supporting both higher education expenses and family financial requirements. This observation is consistent with Islam's (2018) findings, which connected the monetary needs of students to their willingness to offer academic coaching services, even amidst time constraints imposed by their ongoing studies.

According to Alam and Zhu (2021), private tutoring in Bangladesh has a rich historical foundation, deeply embedded in the fabric of the country. This historical legacy serves as the underpinning for its widespread presence today. The study emphasizes that the swift proliferation of private tutoring can be attributed to the overarching trends of privatization and marketization observed in the education sector. The shift of private tutoring towards a commercialized industry accentuates its crucial role within the educational framework.

Nevertheless, substantial challenges accompany the widespread dual involvement, as illustrated by instances of inadequate class attendance, delayed assignments, diminished academic achievements, and heightened stress levels among students burdened with excessive workloads (Shamim, 2021; Hossain, 2017). To ensure sustained engagement alongside formal education, Rahman (2021) suggested the implementation of advanced policy directives, financial backing, and the development of infrastructure to formally incorporate earn-learn programs.

3. Methodology

3.1 Data Source and Study Design

The study conducted in the academic year 2023, involved data collection from students of Shahjalal University of Science and Technology (SUST). The initial step involved the selection of 17 departments from a total of 27 departments across six schools. This process employed a Probability Proportional to Size (PPS) sampling technique to ensure representation that aligns with the size and significance of each

department. These schools collectively formed the framework within which the selected departments were examined. A calculated sample size of 400 students was determined to ensure statistical robustness and representation across the selected departments. The data collection process involved direct interviews with the selected students employed by the Simple Random Sampling (SRS). This approach allowed for in-depth conversations, enabling the collection of data that captures the nuances of all the characteristics of the student. For all data cleaning and data analyses, IBM SPSS software version 25, RStudio version 4.3.1 were used.

3.2 Statistical Analysis

For frequency and graphs, some descriptive statistics, bar and pie chart were used. For identifying the association between the outcome variable (involvement in freelancing/tuition activities) and the other variables, crosstabulation and the chi-square test were used. For finding the effect of other variables on the involvement in freelancing/tuition activities, we used the following model. The variable was coded with 0 = No (No involvement), 1= Yes (Involvement).

• **Binary Logistic Regression Model**

The binary logistic regression model is represented by the following equation:

$\pi(x) = P(Y=1|X) = 1 / (1+e^{-(b0+b1X1+b2X2+...+bqXq)})$

The logistic regression model with the log odds as the outcome:

$\text{logit}(\pi(x)) = \ln(\text{odds}) = b0 + b1X1 + b2X2 + ... + bqXq$

Where,

$\text{logit}(\pi(x))$: Log odds of the outcome (logit link function)

$\ln(\text{odds})$: Natural log of the odds

$\text{odds} = \pi(x)/(1-\pi(x))$; Odds of the outcome

$\pi(x)$: Probability of the outcome (Y=1)

b0: Intercept

b1 to bq: Regression coefficients

X1 to Xq: Independent variables in this model. We take the natural logarithm of the odds as the outcome variable rather than modeling the probability directly. Model fit was evaluated along with careful examinations of residual plots, VIF, goodness of fit and predictive performance using receiver operating curves and area under the curve metrics.

4. Results

4.1 Background Characteristics of the Students of SUST through Graphs

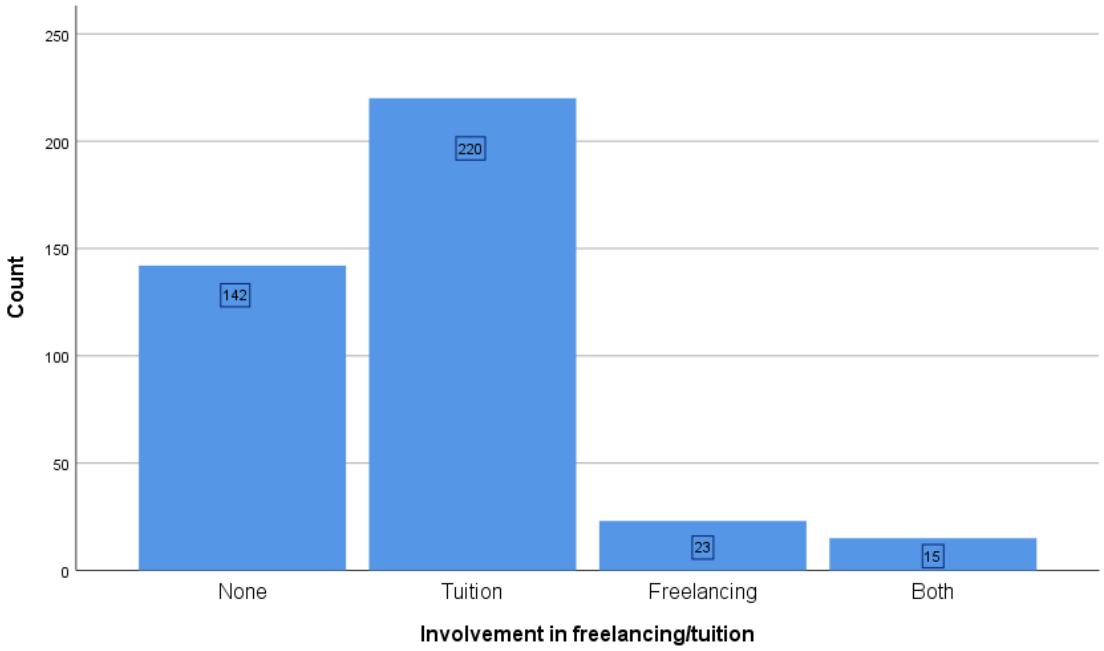

Figure 1: Student's Involvement in Freelancing/Tuition Activities

The column chart (Figure-1) depicts the frequency distribution of university students involved in freelancing/tuition activities. The tallest bar representing tuition activities has the highest frequency of 220 students. This suggests a significantly large proportion rely on private tutoring. In contrast, only 23 students participate in freelancing - reflected in the relatively small bar. The bar for no engagement in any activities stands at 142 students. Smallest group is students simultaneously freelancing and tutoring, possibly for maximizing earnings.

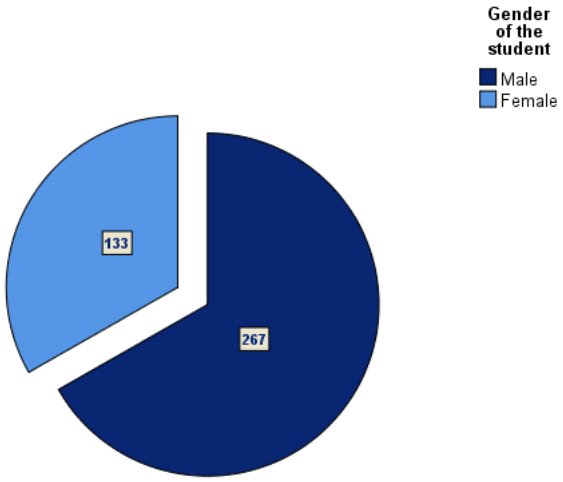

Figure 2: Gender of the Students

Figure 2 pie chart visually represents the gender distribution among the surveyed students of SUST. The larger portion of the pie represents males, with a count of 267, which corresponds to 67% of the total. The smaller portion of the pie represents females, with a count of 133, corresponding to 33% of the total.

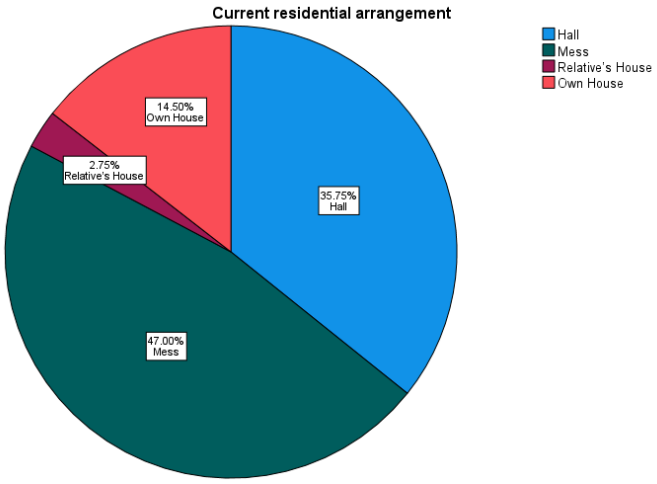

Figure 3: Current Residential Arrangement of the Students

Figure-3 illustrates the current distribution of student residences. Nearly half of the student accounting for 47%, reside in mess accommodation, while 35.8% live in university halls. Those with their own

houses constitute 14.5% of the total, and a small percentage of 2.8% reside in the homes of their relatives.

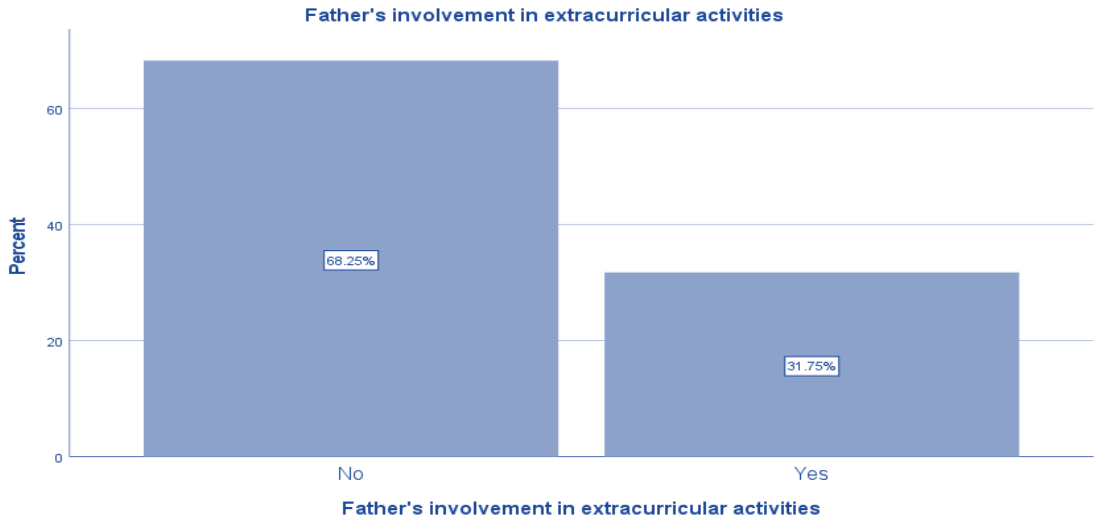

Figure 4: Father's Involvement in Extracurricular Activities of the Students

The bar chart reveals that the majority of fathers, constituting 68%, did not engage in extracurricular activities. Only approximately one-third, accounting for 32%, were actively involved.

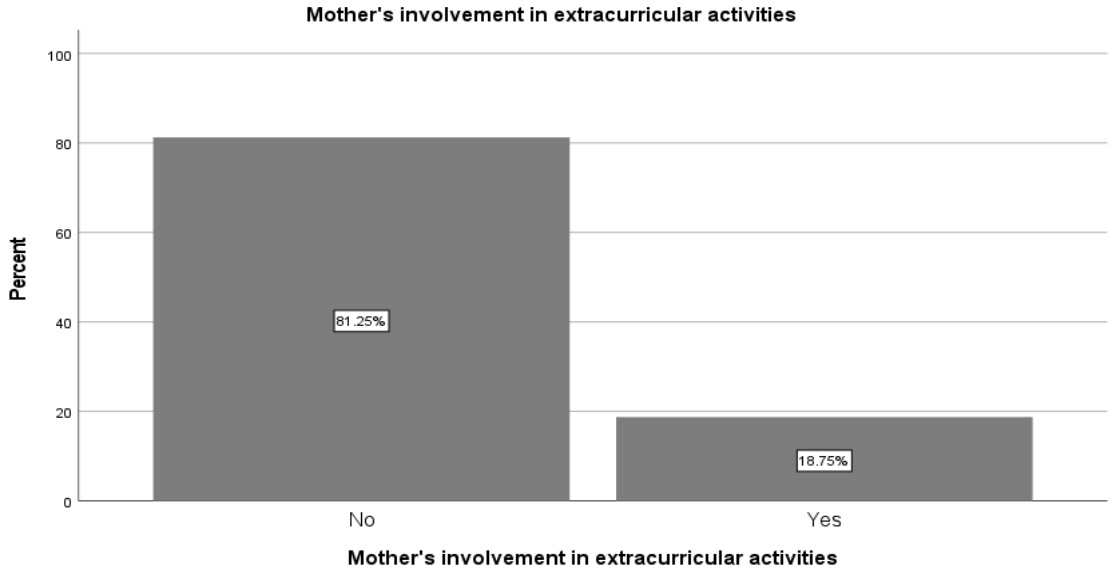

Figure 5: Mother's Involvement in Extracurricular Activities of the Students

According to the bar chart figure 5, an even more substantial majority of mothers, comprising 81%, did not partake in extracurricular activities. Merely 19% of mothers were actively involved.

Figure 6: Family Member's Encouragement to Participate in Extracurricular Activities

The depicted bar chart indicates that the majority of students, specifically 72%, mention receiving encouragement from their families to engage in extracurricular activities. Conversely, the remaining 28% report a lack of familial support for participation in such activities.

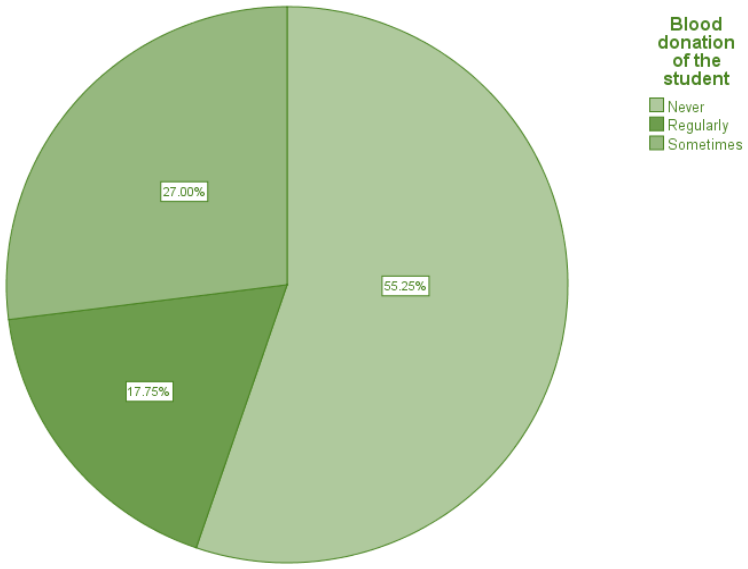

Figure 7: Blood Donation of the Students

The pie chart illustrates that over half of the students (55.25%) have never contributed blood. This could be attributed to factors such as fear, being underweight, or other health concerns. On the other hand, 17.75% of students engage in regular blood donation, while 27% donate blood occasionally.

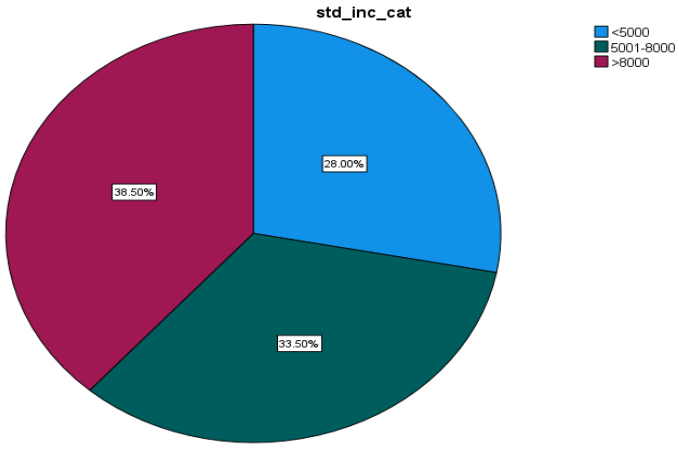

Figure 8: Student's Income

Figure-8 pie chart illustrates the breakdown of students' individual monthly income. A significant portion, totaling 38.5% of students, earns more than 8,000 per month. This group predominantly comprises students from lower-middle-class or middle-class families who often need to sustain themselves through avenues like tuition or other means. Additionally, 33.5% of students earn between 5,000 and 8,000, while 28% earn less than 5,000 per month.

4.2 Descriptive Analysis

Department

Statistics, Public Administration, Mechanical Engineering, Civil Engineering, Environmental Sciences, Biochemistry students predominantly depend on tutoring jobs (50-73%) for managing expenses while studying. Flexibility to take up roles requiring more niche skills is limited. On the other hand, disciplines like Computer Science, Sociology see over half of students remain free of any engagement, likely supported by families. Very small proportion tutor out of necessity. Social Welfare, Architecture display noticeably higher inclination for freelancing roles (18-33%) indicating skills and aptitudes aligning with such jobs. Economic drivers remain influential though. Economics, Genetic Engineering also demonstrate higher engagement in skilled freelancing opportunities enabled by their specialized academic focus.

Gender

For males, 30.7% are not involved in freelancing or tuition, 56.6% are involved in freelancing, 8.2% in tuition, and 4.5% in both. For females, 45.1% are not involved in freelancing or tuition, 51.9% are involved in freelancing, 0.8% in tuition, and 2.3% in both. The x^2-value (15.382) and p-value (.002)

indicate the statistical significance of the association between gender and involvement in freelancing or tuition.

The medium of instruction in school & college

In the Bengali medium, 35.2% of individuals are not engaged in either freelancing or tuition, while 56.2% are involved in freelancing, 5.2% in tuition, and 3.4% in both activities. In the English version, 41.7% are not participating, with 25.0% in freelancing, 16.7% in tuition, and 16.7% in both. The English Medium category shows that 50.0% are not involved, none are in freelancing, 50.0% are in tuition, and none are engaged in both. The x^2-value (18.501) and p-value (.005) serve as indicators of the statistical significance between the medium of instruction and participation in freelancing or tuition activities of the students.

Students involvement in extracurricular activities

For those not involved in extracurricular activities, 44.0% are not involved in freelancing or tuition, 51.2% are involved in freelancing, 2.4% in tuition, and 2.4% in both. For those involved in extracurricular activities, 29.3% are not involved, 57.8% are in freelancing, 8.2% in tuition, and 4.7% in both. The x^2-value and p-value (13.891, .003) suggest a statistically significant association between students' involvement in extracurricular activities and their involvement in freelancing or tuition.

Motivates the student for study

For those motivated by family, 36.5% are not involved in freelancing or tuition, 56.6% are involved in freelancing, 3.6% in tuition, and 3.3% in both. For those motivated by teachers, 38.5% are not involved, 61.5% are in freelancing. For those motivated by friends, 37.0% are not involved, 59.3% are in freelancing, 3.7% in tuition, and none in both. For those motivated by others, 28.6% are not involved, 42.9% are in freelancing, 19.6% in tuition, and 8.9% in both. The x^2-value and p-value (30.545, .000) suggest a statistically significant association.

Blood donation of the student

For those who never donated blood, 43.0% are not involved in freelancing or tuition, 50.2% are involved in freelancing, 3.6% in tuition, and 3.2% in both. For those who regularly donate blood, 28.2% are not involved, 59.2% are in freelancing, 7.0% in tuition, and 5.6% in both. For those who donate blood sometimes, 25.0% are not involved, 62.0% are in freelancing, 9.3% in tuition, and 3.7% in both. The x^2-value and p-value (15.165, .019) suggest a statistically significant association between students' blood donation habits and their involvement in freelancing or tuition.

Physical Exercise behavior

37.6% of students who never engage in physical exercise are not involved in freelancing or tuition while 55.4% are involved in tuition. Again, 26.2% of students who regularly engage in physical exercise are not involved in freelancing or tuition. 47.6% are involved in tuition, 16.7% are involved in freelancing and 9.5% are involved in both freelancing and tuition. Again, 56.0% of students who sometimes engage in physical exercise are involved in tuition. The x^2-value and p-value (15.622, .016) suggest that there is a statistically significant association between students' physical exercise behavior and their involvement in freelancing or tuition.

Financial difficulties to continue study

Students facing no difficulties - half (50.2%) tutor, over 40% (40.4%) do not work. Relatively higher proportion (6.5%) also freelance and 2.9% juggle both activities. For those facing funding issues - clear dependence on tutoring jobs rises further (62.6%). Only around quarter (27.7%) can afford to not work. Marginal groups freelance (4.5%) or take on dual occupations (5.2%).

Smoking behavior

For those who never smoked, 37.2% are not involved in freelancing or tuition, 55.3% are involved in freelancing, 4.5% in tuition, and 2.9% in both. For those who smoke regularly, 26.5% are not involved, 41.2% are in freelancing, 20.6% in tuition, and 11.8% in both. For those who smoke sometimes, 31.6% are not involved, 61.4% are in freelancing, 3.5% in tuition, and 3.5% in both. The x^2-value and p-value (23.623, .001) suggest a statistically significant association between students' smoking behavior and their involvement in freelancing or tuition.

Family Income

Students from lowest income families (<30000 taka) predominantly tutor (65.2%) as the key source for funding their higher education and expenses. Less than one-third (29.8%) do not work. Very few freelance (3.1%) or take on dual activities (1.9%). In the mid-income bracket (30000-70000 taka) - tutoring share drops to half (50%) though still the top engagement choice. Over one-third (37.2%) do not work. Slightly increased participation seen in freelancing (7.2%) and both jobs (5.6%). For highest income category - tutoring share further drops (42.4%). Students possibly enjoy flexibility allowing almost half (45.8%) to not take up jobs. Highest freelancing proportion (8.5%) also seen here.

Student Income

Majority (57.1%) of the students who are in tuition earns less than 5000 taka per month. Again, over one-third (36.6%) do not undertake any activity, very few (only 2.7%) freelance and 3.6% do both activities. For those earning 5001-8000-taka, tuition share reduces to half (52.2%), No activities rise (42.5%). Highest earning students (>8000 taka) marginally above half (55.8%) tutor now and freelancing participation jumps to 11.7%.

Student Monthly Expenditure

For those spending <5000 taka monthly - majority 50% tutor, 42.6% have no activities. Very few freelance (4.3%) or do both (3.2%). In the 5001-8000-taka expense bracket - tutoring share rises slightly to 56.7% while 37.6% remain without engagement. Marginal participation seen in freelancing (2.2%) or dual activities (3.4%). Students spending >8000 taka monthly demonstrate a further drop in no activities (27.3%). Tutoring is steady at 56.3% but noticeably more students freelance (11.7%) or juggle both jobs (4.7%) now. The chi-square p-value = .009 confirms increasing expenditure positively associates with higher inclination towards freelancing alongside persistent tutoring roles.

Spent Time in Freelancing/Tuition Activities

For those spending 1-10 hours per week - majority 82.5% tuition, 6.5% freelancing, 7.1% do both activities. Highest dual participation is seen in the 10> hours bracket (11.6% freelance, 2.7% both activities) though tutoring still dominates at 82.1% The extremely high chi-square statistic confirms time

spent is significantly associated with category of engagement and the distributions clearly validate the self-reported weekly hours.

Drop Course
Majority of students who have not dropped any courses are engaged in private tutoring (56.2%). About 36.9% do not participate in either activity. Students who have dropped courses show a similar distribution - 52.4% tutor, 32.5% no activities. However, those who have dropped courses are more likely to be freelancing (10.3% vs 3.6%) or doing both activities (4.8% vs 3.3%) The chi-square test result is significant with p=.049<.05, indicating an association between dropping courses and higher inclination towards freelancing/dual engagement.

4.3 Binary Multiple Logistic Regression Model

4.3.1 Model Interpretation

Constant: The constant term represents the estimated log odds of the involvement in tuition/freelancing activities when all other predictor variables are zero. The p-value associated with the constant is very low (0.000), suggesting that the constant is statistically significant.
Religion: The odds ratio for the category “Hindu” is 0.439. This means that, compared to individuals who identify as Islam, individuals who identify as Hindu have 0.439 times the odds of the involvement in tuition/freelancing activities. The odds ratio for the “other” category is 0.025. This means that, compared to individuals who identify as Islam, individuals who fall into the "other" category have 0.025 times the odds of the involvement in tuition/freelancing activities.
Students' Involvement in Extracurricular Activities: Those who are involved in extracurricular activities have an odds ratio of 2.582, with a 95% CI ranging from 2.582 to 0.686. The p-value is 0.161, suggesting that involvement in extracurricular activities is not statistically significant in predicting involvement in tuition/freelancing activities.
Drop Courses: Students who drop courses have an odds ratio of 0.239. The p-value 0.044 indicates that dropping courses is associated with a significantly lower likelihood of being involved in tuition/freelancing activities compared to not dropping courses.
Spend Time on Freelance/Tuition Activities per Week: Compared to having no activities, spending 1-10 hours per week on freelance/tuition activities has a very high odds ratio of 3865.449. Spending 10 or more hours per week also has a high odds ratio of 8078.265. Both p-values are 0.000, indicating a highly significant association between the amount of time spent on activities and the likelihood of involvement in tuition/freelancing.
Blood Donation of the Student: Regular blood donors have an odds ratio of 2.166, with a 95% CI ranging from 0.338 to 13.899. The p-value is 0.415, indicating that regular blood donation is not statistically significant in predicting involvement in tuition/freelancing activities compared to those who never donate blood. Sometimes donating blood is associated with an odds ratio of 4.526, with a 95% CI ranging from 0.713 to 28.733. The p-value is 0.109, suggesting that there is no statistically significant association at a conventional significance level.
Feel Lonely in University Life: Always feeling lonely is associated with an odds ratio of 3.264. The p-value 0.241 indicates that there is no statistically significant association at a conventional significance level. Sometimes feeling lonely is associated with an odds ratio of 4.412. The p-value is 0.045, suggesting

a statistically significant association; students who sometimes feel lonely are more likely to be involved in tuition/freelancing activities compared to those who never feel lonely.

4.3.2 Table 1 Goodness-of-fit test

Model Summary		
-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
84.661	.664	.912

This is a measure of how well the model fits the data. In this case, the -2 log likelihood is 84.661. Here, the Cox & Snell R Square is 0.664, meaning that about 66.4% of the variance in the dependent variable (involvement in tuition/freelancing activities) is explained by the model. Nagelkerke R Square is another pseudo-R-squared value that adjusts the Cox & Snell R Square to provide a more accurate estimate of the explained variance. In this case, the Nagelkerke R Square is 0.912, suggesting that the model explains a substantial amount (91.2%) of the variance in the dependent variable. So, the logistic regression model seems to provide a good fit to the data, explaining a substantial proportion of the variance in students' involvement in tuition/freelancing activities, as indicated by the high Cox & Snell R Square and Nagelkerke R Square values.

4.3.3 Table 2 Hosmer and Lemeshow Test

Chi-square	df	Sig.
2.123	8	.977

Table 2 provides data of the Hosmer and Lemeshow Test. The chi-square statistic of 2.123 is associated with a large p-value of 0.977. A high p-value suggests that there is no significant evidence to reject the null hypothesis. So, the results of the Hosmer and Lemeshow test suggest that there is no evidence of a lack of fit in the logistic regression model, supporting the adequacy of the model in explaining the relationship between the predictor variables and students' involvement in tuition/freelancing activities.

4.3.4 Table 3 Classification Table

		Predicted		
		Binary		Percentage
Observed		No	Yes	Correct
Binary	No	132	10	93.0
	Yes	3	255	98.8
Overall Percentage				96.8

The classification table 3 provides a snapshot of how well the logistic regression model predicts the observed outcomes. The model correctly predicted the involvement in tuition/freelancing activities for students is 96.8%, suggesting that the model is accurate in predicting the outcomes. When the actual outcome is "No," the model predicts "No" 132 times and "Yes" 10 times. When the actual outcome is "Yes," the model predicts "No" 3 times and "Yes" 255 times.

4.3.5 Table 4 Multicollinearity Through Variance Inflation Factor (VIF)

Religion	drop_course_cat	Involved_ECA	Donate_Blood	Feel_lonely	Spent_Time_Weekly
1.301984	1.251469	1.057644	1.115335	1.301984	1.251469

According to provided VIF values in the Table 4, there doesn't seem to be a significant issue with multicollinearity among the predictors in the logistic regression model. VIF values close to 1 indicate low multicollinearity, and the values of all the predictors of the model fall within this range.

4.3.6 Receiver Operating Characteristic (ROC) curve

A Receiver Operating Characteristic (ROC) curve is a graphical representation of the trade-off between sensitivity (true positive rate) and specificity (true negative rate) across different threshold values for a binary classification model. We can see in the figure- that the area under the curve is 0.98 which is very high. An AUC of 0.98 indicates a highly effective logistic regression model for predicting involvement in freelancing/tuition activities. It is well-suited for discriminating between individuals who are involved and those who are not, and its performance is robust across various threshold values.

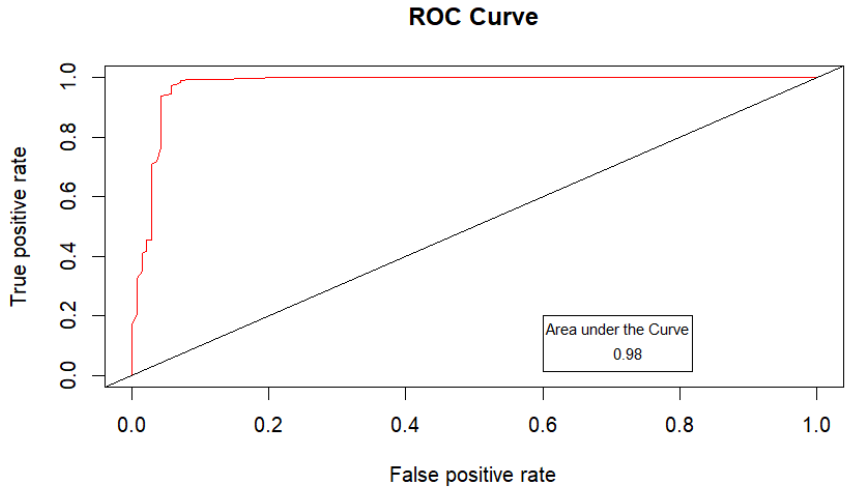

Figure 9: Receiver Operating Characteristic (ROC) curve

5. Discussion and Conclusion

5.1 Discussion

Aligning with prior research (Khan & Joshi, 2019; Islam, 2018), the primary motivator behind student involvement remains predominantly economic. As depicted in Figure 8, a noteworthy 38.5% of students generate a monthly income exceeding 8000 takas. through these engagements, emphasizing the primary goal of supplementing their financial resources. This reliance on external earnings beyond university studies is justified by the escalating academic expenses and limited financial support for economically challenged students hailing from lower-middle-class backgrounds.

Nevertheless, the data uncovers variations across academic disciplines. Specialized fields such as Computer Science, Economics, Architecture, and Genetic Engineering exhibit a noticeably higher inclination towards freelancing compared to humanities and engineering disciplines, where the ease of marketing teaching skills fosters a dependence on tutoring. This implies that discipline-related aptitudes and exposures play a pivotal role in shaping the type of pursued economic activity.

The study also sheds light on the discernible impacts on student lifestyles. Active participation in co-curricular activities, regular exercise, and community service, particularly through blood donations, is significantly linked to increased involvement in both freelancing and tutoring activities. This suggests that attributes such as ambition, confidence, and civic responsibility influence students' inclination towards these economic roles.

Conversely, factors like loneliness, smoking, and course dropping are more closely associated with specific roles in freelancing. This once again underscores the financial motivations that drive these activities beyond the regular demands of the curriculum. This observation aligns with Islam's (2018) findings, emphasizing a disproportionate dependence on tutoring among financially distressed students.

5.2 Limitations of the Study

While the analysis offers important insights, some limitations need acknowledgment. Firstly, the study was localized to students at SUST and may not represent the national scenario across all public and private universities. Secondly, incorporating administrative data around actual academic performance indicators would strengthen findings. The relatively small bundled freelancing and tutoring category sizes posed some analytical challenges. Tracking specific income and hours contribution from each activity could enrich understanding for students undertaking both.

5.3 Conclusion

In conclusion, this study provides a comprehensive understanding of the dynamics of freelancing and private tutoring activities among undergraduate students at Shahjalal University of Science and Technology (SUST). The research sheds light on the economic motivations driving students' involvement in these activities, emphasizing the need for additional income to cope with rising academic expenses and limited financial support. Moreover, the study highlights the disciplinary variations, with certain fields showing a higher inclination towards freelancing, while others lean more towards private tutoring. The impact on student lifestyles is evident, with active participation in co-curricular activities and

community service correlating positively with increased engagement in economic roles. On the other hand, factors like loneliness, smoking, and course dropping are associated more with freelancing, emphasizing the financial drivers behind these activities.

5.4 Recommendation

Considering the growing trend of freelancing and private tutoring among students, educational institutions and policymakers should take note of the following recommendations:

1. As freelancing and tuition activities are associated with dropping courses by the students, authority should give scholarships, grants etc. for supporting poorer pupils facing funding shortages that compel over engagement in external jobs at the cost of academic performance.
2. Provide career guidance and support tailored to different academic disciplines, acknowledging the varying demands and opportunities for freelancing and tutoring.

5.5 Recommendation for Further Research

To further enrich the understanding of freelancing and private tutoring among students, future research can explore:

1. Longitudinal Studies: Conduct longitudinal studies to track changes in students' economic activities and their impact on academic performance over time.
2. Comparative Analyses: Compare the trends and factors influencing freelancing and private tutoring across various universities and educational systems.

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Appendix 1

Table-5 Chi-Square Test of Involvement in Freelancing/Tuition Activities of Students According to The Selected Significant Variables

Characteristics	Categories	Involvement in freelancing/tuition				x^2-value	P-value
		None	Tuition	Freelancing	Both		
Department	STA	12(34.3%)	21(60%)	0(0%)	2(5.7%)	110.160	.000
	BAN	15(48.4%)	16(51.6%)	0(0%)	0(0%)		
	PME	5(41.7%)	6(50.0%)	0(0%)	1(8.3%)		
	SCW	12(44.4%)	10(37%)	5(18.5%)	0(0%)		
	PAD	11(36.7%)	19(63.3%)	0(0%)	0(0%)		
	MEE	3(20%)	10(66.7%)	2(13.3%)	0(0%)		
	CEE	5(21.7%)	17(73.9%)	1(4.3%)	0(0%)		
	ECO	9(34.6%)	13(50%)	2(7.7%)	2(7.7%)		
	FES	4(22.2%)	13(72.2%)	0(0%)	1(5.6%)		
	ARC	6(50%)	2(72.2%)	4(33.3%)	0(0%)		
	GEE	3(18.8%)	8(50%)	1(6.3%)	4(25%)		
	EEE	4(20%)	14(70%)	2(10%)	0(0%)		
	CSE	22(59.5%)	13(35.5%)	1(2.7%)	1(2.7%)		
	SOC	15(62.5%)	9(37.5%)	0(0%)	0(0%)		
	BBA	4(13.8%)	21(72.4%)	3(10.3%)	1(3.4%)		
	BMB	5(29.4%)	12(70.6%)	0(0%)	0(0%)		
	CHE	7(25%)	16(57.1%)	2(7.1%)	3(10.7%)		
Gender	Male	82(30.7%)	151(56.6%)	22(8.2%)	12(4.5%)	15.382	.002
	Female	60(45.1%)	69(51.9%)	1(0.8%)	3(2.3%)		
The medium of instruction in school & college	Bengali Version	136(35.2%)	217(56.2%)	20(5.2%)	13(3.4%)	18.501	.005
	English Version	5(41.7%)	3(25.0%)	2(16.7%)	2(16.7%)		
	English Medium	1(50.0%)	0(0%)	1(50.0%)	0(0%)		
Students involvement in extracurricular activities	No	74(44.0%)	86(51.2%)	4(2.4%)	4(2.4%)	13.891	.003
	Yes	68(29.3%)	134(57.8%)	19(8.2%)	11(4.7%)		
Father's involvement in extracurricular activities	No	103(37.7%)	154(56.4%)	10(3.7%)	6(2.2%)	13.552	.004
	Yes	39(30.7%)	66(52.0%)	13(10.2%)	9(7.1%)		

Mother's involvement in extracurricular activities	No	116(35.7%)	188(57.8%)	12(3.7%)	9(2.8%)	19.781	.000
	Yes	26(34.7%)	32((42.7%)	11(14.7%)	6(8.0%)		
Motivates the student for study	Family	111(36.5%)	172(56.6%)	11(3.6%)	10(3.3%)	30.545	.000
	Teachers	5(38.5%)	8(61.5%)	0(0.0%)	0(0.0%)		
	Friends	10(37.0%)	16(59.3%)	1(3.7%)	0(0.0%)		
	Others	1628.6%)	24(42.9%)	11(19.6%)	5(8.9%)		
Blood donation of the student	Never	95(43.0%)	111(50.2%)	8(3.6%)	7(3.2%)	15.165	.019
	Regularly	20(28.2%)	42(59.2%)	5(7.0%)	4(5.6%)		
	Sometimes	27(25.0%)	67(62.0%)	10(9.3%)	4(3.7%)		
Physical Exercise behavior	Never	38(37.6%)	56(55.4%)	4(4.0%)	3(3.0%)	15.622	.016
	Regularly	11(26.2%)	20(47.6%)	7(16.7%)	4(9.5%)		
	Sometimes	93(36.2%)	144(56.0%)	12(4.7%)	8(3.1%)		
Financial difficulties to continue study	No	99(40.4%)	123(50.2%)	16(6.5%)	7(2.9%)	8.949	.030
	Yes	43(27.7%)	97(62.6%)	7(4.5%)	8(5.2%)		
Smoking behavior	Never	115(37.2%)	171(55.3%)	14(4.5%)	9(2.9%)	23.623	.001
	Regularly	9(26.5%)	14(41.2%)	7(20.6%)	4(11.8%)		
	Sometimes	18(31.6%)	35(61.4%)	2(3.5%)	2(3.5%)		
Suffering sleeping disorders	Never	51(43.2%)	59(50.0%)	5(4.2%)	3(2.5%)	15.330	.018
	Frequently	22(29.3%)	38(50.7%)	9(12.0%)	6(8.0%)		
	Sometimes	69(33.3%)	123(59.4%)	9(4.3%)	6(2.9%)		
Family Income (Category)	<30000	48(29.8%)	105(65.2%)	5(3.1%)	3(1.9%)	15.463	.017
	30000-70000	67(37.2%)	90(50.0%)	13(7.2%)	10(5.6%)		
	>70000	27(45.8%)	25(42.4%)	5(8.5%)	2(3.4%)		
Student Income (Category)	<5000	41(36.6%)	64(57.1%)	3(2.7%)	4(3.6%)	19.814	.003
	5001-8000	57(42.5%)	70(52.2%)	2(1.5%)	5(3.7%)		
	>8000	44(28.6%)	86(55.8%)	18(11.7%)	6(3.9%)		
Student Monthly Expenditure (category)	<5000	40(42.6%)	47(50.0%)	4(4.3%)	3(3.2%)	17.048	.009
	5001-8000	67(37.6%)	101(56.7%)	4(2.2%)	6(3.4%)		
	>8000	35(27.3%)	72(56.3%)	15(11.7%)	6(4.7%)		
Spent Time in Freelancing/Tuition Activities (weekly)	No Activities	134(98.5%)	0(0.0%)	0(0.0%)	0(0.0%)	356.013	.000
	1-10 Hours	6(3.9%)	127(82.5%)	10(6.5%)	11(7.1%)		
	10> Hours	4(3.6%)	92(82.1%)	13(11.6%)	3(2.7%)		
Drop Course	No	101(36.9%)	154(56.2%)	10(3.6%)	9(3.3%)	7.859	.049
	Yes	41(32.5%)	66(52.4%)	13(10.3%)	6(4.8%)		

Appendix 2

Table-6 The Results of Binary Multiple Logistic Regression Model

Characteristics	Category	Odds Ratio	95% CI		P-value
			Lower	Upper	
Constant		.002			.000
Religion	Islam				.021
	Hinduism	.439	.065	2.970	.399
	other	.025	.002	.342	.006
Students involvement in extracurricular activities	No				
	Yes	2.582	2.582	.686	.161
Drop Courses	No				
	Yes	.239	.239	.059	.044
Spend time on freelance//tuition activities per week	No Activities				.000
	1-10 Hours	3865.449	527.824	28308.075	.000
	10 > Hours	8078.265	838.997	77781.372	.000
Blood Donation of the Student	Never				.249
	Regularly	2.166	.338	13.899	.415
	Sometimes	4.526	.713	28.733	.109
Feel lonely in university life	Not at all				.124
	Always	3.264	.452	23.555	.241
	Sometimes	4.412	1.034	18.831	.045