

# Factors Influencing Students' Academic Performance At Arab Open University: The Case Of Oman

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## Abstract:

Students are an important asset for higher education institutions, and it is crucial to increase student retention and reduce dropout. Low academic performance and high dropout rates are complex and multi-faceted problems that have far-reaching implications for all stakeholders, including society, educational institutions, government, and, most importantly, the economy. The purpose of this study is to identify factors that affect academic performance at Arab Open University, Oman. The study distributed an online questionnaire to students and collected 516 samples. Key factors identified include teaching methods, family income and support, time and stress management, attendance, ethnicity, past academic performance, continuous assessment grades, e-learning activities, and accommodation. The findings reveal strong positive correlations between teaching methods, attendance, and continuous assessment grades with students' Grade Point Average (GPA) across various GPA categories. Time management and e-learning activities show significant impacts in specific GPA ranges. Other factors such as ethnicity, past grades, and accommodation demonstrate varying levels of influence, while family income exhibits a weaker correlation. The study emphasizes the importance of these factors in guiding educators and policymakers to enhance academic outcomes by prioritizing interventions in areas with the greatest impact.

**Keywords:** Students' Academic Performance, Higher Education, Factors, Dropout, GPA

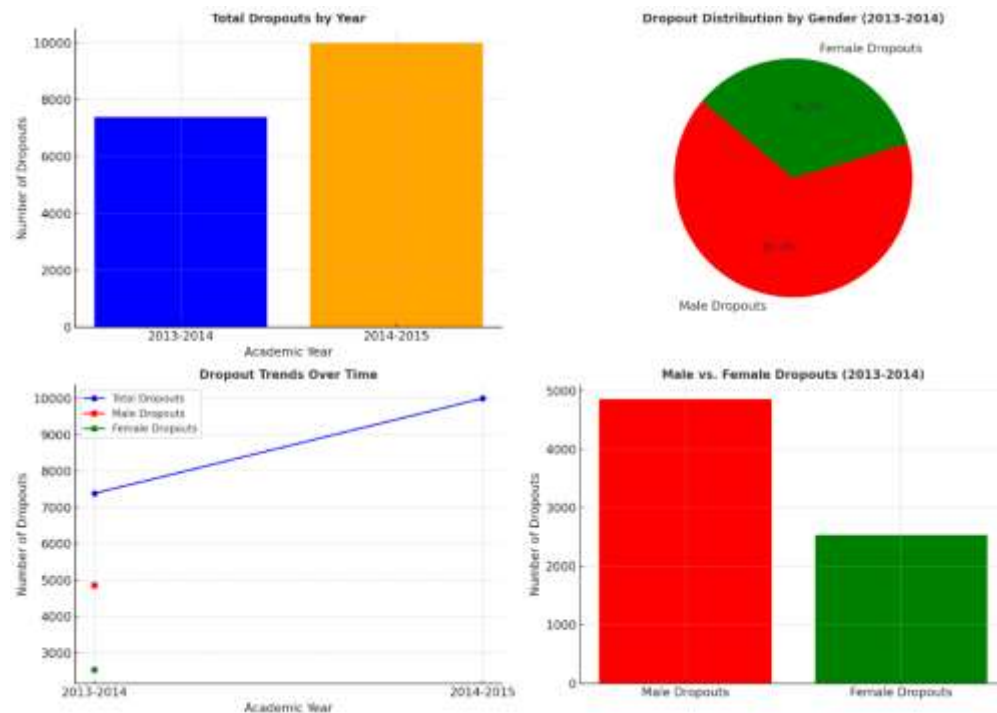
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## INTRODUCTION

The Sultanate of Oman has actively supported higher education through scholarship programs to supply industries with skilled professionals. Over the past two decades, the country has experienced substantial growth in both the number of higher education institutions and student enrollment. However, this progress has been challenged by an unexpected issue: a rising student dropout rate. In the 2014–2015 academic year alone, over 10,000 students left college, averaging around 7,000 dropouts annually in Oman [1]. Official data from the Ministry of Higher Education's statistical system highlights college dropout as a critical issue that undermines the government's educational goals, calling for urgent attention from all stakeholders in Oman's higher education sector [1] [2].

"The dropout rate in higher education institutions in Oman reached 6% of total enrolled students in the academic year 2013-2014," Minister of Higher Education Dr. Rawya Saud Al Busaidi said in an interview with the Times of Oman [3]. Data from the Ministry of Higher Education's statistical system reveals that 7,388 students dropped out of higher education institutions in Oman during the 2013–2014 academic year. This figure includes 2,532 female and 4,856 male students, excluding those enrolled in vocational training institutes or recipients of external scholarships. The Minister attributed this high dropout rate primarily to student-related factors. Common reasons cited include academic failure, disciplinary issues,

lack of motivation to continue studies, employment commitments, and financial difficulties in covering tuition fees [3]. Figure 1 summarizes the dropout among the Oman Higher education institutes.



**Figure 1** Student dropout analysis in Oman

Additionally, the dropout problem is a global issue. Based on [4], the results on their paper revealed that there is a critical period at the beginning of the second year, as the dropout rate reached a proportion of 20%. Additionally, 10% dropout students between the second and final year. Research [5], reported that there 34.4% of students were leaving the university in the first academic year with a dropout proportion 23.2% in the first 6 months. Author [6], reported that the average dropout is high in first-year students on bachelor programs with a proportion of 5.8% and reached to extremely high rates up to 65.2% in some programs. The study carried out by [7], has reported that average annual dropout was high and reached to a proportion of 31% of the enrolled students in accounting and science courses in Brazil. A student's academic performance is influenced by both internal and external factors [8]. Identifying these causes and getting to the bottom of them thus significantly improves students' academic performance [9]. Data collection has become easier with the advancement of technology [10]. There is a massive increase in the amount of data available in the educational institutions today that can be used to add value [11]. Educational institutions needed the outcome of the predicate process to improve their institute and students' academic performance, which was accomplished by analyzing a large volume of student data [12]. All higher education institutions rely heavily on their students. Therefore, academic performance of students would be critical in higher education institutions. Most higher education institutions around the world are focused on quality of education. Quality of education has resulted in strong curriculums and difficult course components such as assignments and exams, which may present students with significant challenges in their studies. This will result in an increase in the number of students failing their courses. Furthermore, this failure will have a direct impact on the student's grade point average. Students will have several semesters to work on improving their GPA. This means that students will be dismissed from universities if they fail to improve their GPA. As the number of failures rises, so will the number of dismissal cases. The main issue is retaining students in these universities, which will directly affect their incomes. Using big educational data analytics to identify factors and attributes will aid in predicting students' academic performance [2]. The field of education is one of the most critical aspects of human lives. Achieving ideal economic development through a focus on education and students'

academic performance. The accomplishments of students have an impact on many areas, including industry, society, and government. This study will focus on the factors that have an impact on students' academic performance. Furthermore, it is critical to identify student factors. Therefore, this study aims to identify the factors that significantly influence the Arab Open University students' academic performance.

## **LITERATURE REVIEW**

The study conducted by [4], presented new evidence through studying the cumulative effect of academic vulnerability and family support in dropout students in Thailand universities. The data set includes 1613 students. It consists of information on student dropout semester details. The methodology used is discrete-time survival analysis and followed by a conditional model which examined the effects of predictors in students' dropouts. Then examines the cumulative effects of predictors through drawing the probabilities on their combined effects in each semester on dropout. Based on the data analysis, the results reveal that there is a critical period at the beginning of the second year, as the dropout rate reached a proportion of 20%. Additionally, 10% of dropout students dropped between the second and final year. The most students who are considered as dropout are in low entry grades about 2.17 times across each semester. The students who live far from family support and are vulnerable to dropout are about 1.32 times in each semester. According to the two reasons mentioned above, the dropout rate proportion reached 30% of the total students. The dropout rate was 60% from those students in the final year compared with 14% of students with high entry grades and students who lived with their families. Sosu and Pheunpha recommended direct concerns on these two reasons more than in the academic support for the student who does not have a strong entry qualification. The study [5], focused on analyzing first-year student dropout rates in the engineering program at Latvia University of Agriculture. Using actual data from engineering students, the study examined factors such as gender, funding source (government-funded or self-funded), and secondary school grades (classified as first, second, or third). To assess these factors, the researchers applied the Proportional Hazard Model within Survival Analysis. The dataset included 677 full-time engineering students enrolled during the 2012–2013 academic year. Over time, enrollment numbers declined, with only 61.4% of students remaining after the first year. Notably, 34.4% of students dropped during the first year, with 23.2% leaving within the first six months. The data indicated a consistent monthly dropout pattern, peaking at 12.3% in the fifth month and 4.4% in the twelfth month. The findings highlight that the primary causes of student dropout were low motivation to study and insufficient secondary school preparation. In the study carried out by [6], the study aimed to analyze the factors contributing to first-year dropout rates in bachelor programs at Tunisian universities. It examined data from 160 institutions offering an average of 671 bachelor programs annually between 2010 and 2015. To investigate dropout determinants, the study employed various models, including the Pooled Ordinary Least Squares (OLS), Fixed Effect Model, and Random Effect Model, focusing on four categories of indicators: institutional factors, internal factors, contextual factors, and student characteristics. The results revealed that institutional characteristics significantly influence student dropout rates. Specifically, a higher student-staff ratio was associated with increased dropout rates, while better staff quality had a negative correlation with dropout, meaning higher staff quality reduces dropout rates. Contextual factors, such as the lack of university accommodation, also contributed to higher dropout rates, suggesting that providing adequate housing could mitigate this issue. Furthermore, the study found a positive relationship between unemployment rates and student dropouts from higher education institutions. Overall, the findings indicated that first-year dropout rates in bachelor programs are relatively high, averaging 5.8%, with some programs experiencing alarmingly high rates of up to 65.2%. The study conducted by [13] in Sultanate of Oman's higher education students, there were a total of 133938 enrolled students in public and private institutions. Around 63644 students were in government higher education institutions (HEIs) which constituted 48% of the total students and 70294 students were enrolled in private HEIs which constituted 52%. They reveal that most dropouts from HEIs were in foundation year and first year. The total dropout was 2467 students, which was around 2% of the total enrolled students. Around 33% of dropouts were from only One HEI.

According to the study carried out by [1] in the Foundation Program at Modern College of Business & Science (MCBS) in Sultanate of Oman, there are many main reasons for students to drop out from Higher education institutions that could be low academic performance, low confidence, low socialization skills, busy social life, and financial issues. Due to the rising rates of students drop out of HEIs there is a need to explore and understand this critical problem to identify a suitable solution. The research methodology he used is an application of exploratory study based on collecting data for 22 semesters and analysing them, from Spring 2012 to Summer 2017. The data, including a variety of points for the analysis, includes, semester dropped, program, level left, study type (part or full time), gender, sponsors, courses completed with its grades. The data collected of students' dropout was from the Database Department. It was analyzed using Pivot Tables in MS Excel. The findings revealed that there were 1966 dropout students from the foundation program out of 15597 students which indicated 12.6% between spring 2012 to summer 2017, with an average of 94 students in each semester. The male rate was the highest in level I and IV. But from the total dropout, the female dropout students were the highest, where there were 1027 students with a proportion of 52.2%. The male students were 939 students with proportion of 47.8%. The best way to prevent this phenomenon of students dropping out or to reduce the number of dropouts is to identify the potential students who may drop out and at-risk students and then to implement an early warning system. This research was conducted to explore some of the reasons for students drop out from the foundation program at MCBS. According to [14], he tried to state the issues of students' dropout in Sultan Qaboos University. The dropout rates increased gradually in SQU, and this is a critical issue to SQU as the students in SQU do not pay any fees for education, and also includes free accommodation for female students, meals for female students, and providing some financial aid for those students coming from different areas within 100 km of the campus. The attrition rates showed a decrease among enrolled students between 6.8% in 1998, 7.8% in 1999 and 7.9% in 2000. To achieve this goal, a questionnaire was designed and developed to determine students' perceptions of the causes of dropout and the reasons behind it. The questionnaire was distributed to 300 dropout students representing 12.6% of total withdrawals which was 2390 students during the 2000-2011 period. 111 students answered it. and the finding revealed that the academic factors were the main reasons that affected the students to leave the university before completing their studies, followed by social factors and then the financial factors though financial factors did not significantly influence students' dropouts. Table 1 shows the highlights of the impact of the drop out in globally.

**Table 1.** Highlights of the impact of the dropout on the nations

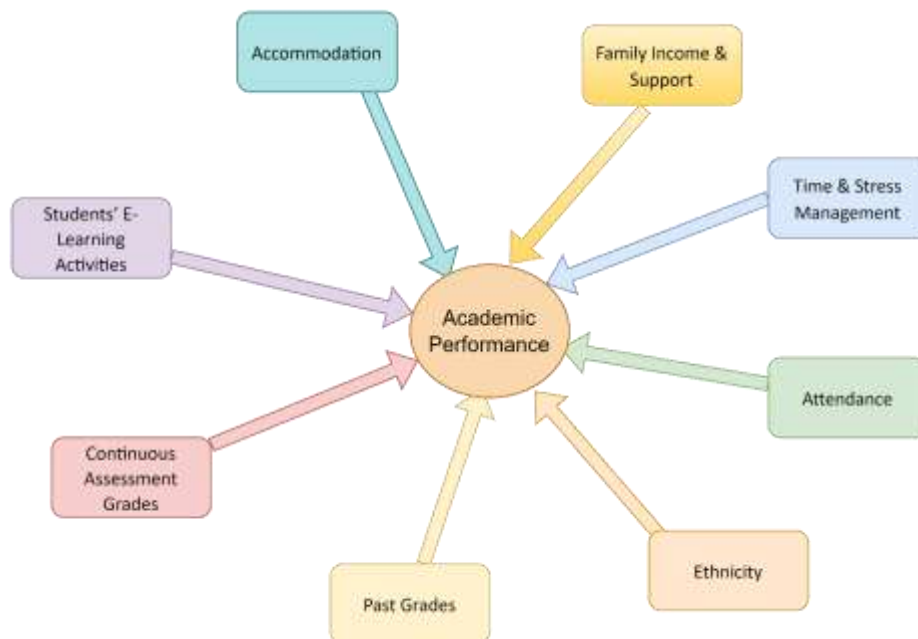
Study	Country/Region	Sample Size	Dropout Rate (%)	Key Contributing Factors	Methodology	Policy Recommendations
Study [4] (Thailand Universities)	Thailand	1613 students	30% (Overall), 20% (2nd year), 60% (Final year)	Low entry grades (2.17x risk), Distance from family (1.32x risk), Family support absence	Discrete-time survival analysis, Conditional model	Improve academic support, strengthen family engagement, Introduce early intervention programs
Study [5] (Latvia University of Agriculture)	Latvia	677 engineering students	34.4% (1st year), 23.2% (First 6 months), Peak:	Low motivation, Poor secondary education preparation, Self-funded	Proportional Hazard Model (Survival Analysis)	Enhance student motivation, Strengthen pre-university academic preparation

Study	Country/Region	Sample Size	Dropout Rate (%)	Key Contributing Factors	Methodology	Policy Recommendations
			12.3% (5th month)	students had higher dropout rates		
Study [6] (Tunisian Universities)	Tunisia	160 institutions, 671 programs annually	5.8% (Average), Up to 65.2% (Some programs)	High student-to-staff ratio, Lack of university accommodation, Unemployment rates	Pooled OLS, Fixed & Random Effects Models	Improve student-faculty ratio, Provide better student housing, Address unemployment issues
Study [13] (Oman HEIs)	Oman	133,938 students (Public & Private HEIs)	~2% of total enrolled students (2467 dropouts)	Foundation year had the highest dropout, 33% from one institution	Statistical data analysis from Ministry of Education	Introduce stronger student retention strategies, Identify at-risk students early
Study [1] (MCBS Oman)	Oman	15,597 students (Foundation Program)	12.6% (1027 Female, 939 Male)	Low academic performance, Lack of confidence, Financial issues, Social life distractions	Exploratory study, Data analysis using Pivot Tables (MS Excel)	Develop early warning systems for at-risk students, Improve student engagement and support services
Study [14] (Sultan Qaboos University)	Oman	2390 dropout students (Surveyed: 300)	6.8% (1998), 7.8% (1999), 7.9% (2000)	Academic challenges (primary), Social factors, Financial issues (minor)	Survey-based study (Questionnaire to dropout students)	Strengthen academic support, Address social concerns, Improve student retention strategies

## RESEARCH METHODOLOGY

A Self-administered structured questionnaire is used to gather raw data from the students. The questionnaire consist of sections wherein the first section will be related to student demographic data, the second section related to statements on factors affecting students' academic performance in higher education, including Teaching Methods, Family Income and support, Time and Stress Management, Attendance, Ethnicity, Past grades in previous semesters, Student's Continuous Assessment Grades, Students' e-Learning activities, and Accommodation, the third section is related to Academic

Performance and the fourth section related to other factors that affect Academic Performance. Figure 2 represents the pictorial representation of the influencing factors and academic performance.



**Figure 2** The influencing factor used in this research

The population of the study is the undergraduate students at Arab Open University in Sultanate of Oman campus. Arab Open University operates in two main semesters, the September semester, and the February semester, each running for 16 weeks each. However, the university also runs an 8-weeks summer semester. Although the summer semester is optional in terms of enrolment, two-thirds of the students enroll for courses during the summer rather than taking their holiday then. The descriptive statistics provide insights into the demographic profile of the respondents. The demographic profile contains information about the Age, Gender, Nationality, Type of study, Program of Study, and Source of study funding. While the family demographic profile contains information about mother's formal education, father's formal education, father's occupation, mother's occupation, and Family income. In addition, the GPA has been classified into four different categories, below 2.00, 2.00 to 2.32, 2.33 to 2.99 and above 3.00 . Once the data collection is completed, the analysis could begin. The Data was analyzed using SPSS version 15.0 (Statistical Package for the Social Sciences).

## RESULTS AND DISCUSSION

This study has found many factors influencing students' academic performance at Arab Open University, Oman. Those factors are essential findings for educators, administrators, and decision-makers at the university and the country in general. Table 2 presents the summary of the statistical analysis of the influencing factors. The average mean of Teaching Methods represents (3.37), and the standard deviation is (0.385). This is in accordance with the observation of [15] that the teaching method is an important factor to increase learning quality. Next, the average mean of family income and support represents (3.28), and the standard deviation is (0.914). This is in accordance with the observation of [16], who revealed that family income has a significant impact on a student's academic performance. Additionally [17], reported that family income has the highest influence on the student's academic performance. Additionally, the average mean of Time and Stress Management represents (3.22), and the standard deviation is (0.767). According to [18], time management define as "behaviors that aim at achieving an effective use of time while performing certain goal-directed activities". They revealed that there is a high correlation between the time management and students academic performance. The students' with high GPA tend to have a strong time management skills. Next, the average mean of Attendance represents

(3.85), and the standard deviation is (0.695). Authors [19] found that lecture attendance has a significant and positive impact on academic performance and success. In addition, the average mean of Ethnicity represents (2.60), and the standard deviation is (0.850). In terms of ethnicity, [7] discovered a noteworthy negative correlation between a student's ethnicity and their ability to complete courses. This finding suggests that ethnicity may be a significant factor that can hinder a student's academic success[7]. Unlike these findings, ethnicity has a low impact on student academic performance in the Sultanate of Oman. While the average mean of Past grades in previous semesters represents (3.24), and the standard deviation is (0.689). Authors [20] support this study findings by concluding that past grades performance in previous semesters gives satisfactory results. Additionally, previous grades and class performance were significant factors that could help in determining a student's academic success and are influencing students' academic performance [21], [22]. Additionally, the average mean of Continuous Assessment Grades represents (3.81), and the standard deviation is (0.701). The research of [23] supports this study findings as they revealed that the attribute of internal assessment in the continuous evaluation process was found to have the most significant impact on the final semester results of students. Moreover, the average mean of Students' e-Learning activities represents (3.15), and the standard deviation is (0.672). Research [24] supported the importance of this factor, and they revealed some correlation between the e-learning sessions and final grades. The academic performance of students was also discovered to be significantly impacted by their e-Learning activity. This suggests that the more participation in e-learning activities, the more likely it is that they will improve their grades and overall performance [25]. Academic performance was found to be significantly impacted by students' participation in online learning. E-learning activities have a positive impact on students' grades and overall performance [26], [27]. Then, the average mean of Accommodation represents (3.28), and the standard deviation is (0.850). Research [6], reported that there is a negative and statistically significant relationship between university accommodation and student performance. Additionally, that students who have some form of accommodation graduate on average more quickly than students who do not have any form of accommodation [28]. Finally, the average mean of Academic Performance represents (3.26), and the standard deviation is (0.572).

**Table 2.** Statistical analysis of the factors.

Factor	Average Mean	Standard Deviation	Significance
Teaching Methods	3.37	0.385	Strong impact on learning quality
Family Income & Support	3.28	0.914	Significant influence on academic success
Time & Stress Management	3.22	0.767	High correlation with GPA improvement
Attendance	3.85	0.695	Strongest correlation with academic success
Ethnicity	2.6	0.85	Low impact in Oman, but globally significant
Past Grades	3.24	0.689	Predictor of academic success
Continuous Assessment Grades	3.81	0.701	Strong influence on final grades
Students' E-Learning Activities	3.15	0.672	Moderate correlation with performance
Accommodation	3.28	0.85	Negative correlation with performance

Academic Performance	3.26	0.572	Overall indicator of student success
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Factors correlation refers to the extent to which two or more factors are related or associated with each other. In the context of academic performance, factors correlation can help identify the extent to which various factors are interrelated and how they jointly impact student academic performance. By examining the correlation of the factors, it can be better to understand the complex interplay between different factors [10], such as Teaching Methods, Family Income and support, Time and Stress Management, Attendance, Ethnicity, Past grades in previous semesters, Student's Continuous Assessment Grades, Students' e-Learning activities, Accommodation, Academic Performance, and their impact on final students' academic performance. This can help educators and administrators to develop more effective interventions and strategies to improve student outcomes by focusing on the factors that have the greatest impact and are most strongly correlated with academic success. Understanding factors correlation can also help identify the causal relationships between different factors and students' academic performance, enabling them to develop more accurate and effective models for predicting and improving student academic performance [8]. Pearson correlation coefficients between various factors and their impact on students' academic performance in higher education show a significant correlation. Teaching Methods exhibit a strong positive correlation with the Factors affecting students' academic performance in higher education. Similarly, Time and Stress Management, Attendance, Past grades in previous semesters, Student's Continuous Assessment Grades, and Students' e-Learning activities also have a strong positive correlation with the Factors affecting students' academic performance in higher education. Family Income and support, Ethnicity, and Accommodation show a positive correlation with the Factors affecting students' academic performance in higher education. Finally, the Factors affecting students' academic performance in higher education exhibit a strong positive correlation with Academic Performance, indicating that these factors have a significant impact on academic success. Table 3 shows the correlations of the factors with the academic performance of the students.

**Table 3.** The correlation of the influencing factors with academic performance of the students.

Factor	Correlation with Academic Performance
Teaching Methods	Strong Positive
Time & Stress Management	Strong Positive
Attendance	Strong Positive
Past Grades	Positive
Continuous Assessment Grades	Strong Positive
Students' E-Learning Activities	Moderate Positive
Family Income & Support	Weak Positive
Ethnicity	Positive
Accommodation	Positive

The impact of the GPA on the influencing factors is presented in Table 3. The GPA correlation with factors refers to the relationship between students' Grade Point Average (GPA) and various factors that affect academic performance in higher education. By examining the correlations between GPA and different factors, educators, administrators, and decision makers can gain valuable insights into the factors strongly associated with academic success and develop more effective strategies to improve students' academic performance. Pearson correlation coefficients between the GPA and all the factors grouped by different GPA ranges. For students with a GPA below 2.00, Teaching Methods, Time and Stress Management, Attendance, Student's Continuous Assessment Grades, and Students' e-Learning activities exhibit a strong positive correlation with GPA. Additionally, Ethnicity, Past grades in previous semesters, and Accommodation show a positive correlation, albeit weaker than the aforementioned factors. On the other hand, family income and support show only a weak positive correlation.



Moving on to students with a GPA between 2.00 – 2.32, Teaching Methods, Family Income and support, Attendance, and Student's Continuous Assessment exhibit a strong positive correlation with GPA. Meanwhile, Time and Stress Management, Past grades in previous semesters, Students' e-Learning activities, Accommodation, and Academic Performance show a positive correlation, albeit weaker than the aforementioned factors. Ethnicity, in this case, also exhibits only a weak positive correlation. For students with a GPA between 2.33 – 2.99, Teaching Methods, Time and Stress Management, Attendance, Student's Continuous Assessment Grades, Students' e-Learning activities, and Academic Performance exhibit a strong positive correlation with GPA. Family Income and support, Ethnicity, Past grades in previous semesters, and Accommodation, on the other hand, show a positive correlation, albeit weaker than the former factors. Finally, for students with a GPA above 3.00, Teaching Methods, Time and Stress Management, Attendance, Ethnicity, Past grades in previous semesters, Student's Continuous Assessment Grades, and Academic Performance exhibit a strong positive correlation with GPA. Similarly, Family Income and support, Students' e-Learning activities, and Accommodation show a positive correlation, albeit weaker than the former factors. The results suggest that certain factors have a significant impact on students' academic performance. The factors that consistently exhibit a strong positive correlation with GPA across all GPA categories are Teaching Methods, Attendance, and Student's Continuous Assessment Grades. Time and Stress Management and Students' e-Learning activities also show a strong positive correlation with GPA for some GPA categories. It is recommended that educators and decision-makers in higher education institutions pay close attention to these factors in order to improve students' academic performance.

Moreover, the results indicate that factors such as Ethnicity, Past grades in previous semesters, and Accommodation have a positive correlation with GPA, but their impact may vary based on the students' GPA category. On the other hand, family income and support show a weak positive correlation with GPA, suggesting that its impact on students' academic performance may not be as strong as other factors.

**Table 4.** The impact of GPA on the influencing factors

GPA Range	Strong Positive Correlation Factors	Moderate Positive Correlation Factors	Weak Positive Correlation Factors
Below 2.00	Teaching Methods, Time & Stress Management, Attendance, Continuous Assessment Grades, E-Learning	Ethnicity, Past Grades, Accommodation	Family Income & Support
2.00 – 2.32	Teaching Methods, Family Income & Support, Attendance, Continuous Assessment	Time & Stress Management, Past Grades, E-Learning, Accommodation, Academic Performance	Ethnicity
2.33 – 2.99	Teaching Methods, Time & Stress Management, Attendance, Continuous Assessment, E-Learning, Academic Performance	Family Income & Support, Ethnicity, Past Grades, Accommodation	None
Above 3.00	Teaching Methods, Time & Stress Management, Attendance, Ethnicity, Past Grades, Continuous Assessment, Academic Performance	Family Income & Support, E-Learning, Accommodation	None

It is evident that all factors profoundly impact students' academic performance. These factors are Teaching Methods, Family Income and support, Time and Stress Management, Attendance, Past grades in previous semesters, Continuous Assessment Grades, Students' e-Learning activities, and Accommodation. Among these factors, Teaching Methods, Attendance, and Student's Continuous Assessment Grades stand out as having a particularly strong and statistically significant impact on academic progress. [29]–[32] support this study findings of the teaching methods factor as it has a significant impact on academic performance. In addition, as mentioned earlier, Attendance showed a particularly strong and statistically significant impact on academic performance. This significance was agreed upon by [29], [33], [34]. Additionally, [35]–[37], are supporting this study findings, as they revealed a highly significant impact on Student's Continuous Assessment Grades factor with students' academic performance. Table 5 highlights the policy implication for the higher education institutes in Oman.

**Table 5.** Policy implications of Factors influencing students' academic performance

Factor	Recommendations
Teaching Methods	Enhance teaching methodologies to improve learning outcomes.
Attendance	Implement policies to ensure better student attendance and participation.
Continuous Assessment Grades	Develop continuous assessment systems that track student progress more effectively.
Time & Stress Management	Provide time and stress management workshops for students.
Students' E-Learning Activities	Increase engagement in online learning platforms for better performance.
Past Grades	Use past grades as an indicator to provide additional support to struggling students.

## CONCLUSION

The study highlights the multifaceted nature of factors affecting academic performance at Arab Open University, Oman. Teaching methods, attendance, and continuous assessment grades consistently exhibit strong correlations with academic success, underscoring their critical role in enhancing student performance. Time management and e-learning activities also significantly impact on students with specific GPA ranges, suggesting targeted interventions could improve outcomes. While factors like ethnicity, past academic performance, and accommodation show varying degrees of influence, family income demonstrates a relatively weak correlation. These findings offer valuable insights for educators, administrators, and decision-makers to develop strategies that address the most impactful factors and foster improved academic achievements. Future research may explore the interplay of these factors across different contexts to build comprehensive support frameworks for students.

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## DATA AVAILABILITY

The data for this project was collected from Arab Open University, Oman, specifically to meet the requirements of this research. As it is proprietary, it is not publicly available.

## CONFLICT OF INTEREST

There is no conflict of interest.

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