



The Journal of Management, Digital Business, and Entrepreneurship

Homepage: <https://jurnal.glowscien.com/index.php/JMDBE>

Vol. 2, September 2, June (2024), 81-94

DOI Issue: <https://doi.org/10.58857/JMDBE.2024.v02.i02>

E-ISSN 3031-9064



Learning Interest and Academic Success: Investigating the Moderating Role of Infrastructure at Udayana University's Management Program

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DOI Article: <https://doi.org/10.58857/JMDBE.2024.v02.i02.p05>

ARTICLE INFO	ABSTRACT
<p>Article History: Submitted: 15 February 2024 Reviewed: 17 March 2024 Revision: 24 April 2024 Accepted: 11 May 2024 Publish: 27 September 2024</p> <hr/> <p>Keywords: Interest in learning; Cumulative Achievement Index; Educational infrastructure; Moderated Regression Analysis</p> <hr/> <p>Corresponding Author: Ni Putu Metya Juniari email: putumetyajuniari@gmail.com</p>	<p>This study aims to examine the effect of learning interest on the Cumulative Achievement Index (GPA) of students of the Management Study Program at Udayana University, with campus infrastructure as a moderating variable. This study uses a quantitative approach and explanatory design to identify causal relationships between variables. The independent variable in this study is learning interest, the dependent variable is GPA, and the moderating variable is campus infrastructure. The population of the study was all active students of the Undergraduate Management Study Program at Udayana University, totaling 41 people, with a sampling technique using total sampling. Data were collected through a closed questionnaire based on a Likert scale and tested using a moderated regression analysis technique (MRA) with the help of statistical software.</p> <p>The results of the analysis show that learning interest has a positive and significant effect on students' GPA. Furthermore, campus infrastructure does not moderate the relationship, meaning that students' perceptions of campus infrastructure and facilities do not increase the influence of learning interest on academic achievement. The implications of this study indicate the importance of strengthening students' learning interest through a participatory pedagogical approach to create a conducive learning environment. These findings are expected to be a reference for policy makers in higher education environments in formulating strategies to improve the quality of education based on a holistic approach between internal and external aspects of students.</p>

INTRODUCTION

Education is the main foundation in forming a superior and highly competitive generation of the nation. The role of education is very central in preparing human resources that are creative, innovative, active, independent, and responsible. Through a planned and quality education process,

individuals are able to develop intellectual, emotional, and social abilities as a whole (Sholekah et al., 2021). Education is also a strategic tool for creating social change and economic progress in a country (TL et al., 2017). Therefore, the quality of education must be a priority in every stage of national development (Kaesa et al., 2024).

Higher education, especially universities, has a great responsibility in producing competent graduates who are ready to face global challenges (Wulandari et al., 2022). Through the Tri Dharma of Higher Education—education, research, and community service—universities are required to produce graduates who are not only academically intelligent, but also adaptive to the dynamics of the times (Febianti & Joharudin, 2018). Udayana University as one of the state universities in Bali is committed to becoming a center of superior higher education (Santika, 2020). One of its leading study programs is the Management Study Program, Faculty of Economics and Business, which is expected to be able to produce professional and highly competitive graduates.

The success of the educational process in higher education is often measured by students' academic achievements represented in the Cumulative Achievement Index (GPA). GPA is an important indicator in assessing students' academic performance during higher education (Setyawati et al., 2020). However, achieving a high GPA is not the result of a linear learning process, but is influenced by various internal and external factors (Mulyani et al., 2019). Among these factors, students' interest in learning plays an important role in shaping effective and sustainable learning behavior (Liora et al., 2024). High interest in learning usually encourages students to be more active, diligent, and committed in following the academic process (Huda & Mulyana, 2017).

Learning interest is a psychological tendency that shows a person's interest in learning activities. Students who have a strong learning interest tend to be more enthusiastic about attending lectures, are more diligent in reading references, and are quicker in absorbing material (Haris et al., 2023). In addition, they are also more proactive in finding learning strategies that suit their learning style (Marna et al., 2020). Thus, learning interest can be the main driver in improving students' academic achievement (Izzulhaq et al., 2023). This indicates that learning interest is not only a determinant of motivation but is also closely related to academic achievement (Kaesa et al., 2024).

However, high interest in learning is not always directly proportional to academic achievement, especially if the learning environment and supporting facilities are inadequate (Ayuningtyas et al., 2020). In this context, the existence of educational infrastructure plays a crucial role as an external factor that can strengthen or even hinder student learning outcomes (Yusman & Ashar, 2019). Educational infrastructure includes facilities such as comfortable classrooms, information technology facilities, complete libraries, and stable internet access (Wibowo & Wilujeng, 2021). If these facilities are not available or are less than optimal, student motivation and interest in learning can decrease (Baladan et al., 2021). Therefore, it is important to review how campus infrastructure can act as a moderating variable in the relationship between interest in learning and GPA (Munira et al., 2024).

A learning environment supported by good infrastructure will provide comfort and ease in accessing learning resources (Pratama et al., 2018). Complete infrastructure also supports more active learning interactions, both between students and lecturers and between students (Kosasi et al., 2022). Conversely, limited infrastructure can create obstacles in the learning process, such as limited space, technical problems, or lack of teaching materials (Shaleh, 2016). In such situations, students, even though they have a high interest in learning, may find it difficult to achieve optimal academic achievement (Huda & Mulyana, 2017). Therefore, campus infrastructure is not only a physical complement, but is an integral part of a holistic learning system (Munira et al., 2024).

In previous studies, the influence of learning interest on academic achievement has been widely studied (Sholekah et al., 2021; TL et al., 2017), but not many studies have specifically considered the role of infrastructure as a moderating variable (Ayuningtyas et al., 2020). In fact, in the context of higher education, the interaction between internal (learning interest) and external

(infrastructure) factors can provide a more comprehensive picture of the factors that influence students' GPA (Darwis, 2022; Setyawati et al., 2020).

Based on this background, this study aims to examine the effect of learning interest on the Cumulative Achievement Index (GPA) of students of the Management Study Program at Udayana University, with infrastructure as a moderating variable. With a quantitative approach and empirical data, this study is expected to provide scientific evidence on how learning interest affects GPA, as well as how infrastructure strengthens or weakens the relationship (Kusumastuti, 2020).

From the description above, two research hypotheses are formulated as the basis for empirical testing in this study. The first hypothesis (H1) is: Learning interest has a positive and significant effect on the Cumulative Achievement Index of students in the Management Study Program at Udayana University. This hypothesis is based on the assumption that learning interest will encourage students to behave actively, diligently, and systematically in learning so that it affects their academic results. The second hypothesis (H2) is: Campus infrastructure moderates the effect of learning interest on the Cumulative Achievement Index, where good infrastructure strengthens this positive relationship. This hypothesis refers to the view that a supportive learning environment will facilitate students in maximizing their learning potential, including those driven by intrinsic interest (Chintya & Irawaty, 2022).

The results of this study will be useful for policy makers in higher education environments in designing more effective learning strategies. In addition, the findings of this study can also be used as a reference in improving the quality of higher education in Indonesia (Nugroho & Budiarsih, 2023; Nurdin et al., 2024). The practical implications of this study can also provide direction for the development of campus infrastructure that is more proactive towards student needs (NZ et al., 2018).

RESEARCH METHODOLOGY

This study uses a quantitative approach with the aim of testing the relationship between variables objectively using standardized instruments. This approach is very suitable for research involving numerical data and statistical analysis, so that the results obtained can be generalized to a wider population. In this study, the population used as subjects were all active students of the Undergraduate Management Study Program, Faculty of Economics and Business, Udayana University. Based on available data, the population size is 41 students who participate in academic activities in the current semester. The sample used in this study is all members of the population, so the sampling technique used is total sampling. However, because the probability sampling approach is also mentioned, the simple random sampling method can be applied if the population increases in the future and not all students can be reached. This technique allows each member of the population to have an equal opportunity to be selected as a sample.

Data collection in this study used a closed questionnaire compiled based on indicators from each research variable. The questionnaire was divided into three main parts, namely: learning interest (X1), which was measured through statements reflecting liking, attention, willingness, and perseverance; facilities and infrastructure (M), which was measured from students' perceptions of the availability, suitability, and comfort of educational facilities; and cumulative achievement index (Y), which was measured based on the last GPA reported by the respondent. All statement items used a five-point Likert scale, ranging from "Strongly Disagree" (1) to "Strongly Agree" (5).

Before further analysis, the research instrument was tested for validity and reliability. Validity testing was carried out using the Pearson Product Moment correlation technique between item scores and total scores, where an item is declared valid if the calculated r-value is greater than the r-table at a significance level of 5% and 1%. Meanwhile, reliability testing was carried out using the Cronbach Alpha method, where the instrument is said to be reliable if the Cronbach's Alpha value ≥ 0.70 , which indicates that there is internal consistency between items in the questionnaire.

Before conducting regression analysis, the data is first tested against several classical assumptions. Normality test is performed using Kolmogorov-Smirnov or Shapiro-Wilk Test to ensure that the data is normally distributed. Multicollinearity test is performed by looking at the Variance Inflation Factor (VIF) value, where the VIF value must be less than 10 to be free from multicollinearity. Heteroscedasticity test is performed using Glejser test or residual scatterplot analysis to see if there is a certain pattern in the distribution of residuals. If the data is a time series, then the autocorrelation test can also be performed using the Durbin-Watson test.

Data analysis techniques are carried out in stages with the help of statistical software such as SPSS. The first stage is descriptive analysis to describe the characteristics of respondents and the distribution of answers. Furthermore, a moderated regression analysis is carried out to test the effect of independent variables on dependent variables by considering the presence of moderator variables. The regression model used is Moderated Regression Analysis (MRA), which allows testing the interaction between independent variables and moderators on dependent variables.

Model 1:

$$Y = \beta_0 + \beta_1 X_1 + \varepsilon$$

Model 2:

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 M + \beta_3 (X_1 x M) + \varepsilon$$

Information:

- Y = GPA (Cumulative Achievement Index)
- X_1 = InterestStudy
- M = Means andInfrastructure
- $X_1 x M$ =Interaction of Interest with Means andInfrastructure
- β_0 = Intersep
- $\beta_1, \beta_2, \beta_3$ =Regression Coefficient
- ε = Error

RESULTS AND DISCUSSION

Validity Test of Research Instruments

Validity testing in this study aims to measure the extent to which each statement item in the questionnaire is able to represent the variables studied, namely Interest (X), GPA (Y), and Facilities and Infrastructure (M). Validity is tested using the Pearson Product Moment correlation method, with the criteria that an item is declared valid if the significance value (Sig.) <0.05 and the correlation coefficient value shows a fairly strong relationship with the total score. Table 1 below presents the results of the validity test of each item on the three variables.

Table 1. Results of Validity Testing of Interest Variables (X), GPA (Y), Facilities and Infrastructure (M)

Item	Pearson Correlation	Sig.	Information
(X) Interest			
X.1	0.659	0,000	Valid
X.2	0.711	0,000	Valid
X.3	0.354	0.023	Valid
X.4	0.716	0,000	Valid
X.5	0.741	0,000	Valid
(Y) GPA			
Y.1	0.669	0,000	Valid
Y.2	0.744	0,000	Valid
Y.3	0.626	0,000	Valid
Y.4	0.722	0,000	Valid
Y.5	0.597	0,000	Valid
(M) Facilities and Infrastructure			

Item	Pearson Correlation	Sig.	Information
M.1	0.564	0,000	Valid
M.2	0.629	0,000	Valid
M.3	0.707	0,000	Valid
M.4	0.868	0,000	Valid
M.5	0.854	0,000	Valid

Source: Results of research instrument testing

Based on Table 1, all statement items in the variables Interest, GPA, and Facilities and Infrastructure show a significance value below 0.05 and a positive correlation coefficient, which means that all items are declared valid. Thus, the research instrument used to measure the three variables has met the validity requirements and can be used further in the data analysis process.

Reliability Test of Research Instruments

Reliability testing aims to determine the extent to which the research instrument produces consistent and stable data when used in repeated measurements. Reliability is measured using the Cronbach's Alpha value, with the provision that an instrument is said to be reliable if it has an alpha value ≥ 0.60 . Table 2 below presents the results of the reliability test for the three variables in this study, namely GPA as the dependent variable, Interest as the independent variable, and Facilities and Infrastructure as the moderating variable.

Table 2. Reliability Test Results

Variables	Cronbach's alpha	Information
Dependent		
GPA (Y)	0.693	Reliable
Independent		
Interest (X)	0.641	Reliable
Infrastructure Facilities (M)	0.774	Reliable

Source: Results of research instrument testing

The test results in Table 2 show that all variables have a Cronbach's Alpha value above 0.60, which means that each instrument is classified as reliable. Thus, the questionnaire used in this study is proven to have an adequate level of internal consistency and is suitable for use in further analysis processes.

Descriptive Statistics

Table 3 presents a descriptive statistical analysis of the variables Interest, Infrastructure, and GPA involving 41 respondents. In this table, the minimum, maximum, average (mean), and standard deviation values for each variable are displayed. This analysis aims to provide an overview of the distribution and characteristics of the data used in this study.

Table 3. Descriptive statistical analysis

	N	Minimum	Maximum	Mean	Std. Deviation
Interest	41	3.00	5.00	0.309	01.86
Infrastructure	41	2.00	4.00	0.286	01.01
GPA	41	3.40	4.00	03.70	00.17
Valid N (listwise)	41				

Source: Results of research data analysis

The results shown in Table 3 illustrate a fairly large variation in the three variables. Interest has a range of values between 12.00 to 25.00 with an average of 0.81 and a fairly high standard deviation of 3.26, indicating a fairly wide distribution of data. Infrastructure also shows a similar variation with a range between 10.00 to 28.00 and an average of 0.89 with a standard deviation of 4.11. Meanwhile, GPA has an average of 3.21 with a smaller standard deviation (0.47), indicating a relatively high consistency in respondents' GPA assessments.

Classical Assumption Test

Normality Test

Based on the visualization results of the residual histogram, QQ Plot, and PP Plot, it can be concluded that the residual data in this regression model is normally distributed. The residual histogram shows a pattern resembling a normal curve, with a symmetrical distribution around the zero value. In the QQ Plot, the points spread along the diagonal line, indicating that the empirical residual values approach the theoretical normal distribution. Likewise, in the PP Plot, the points follow a straight diagonal line, indicating a good agreement between the expected and observed cumulative distributions. This finding is consistent with the results of the Kolmogorov-Smirnov test in Table 4 which shows a significance value of 0.200 (greater than 0.05), so there is not enough evidence to reject the hypothesis that the residuals are normally distributed.

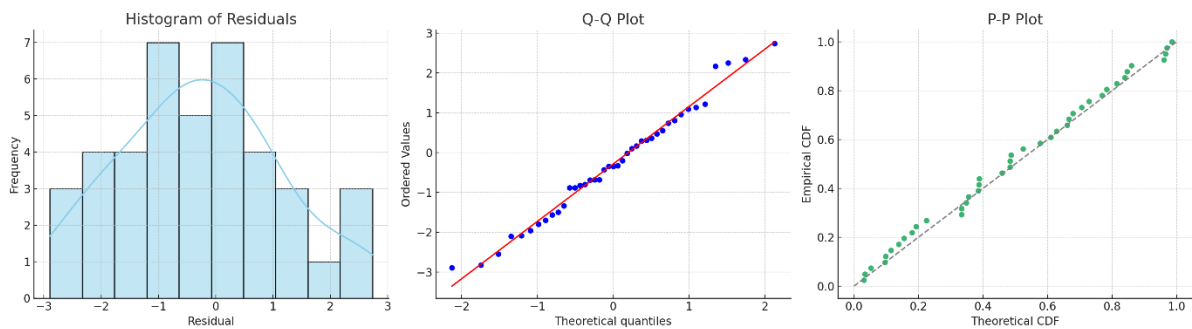


Figure 1 Residual Histogram, Q-Q Plot, and PP Plot Research

Based on the results of the Kolmogorov-Smirnov normality test presented in Table 4, a significance value (Asymp. Sig. 2-tailed) of 0.200 was obtained. This value is greater than the significance level of 0.05, which indicates that there is insufficient evidence to reject the null hypothesis (H_0) that the residual data is normally distributed. This is also supported by the Kolmogorov-Smirnov Z value of 0.110 and the residual average of 0.000 with a standard deviation of 1.477. Thus, it can be concluded that the assumption of residual normality in the regression model has been met, so that the data is suitable for use in further regression analysis.

Table 4. Results of the Kolmogorov-Smirnov Normality Test

Statistics	Mark
N	41
Mean Residual	0.0000000
Std. Dev.	1.47733579
Kolmogorov-Smirnov Z	0.110
Asymp. Sig. (2-tailed)	0.200

Source: Results of research data analysis

Multicollinearity Test

To ensure that there is no multicollinearity in the regression model used in this study, a test was conducted using the Tolerance and Variance Inflation Factor (VIF) values on the independent variables, namely Interest and Infrastructure. This test is important in quantitative data-based research, such as the one you often use in teaching Management and Investment courses, to ensure that there is no strong linear relationship between the independent variables that can interfere with the interpretation of the regression results.

Table 5. Multicollinearity Test Results

Variables	Tolerance	VIF
Interest	.553	1,809
Infrastructure	.553	1,809

Source: Results of research data analysis

Based on the results in Table 5, the Tolerance value is 0.553 and the VIF value is 1.809 for both variables, which are still within the accepted tolerance limits (Tolerance > 0.10 and VIF < 10). Thus, it can be concluded that there are no symptoms of multicollinearity in the model, so the regression model used is feasible for further analysis.

Heteroscedasticity Test

Heteroscedasticity testing is carried out to determine whether there is inequality of variance of the residuals in the regression model. One of the methods used in this study is the Glejser Test, in which the absolute value regression of the residuals is carried out on each independent variable. If the significance value is greater than 0.05, it can be concluded that there are no symptoms of heteroscedasticity in the model, so that the model can be considered to meet the classical assumptions in linear regression analysis.

Table 6. Heteroscedasticity Test Results

Variables	Sig. (Glejser Test)
Interest	0.883
Infrastructure	0.529

Source: Results of research data analysis

Based on the results shown in Table 6, the significance value for the Interest variable is 0.883 and Infrastructure is 0.529. Both values exceed the threshold of 0.05, which means that there are no symptoms of heteroscedasticity in the regression model. Thus, the regression model in this study can be said to have met the assumption of homoscedasticity, and is suitable for use in further analysis.

Autocorrelation Test

Autocorrelation testing is performed to determine whether there is a relationship between the current residual and the previous residual in the regression model. One method used is the Durbin-Watson (DW) test, where a DW value close to 2 indicates no autocorrelation, a value below 1 indicates positive autocorrelation, and a value above 3 indicates the possibility of negative

autocorrelation. This test is important especially for time series data, but is also relevant to ensure the reliability of the regression model in cross-individual research such as in this study.

Table 7. Autocorrelation Test Results (Durbin-Watson Test)

Test Statistics	Mark	Assessment criteria	Conclusion
Durbin-Watson (DW)	1,913	Values approach 2 indicates no autocorrelation.	There is no autocorrelation

Source: Results of research data analysis

Based on the test results shown in Table 7, the Durbin-Watson value is 1.913, which is close to 2. This indicates that the regression model does not contain autocorrelation, so that the residuals between observations are independent. Thus, the regression model is stated to meet the classical assumptions related to autocorrelation and can be used validly in further analysis.

First Equation Regression Analysis

Simple linear regression analysis was conducted to determine the effect of the independent variable Interest on the dependent variable GPA. This model aims to test how much contribution the student Interest variable has in influencing the achievement of Cumulative Achievement Index (GPA). The test results are shown in Table 8 which presents the regression coefficient, significance value, and t value for hypothesis testing.

Table 8. First Regression Equation Analysis

Coefficients ^a					
Model	Unstandardized Coefficients		Standardized Coefficients		
	B	Std. Error	Beta	t	Sig.
1 (Constant)	4,233	2,090		2,025	,050
Interest	,729	,128	,674	5,701	,000

a. Dependent Variable: GPA

Source: Research Data Analysis Results

Based on the results in Table 8, it is obtained that the Interest variable has a significant effect on GPA, with a coefficient value of 0.729 and a significance level of 0.000 ($p < 0.05$). The t-value of 5.701 indicates that Interest is a strong predictor in explaining variations in student GPA. Thus, it can be concluded that the higher the student's interest in learning, the higher the GPA achieved.

Coefficient of Determination of the First Equation

The first regression model analysis aims to evaluate the extent to which the Interest variable is able to explain the variation that occurs in the student GPA variable. The summary results of the model presented in Table 9 provide information on the value of the determination coefficient (R Square), as well as the standard error of the model estimate, which is important in assessing the quality and strength of the relationship between the two variables.

Table 9. First Regression Equation Analysis

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	,674a	,455	,441	1,500

a. Predictors: (Constant), Interest
 Source: Research Data Analysis Results

Based on Table 9, the R value is 0.674 which indicates a positive and fairly strong relationship between Interest and GPA. The R Square value of 0.455 indicates that 45.5% of the variation in GPA can be explained by the Interest variable, while the rest is influenced by other variables outside the model. Thus, this regression model can be said to be quite good in describing the influence of interest on student GPA.

Regression Analysis of the Second Equation

Table 10 presents the results of the second regression analysis that measures the influence of various variables on GPA as the dependent variable. In this table, there are four independent variables tested, namely Interest, Infrastructure, and the interaction between Interest and Infrastructure. The unstandardized and standardized regression coefficients, as well as the t-value and significance, are presented to provide a clearer picture of the contribution of each variable to GPA.

Table 10. Second Regression Equation Analysis

Coefficients ^a					
Model	Unstandardized Coefficients			Standardized Coefficients	
	B	Std. Error	Beta	t	Sig.
1 (Constant)	29,787	15,281		1,949	,059
Interest	-,877	,936	-,811	-,937	,355
Infrastructure	-1,476	,912	-1,847	-1,618	,114
Interest*Infrastructure	,092	,054	3,077	1,692	,099

a. Dependent Variable: GPA
 Source: Research Data Analysis Results

Overall, the results of this regression analysis indicate that not all variables have a significant effect on GPA. The Interest and Infrastructure variables, both individually and in their interactions, do not show strong significance at the 0.05 level, although the interaction between the two approaches the significant value. This also shows that the Facilities and Infrastructure variables are unable to moderate the influence of interest and GPA. These results indicate the need for further research to explore other factors that may have a more direct effect on GPA.

Coefficient of Determination of the Second Equation

Table 11 presents the results of the second regression equation analysis that tests the influence of the variables Interest, Infrastructure, and the interaction between the two on GPA. This model uses Infrastructure as a moderating variable that influences the relationship between Interest and GPA. In this table, the R, R Square, and Adjusted R Square values are provided to

illustrate how well the regression model can explain the variability in GPA based on the variables used.

Table 11. Second Regression Equation Analysis

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	,704a	,496	,455	1,480

a. Predictors: (Constant), Interest*infrastructure, Interest, Infrastructure
 Source: Research Data Analysis Results

Based on the analysis results in Table 11, the R Square value of 0.496 indicates that around 49.6% of the variation in GPA can be explained by a combination of Interest, Facilities and Infrastructure, and the interaction between the two. Although the Adjusted R Square value of 0.455 indicates that this model can still be improved, this model is good enough in describing the relationship between the variables tested. Associated with the t-test in Table 10, it is known that facilities and infrastructure are not able to moderate the effect of interest on GPA. This is indicated by the R2 value which does not change much when compared to the first equation model.

Discussion

This study aims to explore the effect of Interest on students' Cumulative Grade Point Average (GPA), considering the role of Facilities and Infrastructure as a moderating variable. The results of the first regression analysis show that Interest has a significant effect on GPA, with a regression coefficient of 0.729 and a very low significance value (0.000), indicating that the higher the student's interest, the higher the GPA they achieve. This finding is in line with the literature showing that high interest in learning is often associated with better academic achievement (Yusub, 2022). The coefficient of determination in the first regression model (R Square = 0.455) shows that 45.5% of the variation in GPA can be explained by the Interest variable. However, there is still 54.5% of the variation in GPA that is not explained by Interest, indicating that there are other factors that influence students' GPA. Therefore, it is important to conduct further research to explore other factors that may contribute to academic achievement, such as learning methods, social support, and environmental factors (Rohmansyah & Firdaos, 2022).

In the second regression analysis, this study focuses on testing the role of Facilities and Infrastructure as a moderating variable in the relationship between Interest and GPA. Although the interaction between Interest and Facilities and Infrastructure shows a t-value approaching significance (t = 1.692), the test results do not confirm a significant moderating role. The coefficient for this interaction is 0.092, but the significance value is 0.099, which is greater than the significance limit of 0.05. This indicates that Facilities and Infrastructure are unable to moderate the effect of Interest on GPA as expected. Although facilities and infrastructure have an important role in supporting the learning process, in the context of this study, these variables do not seem to have a significant influence in influencing students' academic outcomes (Titin, 2023). This finding also suggests that external factors such as facilities and infrastructure may not be enough to increase students' GPA if they are not supported by other factors that more directly affect the learning process.

In addition, the Facilities and Infrastructure variable itself did not show a significant effect on GPA (significance value 0.114), which indicates that the existence of adequate facilities and infrastructure does not always contribute to increasing students' GPA. This study confirms that the quality of facilities and infrastructure is indeed important in supporting the learning process, but in terms of academic achievement, other factors, such as the quality of teaching and effective learning

methods, can play a bigger role. This is relevant to the findings of previous studies which show that although physical facilities are supportive, the effectiveness of teaching and student engagement in learning remain more crucial factors in improving academic achievement (Triyanto, 2022). Therefore, although it is important to have adequate facilities and infrastructure, it is undeniable that internal factors of students also play a very important role in achieving GPA.

Overall, the results of the second regression analysis show that this model is only able to explain about 49.6% of the variation in GPA, with an R Square of 0.496. Although this figure is higher compared to the first model (0.455), there are still many other factors that may play a role in influencing students' GPA that are not included in this model. This underscores the importance of further exploration to identify other variables that can explain the remaining unexplained variation. For example, factors such as the learning methods used by students, time management skills, and academic support from lecturers, may have a more direct influence on GPA. This suggests that academic influence does not only depend on external factors such as facilities and infrastructure, but also on internal factors that are more related to students' efforts and abilities in learning.

This study concludes that Facilities and Infrastructure as a moderating variable does not have a significant impact on the relationship between Interest and GPA. This finding indicates that although interest is an important factor in influencing GPA, other more direct factors, such as the quality of teaching and learning strategies applied by students, may have a greater influence. In addition, although facilities and infrastructure are important in supporting learning, the quality of teaching and academic support provided by lecturers can be more determining factors in improving student academic outcomes. Therefore, policies that focus on increasing student interest and involvement in the learning process will be more effective than only focusing on providing physical facilities and infrastructure.

In conclusion, although this study found that Interest has a significant effect on GPA, the effect of Facilities and Infrastructure as a moderating variable cannot be proven significantly. Further research is recommended to explore other factors that are stronger in influencing GPA, as well as to consider a more holistic approach in assessing the influence of the environment and motivation on student academic achievement. A more comprehensive approach, which includes internal aspects such as motivation, study skills, and academic support, is expected to provide deeper insight into the factors that influence student GPA. In addition, further research can include testing certain types of facilities and infrastructure that may be more relevant to the development of students' academic abilities, in order to provide more effective policy recommendations in improving the quality of higher education (Saputri & Pratikno, 2024).

CONCLUSION

The conclusion of this study shows that student interest has a significant influence on Cumulative Grade Point Average (GPA), with the results of the first regression analysis showing a regression coefficient of 0.729 and a very low level of significance (0.000). This indicates that the higher the student's interest in learning, the higher the GPA achieved. Although the interest variable can explain 45.5% of the variation in GPA, there are still other factors that influence student academic achievement, which requires further research to identify the influence of other factors such as learning methods or social support.

Meanwhile, the results of the second regression analysis show that facilities and infrastructure do not have a significant effect on GPA, either individually or in their interaction with interest. The coefficient for the interaction between interest and facilities and infrastructure shows a value that is close to significance, but is not strong enough to be considered a significant moderating factor. This study emphasizes that although facilities and infrastructure are important in supporting the learning process, internal factors, such as the quality of teaching and learning strategies applied by students, play a greater role in determining academic achievement. Therefore, policies that focus

on increasing student interest and involvement in the learning process will be more effective in increasing GPA than simply improving physical facilities and infrastructure.

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