Examining The Factors Affecting Students' Academic Performance in Nepal

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Abstract: Academic performance refers to the assessing the individual progress, institutional effectiveness, and the overall quality of the educational process. It is the measurable outcomes of a student's educational efforts, typically assessed through continuous evaluation methods such as GPA or percentage marks. This study aimed to explore the factors affecting academic performance among master's level students at Mahendra Multiple Campus, Nepalgunj, a constituent campus of Tribhuvan University, Nepal. A cross-sectional research design was utilized, with a sample of 270 students selected from a population of 903 across the faculties of Management, Humanities, and Education using proportionate stratified random sampling. Primary data were collected through structured, pre-tested questionnaires, and the reliability of the instrument was confirmed with a Cronbach's alpha of 0.735. Descriptive and inferential statistical analyses were performed, followed by multiple linear regression to identify significant predictors of academic performance. The MLR model explained 57.2% of the variance in academic performance, with significant predictors including type of college, family income, time spent on the internet, family size, and mother's education level. Students from private colleges, higher-income families, and smaller family sizes performed better, whereas increased time spent on the internet was associated with lower academic performance. These findings underscore the importance of socio-economic and institutional factors in influencing academic performance and highlight the need for improved parental education, equitable access to higher education, and greater investment in institutional resources to promote academic success and contribute to broader societal progress.

Keywords: Academic Performance, Multiple Regression Model, Student, Nepal

1.   Introduction

In the current day of globalization and technological innovation, education is regarded as the initial step in any human endeavor (Mohamed et al., 2018; Daraojimba et al., 2023). The most significant indication of educational improvement in every country is the student's academic performance. It is evident that in today's complex and interconnected world, the academic performance of students not only serves as a yardstick for educational institutions but also plays a pivotal role in shaping the future trajectory of individuals and nations alike. In the contemporary landscape defined by rapid technological progress and increasing interconnectedness through globalization, education stands as the cornerstone of human

advancement (Daraojimba et al., 2023). Suan et al. (2022) assert that education plays a pivotal role in not only imparting essential knowledge, skills, and competencies but also fostering progress and development at individual, community, and national levels.

Student's academic performance/achievement is the extent to which a student, teacher, or institution has attained their short or long-term educational goals and is measured either by continuous assessment or cumulative grade point average (CGPA) (Stasolla et al*.,* 2021; Talib, & Sansgiry, 2012). Students' academic performance is vital for assessing a student's standing within a university and it is typically measured through the Grade Point Average (GPA) (Al Husaini, & Ahmad Shukor, 2022). The students' performance factor is one of the most challenging aspects in many academic literatures because it affects their performance in academic, social, psychological, economic, and environmental cohesion (Vermunt, 2005; Azhar et al., 2014). Academic achievement refers to performance outcomes that indicate how far a person has progressed in specific goals of activities in instructional settings, such as school, college, and university (Suleiman, 2023).

Recognizing the broader implications, academic success not only shapes future prospects but also holds intrinsic social value, making it an imperative consideration worldwide (Insah et al., 2013). Academic performance, which reflects students' achievements, plays a crucial role in identifying and nurturing talented individuals who can become future leaders and contribute to a nation's economic and social development (Ali et al., 2009)

Exam results serve as conventional benchmarks for evaluating students' academic prowess in school or college settings, typically quantified by the marks received (Galiher, 2006; Insah et al., 2013). Globally, researchers commonly employ the Grade Point Average (GPA) as a standardized measure for assessing student achievement (Galiher, 2006). But in this research, as per annual program of Tribhuvan University, students' academic performance is measured by marks obtained in percentage.

In the contemporary era characterized by rapid technological advancements and increasing globalization, the academic performance of students holds paramount importance for the comprehensive advancement of any nation (Vasilyeva, & Sinagatullin, 2020). It serves as a crucial determinant in shaping the caliber of graduates who are poised to assume pivotal leadership roles in propelling a nation's economic and social progress.

Consequently, there has been a burgeoning interest in scrutinizing the various factors associated with the scholastic achievement of college students within the domain of higher education. Students' academic performance serves as a pivotal criterion for employers when evaluating potential candidates for employment, especially recent graduates (Mohamed et al., 2018). Moreover, scholarly discourse underscores the notion that the academic achievement of students is intricately linked to the quality of the learning process, as elucidated by the World Bank (2018). Furthermore, within the sphere of higher education, academic success exerts a profound impact on students' self-esteem, motivation, and perseverance (Jayanthi et al., 2014). The study conducted by Tamang and Khanal (2023) revealed that students' motivation, study habits, and communication skills significantly influenced their Semester Grade Point Average (SGPA). The internet facility at libraries, as a learning facility, contributed significantly to the students' academic achievement (Ghimire, 2023).

The academic performance of students emerges as a crucial metric for assessing educational advancement within any country (Chapagain, 2021). This metric serves as a catalyst for academic institutions to embrace innovative approaches, reflecting their efficacy in achieving both immediate and long-term educational objectives (Paudel, 2021; Suan et al., 2022). Moreover, studies suggest a positive correlation between faculty academic excellence and students' academic achievements, underlining the significance of enhancing teaching quality in educational settings (Poudel, 2021). The identified factors such as irregular class attendance, low parental education levels, limited family cooperation, excessive social media usage, and engagement in gossiping significantly correlate with academic underachievement, as noted by Shahjahan et al. (2021).

Furthermore, the study conducted by Dasanayake and Jayasinghe (2021) underscores the pivotal role of students' English proficiency, self-motivation, lecture attendance, and study time in shaping their academic performance, with self-motivation emerging as the most influential factor. Likewise, Ali et al.

(2009) identified demographic characteristics, involvement in extracurricular activities, active learning, and attendance as variables positively associated with student performance. Thawabieh (2016) delineated key elements impacting university students' academic performance into categories student caliber, and faculty quality. Mohamed et al. (2018) found significant positive correlations between university students' academic performance and learning methodology, available resources, study practices, and home-related variables. Duwal and Khonju (2020) highlighted the substantial impact of teaching methods and student attendance on perceived student performance, although they observed a lack of significant correlation with students' habits.

The study conducted by Siddiky and Haque (2024) showed that the factors like students' gender, interests on study, previous semester result, physical and mental health, participation in class as well as in co-curricular activities, family economic condition and support, parental guidance, student-teacher relationship, and learning environment of the institution positively affect students' academic performance. Moreover, parental education and occupation, family socioeconomic status, and student ethnicity emerge as influential factors in academic performance, as supported by multiple studies (Akessa, & Dhufera, 2015; Chapagain, 2021; Saifullahi, 2011). The study conducted by Ali et al. (2013) revealed that factors such as age, socioeconomic status of the family, and daily study time significantly influenced academic performance. Banik and Kumar (2019) highlight the multifaceted nature of factors influencing university students' academic performance, encompassing socioeconomic and idiosyncratic elements. These factors include cognitive ability, motivation, effort, classroom environment, teacher-student relationship, information literacy skills, age, gender, family income, and parental education. Suan et al. (2022), further identify gender, parental educational, and number of siblings as significant determinants of students' Cumulative Grade Point Average (CGPA), while Alhassan & Alhassan (2019) emphasised the impact of age, gender, and prior knowledge on students' academic achievement. Ahmmed and Salim (2018) revealed that academic performance is influenced by gender, class attendance, teacher-student relationship.

Emphasizing the significance of the learning process over mere outcomes, the World Bank (2018) underscores the importance of the academic achievements' alignment with learning-related competencies, skills, and practical knowledge outlined in the curriculum (Németh, & Long, 2012). However, numerous countries, including South Sudan and Nepal, grapple with alarmingly low literacy rates, exacerbating global disparities in education. Data from UNESCO's Institute of Statistics (2013) and the World Bank (2018) highlighted the prevalence of substandard academic performance across various nations, posing challenges for educators, parents, and students alike. In the context of Nepal, the reports published by University Grants Commission (2018, 2019, 2020, & 2021), the pass rate of students in annual programs in Tribhuvan University has found 26.10% (2018), 29.3% (2019), 41% (2020), 29.33% (2021). This report indicates that the academic achievement of students in university is not satisfactory. Most of the students are not passing their exam regularly.

Students' academic performance is not only influenced by the talent of nature but also several factors that are involved for better performance (Ullah, & Almani, 2022). Different studies from the academia showed that factors like study habits (Tamang, & Khanal, 2023; Dasannayak, & Jaysingh 2021; Mohamed et al., 2018; Siddiky, & Haque, 2024; Ali et al., 2013), student self-motivation (Banik, & Kumar, 2019; Jaynath et al., 2014), student attendance (Ali et al., 2009, Dasanayak, & Jaysingh, 2021; Duwal, & Khonju, 2020; Shahjahar et al., 2021), Gender (Suan et al., 2019; Alhassan, & Alhassan, 2019; Banik, & Kumar, 2019; Siddiky, & Haque, 2024), teaching method and class environment (Duwal, & Khonjus, 2020; Mohamed et al., 2018; Banik, & Kumar, 2019), teacher student relations (Banik, & Kumar, 2019), parental education and home related variables (Shahjahar et al., 2021; Mohamed et al., 2018; Siddiky, & Haque 2024; Akessa, & Dhufera, 2015; Banik, & Kumar, 2019), co-curricular activities (Ali et al., 2013; Siddiky, & Haque, 2024) were significantly associated with students' academic performance. Moreover, several other important factors have not been studied so far. Thus, the study was intended to investigate the factors that affect students' academic performance. But, in this study, some other than the above factors have been attempted to study for the students' academic performance, such as type of college, television at home, duration to reach college, medium of study, residence of students, time on internet and family size and related factors.

However, limited research has been conducted on the factors influencing students' academic performance specifically among students at Tribhuvan University. Therefore, by considering the multifaceted factors influencing academic performance, this study aims to explore key factors affecting academic performance among master-level students at Mahendra Multiple Campus, Nepalgunj, Nepal, providing valuable insights to reduce the failure rates of students at the university level.

In this regard, this study intends to answer the following research questions:
- Is there a relationship between socio-demographic characteristics and academic performance of students enrolled in master level?
- What are the major factors affecting academic performance of students enrolled in master level?

2. Methods

2.1 Research Design and Participants

The research employed a cross-sectional study design conducted at Mahendra Multiple Campus in Nepalgunj, Banke, Nepal, from June to July 2022. The target population comprised 903 students enrolled in the master's programs across various faculties, including Management, Education, and Humanities. Given the diversity of faculties and the distinct academic levels of students within each faculty, a proportionate stratified random sampling technique was utilized. Participants were selected through simple random sampling from each stratum, categorised by their respective faculties: Education, Humanities, and Management. This approach ensured adequate representation from each faculty. The sample size calculation was estimated based on Cochran's formula (Cochran, 1977), assuming a 50% proportion of academic performance because unavailable reporting the academic performance of the setting. Considering as 5% level of significance and marginal error respectively, whereas population size of 903.

$$ n = \frac{p(1-p)}{\frac{e^2}{z^2} + \frac{p(1-p)}{N}} = \frac{0.5(1-0.5)}{\frac{0.05^2}{1.96^2} + \frac{0.5(1-0.5)}{903}} = 269.51 \approx 270 $$

Table 1. Size of sample

Faculty	Total population	Sample size
Management	370	111
Humanities	374	112
Education	159	47
Total	**903**	**270**

Source: Office record of Mahendra Multiple Campus, Nepalgunj, 2022

2.2 Measurement and Data Collection

The sampling unit comprised students enrolled in different faculties, and those selected were approached with a structured, pre-tested, and self-administered questionnaire for data collection. In cases where students were unavailable during the initial visit, subsequent attempts were made to reach them. If students remained inaccessible after multiple attempts, replacement samples were drawn to maintain the desired sample size and ensure representativeness across faculties. This methodological approach aimed to provide a comprehensive understanding of factors influencing academic performance among master's level

students at Mahendra Multiple Campus, thereby contributing valuable insights to educational research in the Nepalese context.

In this research, the Cronbach's alpha test was employed to assess the internal consistency and reliability of 20 items. The reliability coefficients of this research were 0.735 for the scale of the structured and self-administered questionnaire. Thus, the scale of this research was reliable as Cronbach's alpha coefficients in the range of 0.70 and above (Robinson et al., 1991). In this study, the dependent variable was the academic performance of students enrolled in master's level programs at Mahendra Multiple Campus, Nepalgunj. Academic performance was assessed based on the marks obtained by students in their bachelor's level studies, quantified as a percentage. Several independent variables were considered based on previous literatures. These independent variables encompassed demographic, socio-economic, student-related and institutional factors. Demographic factors may include age, gender, ethnicity, religion, mother tongue, while socio-economic variables could encompass parental education, family income, and occupation, telivision at home, residence, number of family members and siblings. In addition, student-related and institutional factors may include study habits, study time, time on the internet, attendance, engagement in extracurricular activities, types of college, and medium of study. By examining the relationships between these independent variables and the dependent variable of academic performance, the study aimed to elucidate the multifaceted factors influencing students' achievements at the master's level in Mahendra Multiple Campus, Nepalgunj. This comprehensive approach facilitates a nuanced understanding of the determinants of academic success and contributes to the development of targeted interventions to support students' educational attainment.

2.3   Data Analysis

The study utilized various statistical computational and analytical tools, including MS-Excel and SPSS version 21.0 software, to conduct data analysis. The descriptive analysis involved calculating frequencies, percentages, mean, median, mode, standard deviation, minimum, maximum, and quartiles, as appropriate for the nature of the variables under examination.For inferential analysis, independent t-tests for test of significance of difference between two groups and F-tests (ANOVA) were employed for test of significane of difference among more than two groups as regard to depandent variable.

Initially, bivariate analysis t-test and Pearson correlation were conducted to examine the relationships between the dependent variable (percentage marks) and each independent variable (factors affecting academic performance). This process helped to identify important candidate variables for inclusion in the multiple linear regression (MLR) model. The forward selection method was then used to build the MLR model, exploring significant predictor variables associated with students' academic performance. Normality of the dependent variable was assessed using histograms, Kolmogorov-Smirnov test, and Shapiro-Wilk test. Additionally, the presence of multicollinearity among explanatory variables was examined using variance inflation factors (VIFs) prior to running the MLR model. To ensure the validity of the MLR model assumptions, a scatter plot was employed to assess homoscedasticity of residuals, and a Predicted Probability (P-P) plot was used to test the normality of residuals distribution. These diagnostic tests helped to evaluate the appropriateness of the MLR model for the data at hand and provided insights into potential issues such as non-normality of residuals or multicollinearity among predictor variables.
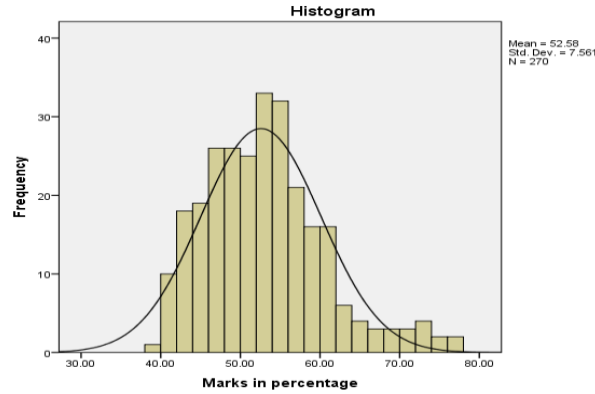
Fig. 1 Histogram of marks (in percentage) of students

The above histogram shows that the marks (in percentage) of students are nearly normally distributed.

Table 2. Kolmogorov-Smirnov and Shapiro-Wilk test of total marks of students

	Kolmogorov-Smirnov			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Marks in percentage	0.078	270	0.071	0.959	270	0.085

As per Table 2, p-value for Kolmogorov-Smirnov test and Shapiro-Wilk test is greater than 0.05 which indicates the marks obtained in percentage are insignificant which means that marks obtained (in percentage) are approximately normally distributed.

2.3.1 Model Specification

A multiple linear regression (MLR) model is characterized by a single continuous response variable and two or more independent variables. The independent variables can be continuous (scale) or categorical. The data consist of n observations on a dependent variable Y and k explanatory variables, $X_1, X_2, X_3, \ldots$, X_k. The relationship between Y and $X_1, X_2, X_3, \ldots \ldots , X_k$, is formulated by the MLR model as

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \ldots \ldots + \beta_k X_K + \varepsilon$$

For this model, let Y represent the academic performance (marks obtained in percentage) and X_i's are the different predictors of academic performance. $\beta_0, \beta_1, \beta_2, \ldots \ldots , \beta_k$, denote constants that serve as the regression coefficients of explanatory variables and ε is a stochastic disturbance or error.

2.3.2 Goodness of Fit, ANOVA and R² of the Model

The overall test of significance of the regression coefficients of the fitted model was tested by ANOVA and the coefficient of determination (R^2) was computed and reported for evaluating variability in the dependent variable has been explained by the variation in the independent variables. The goodness of fit of the fitted model was judged by Kolmogorov- Smirnov test.

3. Findings

The findings have been systematically arranged and depicted in the subsequent table:

Table 3. Descriptive information of dependent variable

	n	Minimum	Maximum	Mean	Median	Std. deviation	Quartile	
							First	Third
Marks (in percentage)	270	39	77	52.58	52	7.56	47	57

Table 3 reveals that the average score of the respondents is 52.58%, with a standard deviation of 7.56%. The pupils' grades range from 39% to 77%. One-half of the students received 52%, while one-fourth received less than or equal to 47% and one-fourth received more than or equal to 57%.

3.1   Bivariate Analysis

The identification of significant independent variables commenced with screening using ANOVA, independent t-tests, Pearson correaltion, and regression analysis to elucidate their impact on academic performance. Notably, Table 4 reveals a noteworthy association (P-value < 0.05) between students' academic performance and their mother tongue. Additionally, significant disparities (P< 0.05) are evident in scholastic achievement concerning socio-demographic variables such as caste, ethnicity, religion, fathers' and mothers' education, mothers' occupation, and college type. Table 5 depicts the bivariate correlation between dependent and independent variables. Further analysis, Table 6 indicates significant disparities (p-value < 0.05) in academic performance concerning the number of family members, family income, study time at home, and time spent on the internet at the 5% level of significance. Based on bivariate analysis results, these statistically associated variables were considered as potential candidates for inclusion in the multiple linear regression (MLR) model. The Forward Method was utilized for the appropriate selection of significant covariates explaining students' academic performance. Consequently, the final model identified five significant predictor variables: type of college, monthly income, time spent on the internet, number of family members, and mother's level of education, as delineated in Table 6.

Table 4. Bivariate analysis of variables with academic performance of students

Socio-demographic Variables		N	Mean	SD	t-value / F-value (p-value)
Gender	Male	124	52.99	7.86	0.829
	Female	146	52.22	7.31	(0.408)
Mother Tongue	Nepali	148	56.24	7.06	13.253
	Awadhi	32	54.91	9.31	(0.004)
	Tharu	84	48.55	5.31	
	Others	6	54.50	14.18	
Ethnicity	Brahmin	84	59.37	8.05	9.374
	Chhetri	35	52.63	6.65	(0.006)
	Janajati	104	49.65	6.01	
	Madhesi	26	50.35	8.83	
	Muslim	11	47.18	6.05	
	Dalit	10	55.5	3.95	
Religion	Hindu	246	52.99	7.51	3.044
	Islam	11	47.18	6.05	(0.029)
	Christian	8	48.50	9.04	
	Buddhist	5	50.80	5.40	
Father's Education	Illiterate	35	47.77	6.58	4.428
	Literate	62	50.39	5.31	(0.005)
	Basic Level	91	52.00	7.48	
	Secondary Level	82	54.79	8.90	

Socio-demographic Variables		N	Mean	SD	t-value / F-value (p-value)
Mother's Education	Illiterate	78	50.74	6.39	6.311
	Literate	86	51.63	6.55	(0.000)
	Basic Level	47	53.11	5.98	
	Secondary Level	59	52.58	1.010	
Father's occupation	Agriculture	124	51.96	6.45	2.063
	Business	71	52.15	9.18	(0.070)
	Service	49	53.24	7.82	
	Foreign employment	10	45.20	3.08	
	Daily wage	12	58.00	8.18	
	Others	4	48.25	3.20	
Mother's occupation	House maker	171	53.09	7.36	6.065
	Agriculture	68	49.74	4.67	(0.001)
	Business	11	57.27	7.02	
	Service	20	55.3	13.01	
Television at home	No	50	49.47	5.05	-2.983
	Yes	220	53.22	7.89	(0.30)
Extra-curricular activities	No	187	52.01	7.12	-1.858
	Yes,	83	53.85	8.37	(0.064)
Type of college	Government	158	50.61	6.34	5.339
	Private	112	55.36	8.27	(0.001)
Residence	Rural	140	52.59	7.98	0.034
	Urban	130	52.56	7.11	(0.973)
Medium of study	Nepali	197	52.68	7.79	3.83
	English	73	52.29	6.93	(0.702)

Table 5. Bivariate correlation between dependent and independent variables

Variables	1	2	3	4	5	6	7
1.Marks in Percentage							
2. Age of respondent	0.001						
3. No of family members	0.163**	-0.048					
4. No of Siblings	0.049	0.076	0.593**				
5.Duration to reach college	- 0.21	-0.061	0.194	0.268*			
6.Monthly income	0.247**	0.102	0.150*	0.042	0.154*		
7. Time spent on internet	0.194**	0.043	0.196**	0.149*	- 0.095	-0.089	

* Significance at 5% level of significance

** Significance at 1% level of significance

Table 5 relating to bivariate co-relation between dependent variable and independent variables indicates as follows: among the variables, no of family members (r = 0.163**) was positively related to the academic performance. Similarly, monthly income (r = 0.247**), and time spent on the internet (r = 0.194**), were also positively co-related with academic performance. Moreover, other variables like age of respondents, no. of siblings, duration to reach college were not co-related with academic performance.

Table 6. Academic Performance on Various Independent Variables using Regression Analysis

	Unstandardized Coefficients			
	β	Std. Error	t	p-value
Constant	52.5	3.903	13.425	
Age of student	0.003	0.147	0.020	0.984
Constant	48.97	1.41	34.823	
Family members	0.578	0.213	2.712	0.007
Constant	51.830	1.039	49.879	
Siblings	0.298	0.372	0.802	0.423
Constant	52.815	0.830	63.569	
Duration to reach college	-0.011	0.033	-0.344	0.731
Constant	50.866	0.607	83.775	
Monthly income	0.002	0.005	4.165	0.001
Constant	52.858	0.905	58.401	
Study time	0.003	0.008	0.360	0.019
Constant	50.341	0.826	60.949	
Time on internet	0.20	0.06	3.236	0.001

Table 7. Test of presence of multicollinearity

	Collinearity Statistics	
	Tolerance	VIF
Type of college	0.976	1.024
Family Income	0.846	1.181
Time spend on internet	0.905	1.105
Family size	0.861	1.161
Mothers level of education	0.796	1.256

The presence of multicollinearity among the explanatory variables was examined by variance inflation factors (VIFs) before running the multiple linear regression model. Here, all tolerance values are more than 0.1 and none of the VIF's values is more than 4 (Hair et al., 2010). It indicates that there is no significant collinearity among the independent variables listed in Table 7.

Table 8. Coefficient of determination (R-square)

R	R-Square	Adjusted R-Square	Std. Error
0.723	0.643	0.572	6.515 %.

From above Table 8, an Adjusted R-square value of 0.572 signifies that the independent variables used in this model explained 57.2% of the variation in academic performance of the students under study. The standard error of the estimates is 6.515%, implying that the average variation in observed academic performance around the fitted line is 6.515 %.

Table 9. Overall test of significance

	Sum of square	d.f.	Mean sum of square	F-value	P-value
Regression	4211.418	6	701.903	16.532	0.000
Residual	11166.449	263	42.458		
Total	15377.867	269			

Table 9 shows that the p-value < 0.05. Thus, notable distinctions exist among the variables that influence academic performance of the students.

3.2 Fitted Model for Academic Performance

Table 10 reveals the results of the fitted model for academic performance taking selected significant independent variables.

Table 10. Fitted model for academic performance

| Variables | Unstandardized coefficients | | | | 95% CI for β | |
	β	Std. Error	t	p-value	Lower Bond	Upper Bound
Constant	51.06	1.69	30.19	0.000	47.73	54.39
Family Size	0.45	0.26	2.18	0.030	0.044	0.856
Time spent in internet	-0.16	0.006	-2.78	0.006	-0.005	-0.0287
Family income	0.0019	0.001	3.12	0.002	0.0007	0.0009
Type of college: (Government) @ Private	-4.28	0.84	-5.12	0.000	-5.95	-2.65
Mother's Education: (Illiterate) @Secondary and above	-3.205	1.27	-2.52	0.012	-5.71	-0.70
Mother's Education: (Literate) @ Secondary and above	-2.64	1.20	-2.19	0.029	-5.02	-0.28
Mother's Education: (Basic level) @Secondary and above	-0.86	1.36	-0.63	0.049	-3.52	-0.70

Let Y denote the academic performance of students under study, X_1 represent the family size, X_2 represent time spent on the internet, X_3 represent average monthly family income, D_{GP} represent the dummy variable which indicates the type of college taking 1 for government college and 0 for private college, D_{IS} represent the dummy variable which indicates the mothers' education level, which is basically divided into two categories, 1 for illiterate and 0 for secondary and above. Similarly, let D_{LS} represent the dummy variable that also indicates the mothers' level of education, which is divided into two categories 1 for literate and 0 for secondary and above and D_{BS} represent the dummy variable which also indicates the level of education of the mother, divided into two categories: 1 for basic level and 0 for secondary level and above.

The above information can be shown in the form of equation:

$$Y = 51.06 + 0.45X_1 - 0.16X_2 + 0.0019X_3 - 4.28D_{GP} - 3.205D_{IS} - 2.64D_{LS} - 0.86D_{BS}$$

The fitted model suggests several significant findings regarding the impact of various factors on students' academic performance. Firstly, an increase in family size corresponds to a positive effect on

academic performance, with a one-member increment associated with a 0.45% improvement. Conversely, every additional minute spent on the internet correlates with a 0.16% reduction in academic performance. Moreover, higher family income is linked to improved academic performance, with a one-rupee increase in monthly income corresponding to a 0.0019% enhancement. Comparatively, students from government colleges exhibit a 4.28% lower academic performance than their counterparts from private colleges. Additionally, mothers' educational levels significantly influence students' performance; students with illiterate mothers perform 3.20% worse than those whose mothers completed secondary education or above, while those with literate mothers perform 2.64% worse. Similarly, students whose mothers completed basic-level education perform 0.86% worse than those with mothers who completed secondary education or above. Furthermore, as all calculated t-statistics yield p-values below 0.05, it is concluded that all model coefficients are statistically significant at the 5% level of significance, affirming the robustness of the model's findings.
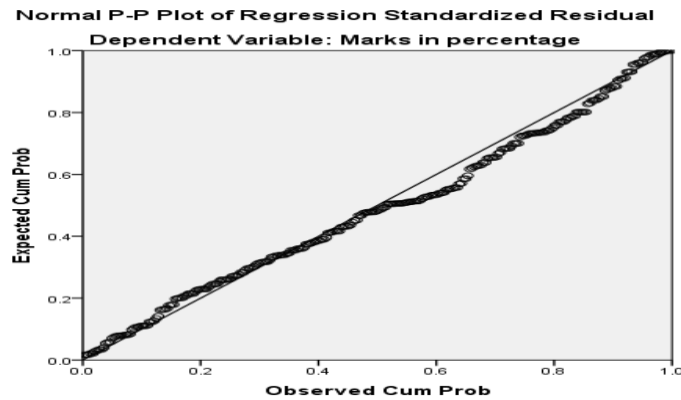

Fig. 2 Test of normality of residuals by P-P Plot

As illustrated in the aforementioned graph, there is no discernible deviation of residuals from the normal line. This indicates that the residuals adhere to an approximately normal distribution.
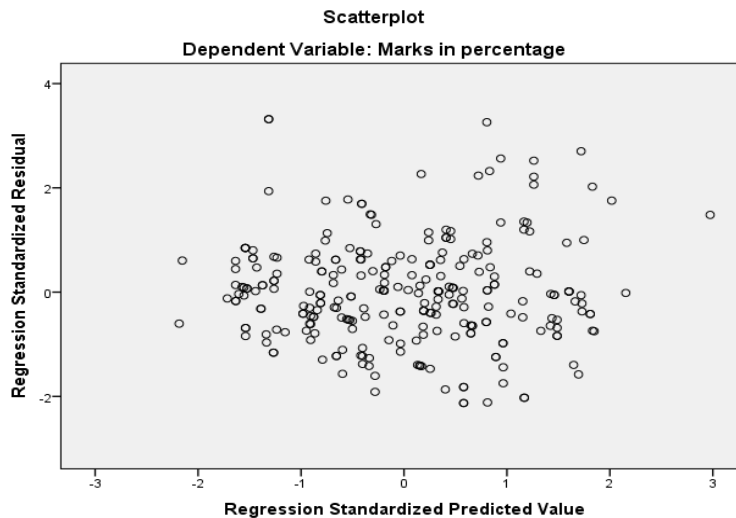

Fig. 3 Test of Homoscedasticity of Residuals

As shown by the scatter diagrams of residuals versus predicted values, the errors (residuals) are distributed uniformly across the entire range of predicted values. It is the indication of absence of heteroscedasticity.

Table 11. Test of goodness of fit of fitted model

n	Mean	S.D.	Kolmogorov-Smirnov Z	p-value
270	0.000	12.54	0.751	0.071

The Kolmogorov-Smirnov test yielded a p-value greater than 0.05, as presented in Table 11. This indicates that the residual coefficients, overall, are not statistically significant. The non-significant p-value indicates that the estimated model provides a good fit for the data.

4.   Discussion

The study indicated that various personal factors, family factors, economic factors, and institutional factors positively affect students' academic performance. The findings from the study put forward that the students' family income has a very strong positive effect on their academic performance. This finding of the study is supported by the findings presented by several studies available in the academia (Banik, & Kumar, 2019; Ali et al., 2013; Akessa, & Dhufera, 2015). The study also indicated that institutional factors, particularly type of college, play a significant role in students' academic achievement. The findings show that students from government colleges tend to have lower academic performance compared to their counterparts in private colleges. This may be attributed to the fact that students in private colleges often have access to better facilities related to the teaching and learning environment, and guardians may also pay greater attention to their children in private institutions. However, other studies on academic performance have not demonstrated a significant impact of the type of college, possibly because they did not consider this variable in their analysis.

Moreover, among family factors, a mother's education was identified as a positive factor influencing students' academic achievement. The crucial role that mothers play within the family may contribute to this effect. This finding is also supported by the findings presented in several studies available in the academia (Shajahan et al., 2021; Siddiky, & Haque, 2024; Akessa, & Dhutera, 2015; Banik, & Kumar, 2019; Suan et al., 2019). The study revealed that the student-related factor, time spent on the internet was negatively associated with academic performance. It may be that students who spend more time on social media, rather than engaging in curricular activities, experience a decrease in their academic achievement. The study conducted by Shajahan et al. (2021) corroborates the findings of this research, indicating a negative impact on students' academic achievement. Although, the internet can be a valuable resource for academic study, the results indicate that students are primarily using it to engage in various social media activities, which leads to a waste of time.

Hence, while other studies have identified various factors that are either positively or negatively associated with students' academic performance. However, this study found that only family income, time spent on the internet, type of college, and maternal education have a significant impact on students' academic performance.

5.   Conclusion and Recommendations

The study revealed that academic performance significantly differs among studnets in terms of mother tongue, ethinicity , religion, mother's education , father's education, mother's occupation and types of college. Hence, demographic, socio-economic, and students-related factors affect students' academic performance. Furthermore, the Pearson correlation analysis indicated that the number of family members, family monthly income, and time spent on the internet were positively correlated with students' academic

performance, with all associations being statistically significant. Thus, the study put forward that demographic, socio-economic, and students-related factors have a positive effect on students' academic performance. Notably, the multiple linear regression model identified that family size, family income, time spent on the internet, type of college, and mother's education emerged as significant factors influencing academic performance.

These findings not only contribute to a deeper understanding of the factors shaping academic performance but also hold practical implications for educational stakeholders. The findings provide valuable insights for academic institutions in developing targeted support programs designed to address the diverse needs of students based on their socio-economic backgrounds and family characteristics on providing additional academic support for students from lower-income families or those with limited educational support at home. It is advisable to integrate educational technology and online resources into the learning environment. Furthermore, the findings serve as valuable guidance for university administrators and faculty members striving to enhance academic outcomes within their academic institutions. By aligning institutional practices and support mechanisms with the identified predictors, universities can cultivate an environment conducive to academic excellence and student success.

In the light of the findings and implications of this study, several recommendations can be proposed to enhance academic performance and facilitate educational advancement. Firstly, advocating for initiatives aimed at improving parental education levels is crucial, as educated parents are better positioned to provide guidance and support to their children, thereby fostering an environment conducive to academic success. Secondly, the government should prioritize the establishment of colleges in rural areas to ensure equitable access to higher education opportunities, thereby democratizing access to education and contributing to regional development. Thirdly, enhancing the quality of education in government colleges through investments in infrastructure, modern teaching facilities, and comprehensive training programs for faculty members is essential for creating an environment that supports academic excellence. Additionally, strengthening teacher training programs to equip educators with the necessary skills and knowledge for effective student engagement and support is vital. By implementing these recommendations, stakeholders can collectively contribute to fostering an environment conducive to academic excellence, equitable access to education, and holistic development of students, thereby laying a strong foundation for the future prosperity and progress of society.

The target population for this study was limited to students enrolled in master's level at Mahendra Multiple Campus, Nepalgunj. Therefore, the findings of this study may not be generalizable to other populations or regions. It is important to note that future research could incorporate several significant factors that were not addressed in this study, such as respondents' mental health, levels of motivation, teacher support and guidance, student-teacher relationships, regular class attendance, parental guidance, and institutional learning facilities. The findings of future research may serve as a foundation for academic institutions and policymakers to design interventions that address the diverse challenges students face in their academic journeys. These insights can be applied in developing student-centered support systems and improve teaching methodologies to optimize students' academic potential.

6.   References

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