

Analyzing Student Performance Using SPSS: Integrating Demographic, Socioeconomic, Motivational, and Support Factors

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Abstract— This study aims to identify key factors influencing the academic performance of students within the College of Engineering. Demographic factors such as age, gender, marital status, socioeconomic factor such as job status, motivational factor such as motivation for continuing studies, and support factor such as academic engagement measured by the frequency of meetings with supervisors were investigated as potential contributors to differences in students academic performance. Data was collected from approximately 130 students in the College of Engineering using a Google spreadsheet. The SPSS statistical tool was employed to analyze these parameters, specifically using Chi-square analysis to determine the association between these factors and the students Cumulative Grade Point Average (CGPA). The results showed that there is a statistically significant association between age and students CGPA. However, the study found no significant association between gender, marital status, job status, motivation for continuing studies, or the frequency of meetings with supervisors and students CGPA. This study contributes to the understanding of factors related to academic achievement in an engineering faculty, providing insights that may help in designing targeted support strategies to enhance student success within the College of Engineering.

Index Terms— Academic support factors, demographic factors, motivational factors, socioeconomic factors, students' academic performance.

I. INTRODUCTION

“Education is the most powerful weapon which you can use to change the world,” – Nelson Mandela. This profound statement highlights the transformative power of learning, which serves as a fundamental driver of national development, contributing not only to economic growth but also to social progress and individual empowerment [1]. When individuals are empowered through education, they are better equipped to overcome challenges, contribute meaningfully to their communities, and drive positive change.

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At the core of this transformation lies student performance, a vital indicator of the effectiveness and inclusivity of the education system. However, academic success does not occur in isolation. It is deeply influenced by a complex interplay of demographic, socioeconomic, motivational, and support factors. For instance, students from diverse demographic backgrounds may face unique challenges that impact their learning outcomes [2]. Socioeconomic status often determines access to resources such as quality schools, educational materials, and extracurricular opportunities, which directly affect performance [2]. Additionally, a student's internal motivation, sense of purpose, and belief in their ability to succeed are powerful drivers of achievement [3]. Equally important are external support systems including family involvement, lecturer or supervisor encouragement, peer networks, and institutional support which can either strengthen or hinder a student's educational journey [4].

While previous studies have examined some of these factors individually, there remains a gap in research that integrates a broad range of demographic, socioeconomic, motivational, and support variables simultaneously. To address this gap, the current study examines all these factors together to understand how they collectively influence student performance in the College of Engineering. This comprehensive analysis aims to reveal the main challenges faced by low-achieving students and identify key areas where targeted support and interventions can improve their academic success.

The study has two primary objectives: first, to identify the demographic, socioeconomic, motivational, and support-related factors that significantly impact academic performance; and second, to analyze the relationships between these factors and academic outcomes using statistical methods, highlighting which factors exert the strongest influence. To achieve these objectives, this paper analyzes student performance data using a range of variables, including demographic characteristics (age, gender, marital status), socioeconomic indicators (job status), motivational factors (motivation for continuing studies), and measures of academic engagement (frequency of meetings with supervisors). The Student Performance Index, derived from each semester of the course, serves as a reliable measure of academic achievement. By utilizing statistical analysis to determine the significant parameters affecting student performance, this study aims to highlight which factors have a high impact and which have a lower impact on student academic performance. The ultimate goal is to identify potential

inequities, understand the interplay of these factors, and inform strategies to create more comprehensive and effective learning environments within the College of Engineering.

II. LITERATURE REVIEW

Student performance is a critical indicator of educational effectiveness. Educational research has long recognized the impact of demographic variables on student academic achievement, revealing persistent disparities across various groups. To effectively analyze the complex interplay of demographic variables and academic outcomes, researchers frequently employ statistical methods, with SPSS being a widely used tool. This review will examine studies that have employed SPSS to analyze the influence of these demographic factors on students' academic performances. This process will systematically analyze each study by determining: what the authors aimed to investigate (objectives), the demographic factors the authors considered, how the authors measured student performance, the key findings the authors presented, and any limitations the authors acknowledged.

A. Mohd Remali et al. [5] investigated the main factors that influence the academic performance of first-year accounting students at Universiti Tenaga Nasional (UNITEN). This study specifically aims to investigate the association of demographic factors such as gender and prior academic knowledge, determine the relationship between motivation factors (intrinsic, extrinsic, and self-efficacy), and explore the relevance of learning styles. The key findings revealed that motivation factors and learning styles had significant positive relationships with students' CGPA, indicating that students who are more motivated and adopt effective study habits tend to perform better academically. In contrast, demographic factors such as gender and prior academic knowledge showed no significant impact on academic performance. Despite its contributions, the study presents several research gaps, including limited generalizability due to a small, homogenous sample from a single institution and discipline, a narrow demographic scope that excluded variables like socioeconomic status and parental education, and reliance on self-reported data prone to bias. Additionally, the cross-sectional design prevents the observation of changes over time, and the study did not explore interaction or mediation effects among variables. The absence of practical interventions and the lack of consideration for seasonal or contextual factors in student motivation further limit the depth and applicability of the findings, highlighting the need for broader, longitudinal, and multi-variable research in future studies.

A. O. Adeleye et al. [6] investigated the influence of socio-demographic factors on the academic performance of Human Kinetics and Health Education students at Olabisi Onabanjo University (OOU). The socio-demographic factors considered in the study included age, gender, school location, availability of educational materials, school discipline, and dating. The study's key findings indicate that socio-demographic status as a whole significantly influences the academic performance of Human Kinetics and Health Education students at Olabisi Onabanjo University. Statistically, 17.9% of the variation in their academic performance can be attributed to the socio-demographic factors examined in the study. Among the

individual factors, school location emerged as the strongest positive predictor of academic performance. This suggests that the environment or resources associated with the school's location play a crucial role in student success. Similarly, dating was found to have a significant positive association with academic performance among the students. The study also revealed that age has a significant relative contribution to academic performance, though the negative beta weight suggests a potential inverse relationship within the studied age group (15-34). Conversely, a lack of adequate educational materials significantly and negatively impacted academic performance, highlighting the importance of resources for learning. Furthermore, school discipline was found to have a significant negative relationship with academic performance based on the beta weight, though the discussion aligns with other research suggesting a positive role of discipline. Finally, the study found that gender did not significantly predict academic performance in this specific group of students. Overall, these findings suggest that socio-demographic factors do play a considerable role in the academic achievements of Human Kinetics and Health Education students at the studied university. However, the study's scope presents certain limitations. Notably, its focus on a single institution, Olabisi Onabanjo University, restricts the generalizability of the results to other universities. Furthermore, the research is specific to students within the Human Kinetics and Health Education Department, potentially limiting the applicability of the conclusions to other academic disciplines. Finally, the study relied on self-reported data obtained through questionnaires, which introduces the possibility of biases such as social desirability bias influencing the responses.

A. Azmer et al. [7] investigates the correlation between students' sociodemographic and socioeconomic background factors and their level of academic achievement at UiTM Kampus Kuala Pilah students. The key findings of the study revealed that socioeconomic status had a significant positive correlation with the level of students' academic achievement. However, the study found no significant correlation between parents' education (father and mother) and students' academic achievement, family size and students' academic achievement, and place of residence and students' academic achievement. The study acknowledges several limitations, including that the data was collected from a single tertiary institution which limits the generalizability of the findings, the sample consisted of homogenous respondents (Bumiputras).

B. I. Chigbu et al. [8] investigates the relationship between students' input, output, learning environment, challenges, and students' demographic variables at the tertiary level of education and the effects of high school preparation on the academic performance of first-year undergraduate students. The key findings revealed that learners' academic performance is influenced by students' demographic variables, intellectual input, educational environment, and challenges, with an excellent and effective study environment making the most remarkable difference in scholastic achievement. It was also found that the university environment predicts the quality of academic output, and there is a relationship between the study environment and students' academic input, as well as a relationship, albeit minimal, between students' academic input and output. Furthermore, university environmental challenges

and students academic input correlate with their socio-demographic factors, and specific socio-demographic factors are associated with students academic output and the university environment. A limitation of this study is that it did not focus on a psychological perspective and did not implement open-ended qualitative questions, which could be addressed in future research.

M. Tadese et al. [9] investigates the determinants of good academic performance among university students in Southern Ethiopia. To achieve this, the authors conducted an institution-based cross-sectional study at Hawassa University. The key findings revealed that age, faculty (specifically being in the medical/health science faculty), and smoking habits were statistically significant determinants of academic performance. The study's limitations include potential social desirability bias due to the self-administered questionnaire, the lack of control for some potential confounders like institutional influences, possible under or over-reporting due to self-reporting, and the cross-sectional nature of the study which does not allow for direct causal inferences.

G. Refae et al. [10] investigate the impact of demographic characteristics on academic performance by comparing face-to-face (F2F) learning and distance learning (DL) implemented to prevent the spread of COVID-19 at Al Ain University (AAU) in the UAE. The study found that students demonstrated better academic performance in DL than in F2F learning, with a sharp drop in the number of weak students in DL. Furthermore, demographic characteristics such as gender, college, and status were found to have a significant impact on students academic performance in both F2F and DL, explaining at least 7.4% of the variation. This study, while insightful, does have a few limitations that suggest avenues for future research. Firstly, the demographic characteristics examined—gender, college, and student status—only account for a small portion of the variance observed in academic performance. To gain a more comprehensive understanding, future studies could incorporate additional factors such as the learning environment, employment status, income levels, individual motivation, learning strategies employed by students, and their self-regulatory attributes. Secondly, the research was conducted specifically at Al Ain University. To enhance the generalizability of the findings, it would be beneficial to replicate this study across a wider range of universities and educational contexts, particularly in diverse cultural and national settings. Finally, given that this study was carried out during the unique circumstances of the COVID-19 pandemic and the subsequent shift to distance learning, future research could compare face-to-face and distance learning in more typical, non-pandemic conditions. This would help establish baseline data and allow for a better understanding of the long-term effects of distance learning on academic outcomes.

D. R. Tabassum et al. [11] investigates the effect of demographic factors on the academic performance of university students. The objective of this study was to examine the relationship between educational output, measured by CGPA, and demographic factors identified by Erikson's theory of social development as influential at different life stages. The key findings of the study indicated that gender, age group, sibling position, university sector, discipline of study, employment status, and residential area had a significant effect

on the academic performance of university students, while marital status and genetic background did not show a significant effect. Specifically, female students performed better than male students, adolescents and middle adults showed better performance than early adults, and students with only child status excelled. Furthermore, public sector university students scored higher than those in private sector universities, and employed students performed better than unemployed ones. A limitation of the study is that the data on academic performance was primarily self-reported, although verified where possible. Additionally, the study acknowledges that different universities and disciplines may have varying criteria for awarding scores, which could influence the comparisons. Another limitation is that the sizes of the different subgroups compared in the study were unequal, which might have affected the results.

The study by J. C. Vargas-Ramos et al. [12] investigated the academic performance of college students during the COVID-19 pandemic and its relationship with demographic factors and alcohol consumption. The main objectives were to compare students academic performance before and during the quarantine and to determine if factors like sex, age, and alcohol consumption influenced any changes observed. The key findings revealed that most students showed an improvement in their academic average during the quarantine. Furthermore, sex, age, and alcohol consumption were identified as factors associated with academic performance during this period, with women generally achieving higher academic averages than men. Specifically, women with no prior failed subjects and low-risk alcohol consumption had the best academic outcomes during quarantine. Older students were more likely to have a history of failing subjects, and higher alcohol consumption levels were linked to lower academic averages and more failed subjects. Despite the overall improvement, the study acknowledged limitations, including the non-probabilistic convenience sampling which restricts the generalizability of the findings. Additionally, the evaluation of academic performance was limited to academic average and failed subjects, and other potentially relevant factors were not considered. The study also noted the uneven group sizes and unequal sex distribution within the sample as potential influences on the results.

T. Ibengwe et al. [13] investigates the potential effect of demographic factors, specifically age, educational level, and occupation, on the academic performance of learners in Open schools within the Dar es Salaam Region, Tanzania. The study found that demographic factors (age, education level, and occupation) do not have a significant effect on the academic performance of Open school learners in Tanzania. This suggests that these demographic characteristics are not the main determinants of academic performance in Open schools. The research specifically focused on learners perspectives regarding the influence of demographic factors on their academic performance. This methodological choice may limit the scope of the findings. Future research could take a broader approach by including other factors that may affect academic performance in addition to demographic factors. Researchers could examine the influence of lifelong learning on individuals of varying ages, educational backgrounds, and occupations to identify ways to increase knowledge and skills. Future studies may evaluate the facilities and resources in Open schools to find ways to improve them and expand access to secondary

education for individuals with diverse demographic characteristics.

Y. Chapagain et al. [14] investigates the academic performance of grade 10 students in Nepal using the School Education Exam (SEE) results of the academic year 2020. The main purpose of this study was to analyze the academic performance of these students in terms of their overall performance and its relationship with socio-demographic factors. Key findings of the study revealed that the performance of most community school students (66%) is under a satisfactory level compared to private school students (97% achieved GPA 2.40 – 4.00). Community school students (85%) are also very poor in Mathematics compared to other subjects. The study also found a wider gap in student performance between theory and practical subjects. Students from municipal government and Bramin/Chetri ethnic groups showed better performance than others. The study concluded that school type, local government type, nature of examination, and age & ethnicity of students make a significant difference in student achievement, whereas gender does not.

M. Arshad et al. [15] investigates the self-esteem and academic performance among university students after noting the emergence of several behavioral and educational problems. Key findings include that there was a significant positive relationship between self-esteem and academic performance. Furthermore, a significant difference was found between male and female students on both self-esteem and academic performance scores, with female students having higher scores in academic performance and male students having higher scores in self-esteem. However, the small sample size and the use of purposive sampling, suggesting that future studies could increase the data and use random sampling for more accurate results, and also study more variables like age and education.

J. Bakare et al. [16] investigated the impact of demographic variables on the academic performance and entrepreneurial intentions of electro-mechanical technology students in Nigerian Universities. The key findings indicate a moderate positive influence of socio-demographic variables on academic performance and a weak negative influence on entrepreneurial intentions. Additionally, a moderate positive relationship was found between academic performance and entrepreneurial intentions. The study also confirmed a significant relationship between academic performance and entrepreneurial intentions, as well as between socio-demographic variables and academic performance, and found that socio-demographic variables significantly moderate the effect of achievement motivation on academic performance.

III. DATA COLLECTION AND METHODOLOGY

This study employed a quantitative, survey-based approach to identify key factors influencing students' academic performance within the College of Engineering. Data collection was carried out using a structured questionnaire developed in Google Forms, and the survey link was embedded in a Google Spreadsheet, which served as the central medium for distribution and response tracking. The questionnaire included close-ended questions (using Likert scales, multiple-choice) and short-answer questions to gather both quantitative and limited qualitative data. The questionnaire was shared with

students via digital channels, specifically through official faculty and department email lists, to ensure broad participation across the College of Engineering.

Participation in the survey was entirely voluntary, and students were informed about the purpose of the study, the confidentiality of their responses, and the anonymized handling of all collected data. A total of approximately 130 students completed the questionnaire, providing comprehensive information across several key domains. These included demographic factors such as age, gender, and marital status; a socioeconomic factor represented by employment or job status; a motivational factor related to their reasons for pursuing further studies; Support factors were measured by academic engagement, particularly the frequency of meetings with academic supervisors; and academic performance was assessed based on self-reported CGPA.

Data collection was conducted over a continuous period of three weeks, from March 4, 2024 to March 24, 2024. During this period, the online questionnaire was distributed to students within the College of Engineering via official faculty and department email lists. To optimize participation, weekly reminder emails were sent to encourage students to complete the survey.

A total of 130 responses were received. Prior to statistical analysis, the dataset underwent a thorough data cleaning and validation process. First, all responses were reviewed for completeness. Entries with more than 20% missing data were excluded to ensure the integrity and reliability of the dataset. Next, logical consistency checks were applied to detect and eliminate duplicate or inconsistent responses that could distort the analysis. Additionally, short open-ended responses were examined for clarity and categorized when appropriate to facilitate thematic grouping and interpretation.

Following this cleaning process, the final dataset consisted of 117 valid responses, which were then deemed suitable for statistical analysis. The validated dataset was exported to Microsoft Excel and IBM SPSS Statistics (version 29) for processing and analysis. Descriptive statistical methods, such as frequencies, means, and standard deviations, were used to summarize respondent characteristics, including demographic and academic profiles.

To examine the association between these selected factors and students' CGPA, Chi-square (χ^2) tests of independence were performed using IBM SPSS Statistics. Each categorical variable like age group, gender, marital status, job status, motivation type, and frequency of supervisor meetings was cross-tabulated with CGPA categories to assess the presence of any statistically significant relationships.

A significance level of $p < 0.05$ was applied to determine the threshold for statistical significance. All analyses were carried out using IBM SPSS Statistics, ensuring a robust and standardized interpretation of the data.

A. Used Tools and Technology

The study utilized the SPSS statistical tool to identify parameters that have the most significant impact on enhancing student performance within the College of Engineering. SPSS

(Statistical Package for the Social Sciences) is a software widely used for examining large datasets and extracting valuable insights through statistical analysis. In the educational sector, it is particularly useful for identifying factors that influence student success and academic performance the most significant impact on enhancing student performance.

B. SPSS and Experimental

This study found the coefficient table after performing the statistical analysis in the SPSS tool in the following table.

1) Age and CGPA

Table I provides the findings of an analysis examining the relationship between age and CGPA during undergraduate study among students in the College of Engineering. The table delineates the distribution of students across different CGPA ranges categorized by their age groups. Among students aged 30 years and below, the frequencies and percentages within each CGPA range are as follows, 0 in the 2.00 - 2.49 range, 5 (3.9%) in the 2.50 - 2.99 range, 7 (5.5%) in the 3.00 - 3.49 range, and 8 (6.3%) in the 3.50 - 4.00 range. For age 31 to 40 years old, the frequencies and percentages are 0 in the 2.00 - 2.49 range, 11 (8.6%) in the 2.50 - 2.99 range, 32 (25.0%) in the 3.00 - 3.49 range, and 27 (21.1%) in the 3.50 - 4.00 range. Similarly, the frequencies and percentages for students aged 41–50 years old are displayed, followed by those aged 51–60 years old.

The significant value associated with the Chi-square test is reported as $p = 0.02$, indicating a statistically significant association between age and CGPA during undergraduate study among students in the College of Engineering. This suggests that age influences the distribution of CGPA ranges among students within this academic context, with younger students demonstrating a different CGPA distribution compared to older students. This finding underscores the importance of considering age-related factors when analyzing academic achievements and outcomes among College Engineering students.

2) Gender and CGPA

Table II presents the results of a Chi-square analysis examining the relationship between gender and CGPA during undergraduate study among students in the College of Engineering. The table displays the distribution of students across different CGPA ranges categorized by gender.

For males, the frequencies and percentages within each CGPA range are as, 1 (0.8%) in the 2.00 - 2.49 range, 14 (10.9%) in the 2.50 - 2.99 range, 23 (18.0%) in the 3.00 - 3.49 range, and 17 (13.3%) in the 3.50 - 4.00 range. Similarly, for females, the frequencies and percentages are 1 (0.8%) in the 2.00 - 2.49 range, 16 (12.5%) in the 2.50 - 2.99 range, 33 (25.8%) in the 3.00 - 3.49 range, and 23 (18.0%) in the 3.50 - 4.00 range.

The significance value associated with the Chi-square test is reported as $p = 0.96$, indicating that there is no significant association between gender and CGPA during undergraduate study among students in the College of Engineering. This implies that gender does not play a significant role in influencing the distribution of CGPA ranges among students

within the College of Engineering. In summary, the data suggest that CGPA outcomes are independent of gender in this academic context.

3) Marital Status and CGPA

Table III illustrates the outcomes of a Chi-square analysis exploring the correlation between marital status and CGPA during undergraduate studies among the students in the College of Engineering. The table presents the distribution of students across different CGPA ranges categorized by marital status.

TABLE I. CHI-SQUARE ANALYSIS BETWEEN AGE AND CGPA DURING UNDERGRADUATE STUDY AMONG STUDENTS IN THE COLLEGE OF ENGINEERING

Age	CGPA During Undergraduate Study				Sig. (p)
	2.00 - 2.49	2.50 - 2.99	3.00 - 3.49	3.50 - 4.00	
30 years and below	0	5 (3.9)	7 (5.5)	8 (6.3)	0.02
31 to 40 years old	0	11 (8.6)	32 (25.0)	27 (21.1)	
41 to 50 years old	2 (1.6)	14 (10.9)	14 (10.9)	5 (3.9)	
51 to 60 years old	0	0	3 (2.3)	0	

TABLE II. ANALYSIS BETWEEN GENDER AND CGPA DURING UNDERGRADUATE STUDY AMONG STUDENTS IN THE COLLEGE OF ENGINEERING

Gender	CGPA During Undergraduate Study				Sig. (p)
	2.00 - 2.49	2.50 - 2.99	3.00 - 3.49	3.50 - 4.00	
Male	1 (0.8)	14 (10.9)	23 (18.0)	17 (13.3)	0.96
Female	1 (0.8)	16 (12.5)	33 (25.8)	23 (18.0)	

Among single students, the frequencies, and corresponding percentages within each CGPA range are as follows, 0 in the 2.00 - 2.49 range, 9 (7.0%) in the 2.50 - 2.99 range, 13 (10.2%) in the 3.00 - 3.49 range, and 9 (7.0%) in the 3.50 - 4.00 range. Conversely, for married students, the frequencies and percentages are 2 (1.6%) in the 2.00 - 2.49 range, 21 (16.4%) in the 2.50 - 2.99 range, 43 (33.6%) in the 3.00 - 3.49 range, and 31 (24.2%) in the 3.50 - 4.00 range.

The significance value associated with the Chi-square test is reported as $p = 0.73$, suggesting that there is no significant association between marital status and CGPA during undergraduate study among students in the College of Engineering. Consequently, it is unlikely that differences in CGPA distributions are attributable to marital status-related factors. Therefore, it appears that marital status does not significantly influence the distribution of CGPA ranges among students in the College of Engineering. According to the data, marital status has no significant impact on CGPA results in this specific academic setting.

TABLE III. CHI-SQUARE ANALYSIS BETWEEN MARITAL STATUS AND CGPA DURING UNDERGRADUATE STUDY AMONG STUDENTS IN THE COLLEGE OF ENGINEERING

Marital Status	CGPA During Undergraduate Study				Sig. (<i>p</i>)
	2.00 - 2.49	2.50 - 2.99	3.00 - 3.49	3.50 - 4.00	
Single	0	9 (7.0)	13 (10.2)	9 (7.0)	0.73
Married	2 (1.6)	21 (16.4)	43 (33.6)	31 (24.2)	

4) Job Status and CGPA

Table IV presents the results of a Chi-square analysis investigating the relationship between job status and CGPA during undergraduate study among students in the College of Engineering. The table outlines the distribution of students across various CGPA ranges categorized by their job status.

Among students employed by an employer, the frequencies and percentages within each CGPA range are as follows, 0 in the 2.00 - 2.49 range, 2 (1.6%) in the 2.50 - 2.99 range, 4 (3.1%) in the 3.00 - 3.49 range, and 2 (1.6%) in the 3.50 - 4.00 range. For government servants, the frequencies and percentages are 1 (0.8%) in the 2.00 - 2.49 range, 9 (7.0%) in the 2.50 - 2.99 range, 25 (19.5%) in the 3.00 - 3.49 range, and 19 (14.8%) in the 3.50 - 4.00 range. Furthermore, the corresponding frequencies and percentages are provided for students in the private sector, independent contractors, and those who are unemployed.

The significance value associated with the Chi-square test is reported as $p = 0.58$, indicating that there is no statistically significant association between job status and CGPA during undergraduate study among students in the College of Engineering. This finding implies that differences in CGPA distributions are unlikely to be influenced by job status-related factors. Consequently, job status does not seem to play a significant role in determining the distribution of CGPA ranges among students within the College of Engineering. In summary, based on the data, in this academic setting, employment status does not appear to affect CGPA results.

TABLE IV. CHI-SQUARE ANALYSIS BETWEEN JOB STATUS AND CGPA DURING UNDERGRADUATE STUDY AMONG STUDENTS IN THE COLLEGE OF ENGINEERING

Job Status	CGPA During Undergraduate Study				Sig. (<i>p</i>)
	2.00 - 2.49	2.50 - 2.99	3.00 - 3.49	3.50 - 4.00	
Employer	0	2 (1.6)	4 (3.1)	2 (1.6)	0.58
Government servant	1 (0.8)	9 (7.0)	25 (19.5)	19 (14.8)	
Private sector	0	8 (6.3)	11 (8.6)	5 (3.9)	
Self-employed	1 (0.8)	2 (1.6)	3 (2.3)	3 (2.3)	
Not working	0	9 (7.0)	13 (10.2)	11 (8.6)	

5) Motivation for continuing studies and CGPA

Table V presents the results of a Chi-square analysis investigating the relationship between motivation for continuing studies and CGPA during undergraduate study among students in the College of Engineering. The table illustrates the distribution of students across different CGPA ranges categorized by their motivations for continuing studies.

Among students motivated by job promotion, the frequencies and percentages within each CGPA range are as follows, 0 in the 2.00 - 2.49 range, 3 (2.3%) in the 2.50 - 2.99 range, 7 (5.5%) in the 3.00 - 3.49 range, and 6 (4.7%) in the 3.50 - 4.00 range. For self-advancement, the frequencies and percentages are 0 in the 2.00 - 2.49 range, 15 (11.7%) in the 2.50 - 2.99 range, 21 (16.4%) in the 3.00 - 3.49 range, and 14 (10.9%) in the 3.50 - 4.00 range. Similarly, for students motivated to become an academician and self-satisfaction, the frequencies and percentages are displayed accordingly.

The significance value associated with the Chi-square test is reported as $p = 0.45$, indicating that there is no statistically significant association between motivation for continuing studies and CGPA during undergraduate study among students in the College of Engineering. This finding implies that differences in CGPA distributions are unlikely to be influenced by motivation for continuing studies. Therefore, the data suggest that motivation for continuing studies does not appear to play a significant role in determining the distribution of CGPA ranges among students within the College of Engineering. In summary, CGPA outcomes seem to be independent of motivation for continuing studies in this academic context.

TABLE V. CHI-SQUARE ANALYSIS BETWEEN MOTIVATION FOR CONTINUING STUDIES AND CGPA DURING UNDERGRADUATE STUDY AMONG STUDENTS IN THE COLLEGE OF ENGINEERING

Motivation for continuing studies	CGPA During Undergraduate Study				Sig. (<i>p</i>)
	2.00 - 2.49	2.50 - 2.99	3.00 - 3.49	3.50 - 4.00	
Job promotion	0	3 (2.3)	7 (5.5)	6 (4.7)	0.45
Self-advancement motivation	0	15 (11.7)	21 (16.4)	14 (10.9)	
To become an academician	1 (0.8)	9 (7.0)	19 (14.8)	18 (14.1)	
Self-satisfaction	1 (0.8)	3 (2.3)	9 (7.0)	2 (1.6)	

6) Frequency of meeting with supervisor and CGPA

Table VI presents the outcomes of a Chi-square analysis examining the relationship between the frequency of meetings with supervisors and CGPA during undergraduate study among students in the College of Engineering. The table displays the distribution of students across different CGPA ranges categorized by the frequency of their meetings with supervisors.

Among students who meet with their supervisors at least once a week, the frequencies and percentages within each CGPA range are as follows, 0 in the 2.00 - 2.49 range, 11 (8.6%) in the 2.50 - 2.99 range, 15 (11.7%) in the 3.00 - 3.49 range, and 13 (10.2%) in the 3.50 - 4.00 range. Besides, for once in

two weeks, the frequencies and percentages are 0 in the 2.00 - 2.49 range, 8 (6.3%) in the 2.50 - 2.99 range, 25 (19.5%) in the 3.00 - 3.49 range, and 9 (7.0%) in the 3.50 - 4.00 range.

Similarly, the corresponding frequencies and percentages are provided for students meeting with their supervisors once in two weeks, once a month, and once in three months.

According to the Chi-square test, the significance value is $p = 0.21$, which indicates that there is no statistically significant correlation between the frequency of supervisory meetings and undergraduate students CGPA in the College of Engineering.

Therefore, the data indicates that the frequency of meetings with supervisors does not significantly influence the distribution of CGPA ranges among students within this academic context.

TABLE VI. CHI-SQUARE ANALYSIS BETWEEN FREQUENCY OF MEETING WITH SUPERVISOR AND CGPA DURING UNDERGRADUATE STUDY AMONG STUDENTS IN THE COLLEGE OF ENGINEERING

Frequency of Meeting with Supervisor	CGPA During Undergraduate Study				Sig. (p)
	2.00 - 2.49	2.50 - 2.99	3.00 - 3.49	3.50 - 4.00	
At least once a week	0	11 (8.6)	15 (11.7)	13 (10.2)	0.21
Once in two weeks	0	8 (6.3)	25 (19.5)	9 (7.0)	
Once a month	2 (1.6)	8 (6.3)	13 (10.2)	13 (10.2)	
Once in three months	0	3 (2.3)	3 (2.3)	5 (3.9)	

IV. CONCLUSION

This study has examined the relationships between demographic, socioeconomic, motivational, and support factors and the academic performance of students in the College of Engineering. Notably, our findings indicate a statistically significant association between age and CGPA, suggesting that age plays a role in influencing the academic performance of students within the College of Engineering. However, our analysis revealed no significant relationships between CGPA and gender, marital status, job status, motivation for continuing studies, or the frequency of meetings with supervisors. These results suggest that while age is a relevant factor, these other variables do not appear to significantly influence CGPA outcomes in this student population.

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