Volume 22, Issue 2: KUS: 1448: 245-256: 15072025: 2025

KHULNA UNIVERSITY
STUDIES

journal homepage: www.kus.ku.ac.bd

Research article

Factors Affecting Academic Performance among Undergraduate Students at Khulna University

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ABSTRACT

This study investigates how socioeconomic status and individual practices influence academic performance among undergraduate students at Khulna University, Bangladesh. Drawing on Human Capital Theory and Cultural Capital Theory, the research examines variables such as parental income, education, occupation, family structure, and students' own behavioral traits. Using simple random sampling, a total of 155 students from diverse disciplines were surveyed. Tobit regression analysis was employed to assess the effects of both socioeconomic and behavioral factors on students' Yearly Grade Point Average (YGPA). The findings reveal that parental education, income level, and occupational status significantly shape academic outcomes. Students from nuclear families and those with higher study hours and class attendance also perform better. Additionally, students financing their own education or coming from lower-income households show relatively lower academic achievement. The results underscore the multifaceted nature of academic success and emphasize the importance of targeted institutional and policy-level interventions to enhance educational equity in public universities. Future research could expand the scope to longitudinal designs and other institutional settings for broader generalizability.

ARTICLE INFO

Article timeline:
Date of Submission:
15 July, 2025
Date of Acceptance:
14 September, 2025
Article available online:
18 September, 2025

***Keywords*:**
Academic performance
Socioeconomic status
Parental influence
Individual practice
Tobit regression analysis

Introduction

Education has long been regarded as the fundamental force of human development and societal advancement. It empowers individuals with the necessary skills, knowledge, and values to effectively direct a gradually complex world. It also contributes to social transformation through economic participation, civic engagement, and cultural understanding (Torney-Purta, 2002). Academic performance is regarded as one of the most important indicators of educational achievement (Tomul and Savasci, 2012). It shows not only a student's ability and dedication but also serves as a vital standard for evaluating institutional effectiveness and educational policy. The higher education system is expanding in developing countries, making the factors that influence academic success more important for ensuring equitable access and outcomes (Schendel and McCowan, 2016).

A complex series of interconnected factors including both personal and academic dimensions affect academic performance (Suleiman et al., 2024). Among these, socioeconomic status is regarded as one of the most significant factors of academic outcomes (Broer et al., 2019; Drummond and Stipek, 2004; Tomul and Savasci, 2012). Numerous studies across different countries and contexts have consistently found that students from higher socioeconomic status, household income, educated parents tend to outperform their peers from less advantaged families (Considine & Zappalà, 2002; Darwish, 2016; Sirin, 2005). There is cultural capital theory, which demonstrates that students from privileged backgrounds internalize values, forms of communication, and behaviors that align more closely with the formal education system (Tramonte and Willms, 2009). Conversely, students from low-income or lower educated backgrounds frequently face obstacles such as insufficient educational resources, irregular routines, inadequate guidance, and financial stress. These obstacles hinder academic performance and can contribute to lower academic achievement (Davis-Kean, 2005; Roksa and Kinsley, 2018).

Parental education and occupation are widely recognized factors that influence academic achievement. Parents with higher educational backgrounds are generally more involved in their children's academic activities. They also aid their child homework activity focusing on high

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DOI: https://doi.org/10.53808/KUS.2025.22.02.1448-ss

expectations regarding academic upliftment (Dennis et al., 2005; Benner et al., 2016; Drummond and Stipek, 2004).

Similarly, occupational status can influence both economic resources and the value placed on academic achievement within the family (Cheng and Kaplowitz, 2016; Samuel et al., 2012). Students with professional or stable service-holder parents receive more academic support, organized daily routines, and better study environments (Hashmi et al., 2024; Usaini and Abubakar, 2015). Plasman et al. (2020) further reveals that students whose parents hold higher occupational positions are more likely to achieve high grades and maintain sustainable academic growth.

In addition to socioeconomic factors, personal habits, motivation, and emotional well-being significantly influence academic performance (Kaya and Erdem, 2021; Moreira et al., 2020). Students who maintain regular class attendance, allocate time effectively for study, and cultivate consistent academic routines generally perform better (Gettinger and Walter, 2012; Serdyukov, 2017). Academic self-discipline, attitude toward learning, and time management skills have also been identified as critical components of student success (Zimmerman and Kitsantas, 2014). Meanwhile, emotional and psychological health can either support or obstruct learning. Eisenberg et al. (2009) has shown that students experiencing high level of anxiety or depression tends to underperform academically because of diminished concentration and lack of motivation.

Several studies also emphasize the importance of family dynamics and home environment. Families with economic stability, emotional support, structured routines, and positive educational attitudes tend to nurture stronger academic engagement among their children (Bempechat and Shernoff, 2012; Considine & Zappalà, 2002). Kaplan et al. (2016) suggests that even being impoverished, proactive and education-oriented families can mitigate some of the disadvantages associated with low income. Family type can influence academic outcomes, with evidence suggesting that students from nuclear families may experience fewer distractions and more consistent parental attention (Causey et al., 2015).

Academic literature is also beginning to reflect a growing interest in contextual variables such as study environment, residential stability, and digital access. In the context of Bangladesh, Masud et al. (2024) highlights that access to reliable housing, quiet study space, and internet connectivity can enhance academic focus and reduce stress. Valiente et al. (2008) found that environmental consistency, including the predictability of a student's home and class schedule, can foster better academic performance. While global literature has firmly established the multifaceted determinants of academic success, these dynamics often manifest differently across national and institutional contexts. Developing countries such as Bangladesh share similarities with international findings but also face unique socioeconomic challenges, cultural dynamics, and resource constraints that require localized investigation. Therefore, bridging global perspectives with country-specific realities is essential for a more nuanced understanding of academic performance. Despite the relevance of these findings, much of this research is fragmented, often focusing on isolated variables without addressing the interactions between socioeconomic, behavioral, and environmental dimensions.

While global research has established many of these links, Bangladesh remains underrepresented in this discourse-particularly at the tertiary level. Most existing studies in the country focus on primary or secondary education and tend to generalize findings without paying close attention to the unique socioeconomic and institutional contexts of public universities. Khulna University (KU) has students from diverse geographical and socioeconomic backgrounds (Masud et al., 2024). There exists limited empirical evidence regarding the influence of students' socioeconomic backgrounds and individual practice on their academic performance. The absence of evidence-based insights presents a clear research gap, as KU has increasing prominence with diversified students.

As Bangladesh has incremental access to higher education, especially through public universities, the necessity of evidence-based academic planning becomes more crucial. Any intervention with limited knowledge about the predominant influence of socioeconomic and behavioral factors on academic performance may lead towards failure. This study aims to address the knowledge gap which in turn helps university authorities to ameliorate student performance. Furthermore, identifying the key determinants of academic success can improve educational equity and institutional growth.

Despite of widespread recognition, specific impact of socioeconomic condition on undergraduate academic performance in Bangladeshi public universities remain underexplored. Certain national studies have explored related themes, focusing on primary and secondary education, neglecting the realities faced by university students (Amin and Greenwood, 2018). KU is one of the prominent public universities in Bangladesh with diverse student body from various socioeconomic backgrounds. There is no detailed empirical research focusing on KU and its attributes. To address this gap, the present study investigates the influence of socioeconomic and individual practice on undergraduate academic performance. Specifically, this study explores the influence of parental income, occupation, education along with students' individual behaviors. This study aims to provide a comprehensive and context-sensitive determinants of academic success within public universities of Bangladesh. The findings will contribute meaningful insights to the discourse on educational equity and institutional efficacy.

Materials and Methods

Study Area

To ensure contextual relevance and empirical rigor, the present study conveniently selected Khulna University (KU) as study site. Located in the southwestern region of Bangladesh, KU is a public institution characterized by a diverse student with various socioeconomic and geographic backgrounds. This institutional diversity

provides an appropriate setting to investigate the influence of socioeconomic and individual practices on academic performance at undergraduate level.

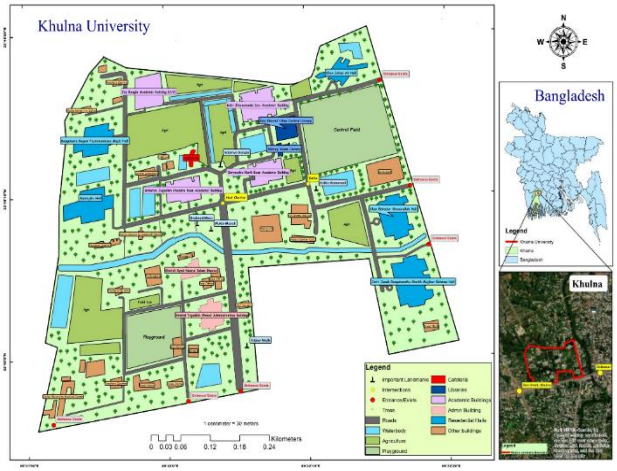

Figure 1: Study area map (Khulna University)

The target population for this study comprises undergraduate students enrolled across eight academic schools within the university. For analytical consistency and to ensure the reliability of response, the study focused exclusively on students in their second, third, and fourth academic years, as these cohorts have experienced more sustained engagement with academic and institutional environments.

A multistage sampling technique was employed to ensure both representativeness and statistical validity. Firstly, KU was selected conveniently. Secondly, six disciplines were randomly selected from a total of twenty-nine disciplines. These six disciplines of five different schools are chosen to capture disciplinary diversity across different schools while maintaining a manageable sample size for in-depth analysis. Finally, students were selected through simple random sampling within each chosen discipline. This sampling process helped to mitigate sampling bias and ensured adequate representation across academic domains. Finally, a total of 155 students were surveyed.

Table 1: Distribution of Sample by School and Discipline

Name of School	Name of Discipline	Sample Size
Management and Business Administration	Human Resource Management	25
Science, Engineering and Technology	Chemistry	25
Life Science	Fisheries & Marine Resource Technology	25
Social Science	Economics	30
Social Science	Sociology	25
Arts and Humanities	Bangla	25
Total		**155**

Primary data were collected using a structured, self-administered questionnaire. Prior to full deployment, the questionnaire was pre-tested with a subset of students to evaluate clarity, relevance, and coherence of the items. The pre-test involved 15 students from different schools who were not part of the final sample, and their feedback was used to refine ambiguous wording, adjust sequencing, and improve overall flow of the questions. This process enhanced the instrument's reliability and ensured that the items were well-aligned with the study objectives. Participants were informed of the voluntary nature of the study, and ethical standards were strictly maintained throughout the data collection process, including informed consent and data confidentiality.

Theoretical Framework

This study is theoretically grounded in two complementary perspectives–human capital theory and cultural capital theory. These collectively explain how socioeconomic and individual practices shape students' academic performance at the tertiary level.

According to human capital theory, initially developed by Schultz (1961) and Pyatt and Becker (1966), education is viewed as an investment in human capabilities that enhances productivity and leads to greater economic returns. Parents, as primary agents of investment, influence their children's educational outcomes through financial support, educational guidance, and the creation of enabling environments. In this context, parental income, education level, and occupational status represent key components of human capital that significantly contribute to academic achievement.

$$YGPA_i = f(X_{1i}, X_{2i}, \dots, X_{ni}) + \varepsilon_i \qquad (1)$$

Where, $YGPA_i$= the academic performance of the ith student, $X_{1i}, X_{2i}, \dots, X_{ni}$ = vector of explanatory variables, and ε_i = the random error term capturing unobserved factors

Given the bounded nature of the dependent variable (YGPA ranging between 2.00 and 4.00), the study employs a Tobit regression model, which is appropriate for analyzing censored dependent variables. The Tobit model is specified as follows:

$$YGPA_i^* = \beta_0 + \sum_{j=1}^{n} \beta_j X_{ji} + \mu_i \qquad (2)$$

$$YGPA_i = \begin{cases} 2.00 & if\ YGPA_i^* < 2.00 \\ YGPA_i^* & if\ 2.00 \le YGPA_i^* \le 4.00 \\ 4.00 & if\ YGPA_i^* > 4.00 \end{cases} \qquad (3)$$

There $YGPA_i^*$ is the Latent academic score, β_j represents the coefficients of the explanatory variables, and μ_i is the stochastic disturbance term.

This theoretical framework informs both the selection of variables and the empirical strategy of the study. It facilitates a structured understanding of how economic capacity, cultural influence, and individual academic behavior jointly affect academic performance in the context of a public university in Bangladesh.

Analytical Framework

This study applies an analytical framework that integrates theoretical insights with empirical analysis to investigate how students' socioeconomic backgrounds and individual practices influence academic performance at undergraduate level. The framework is constructed based on the assumptions of human capital theory and cultural capital theory, and it operationalizes academic performance through a set of quantifiable variables drawn from field data.

The primary objective is to estimate the marginal impact of key determinants–parental income, education, occupation, and student-specific practices on academic outcomes, measured by the YGPA of students at Khulna University.

Table 2: List of Variables

Dependent Variable			
Variable	**Unit of Measurement**	**Symbol**	**Reference**
Academic performance (YGPA)	2.00-4.00 point scale	Y	Broer et al. (2019)

Independent Variable			
Variable	**Unit of measurement**	**Symbol**	**Reference**
Age of the students	Years	X_1	Broer et al. (2019)
Gender of the students	Male=1, female=0	X_2	Broer et al. (2019)
Academic Year	Categorical	X_3	Zhan (2005)
Father alive	Yes =1, No= 0	X_4	Author's Compilation (2024)
Mother alive	Yes =1, No= 0	X_5	Author's Compilation (2024)
Father's education	Years of schooling	X_6	Dennis et al. (2005)
Mother's education	Years of schooling	X_7	Dennis et al. (2005)
Father's occupation	Farmer=1; Teacher=2; Services=3; Doctor=4; Business=5; Others=6	X_8	Dennis et al. (2005)
Mother's occupation	Housewife=1; Teacher=2; Services=3; Others = 4	X_9	Dennis et al. (2005)
Family income	BDT (per month)	X_{10}	Zhan (2005)
Family expenditure	BDT (per month)	X_{11}	Zhan (2005)
Family type	Nuclear=1, Joint=0	X_{12}	Hoque et al. (2017)
Family Size	In numbers	X_{13}	Hoque et al. (2017)
Parents Monthly Income	BDT (per month)	X_{14}	Hoque et al. (2017)
Respondents monthly educational expenditure	BDT (per month)	X_{15}	Hossain et al. (2017)
Source of educational expenditure	Parents= 1, Tuition= 2, Others = 3	X_{16}	Hossain et al. (2017)
Current residential type	Own House =1, University Hall=2, Relative House=3, Mess= 4	X_{17}	Islam and Tasnim, (2021
Class attendance	Percentage	X_{18}	Islam and Tasnim, (2021
Study Hours	Hours	X_{19}	Hossain et al. (2017)
Sleeping Hours	Hours	X_{20}	Hossain et al. (2017)

Table 2 outlines the variables used in this study, categorized into dependent and independent variables. The dependent variable YGPA serves as a continuous measure of students' academic performance, bounded between 2.00 and 4.00. The independent variables are selected based on theoretical relevance and empirical support from existing literature. These include demographic factors, parental socioeconomic indicators, and individual practice variables. Categorical variables such as parental occupation and residential type are appropriately coded for quantitative analysis. The inclusion of these variables allows for a multidimensional understanding of the determinants of academic performance among undergraduate students at Khulna University.

Measurement of Parents Socioeconomic Status

The socioeconomic position of parents has been assessed based on three factors–income level, degree of education acquired, and occupation, all of which are thought to have a significant impact on students' academic achievement. In light of this, the current study used parents' income and education of the respondent to group them into social classes.

Table 3: Parental Socioeconomic Status Based on Income and Education

Indicator	Range	Socioeconomic category
Income (BDT per month)	10000-30000	Lower class
	31000-60000	Middle class
	Above 60000	Upper class
Education (Years of schooling)	1-10	Less educated
	11-12	Moderate educated
	Above 12	Highly educated

Parents classified as lower class had a monthly income that ranged from the minimum pay of 10000 BDT to the maximum wage of 30000 BDT. Those whose monthly income fell within the range of 31000 BDT to 60000 BDT were labeled as middle class. Additionally, parents who made above 60000 BDT labeled as upper class. Based on the amount of education acquired by the respondents' parents, the variable representing the parents' education was calculated. Students who reported that their parents had completed less than a primary and secondary (years of schooling 1-10) education were regarded as having less education, whereas those who had completed a higher secondary education (years of schooling 11-12) were judged to have moderate education. Additionally, students claimed their parents had earned a post higher-secondary (years of schooling above 12) were seen as highly educated. Based on the parents' employment status at the time of the study, the parent's profession variable was calculated. The academic performance of students was measured based on individual student's scores of last YGPA.

Econometric Model Estimation

As dependent variable is academic performance, a censored data, authors used the Tobit model. Study considered academic performance score from YGPA 2.00 to 4.00. The explanatory variables for the model are mentioned in analytical framework (Table 2).

Equation (4) expresses the functional form of Tobit regression model.

$$Y^* = X_i\beta_i + \mu \quad (4)$$

Where, $Y=Y^*$ if $Y^* \geq 2$, and $y^* \leq 4$; X_i = matrix of explanatory variables, β_i = matrix of parameters to be estimated, μ = stochastic error term.

Tobit model for estimating the determinants of academic performance is shown in Equation 5.

$$y_i^* = \beta_0 + \beta_{1X_{1i}} + \beta_{2X_{2i}} + \beta_{3X_{3i}} + \beta_{4X_{4i}} + \beta_{5X_{5i}} + \beta_{6X_{6i}} + \beta_{7X_{7i}} + \beta_{8X_{8i}} + \beta_{9X_{9i}} + \beta_{10X_{10i}} + \beta_{11X_{11i}} + \beta_{12X_{12i}} + \beta_{13X_{13i}} + \beta_{14X_{14i}} + \beta_{15X_{15i}} + \beta_{16X_{16i}} + \beta_{17X_{17i}} + \beta_{18X_{18i}} + \beta_{19X_{19i}} + \beta_{20X_{20i}} + \epsilon_i \quad (5)$$

Hypothesis Testing

By conducting hypothesis test, authors tried to determine the effects of parents' socioeconomic status on students' academic performance. Through the following hypothesis tests, researchers obtained the scenario of the students' academic performance.

Hypothesis 1

H_{10}: Fathers' occupation has no impact on students' academic performance.

H_{11}: Fathers' occupation has an impact on students' academic performance.

Hypothesis 2

H_{20}: Mothers occupation has no impact on students' academic performance.

H_{21}: Mothers occupation has an impact on students' academic performance.

Results

Summary Statistics

In brief descriptive statistics are descriptive coefficients which summarizes a given data set. It represents entire population or a sample of population. The descriptive statistics provides basic information about variables in a dataset and shows the relationship between variables and also helps to organize, simplify and summarize data. Descriptive statistics present data in a meaningful way. The following table 4 describes the descriptive statistics of variables.

Table 4: Descriptive Statistics of the Variables

Variable	Mean	Std. dev.	Min	Max
Age in years	23.232	1.0308	20	25
Education level of father	11.638	5.0694	1	18
Education level of mother	9.374	4.011	1	18
Monthly family income	41238.71	19340.45	7000	120000
Monthly family expenditure	35503.23	15289.15	8000	80000
Monthly family savings	5351.613	5794.695	0	40000
YGPA	3.45	0.27	2.87	3.95
Study Hours	2.903	1.480	1	8
Phone Screen Time in a Day	6.516	1.904	3	11
Average Sleeping Hours	7.219	1.249	3	10

Table 4 depicts that the average father education level is 11.63 where the standard deviation is 5.06. Minimum education level of father is 1 year of schooling and maximum education level of father is 18 years of schooling. And the average mother education level is 9.37 with the standard deviation of 4.01 and minimum mother education is 1 year of schooling and highest mother education is 18 years of schooling. Average monthly family income is 41238.71 BDT where standard deviation is 19340.45 BDT, the minimum income level is 7000 BDT, and the maximum family income is 120000 BDT. Average monthly family savings are 5351.61 BDT where the standard deviation is 5794.69 BDT with the minimum savings level of 0 BDT and maximum level of 40000 BDT. The average YGPA of respondents 3.45 where standard deviation is 0.27 and minimum YGPA is 2.87 and the maximum YGPA is 3.95. Moreover, the mean average study time per day is 2.90 hours, with a standard deviation of 1.48 hours, indicating moderate variation among students. The minimum and maximum study hours range from 1 to 8 hours. Students, on average, spend 5.5 hours on their phones daily. The standard deviation of 1.90 suggests notable variability in screen time. The minimum screen time is 3 hours, while the maximum is 11 hours. Students sleep an average of 7.21 hours daily, with a standard deviation of 1.24 hours. The range is between 3 and 10 hours, indicating significant differences in sleep patterns.

Occupation Pattern of Father

Figure 2 depicts the occupation patterns of student father. The large portion is teacher which is 31.61% of total, second large portion belong to service which is 25.81%, farmers is the third large portion of occupation presenting 20.65%.

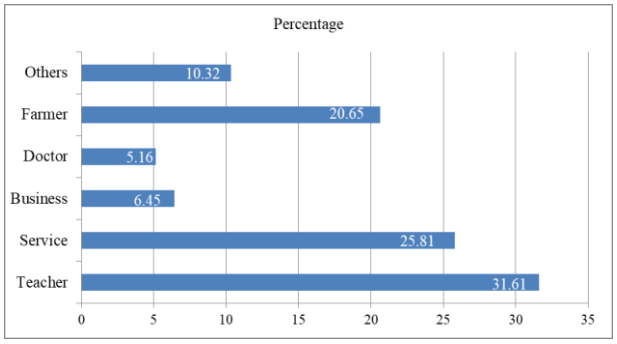

Figure 2: Fathers Occupation

Business and others occupation percentages are 6.45% and 10.32%. The lowers portion occupation is doctors which is 5.16 % of total sample.

Education of Father of the Respondents

Table 5 shows that 37. 42% father is in the group who has completed the year of schooling from 1 to10, 8.39% father has completed year of schooling 11 to 12 and 54.19% fathers has completed the year of schooling above 12 which is the greater portion.

Table 5: Fathers' Education

Father Education	Freq.	Percentage	Cum.
1 to 10	**58**	37. 42	37.42
11 to 12	**13**	8.39	45.81
Above 12	84	54.19	100
Total	**155**	**100.00**	

Over half of the respondents' fathers have attained a relatively high level of education, potentially indicating increased capacity to support their children's academic needs. Higher educational attainment among fathers may contribute to a more favorable learning environment at home through academic guidance, resource allocation, and value transmission.

Occupation Pattern of Mother

Result presents that 62.58% mother are related with housewife profession which is the larger portion followed by service (16.77%), teacher (14.19%), and a small segment categorized as others (6.45%).

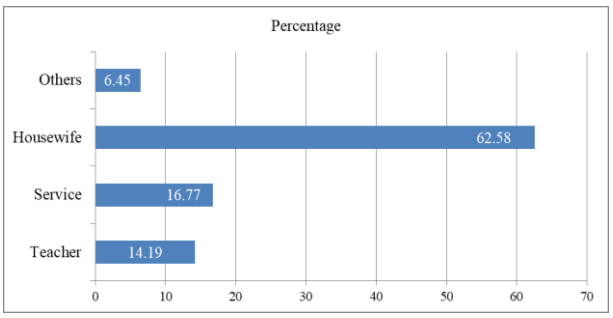

Figure 3: Mothers Occupation

The dominance of the housewife category reflects a traditional gender role distribution within the families surveyed, where mothers are primarily responsible for household management rather than formal employment. However, mothers involved in professional roles such as teaching or service may be better positioned to influence their children's academic habits through exposure to educational environments and structured routines.

Education of Mother of the Respondents

Table 6 indicates that among all respondents, 58.71% of mothers have completed between 1 to 10 years of schooling. Additionally, 19.35% have completed 11 to 12 years, and only 21.94% have studied beyond 12 years.

Table 6: Mothers Occupation

Mother Education	Freq.	Percentage	Cum.
1 to 10	91	58.71	58.71
11 to 12	30	19.35	78.06
above 12	34	21.94	100
Total	**155**	**100.00**	

This distribution suggests that a substantial proportion of mothers in the sample have relatively limited formal education. Compared to the father's education distribution (where over half completed more than 12 years), this reflects a gender gap in educational attainment among parents.

Income Distribution of Parents

Figure 4 Illustrates monthly income of student parents. The monthly income was categorized into three groups, which are 10000 BDT to 30000 BDT, 31000 BDT to 60000 BDT and above 60000 BDT. The results show that 57.41% of parents fall within the lowest income group (10,000–30,000 BDT), followed by 35.49% in the middle-income group (31,000–60,000 BDT), and only 7.09% in the upper-income category (above 60,000 BDT).

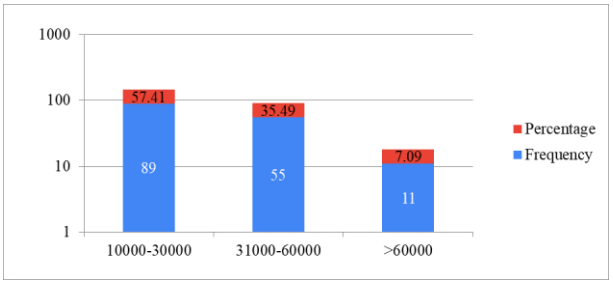

Figure 4: Parents' Income Distribution

This indicates that the majority of students come from lower-income households, which has significant implications for educational opportunities and academic performance. These income disparities are likely to create uneven learning environments and may partially explain performance differences among students.

Source of Educational Expenditure

The pie chart (figure 5) presents the distribution of the sources of educational expenditure among the students. The majority of the funding comes from parents (52.26%), underscoring their critical role in supporting education. A notable 39.35% of students rely on tuition earnings, suggesting that a considerable portion of students must balance academic responsibilities with part-time teaching or coaching to finance their education. Additionally, 8.39% student rely on other sources like scholarship, or external aid.

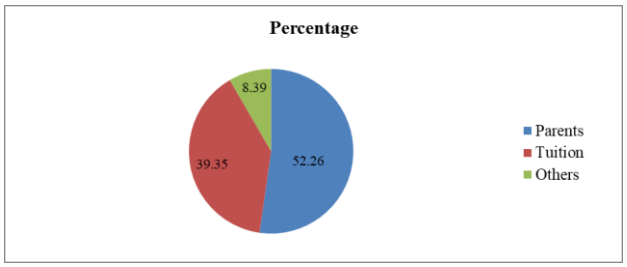

Figure 5: Source of Educational Expenditure

This distribution highlights the potential burden faced by self-financing students, whose academic performance may be negatively affected due to time constraints, stress, or financial insecurity.

Determinants of Academic Performance: Tobit Model Estimates

Table 7 presents the Tobit regression analysis. Where YGPA is dependent variable. The explanatory variables are gender, marital status, family type, source of educational expenditure, and father alive, mother alive, education level of father, education level of mother, father occupation, mother occupation, average class attendance and study hours.

Table 7: Tobit Regression Analysis

Variable Name	Unit of Measurement	Coef.	Std. Err.	P-Value
YGPA (Dependent Variable)				
Gender	Male = 1, Female = 0	0 .0193	0.0191	0.314
Marital Status	Married= 1, Unmarried = 0	-0.0131	0.0296	0.658
Family Type	Nuclear = 1, Joint = 0	0.0568**	0.0205	0.006
Source of Educational Expenditure Base (Parents)				
Tuition	1=Tuition, 0=otherwise	-0.061*	0.0320	0.062
Others	1= Others, 0=otherwise	-0.099*	0.0561	0.078
Father Alive	Yes = 1, No = 0	0.0776**	0.0330	0.020
Mother Alive	Yes = 1, No = 0	0.0521	0 .0343	0.132
Education Level of Father	Years of schooling	0.0067*	0.0035	0.056
Education Level of Mother	Years of schooling	0.0087***	0.0025	0.001
Father Occupation (Base: Farmer)				
Teacher	1=Teacher, 0=otherwise	0.217***	.03751	0.000
Service	1=Service, 0=otherwise	0.209***	0.0338	0.000
Business	1=Business, 0=otherwise	0.017	0.142	0.905
Doctor	1=Doctor, 0=otherwise	0.034	0.066	0.612
Others	1=Others, 0=otherwise	0.068	0.057	0.232
Mother Occupation (Base :Housewife)				
Teacher	1=Teacher, 0=otherwise	0.03*	0.071	0.091
Service	1=Service, 0=otherwise	0.102**	0.134	0.045
Others	1=Others, 0=otherwise	-0.023	0.0369	0.526
Income (Base: Higher Income Group)				
Lower Income Group	BDT	-0.217***	0.07	0.003
Middle Income Group	BDT	-0.147***	0.047	0.002
Average Class Attendance	Percentage	0.007 ***	0.0015	0.000
Study Hours	Hours	0.067***	0.0075	0.000
Cons.		2.204***	0 .122	0.000
Number of obs. = 155		**Pseudo R^2 = 0.7243**		

[Note =***<p0.01, **<p0.05, *p<0.1]

From the analysis in case of the variable source of educational expenditure, if a student's education is financed through tuition payments, their YGPA decreases by 0.061 units compared to those students whose education is financed through parents which is statistically significant at 10% level of significance. If a student's education is financed through other sources, their YGPA decreases by 0.099 units compared to those students whose education is financed through parents which is statistically significant at 10% level of significance. Students from nuclear families achieve a higher (0.0568) YGPA compared to those from joint families which is statistically significant 5% level of significance. At 5% level of significance, students whose father is alive achieve higher (0.077) YGPA compared to those whose fathers are not alive. Again, students whose mothers are alive achieve higher (0.0521) YGPA compared to those whose mothers are not alive, but the effect is weaker.

There is a positive relationship of father education level and YGPA, if father education increases by 1 year of schooling, then YGPA increases by 0.006 units which is statistically significance at 10% significance level. Similarly, if mother education increases by one year of schooling, then YGPA increases by 0.008 units which are statistically significant at 1% significance level. Parents' monthly income has effect on student YGPA which is important socioeconomic factors, from the analysis it has been cleared students whom parents belong to lower income group their YGPA is 0.21 point lower compared to whom parents belong to higher income group which is highly significant at 1% level of significance and students whose parents belong to middle income group their YGPA is 0.14 point lower compared to whose parents belong to higher income group which is also highly significant at 1% level of significance.

Occupation another vital socioeconomic indicator, has impact on students' academic performance, whose fathers are teacher their YGPA is 0.21 unit higher compared to whose fathers are farmers and also whose fathers are service holder their YGPA is 0.20 unit higher compared to whose fathers are farmers at 1% level of significance. Moreover, whose mothers are teachers their YGPA is 0.03 units higher compared to whose mothers are housewife, this result is statistically significant at 10% level of significance and whose mothers are service holder their YGPA is 0.10 unit higher compared to whose mothers are housewife at 5% level of significance. There is also a highly significance relationship between average class attendance and YGPA. By increasing one percent of average class attendance, YGPA increases by 0.007 points, and it is statistically significant at 1% level of significance. Lastly, the coefficient of study hours and YGPA is .It means that if a student increases their study hours by 1 hour, their YGPA increases by 0.067 points which is statistically significance at 1% level of significance.

Results of Hypothesis Testing

Hypothesis 1

Hypothesis 1 has been conducted to examine fathers' occupation impact on students' academic performance.

H_{10}: Fathers' occupation has no impact on students' academic performance.

H_{11}: Fathers' occupation has impact on students' academic performance.

Table 8: One-way Anova Analysis of Fathers' Occupation Impact

Source	SS	df	MS	F	Prob > F
Between groups	2.28	5	0.45	6.87	0.0000
Within groups	9.90	149	0.06	-	-
Total	12.19	154	0.07	-	-

Here, P value is less than 0.05% which means that null hypothesis is rejected. And the alternative hypothesis is accepted that indicates with the variety of fathers' occupation YGPA of students also vary so fathers' occupation has impact on students' academic performance.

Hypothesis 2

Hypothesis 2 has been conducted to examine mothers' occupation impact on students 'academic performance.

H_{20}: Mothers occupation has no impact on students' academic performance.

H_{21}: Mothers occupation has impact on students' academic performance.

Table 9: One-way Anova Analysis of Mothers' Occupation Impact

Source	SS	df	MS	F	Prob > F
Between groups	2.64	3	0 .88	13.95	0.0000
Within groups	9.54	151	0.06		
Total	12.59	154	0.07		

Here, P value is less than 0.05% which means that null hypothesis is rejected. And the alternative hypothesis is accepted that indicates with the variety of mothers' occupation YGPA of students also varies so mothers' occupation has impact on students' academic performance.

Discussion

This study investigated the influence of students' socioeconomic and behavioral characteristics on academic performance, as measured by YGPA. The Tobit regression analysis and descriptive findings revealed a multidimensional relationship among parental income, occupation, education, family structure, student behavior, and academic outcomes. These results are consistent with a growing body of literature that highlights the crucial role of family background and student-specific habits in shaping educational success.

The findings confirm that parental education, especially the mother's, positively affects academic performance. Students whose parents had higher levels of education tended to perform better in university. This supports earlier findings by Dennis et al. (2005) and Hoque et al. (2017), who found parental education to be a strong predictor of children's academic success.

In terms of parental occupation, students whose fathers or mothers were engaged in professional or service sectors reported higher YGPAs, reflecting similar observations by Hoque et al. (2017), and Usaini and Abubakar (2015). These professions not only provide financial stability but also tend to create more academically enriched home environments. Additionally, the significance of family income as a determinant of academic performance echoes findings from Broer et al. (2019), Hossain et al. (2017), and Tomul and Savasci (2012), all of whom report that higher-income families can afford better academic resources, tutoring, and support systems that contribute to student success.

The behavioral traits of students–especially class attendance and study hours–are found to have a direct and significant relationship with academic outcomes. These findings are consistent with studies such as Islam and Tasnim (2021) and Gettinger and Walter (2012), where

regular attendance and structured study routines were identified as major contributors to academic success. Furthermore, self-regulation and time management, as discussed by Zimmerman and Kitsantas (2014) and Pintrich and De Groot (1990), were conceptually validated in the present study through students' reported study time and class participation.

Interestingly, sleep duration and non-educational expenditure were negatively associated with YGPA. While these were not always statistically significant, the pattern suggests that overindulgence in leisure or social activities may crowd out time for academic preparation. This aligns with personality-focused research by Moreira et al. (2020), which found that non-academic traits and habits can weak educational engagement even when other socioeconomic conditions are favorable.

Family structure also played a noticeable role in academic outcomes. Students from nuclear families had higher academic performance compared to those from joint families, possibly due to fewer household distractions and more focused parental attention. Similar conclusions were drawn by Causey et al. (2015), and Roksa and Kinsley (2018), who suggested that nuclear family environments may provide more psychological stability and academic support. The presence of both parents (father and mother alive) was also associated with improved academic outcomes, indicating the emotional and financial support dual-parent households often provide. This is supported by Roksa and Kinsley (2018), and Fan and Chen (2001), who emphasize the vital role of parental involvement and stability in sustaining academic achievement.

The empirical findings of this study are strongly supported by a wide range of international and local literature. Studies across diverse contexts consistently underscore the role of parental education, income, emotional support, and behavioral consistency in shaping academic performance (Dennis et al., 2005; Pyatt & Becker, 1966). The triangulation of these results with both qualitative theories and empirical evidence strengthens the reliability and generalizability of the study's conclusions within the context of developing countries, including Bangladesh.

4.1 Limitations and Directions for Future Research

Despite its strengths, the study is not without limitations. First, the sample is confined to a single institution–Khulna University–which limits the external validity of the findings across other public or private universities in Bangladesh. Second, the sample size (n = 155), although methodologically acceptable, restricts the granularity of subgroup analysis (e.g., by gender or income quintile). Third, several potential influencing variables such as mental health, peer environment, and digital access were not included, although prior research (Beckers et al., 2016; Eisenberg et al., 2009) suggests their potential significance. Fourth, the study employs a cross-sectional design, which limits its ability to capture changes over time or establish causal relationships.

Additionally, while the Tobit model is suitable for handling the censored nature of YGPA, the study does not explore possible interaction effects (e.g., how gender interacts with family income), nor does it apply longitudinal or structural equation models, which might offer deeper insights into dynamic and indirect relationships among variables. Overall, the findings affirm that academic performance is a multifaceted outcome shaped by socioeconomic conditions, behavioral patterns, and family structure. These results are consistent with both theoretical assumptions and empirical findings across varied contexts, reinforcing the need for multi-dimensional support strategies in higher education. Future policies should therefore be tailored to address both financial constraints and behavioral challenges among students to promote academic equity and excellence.

Conclusions

This study empirically demonstrates that parental socioeconomic status–specifically income, education, and occupation–exerts a significant influence on the academic performance of undergraduate students at Khulna University. The findings reveal that students from higher-income households, with well-educated and professionally employed parents, consistently outperform their peers. Moreover, individual behavioral traits such as study hours and class attendance further strengthen academic outcomes. The presence of supportive family structures, particularly nuclear households, also contributes positively. These insights affirm the multifactorial nature of academic success and emphasize the importance of both institutional policies and family engagement in promoting educational equity. Future interventions must therefore be multidimensional, targeting not only financial barriers but also the behavioral and contextual realities of students from underprivileged backgrounds.

Acknowledgement

At the very outset, we would like to express our deep gratitude from our core of heart to almighty Allah for everything. In the trajectory of this research, we owe numerous personalities. This research remains incomplete, if enough support has not come from the practical field. We must highlight the contribution of the students of Khulna University, Khulna for their response as respondents. We are grateful to our enumerator team. Our special thanks to faculty members of Economics Discipline, Khulna University for their research support.

Conflict of Interest

The authors declares no conflict of interest.

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