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Factors Affecting Students' Academic Performance in Nepalese Higher Education: A Multivariate Status Analysis

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Abstract

The expansion of higher education in Nepal has been accompanied by persistent variation in learning resources, teaching practices, student preparation, and institutional support. This study examines factors associated with students' academic performance and develops an integrated analytical framework to inform future research and policy. It synthesizes Nepal-focused empirical evidence and international higher education literature, considering teaching quality, attendance, study habits, motivation, self-efficacy, socioeconomic status, family background, learning facilities, internet and social media use, and institutional support. The reviewed evidence indicates that teaching practices, attendance, access to learning resources, socioeconomic conditions, digital behavior, and motivational factors are associated with academic performance, although the strength and statistical significance of these associations vary across populations, disciplines, institutions, and outcome measures. Evidence further suggests that multivariate models incorporating institutional and household variables can explain a substantial proportion of variation in academic performance. Drawing on this synthesis, the study proposes a parsimonious multiple regression framework for future primary data research. It also identifies policy priorities encompassing stronger academic advising, reliable learning infrastructure, attendance monitoring and engagement systems, targeted financial assistance, digital literacy programs, improved pedagogy, and data-

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informed student support. The study concludes that academic performance reflects multiple interrelated influences, with student effort operating within institutional and socioeconomic contexts. Its contribution lies in integrating these influences into a coherent framework for examining academic performance in Nepalese higher education and informing coordinated interventions across student, household, and institutional domains.

Keywords: Academic Performance; Higher Education; Socioeconomic Factors; Institutional Support; Nepal

INTRODUCTION

Academic performance is one of the most visible indicators of whether students are converting educational opportunity into measurable learning outcomes. At university level, performance is commonly represented by grade point average (GPA), marks, course completion, pass status, progression, or graduation. These indicators are useful but incomplete: performance reflects not only students' knowledge and effort but also the quality of instruction, academic environment, access to resources, financial conditions, family responsibilities, peer environment, and institutional systems. A serious analysis therefore needs to move beyond the assumption that low grades are simply a consequence of low student effort.

The Nepalese higher-education system has expanded considerably in institutional coverage and enrolment. The University Grants Commission (UGC) publishes higher-education management information reports covering universities, campuses, enrolment, gender parity, graduation and pass rates, funding, and institutional trends. The 2023/24 higher-education report shows the diversity of Nepal's higher-education landscape and its geographical concentration, while the Commission's recent annual-report materials continue to emphasize quality enhancement, institutional capacity, research, infrastructure, and student support. This institutional diversity means that students do not enter or experience higher education under identical conditions.

Nepal-focused empirical research also points to a multi-factor explanation. Duwal and Khonju found that teaching method and attendance had significant positive relationships with perceived academic performance among community-college students in Bhaktapur. Khanal reported a positive significant relationship between class attendance and

academic achievement among university students. Ghimire's analysis of B.Sc. students found that library internet access was significantly associated with academic achievement, while a 2024 study by Tharu used multiple linear regression and reported that college type, family income, internet-use time, family size, and mother's education were significant predictors, with the model explaining 57.2% of the variance in the study sample. These studies illustrate why a multivariate perspective is useful: a factor may appear important in one context and weak in another once other variables are controlled.

Background of the Study

Higher education is increasingly expected to perform several functions simultaneously: produce skilled graduates, support social mobility, develop research capacity, foster innovation, and prepare young people for employment and civic life. Academic performance is connected to these functions because persistent failure, delayed completion, and low achievement can increase private and institutional costs. At the same time, performance differences can reproduce social inequalities when students with fewer economic or educational resources face greater barriers to learning.

International higher-education research has long demonstrated that persistence and achievement are influenced by the interaction between student characteristics and institutional environments. Astin's involvement theory emphasizes the amount of physical and psychological energy students invest in the academic experience. Tinto's model highlights academic and social integration as mechanisms influencing persistence. Self-efficacy theory explains why students' beliefs about their capability can influence effort, persistence, and achievement. These perspectives complement Nepalese evidence on attendance, motivation, learning resources, and institutional support.

Problem Statement

A common limitation in discussions of university performance is the tendency to focus on one visible factor—attendance, teaching, social media, family income, or study habits—without accounting for the others. Such a single-factor approach can lead to misleading policy conclusions. For example, students with poor attendance may also have long commuting times, employment responsibilities, weak academic preparation, or low motivation. Likewise, heavy internet use may be harmful when it represents distraction, but the same internet access may improve achievement when it is used for academic resources.

The relevant question is therefore not simply whether a factor exists, but how it operates alongside other determinants.

A second problem is fragmentation of the evidence. Nepalese studies are often conducted within one campus, programme, province, or student group. Different studies use different definitions of performance and different independent variables. This makes direct comparison difficult and creates a need for an integrative status analysis that identifies recurring factors, distinguishes relatively robust evidence from context-specific findings, and proposes a coherent multivariate model for future research.

Objectives

- To identify the major student-level, teaching-learning, institutional, socio-economic, family, digital, and contextual factors associated with academic performance in Nepalese higher education.
- To synthesize Nepal-focused empirical findings and place them within established higher-education theories.
- To examine how these factors can be conceptualized simultaneously in a multivariate analytical framework.
- To identify methodological limitations in existing Nepalese studies and propose a stronger design for future empirical research.
- To develop practical recommendations for universities, campuses, teachers, students, families, and policymakers.

Research Questions

- What are the principal factors associated with students' academic performance in Nepalese higher education?
- Which categories of factors appear repeatedly across Nepal-focused empirical studies?
- How should student, institutional, socio-economic, family, and digital variables be incorporated into a multivariate model?
- What policy and institutional interventions are most defensible given the available evidence?

Significance of the Study

The study is significant for three reasons. First, it organizes dispersed evidence into an integrated framework that is more useful for decision-making than isolated findings.

Second, it distinguishes association from causation and explicitly avoids presenting literature-based associations as universal causal effects. Third, it provides a practical model that can be tested using student-level data across multiple Nepalese universities, thereby supporting evidence-based academic planning.

Review of Literature

Concept of Academic Performance

Academic performance refers to observable educational outcomes produced during a defined period. In higher education, GPA and course marks are the most common indicators because they can be compared within programmes and used for progression decisions. However, GPA is influenced by grading practices, subject difficulty, assessment design, and institutional standards. A stronger study can therefore combine continuous assessment, semester GPA, failed-course count, timely progression, and self-reported learning engagement. The choice of outcome should be stated clearly before statistical modelling.

The advancement of analytical methods, numerical modelling, and computational technologies has created new opportunities for understanding and addressing complex problems in various disciplines. Sah et al. (2024) investigated the existing condition of the education system in Nepal and identified several challenges that require structured planning and evidence-based solutions. In another study, Sahani et al. (2024) highlighted the importance of differential equation-based modelling in analysing dynamic systems, particularly in the field of aerospace engineering. The application of numerical approaches has gradually expanded from technical fields to social and educational research. Sahani and Karna (2024) used numerical simulation to analyse cultural conflicts within diverse societies, demonstrating how mathematical tools can be applied to understand social complexities. Building on this concept, Sahani and Karna (2025) examined the optimization of cultural education programs using numerical techniques. Similarly, Sahani and Prasad (2023) explored how cultural education policies influence literacy rates through differential equation modelling. Further research by Sahani and Sah (2025) and Sahani et al. (2025) emphasized the role of optimization and simulation techniques in improving cultural education strategies and analysing value conflicts in multicultural environments. Recent literature reflects a growing interest in combining mathematical models with artificial intelligence techniques.

Sahani et al. (2026) introduced hybrid analytical, numerical, and machine learning frameworks to improve risk assessment, uncertainty measurement, and decision-making processes. Their studies on Nepalese management systems and cooperative banking highlighted the contribution of explainable machine learning in developing more accurate and transparent prediction models. Additionally, the application of similar hybrid frameworks in healthcare management, dental practice systems, resource allocation, and operational planning demonstrated the flexibility of these approaches in solving practical problems. In summary, previous studies indicate that the integration of mathematical modelling, numerical analysis, and machine learning provides a powerful framework for addressing complex and uncertain situations. While existing research has demonstrated promising applications in education, management, healthcare, and social systems, further investigation is required to test these approaches using broader datasets and real-world conditions.

Theoretical Perspectives

Student Involvement Theory

Astin's student involvement perspective proposes that educational development depends partly on the quantity and quality of student involvement. Attendance, participation, time devoted to study, interaction with faculty, and engagement in academic activities can therefore be interpreted as behavioural pathways linking students to performance. Nepalese evidence on attendance is consistent with this broad proposition, although attendance itself may partly reflect other conditions such as motivation, timetable quality, commuting, or employment.

Student Integration and Persistence

Tinto's framework emphasizes that students' academic and social integration affects persistence. Although persistence and academic performance are distinct outcomes, the theory is useful because students who experience weak academic integration may attend less, seek less help, and become disconnected from their programmes. Institutional advising, peer networks, teacher accessibility, and a supportive academic climate may therefore influence achievement indirectly as well as directly.

Self-Efficacy and Motivation

Bandura's social-cognitive theory places self-efficacy at the centre of goal-directed behaviour. Students who believe they can master a task are more likely to persist after difficulty, whereas low self-efficacy may encourage avoidance. Motivation should therefore be included in multivariate models not as a vague personality trait but through measurable constructs such as academic self-efficacy, intrinsic motivation, goal orientation, and perceived usefulness of the programme.

Socio-economic and Cultural Capital

Household income, parents' education, occupation, residential conditions, access to technology, and family educational expectations can shape the resources available to students. These variables can affect achievement through textbooks, internet access, private tutoring, quiet study space, transportation, nutrition, and the amount of time available for study. Importantly, socio-economic status should not be interpreted as a measure of student ability; it is better understood as a structural condition that changes the opportunities available for learning.

Empirical Evidence from Nepal

Nepalese research provides evidence across several factor categories. Duwal and Khonju studied undergraduate students in community colleges in Bhaktapur and reported significant positive effects of teaching method and attendance on perceived performance. Khanal similarly found a significant positive relationship between attendance and academic achievement among students in five central campuses of Mid-Western University. These studies support the importance of engagement and classroom participation.

Ghimire examined B.Sc. students in Tribhuvan University constituent campuses in Province 1 using binary logistic regression. The study considered gender, caste/ethnicity, socio-economic status and learning facilities, and identified internet facility in libraries as a significant learning-facility factor. This is important because it shows that digital infrastructure is not simply a leisure issue; academic access to reliable internet can be part of the learning environment.

Tharu's 2024 study is particularly relevant to the multivariate approach. Using 270 master's students at Mahendra Multiple Campus, Nepalgunj, the study applied multiple linear regression and reported that college type, family income, internet-use time, family size, and

mother's education were significant predictors. The model explained 57.2% of the variance in academic performance. The finding should not be generalized to all Nepalese students because it is based on one institution and specific programmes, but it demonstrates the analytical value of combining institutional, household, and digital variables in one model.

Other Nepal-focused studies identify social media use, digital inequality, teaching style, administration, study behaviour, and academic support as relevant areas. Hamal reported a negative relationship between social-media engagement and academic performance among graduate management students in Kathmandu, while later studies have continued to examine social media and undergraduate performance. Baral's analysis of online learning during the COVID-19 period highlighted ICT infrastructure, technological skills, and institutional management as major challenges. Gaihre emphasized students' varied backgrounds and competencies, along with library improvement, technological facilities, extra classes, orientation, motivation, and financial status.

Summary of Selected Nepalese Studies

Study	Setting / sample	Key variables	Main finding relevant to this paper
Duwal & Khonju (2021)	150 undergraduates, community colleges, Bhaktapur	Teaching method, study habits, attendance	Teaching method and attendance significantly related to perceived performance.
Khanal (2019)	172 university students, Mid-Western University campuses	Attendance, irregularity	Attendance positively related to academic achievement.
Ghimire (2023)	130 B.Sc. students, TU constituent campuses, Province 1	Gender, ethnicity, SES, learning facilities	Library internet facility significantly associated with achievement.
Baral (2022)	Students and teachers, Pokhara; qualitative study	ICT infrastructure, digital skills, online management	Digital divide and institutional capacity constrained online learning.
Hamal (2021)	176 graduate management students, Kathmandu	Social media, study time, test score	Social-media engagement showed a negative relationship with performance.
Gaihre (2023)	Bachelor students, Rupandehi community campus	Background, competence, technology, motivation	Background/competence important; institutional and motivational supports recommended.
Mishra et al. (2025)	203 students, Kathmandu Valley	Teaching style, administration, motivation	Teaching style and administrative support examined as influences on motivation.
Tharu (2024)	270 master's students, Nepalgunj	College type, income, internet, family size, mother's education	Multiple regression explained 57.2% of performance variance; several institutional and family variables significant.

International Evidence

The broader literature reinforces the multi-causal perspective. A systematic review of higher-education students in low-resource settings identified psychological, biological, facility/environmental, and lifestyle predictors of academic achievement. Commonly reported influences included stress, self-esteem, sleep, learning facilities, internet access, teacher perceptions, and excessive social-media use. The review also cautions that findings differ by setting and measurement. This supports the use of a multivariate model that includes several theoretically justified domains rather than a single universal predictor.

Research Gap

Three gaps emerge from the literature. First, many Nepalese studies are geographically or institutionally narrow. Second, variables are selected inconsistently, making it difficult to understand their relative contribution. Third, there is limited evidence using harmonized data across multiple universities and disciplines. A robust national or multi-university study should therefore use a common outcome measure, common explanatory variables, probability-based sampling, and hierarchical or multilevel modelling where students are clustered within classes, campuses, and universities.

Conceptual Framework

The proposed framework treats academic performance as the dependent variable and groups explanatory variables into six domains: student-level characteristics and behaviours; teaching-learning factors; institutional conditions; socio-economic and family background; digital and lifestyle behaviour; and wider contextual conditions. The framework is intentionally broader than a simple attendance-performance model because the same observed outcome may be produced through multiple pathways.

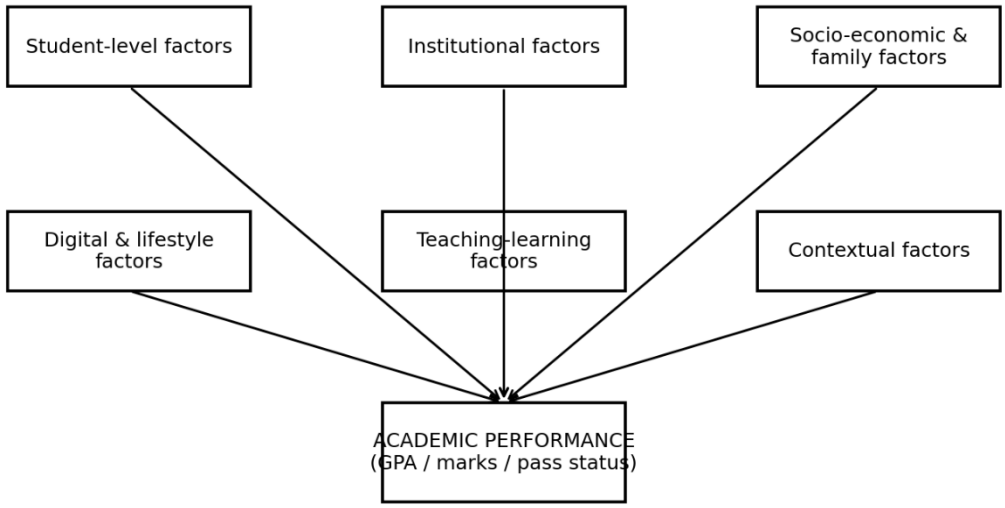


Figure 1. Conceptual framework for a multivariate analysis of academic performance.

Operational Definition of Major Variables

Variable/domain	Possible operational measure	Expected direction
Academic performance	Semester GPA; cumulative GPA; marks; pass/fail; failed-course count	Outcome
Attendance	Percentage of classes attended in semester	Positive
Study habits	Weekly study hours; planning; revision frequency	Positive
Motivation/self-efficacy	Validated Likert-scale index	Positive
Teaching quality	Student rating of clarity, feedback, pedagogy, teacher availability	Positive
Learning facilities	Library, laboratory, internet, classroom adequacy index	Positive
Family income	Monthly/annual household income bands	Positive, but non-linear possible
Parents' education	Highest education of mother/father	Positive
Digital use	Hours/day and purpose of internet/social media use	Mixed; academic use positive, distraction negative
Institutional support	Advising, counseling, scholarship, academic support index	Positive
Control variables	Age, gender, programme, year, residence, prior achievement	Context-dependent

Proposed Multivariate Model

For a continuous performance measure such as semester GPA, a baseline multiple linear regression may be written as: $Y_i = \beta_0 + \beta_1 Attendance_i + \beta_2 StudyHabits_i +$

$\beta_3 Motivation_i + \beta_4 TeachingQuality_i + \beta_5 LearningFacilities_i + \beta_6 FamilyIncome_i + \beta_7 DigitalUse_i + \beta_8 InstitutionalSupport_i + \gamma' Controls_i + \varepsilon_i$. If the outcome is pass/fail, logistic regression is more appropriate. If students are nested within campuses and universities, multilevel models can account for correlated observations and institution-level differences.

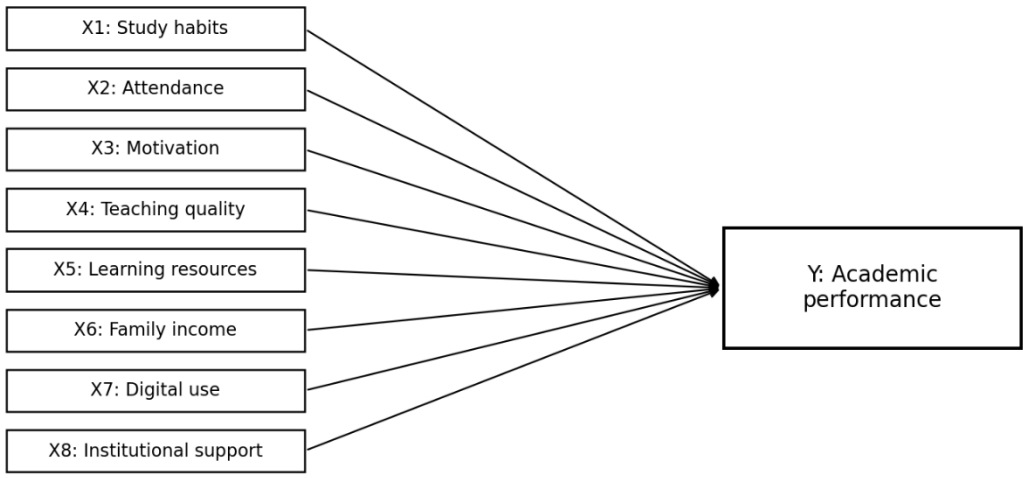


Figure 2. Proposed multivariate model for future empirical testing.

Why a Multivariate Model Is Preferable

Multivariate analysis estimates the association of one factor while statistically controlling for the others included in the model. This matters because explanatory variables often overlap. For example, family income may be related to internet access, private tutoring, and residential location. Teaching quality may influence motivation and attendance. Social-media use may be correlated with total internet time. Without controls, the observed association of one variable may partly reflect another variable. A multivariate approach does not solve every causal problem, but it produces a more informative estimate of conditional associations.

METHODOLOGY

Research Design

This paper uses a structured secondary-evidence and analytical-review design. It synthesizes Nepal-focused empirical studies, official higher-education reports, and established international literature on student achievement. The purpose is not to claim a

new causal estimate from original student records. Instead, the paper develops a status assessment and a testable multivariate framework. Where individual studies report statistical results, those results are described as findings of the original study and are not treated as nationally representative estimates.

Evidence Identification and Selection

The evidence base emphasizes peer-reviewed Nepalese studies and official UGC material, supplemented by foundational international theories and systematic reviews. Priority was given to studies that explicitly examined academic performance or achievement and reported a defined sample, variables, and analytical method. Studies focused on narrow subject performance were included when they illuminated a general factor—such as attendance, digital access, teaching quality, or motivation—but their scope was kept explicit.

Analytical Strategy

The synthesis proceeded in four stages. First, variables were grouped into common domains. Second, recurring findings were compared across settings. Third, the potential overlap among variables was examined conceptually. Fourth, a multivariate model was specified with academic performance as the outcome. The resulting evidence map is a count of studies in the selected review sample that identified a factor or domain; it is not a prevalence estimate and should not be interpreted as saying, for example, that a factor affects a particular percentage of Nepalese students.

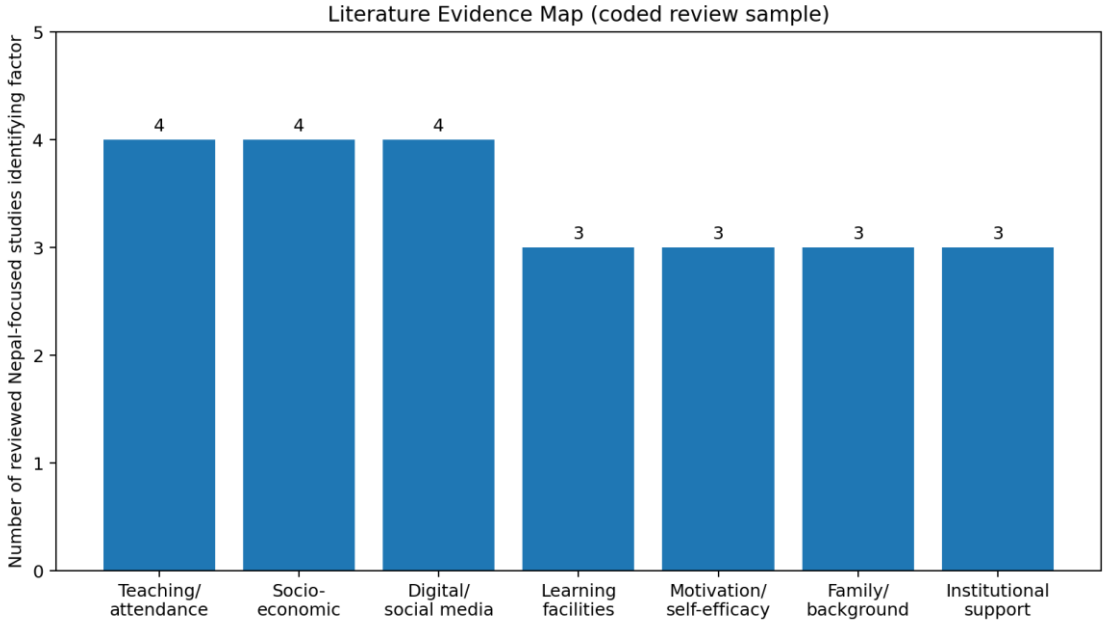


Figure 3. Literature evidence map. Counts represent the selected review sample, not national prevalence or effect size.

Validity and Limitations of the Evidence Base

A major strength of the synthesis is triangulation: similar factors recur across different programmes and study designs. However, heterogeneity is substantial. Samples are often campus-specific; performance measures differ; some studies rely on perceived performance; and cross-sectional designs limit causal inference. Self-reported internet use, study hours, and attendance may also contain recall or reporting error. These limitations mean that the findings are best interpreted as evidence of recurring associations and plausible mechanisms rather than definitive national causal effects.

RESULTS

Student-Level Factors

Student-level factors include prior academic preparation, study habits, time management, motivation, self-efficacy, attendance behaviour, and academic engagement. These factors are closely connected. A student who has clear goals and strong self-efficacy may allocate more time to study, attend more classes, seek feedback, and persist through difficult material. Conversely, weak academic confidence can reduce engagement and create a cycle of avoidance and poor performance. The analytical implication is that researchers should avoid entering several highly overlapping indicators without checking multicollinearity.

Attendance and Engagement

Attendance is one of the more consistently supported behavioural factors in Nepal-focused research. Duwal and Khonju reported a positive effect of attendance on perceived performance, while Khanal found a positive significant relationship between attendance and academic achievement. Attendance can operate through exposure to explanations, demonstrations, peer discussion, continuous assessment, and opportunities to ask questions. However, attendance should not be interpreted mechanically: simply being physically present does not guarantee learning. The quality of participation and instructional practice also matter.

Teaching Quality and Pedagogy

Teaching quality covers clarity of explanation, subject mastery, use of examples, classroom interaction, formative feedback, assessment alignment, and teacher availability.

Nepalese evidence from community colleges and recent work on teaching style and student motivation indicates that instructional practice matters. The policy implication is not merely to increase the number of classes; it is to improve what happens during those classes. Faculty development, peer observation, assessment literacy, and feedback systems can therefore be considered academic-performance interventions.

Motivation and Self-Efficacy

Motivation is both an outcome of the learning environment and a predictor of subsequent behaviour. Supportive teaching can raise students' interest and perceived competence, while repeated failure can reduce confidence. This suggests possible mediation: teaching quality may influence academic performance partly through motivation and engagement. A future study should therefore consider mediation analysis rather than assuming every predictor has only a direct effect.

Learning Facilities and Digital Infrastructure

Learning facilities include libraries, laboratories, reliable electricity, internet connectivity, classrooms, equipment, and access to current learning materials. Ghimire's study identified library internet access as a significant learning-facility variable. Baral's study of online learning showed how infrastructure and digital skills affected the feasibility of remote learning. These findings have continuing relevance because higher education increasingly depends on digital journals, learning management systems, online libraries, and communication platforms.

Socio-economic and Family Factors

Household economic resources can influence the time and conditions available for study. Students with greater financial security may have better access to devices, internet, transportation, learning materials, and quiet study spaces. Students with fewer resources may need paid work or face household responsibilities. Tharu's multivariate analysis reported significant associations for family income, family size, and mother's education, illustrating how family variables can remain relevant even after multiple predictors are considered. These findings support targeted rather than purely universal student support.

Digital Behaviour and Social Media

Digital behaviour is not inherently beneficial or harmful. Academic use of the internet can improve access to books, articles, lectures, software documentation, and

collaborative learning. In contrast, prolonged non-academic use can compete with study time and fragment attention. Nepalese studies have reported negative relationships between social-media engagement and performance, while research on online learning emphasizes the positive potential of technology when infrastructure and skills are adequate. Therefore, the appropriate construct is not simply 'internet use' but purpose, intensity, timing, and self-regulation.

Institutional Support and Academic Environment

Institutional support includes academic advising, counselling, scholarship administration, remedial classes, orientation, teacher availability, examination management, library services, and communication systems. UGC policy and quality-enhancement documents emphasize that higher-education quality depends on faculty quality, curriculum, infrastructure, research environment, libraries, student support, and administrative procedures. These are not background variables; they define the environment within which students attempt to learn.

Interactions Among Factors

The most important insight from a multivariate perspective is that factors may interact. Socio-economic disadvantage can increase the effect of poor transport or weak internet access. Good teaching may compensate partly for weak prior preparation. Strong institutional support may reduce the academic consequences of financial difficulty. Digital access can amplify either learning or distraction depending on students' self-regulation. Consequently, future research should test interaction terms and mediation pathways where theory supports them.

Interaction to test	Rationale	Expected interpretation
Teaching quality × motivation	Better pedagogy may strengthen motivation	Positive interaction if supportive teaching is more effective for motivated students.
Income × study time	Financial pressure can constrain study time	Income may change the strength of study-time effects.
Internet access × academic use	Access alone is insufficient	Positive effect stronger when use is academic.
Attendance × teaching quality	Presence is more useful when instruction is effective	Combined engagement may exceed either factor alone.
Institutional support × prior preparation	Support may benefit academically vulnerable students more	Possible compensatory effect.

DISCUSSION

The evidence supports a shift from a 'student deficit' explanation to an interaction model. Students matter, but students learn inside institutions and households. The recurring association of attendance and teaching with performance suggests that academic engagement is partly produced by the learning environment. The evidence on internet access and digital behaviour demonstrates that technology can be both a resource and a distraction. Socio-economic and family findings show that students' capacity to use educational opportunities differs across households. Together, these findings make a strong case for multi-domain analysis.

The findings also explain why apparently contradictory results can occur. A study may find that study habits are not significant while attendance is significant; another may find internet use significant; a third may identify family income. This does not necessarily mean that one study is wrong. The studies may differ in programme, measurement, sample composition, range restriction, or the variables controlled in the model. Multivariate research should therefore report full model specifications, standardized or interpretable coefficients, confidence intervals, diagnostics, and sensitivity analyses rather than relying only on p-values.

A national research programme should also distinguish individual-level from institution-level determinants. Students are nested within classrooms, campuses, universities, and geographic regions. If two students attend the same campus, they share some facilities, policies, teachers, and administrative conditions. Standard regression that ignores this clustering can underestimate uncertainty. A multilevel model with student-level and institution-level predictors would provide a more defensible national analysis.

Implications for Rajarshi Janak University and Similar Institutions

For universities and campuses, the most practical lesson is to build early-warning and academic-support systems around multiple indicators rather than grades alone. Attendance, assessment submission, course performance, advising contact, and student-reported barriers can be combined to identify students who may need support. Such systems should be supportive rather than punitive and should protect student privacy. The goal is early intervention—tutoring, counselling, mentoring, remedial teaching, or financial guidance—before failure becomes irreversible.

Policy Implications

- Improve teaching quality through continuous faculty development, peer learning, assessment training, and evidence-based pedagogy.
- Strengthen libraries, laboratories, internet access, and digital learning systems, especially where resource constraints are greatest.
- Expand academic advising, mentoring, counselling, bridge courses, and remedial support for students entering with unequal preparation.
- Use targeted scholarships and emergency financial support to reduce the amount of paid work or financial stress that interferes with study.
- Promote digital literacy and self-regulation rather than treating social media as inherently harmful.
- Develop interoperable student-information systems that can monitor progression and identify support needs while maintaining privacy.
- Encourage multi-university research using common measures and representative samples.

Recommendations

For Students

Students should develop regular study routines, monitor their own progress, use digital resources primarily for academic purposes during study periods, attend classes consistently, and seek help early. Time management should be treated as a practical skill rather than a moral judgement. Peer study groups and faculty consultation can be especially useful for difficult courses.

For Teachers

Teachers should provide clear learning objectives, active classroom opportunities, timely feedback, and transparent assessment criteria. Short formative assessments can identify misconceptions before high-stakes examinations. Where students have varied preparation, teachers can use bridging materials and differentiated support without lowering academic standards.

For Universities and Campuses

Institutions should strengthen academic advising, library and laboratory resources, internet reliability, student counselling, and early-warning mechanisms. Data should be used

to identify patterns, not to label students. Institutions should also periodically review course completion, failure rates, attendance patterns, and student feedback by programme and demographic group to identify structural barriers.

For Policymakers and UGC

Higher-education policy should prioritize comparable data definitions, quality assurance, digital infrastructure, faculty development, and equitable student support. UGC and universities can develop a common indicator set for student progression and achievement, enabling evidence-based benchmarking without encouraging simplistic league-table competition.

Proposed Design for a Future National Multivariate Study

A stronger empirical study should sample students from several public, community, and private institutions across provinces, disciplines, and levels of study. Stratified multi-stage sampling would improve representativeness. A target sample of roughly 1,500–3,000 students could provide adequate power for a model containing 15–25 predictors, subject to a formal power analysis and the expected effect sizes. Where feasible, survey responses should be linked to verified academic records with consent rather than relying only on self-reported GPA.

Suggested Questionnaire Domains

Domain	Example indicators
Demographics	Age, gender, residence, programme, semester/year
Prior preparation	SEE/+2 results, entrance score, prior GPA
Academic behaviour	Attendance, study hours, assignment completion, library use
Motivation	Goal orientation, intrinsic motivation, academic self-efficacy
Teaching	Clarity, interaction, feedback, assessment alignment
Resources	Library, laboratory, internet, device availability
Family	Income band, parental education, family size, responsibilities
Digital behaviour	Academic internet use, social-media time, multitasking
Institution	Advising, counselling, scholarship, administrative responsiveness
Outcome	Semester GPA, cumulative GPA, pass/fail, failed courses

Statistical Procedure

- Data screening: missing values, outliers, coding errors, distribution checks.
- Reliability testing for multi-item scales using Cronbach's alpha or preferably omega where appropriate.

- Descriptive statistics by programme, institution type, province, and demographic group.
- Bivariate analysis to understand basic associations without treating them as causal.
- Multiple linear regression for GPA/marks and logistic regression for pass/fail outcomes.
- Variance inflation factor (VIF), residual diagnostics, heteroscedasticity checks, and influential-observation analysis.
- Hierarchical or multilevel regression to account for students nested within campuses and universities.
- Mediation and interaction analysis where theory and sample size justify it.
- Robustness checks using alternative outcome definitions and sensitivity to missing data.
- Report effect sizes and confidence intervals alongside p-values.

Limitations

This paper is a synthesis and framework rather than a new nationally representative survey. It therefore cannot estimate the current national prevalence of each factor or establish causal effect sizes. The Nepalese evidence base contains many institution-specific cross-sectional studies, and some measures are self-reported. Differences in programme, sample, outcome definition, and statistical method limit direct comparison. The evidence map is deliberately descriptive and should not be mistaken for a meta-analysis. Future work should address these limitations through harmonized instruments, probability sampling, longitudinal data, and verified academic outcomes.

CONCLUSION

Students' academic performance in Nepalese higher education is best understood as a multi-causal outcome. The literature points repeatedly toward attendance and engagement, teaching quality, learning resources, motivation and self-efficacy, socio-economic and family conditions, digital behaviour, and institutional support. No single factor provides an adequate explanation across all students or institutions. The strongest direction for future research is therefore a multivariate and, where possible, multilevel design that estimates the relative contribution of student, household, and institutional variables simultaneously.

The policy message is equally clear: improving academic performance requires more than telling students to study harder. Students need effective teaching, accessible learning resources, supportive institutions, reliable digital infrastructure, academic advising, and targeted assistance when economic or educational disadvantages constrain participation. A data-driven support system that combines academic indicators with contextual information can help Nepalese universities move from reactive remediation toward early and equitable academic support.

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