Analysis of Student Satisfaction Regarding the Learning Environment and Its Relationship to Student Academic Achievement (Case Study of Students of Business Administration Department, Politeknik Negeri Bengkalis)

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Abstract. This research aims to determine student satisfaction with the learning environment in the Department of Business Administration, Politeknik Negeri Bengkalis and to determine the relationship between student's satisfaction and student's academic achievement. In this study, the samples were students from the Department of Business Administration, Politeknik Negeri Bengkalis. This research was carried out in order to improve academic quality of students majoring in Business Administration. The research carried out was survey research using a questionnaire as an instrument for data collection. The main analytical tools used in this research are correlation and regression analysis which is assisted by software to process data and then analyzed to draw conclusions. The results of this research show that: 1.The tangible, reliability, responsiveness and assurance which are the dimensions of satisfaction variable simultaneously have a significant influence on student academic achievement with an influence of 52.7%, 2. The Assurance which is one of the dimension of the satisfaction variable the most dominantly influences students' academic achievement, and 3. The dimension of the satisfaction variable that has the least influence on the academic achievement of students that major in Business Administration of Politeknik Negeri Bengkalis is the tangible dimension.

Keywords: Student's Satisfaction, Academic Achievement, Business Administration Department, Politeknik Negeri Bengkalis.

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1 Introduction

Education is a business that operates in the service sector [1]. To assess the quality of educational services, it can be seen from students' assessments of meeting their needs. In representing their needs, each customer(student) has their own view [2]. Customer expectations determine service quality. Expectations are also believed by customers about what will be obtained related to the performance of certain products or services [3].

One of the one of supporting factors is the surroundings. Students are better able to focus on their studies when they are in a pleasant setting. Students can enjoy learning and achieve greater results if the proper environment is set up. Experts frequently refer to the learning environment as the educational environment.The educational environment is a place where learning activities take place which have external influences on the continuity of these activities. The environment which is a source of learning has an influence on the process and results of learning. The environment in the narrow sense is the natural surroundings outside the individual [4]. In addition to the school, parents and the surrounding community also have an obligation to provide a suitable learning environment for their children [5]. Saroni defines the learning environment as everything associated with the location where the learning process takes place [6]. The physical environment and the social environment are the two primary components of the learning environment. The physical surroundings in which children study includes the actual buildings inside and outside of schools. The social environment is related to patterns of interpersonal interaction in the general environment around students studying, both physical facilities within the school and around the school. The social environment is related to patterns of interpersonal interaction in the environment in general [6]. Rusman stated that a good learning environment or educational resources are very important factors that need to be provided to support the achievement of the expected educational goals [7]. The teaching and learning process will be carried out well if the learning environment is conducive. The learning environment consists of family, school and community. [8].

The level of student satisfaction with the educational services received can be determined by comparing expectations and perceived reality [9]). Efforts to meet student expectations are the key to success in winning the competition. Conformity between the wishes of students and the wishes of higher education administrators is an important condition for the success of the educational process in higher education. Every student wants maximum satisfaction from every service available at an educational institution. The maximum satisfaction obtained by students will be able to improve the quality of educational services [10]. In the end, it will produce graduates who are reliable and tough and able to compete in the working world and become winners among other university graduates. The higher the level of absorption of graduates in the world of work, the more they can provide added value in the eyes of society [11].

In the field of education, predicting variables that influence student academic achievement is very important, because it can obtain information that can be used to avoid or reduce dropout rates [12]. According to Tidjan, factors that influence learning achievement are grouped into individual factors and environmental factors [13]. Apart from that, many studies have concluded that one of the factors that influences academic achievement is achievement motivation. Achievement motivation has an important role in growing passion, feeling happy and enthusiastic about learning [14]. According to Dwipurwani, the GPA (Cumulative Achievement Index), which gauges pupils' academic performance, shows student achievement. A number of factors affect the GPA value, such as the caliber of the teaching personnel, which is determined by the amount of formal education they have completed, their mastery of teaching techniques,

and the content they have taught [15]. Muhibbin further mentioned that the GPA (Cumulative Achievement Index), which is displayed at the conclusion of each semester and upon completion of studies, provides indicators of a student's academic success. In cases where students are evaluated based on test scores or completed tasks, the GPA is determined. Thus, a student's GPA (Cumulative Achievement Index) serves as an indication of academic success [16].

1.1 Related research

[17] The study "Analysis of Factors that Influence Student Learning Achievement at the Faculty of Economics, Padang State University" was carried out by Vella Anggresta in 2015. The research results show that: (1) there are eight factors that influence the learning achievement of FE UNP students including (a) teaching quality factor (b) independence factor (c) internal condition factor d) work ethic factor, (e) concentration factor (g) supporting factors (h) parenting style factors (2) further tests of regression analysis stated that eating patterns and the desire to succeed, as well as parenting patterns did not have a significant effect on student learning achievement.

[18] The study "Analysis of Factors that Influence Student Learning Achievement at the Faculty of Economics, Padang State University" was carried out by Vella Anggresta in 2015. The results of this research analysis conclude that there are four factors that must be considered and are considered to be very decisive in determining the learning achievement of students at the Faculty of Economics and Business, Udayana University who take the Application of Quantitative Analysis course, namely; students' intrinsic motivation, professional abilities, personal abilities, and social environment.

[19] Research carried out by Prapdopo and Fariyanti Lecturers from the Samarinda State Polytechnic in 2016 with the research title "Analysis of several factors that influence student academic achievement". The research results show that parental education, learning methods, and student learning styles do not have a significant effect on student academic achievement, while previous educational achievement has a significant effect on student academic achievement. Simultaneously, there is a significant influence between the independent variable and the dependent variable Furthermore, based on the coefficient of determination, the adjusted R^2 value is 13.2 percent.

[20] Research conducted by Ira Gustina and Winda Dwi Rahayu in 2020 entitled "Factors that Influence Student Achievement in the Accounting Department, Faculty of Economics and Business, Riau University". The partial hypothesis test results show that internal factors influence the learning achievement of students majoring in Accounting, Faculty of Economics and Business, Riau University and external factors influence the learning achievement of students majoring in Accounting, Faculty of Economics and Business, Riau University.

[21] "The Relationship between Learning Facilities and the Social Environment on the GPA of First Year Students During Online Learning" is a study done in 2021 by Erika Putri et al. With the subsequent study findings: Online instruction was used at FK UNIMUS during the pandemic. Both internal and external factors are among the many that affect students' learning achievement when they are learning online. Physiological and psychological elements make up internal factors, while the social and non-social environment makes up external factors.

[22] The study "Analysis of Internal and External Factors that Influence Student Learning Achievement (Case Study of Students Department of Business Administration Bengkalis State Polytechnic)" was carried out by Bustami and Trihandayani in 2022. The study's findings are

internal variables that affect performance. Health, intelligence, interest and talent, motivation, and learning methods are among the academic factors that affect business administration majors at Bengkalis State Polytechnic. Other external factors that affect students' academic achievement include family, community, and natural environmental factors.

2 Research Methods

2.1. Location and time of research implementation

The location of this research was carried out in Politeknik Negeri Bengkalis and the implementation time was from May to July 2023.

2.2. Research Model

Associative research is the method used in this study. This research aims to determine the effect of student satisfaction regarding the learning environment on the academic achievement of students majoring in Business Administration, Politeknik Negeri Bengkalis. The following is the research model :

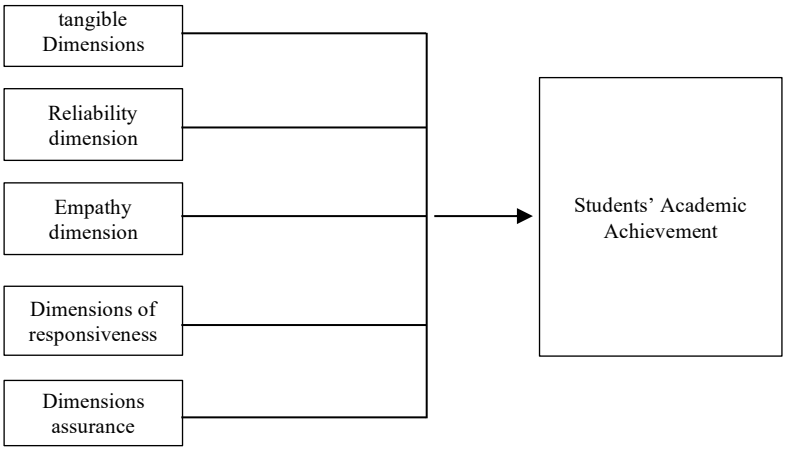

Figure 2. Research model

2.3. Research variable

The Satisfaction Assessment Indicator consists of the following 5 dimensions [23]:

a. Reliability is the conformity expected and received based on the ability to perform services correctly and reliably.
b. Responsiveness is the suitability of the ability to help customers in providing services to services.
c. Assurance is the conformity between expectations and received knowledge to create confidence.

d. Emphaty is a match between expectations and what is received on terms and giving attention to customers
e. Tanggible is the suitability of facilities and infrastructure to facilitate services.

According to Moore, there are three domains of learning outcome indicators [24], namely:

a. Cognitive domain, including knowledge, understanding, application, study, creation and evaluation.
b. The effective domain includes receiving, answering, and determining value.
c. Psychomotor domain, including fundamental movements, generic movements, ordinative movements, creative movements.

2.4. Research approach

In this study, a quantitative approach was taken. This quantitative research uses a survey approach. Survey research is research that takes samples from the population using questionnaires as a data collection tool. Apart from that, this research seeks to describe and generalize data or events that occur to all members of the population based on the research sample.

2.5. Types of research

This research is a type of survey research, namely a quantitative research method used to obtain data that occurred in the past or currently. Data collection techniques are observation and research results tend to be generalized.

2.6. Population, Sample and Sampling Techniques

a. Population

A population is an area for generalization made up of items or subjects chosen by researchers to be studied and from which conclusions will be made because they possess particular attributes. Students enrolled in the 2019 and 2020 business administration majors made up the study's population..

b. Sample

The sample is part of the number and characteristics of the population. The samples in this research were some students majoring in Business Administration, class of 2019 and 2020.

c. Sampling technique

The purpose of sampling technique is to guarantee population representation. The number of samples taken from the total population for this study was calculated by the researchers using the Slovin formula.

$$n = \frac{N}{N.e^2+1} \qquad (1)$$

Where: n: Number of Samples, N: Number of Population, and e: Error Tolerance Limit

By using the Slovin formula in equation 1, the error tolerance limit is 5%, the minimum sample size required in this research is $n = N / (1 + N e^2) = 270 / (1 + 270 \times 0.05^2) = 161{,}194 \approx 162$.

Based on the Solvin formula with an error rate of 5%, a minimum sample size of 161,194 was obtained, rounded up to 162 students from the total number of students majoring in Business Administration, class of 2019 and 2020, but in this research the respondences taken were 172 students.

2.7. Data collection techniques and data analysis

Data collection techniques are the methods used and the tools used in data collection. In this research, researchers used a questionnaire method. A questionnaire is a data collection technique that is carried out by giving respondents a set of questions or written statements to answer.

Research data collection techniques are carried out through the following stages: 1. Distribution of instruments to respondents randomly, to be filled in according to the instructions that have been prepared, 2. Withdrawal of research instruments that have been filled in by respondents, 3. Tabulation of research data, 4. Analysis of research data using statistical formulas assisted by software.

2.8. Research Instrument

A research instrument is a tool used to measure observed natural and social phenomena. Specifically, all of these phenomena are called research variables. To determine the measurement of respondents' answers in this study, a research instrument in the form of a Likert scale was used. The Likert scale is a tool used to control people's attitudes, beliefs, and impressions regarding a specific thing or phenomenon. The Likert scale rates positive statements 5, 4, 3, 2, and 1 on a gradation that runs from very positive to very negative. Negative remarks, however, receive a score of 1, 2, 3, 4, and 5. Strongly agree, agree, neither agree nor disagree, disagree, and strongly disagree are the response options on the Likert scale.

3 Result and Discussion

3.1. Description of research data

This research was conducted in the department of business administration with 172 respondents from the class of 2019 and 2020 who were still active. Data collection was conducted on May 2023 by distributing questionnaires directly to students.

3.2. Test prerequisites

3.2.1. validity and reliability Test

The validity test is used to determine whether or not the data in a research instrument is valid or not. A valid instrument means that the measuring instrument used to obtain data (measure) is valid. Valid means that the instrument can be used to measure what it is supposed to measure. Testing the validity of this data is carried out before testing the hypothesis. The sample in this study was 172 samples (n= 172) with $r_{table} = 0.1497$. The requirements for whether data is valid or not are as follows.

If the data validity results are $< r_{table}$, then the data is declared invalid
If the data validity results are $> r_{table}$, then the data is declared valid

Test the validity of the data in the research using SPSS.25 software with the spearmen correlation test method. Reliability test To find out whether the instrument used can be trusted or not as a research data collection tool. If a variable shows a Cronbach Alpha value > 0.60 then it can be concluded that the variable can be said to be reliable or consistent in measuring [25].

In this research, the satisfaction variabel‘s dimensions (tangible, reliability, emphaty, responsiveness, and assurances) are treated as variables.

3.2.1.1. Tangible dimension

a. validity Test of Tangible dimension

Calculation of the validity of tangible dimensions was carried out by tabulation using the SPSS Statistics version 25 with 22 question items which were tested on 172 respondents. for tangible dimension the value is valid.

b. reliability Test of tangible dimension

The SPSS statistics program, version 25, was utilized by the researcher for this test. Table 1 displays the instrument test results as follows:

Table 1. Reliability test of tangible dimension

Tangible dimension Reliability Statistics	
Cronbach's Alpha	N of Items
0.952	21

The above table leads to the conclusion that. The Cronbach's Alpha value for the tangible dimension question items is 0.952, which is higher than 0.6. Thus, it can be said that the inquiries concerning the tangible dimension are trustworthy. Thus, it can be said that the instrument is stable and consistent in measuring the tangible dimension, as indicated by the answers to the questions for that dimension, which are deemed Reliable.

3.2.1.2. Reliability dimension

a. Validity test of the reliability dimension

Validity calculations for the reliability dimension were carried out by tabulation using the SPSS Statistics version 25 program with 23 question items tested on 172 respondents, all of the question items tested had valid values.

b. reliability test of the reliability dimension

The SPSS statistics program, version 25, was utilized by the researcher for this test. Table 2 displays the instrument test results as follows:

Table 2. The Result of Reliability test of reliability dimension

Reliability Reliability Statistics	
Cronbach's Alpha	N of Items
0.974	23

Table 2 indicates that the Cronbach's Alpha value for the Reliability Dimension's Question Items is 0.974, which is higher than 0.6. Therefore, it can be said that the reliability dimension questions are reliable, indicating that the instrument is stable and consistent in its ability to measure this dimension.

3.2.1.3. Empathy dimension

a. validity Test of the empathy dimension

Validity calculations for the empathy dimension were carried out by tabulation using the SPSS Statistics version 25 program with 20 question items tested on 172 respondents, all of the question items tested had valid values.

b. reliability Test of the empathy dimension

In this research, testing the reliability of the instrument uses the SPSS statistics program version 25 and the results can be seen in table 3 below:

Table 3. test reliability of empathy dimension

Empathy Reliability Statistics	
Cronbach's Alpha	N of Items
0.977	20

The reliability of the empathy dimension question items can be inferred from the above table, as indicated by the Cronbach's Alpha value of 0.977>0.6. Thus, it can be said that the empathy dimension's questions are dependable, indicating that the tool is stable and consistent in its ability to measure this dimension.

3.2.1.4. Responsiveness Dimensions

a. Validity Test of Responsive Dimension

Validity calculations for the Responsiveness dimension were carried out by tabulation using the SPSS Statistics version 25 program with 22 question items tested on 172 respondents, all of the question items tested had valid values.

b. Reliability test Responsivenes Dimension

22 question items were tested on 172 respondents as part of the validation calculations for the responsiveness dimension. All of the tested question items had valid values. The tabulation process was done using the SPSS Statistics version 25 program. outcomes, which are displayed in Table 4 below based on the tabulation results:

Table 4.The results of reliability test of responsiveness dimension

Responsivenes Dimension Reliability Statistics	
Cronbach's Alpha	N of Items
0.987	22

From the table above it can be concluded that the Question Items for the Responsiveness Dimension are reliable because the Cronbach's Alpha value is 0.977>0.6. So it can be concluded that the questions for the Responsivenes dimension are reliable, meaning that the instrument is consistent and stable for measuring this dimension.

3.2.1.5. Assurance dimension

a. Assurance Dimension validity test

The validity calculation for the assurance dimension was carried out by tabulation using the SPSS Statistics version 25 program with 21 question items tested on 172 respondents, all of the question items tested had valid values.

b. Assurance Dimension reliability test

In this test, the researcher used the SPSS statistics program version 21. And it can be concluded from the table above that the question items for the assurance dimension are reliable because the Cronbach's Alpha value is 0.976>0.6. So it can be concluded that the questions for the assurance dimension are reliable, meaning that the instrument is consistent and stable for measuring this dimension. The instrument test results can be seen in table 5 as follows:

Table 5. The results of the reliability test of assurance dimension

Assurance Dimension Reliability Statistics	
Cronbach's Alpha	n of Items
0,976	21

From the table above it can be concluded that the question items for the assurance dimension are reliable because the Cronbach's Alpha value is 0.976>0.6. So it can be concluded that the questions for the Responsivenes dimension are reliable, meaning that the instrument is consistent and stable for measuring this dimension.

3.2.1.6. Students‘Academic Achievement variable

a. Validity Test of students‘Academic achievement

Validity calculations for Students‘Academic Achievement were carried out by tabulation using the SPSS Statistics version 25 program with 9 question items tested on 172 respondents, all of the question items tested had valid values.

b. Test the reliability of Students‘Academic Achievement

In this test, the researcher used the SPSS statistics program version 25. The question items for students‘Academic achievement variable are reliable because the Cronbach's Alpha value is 0.926>0.6. So it can be concluded that the questions for Students‘Academic Achievement variable are reliable, meaning that the instrument is consistent and stable for measuring this variable. The instrument test results can be seen in table 6 as follows:

Table 6. the results of Reliability test for Students‘Academic Achievement variable

Students‘Academic Achievement variable Reliability Statistics	
Cronbach's Alpha	n of Items
0.926	9

From the table 6, it can be concluded that the Question Items for Students'Academic Achievement variable are reliable because the Cronbach's Alpha value is 0.926>0.6. So it can be concluded that the questions for Students'Academic Achievement variable are reliable, meaning that the instrument is consistent and stable for measuring this variable.

3.3. Data Analysis Prerequisite Test (Classical Assumption Test)

3.3.1. Normality test

The normality test aims to test whether confounding variable or residual variable in a regression model are normally distributed.

Table 7. One-Sample Kolmogorov-Smirnov Test Results

One-Sample Kolmogorov-Smirnov Test		
		Unstandardized Residuals
N		172
Normal Parameters, b	Mean	.0000000
	Std. Deviation	3.31998240
Most Extreme Differences	Absolute	,080
	Positive	,080
	Negative	-.067
Statistical Tests		,080
Asymp. Sig. (2-tailed)		.009c

With respect to the above test results, Asymp. Sig. (2-tailed) = 0.009. Given that this result is below the probability threshold of 0.05, it can be said that the data are not normally distributed. The Central Limit Theorem assumption, which states that the normality assumption can be disregarded if the amount of research data is large enough (n > 30), can be applied if the normality test results indicate that the ones used in this study tend to be abnormal [26].

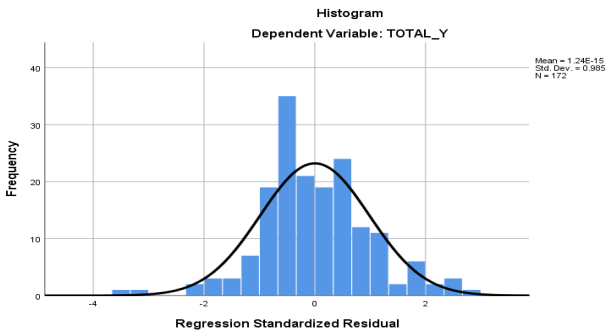

Figure 3. Residual histogram

From the model test results of the residual data, a residual histogram is obtained which resembles a normal distribution as in Figure 3.
The Normal P-P Plot image below displays the results of the normalcy test. Using the Normal P-Plot approach, the residual criteria for whether or not the multiple linear regression model is normally distributed are determined by examining the distribution of data points in the image. It is possible to conclude that the residual data is normally distributed if the point distribution is

near or close to a straight line (diagonal line); however, if the point distribution is far from the diagonal line, the residuals cannot be said to be normally distributed.

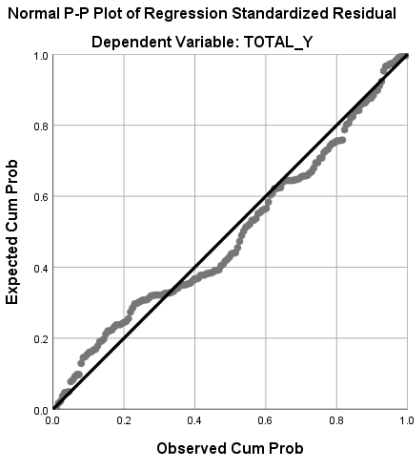

Figure 4. Normal pp plot

It is possible to determine that the residuals are normally distributed because the distribution of points in the above Normal P-P Plot image is fairly close to a straight line.

3.3.2. Multicollinearity Test

According to the traditional presumptions of OLS linear regression, a multicollinearity-free linear regression model is the ideal one. The following is the Coefficients Table obtained from the performed regression test:

Table 8. Test CoefficientsRegression

Coefficientsa								
		Unstandardized Coefficients		Standardized Coefficients			Collinearity Statistics	
Model		B	Std. Error	Beta	t	Sig.	Tolerance	VIF
1	(Constant)	12,792	1,858		6,885	,000		
	Tangibles	.023	,037	,066	,634	,527	,255	3,916
	Reliable	,089	,062	,239	1,438	,152	,100	9,977
	Empathy	-.158	,079	-.393	-2,001	,047	,072	13,885
	Responsiveness	,163	,062	,453	2,627	,009	,094	10,688
	Assurance	.153	,056	,388	2,735	,007	.138	7,241

a. Dependent variable: TOTAL_Y

The VIF values for the Tangible, Reliable, Emphaty, Responsiveness and Assurance dimensions are respectively as follows: 3.916, 9.977, 13.885, 10.688, 7.24. Because the VIF value of the Emphaty and Responsiveness dimensions is greater than 10, it can be said that there is multicollinearity in the two dimensions. It is necessary to heal the data by eliminating the dimension that has the highest VIF value, namely the empathy dimension. From the test results, the following table was obtained:

Table 9. Coeficients model

Coefficients[a]								
		Unstandardized Coefficients		Standardized Coefficients			Collinearity Statistics	
Model		B	Std. Error	Beta	t	Sig.	Tolerance	VIF
1	(Constant)	13.091	1.868		7.006	.000		
	Tangible	.015	.037	.042	.398	.691	.259	3.862
	Reliable	.021	.052	.057	.408	.684	.143	6.998
	Responsivenes	.090	.051	.250	1.778	.077	.143	6.993
	Assurance	.159	.056	.404	2.826	.005	.139	7.219

a. Dependent variable: TOTAL_Y

After removing the empathy dimension, the VIF values for all the remaining dimensions, namely the Tangible, Reliable, Responsiveness and Assurance dimensions, all have values below 10. Thus, the model above is free from multicollinearity.

3.3.3. Heteroscedasticity Test

Heteroscedasticity testing is done in two ways: 1. by using the Spearman rho method; 2. by making a scatterplot (distribution plot) between the residuals and predicted values of the standardized dependent variable.

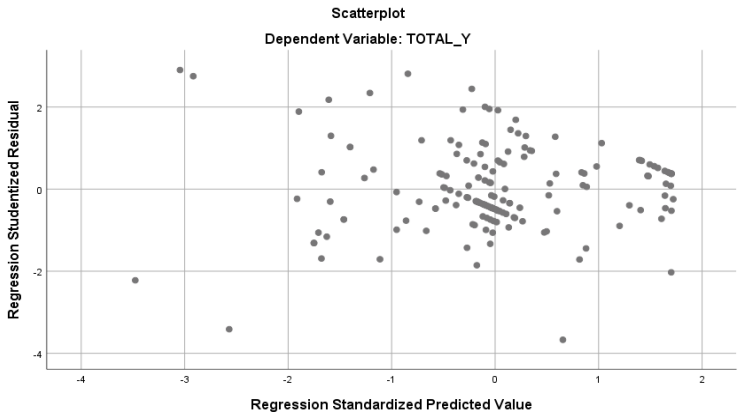

Figure 5. Heteroscedasticity test results with Scatterplot

Figure 5 above displays the results of the heteroscedasticity test using the scatterplot method. Figure 5 makes it evident that no specific pattern emerges because the points are distributed erratically above and below the 0 axis on the Y axis. Thus, it can be said that heteroscedasticity symptoms do not exist.

Using SPSS 25 software, a correlation table is created by applying the Spearman rho method to determine if the regression model exhibits any signs of heteroscedasticity :

Table 10. correlation table

No	Question Items	Correlation
1	Tangible dimensions	,601
2	reliability Dimension	,665
3	responsiveness Dimension	,701
4	assurance Dimension	,715

Given that the correlation value in the table above is greater than 0.05, it can be said that the regression model does not exhibit any signs of heteroscedasticity.

3.4. Test model feasibility

3.4.1. Simultaneous Test (F Test)

The purpose of the simultaneous test is to determine whether the five satisfaction dimensions—reliability, empathy, assurance, responsiveness, and tangible evidence—collectively have an impact on the dependent variable, which is academic achievement. Multiple regression analysis is the method utilized in this study to test the hypothesis. The results of the hypothesis testing are summarized in the table that follows:

Table 11. ANOVA

ANOVAa

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	2153,098	4	538,275	46,570	,000b
	Residual	1930.268	167	11,558		
	Total	4083.366	171			

a. Dependent variable: TOTAL_Y
b. Predictors: (Constant), TOTAL_X6, TOTAL_X2, TOTAL_X5, TOTAL_X3

The F value in Table 11 was determined to be 46,570 with a significance level of 0.000 in order to test this contribution. Since the final significance value is less than 0.05, it can be concluded that the five satisfaction dimensions all work together to have a significant or favorable impact on academic achievement.

3.4.2.**Partial Test (T-Test)**

The T test is used to illustrate how each of the independent variables in the model affects the dependent variable separately. Its significance value also demonstrates the independent variable's unique impact on the dependent variable.

Table12. Coefficients of Model Regression

Coefficientsa

Model		Unstandardized Coefficients B	Unstandardized Coefficients Std. Error	Standardized Coefficients Beta	t	Sig.	Collinearity Statistics Tolerance	Collinearity Statistics VIF
1	(Constant)	13,091	1,868		7,006	,000		
	Tangibles	,015	,037	,042	,398	,691	,259	3,862
	Reliable	.021	,052	,057	.408	,684	.143	6,998
	Responsiveness	,090	,051	,250	1,778	,077	.143	6,993

Assurance	,159	,056	.404	2,826	,005	,139	7,219

a. Dependent variable: TOTAL_Y

With the exception of the assurance dimension, which has a 0.05 sig value and a computed t value of 2.826 that is higher than t $_{table}$= 1.97402, t_{table}(n=172,df=n-2=172-2= 170,t_{table}= 1.97402), the multiple regression testing results show a sig value above 0.05. This demonstrates that while other dimensions have an impact on the students' achievement variable but are not significant, the assurance dimension has a significant impact on academic achievement.

3.4.3. R^2 Coefficient of Determination Test

The coefficient of determination is used to show what percentage of the independent variables in the form of five satisfaction dimensions together explain the variance of the dependent variable in the form of academic achievement.

Table 13. .model summary.

Model Summary					
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.726a	,527	,516	3,400	2,207

a. predictors: (constant), total_x6, total_x2, total_x5, total_x3
b. dependent variable: total_y

The coefficient of determination (R^2), as determined by multiple regression testing, is 0.527, or 52.7%. This figure indicates that five satisfaction-related dimensions have an impact on 52.7% of student satisfaction. Meanwhile, other factors not included in this study had an impact on the remaining 47.3%.

3.4.4. Relative Contribution (SR) and Effective Contribution (SE)

The size of each independent variable's Relative Contribution (SR) and Effective Contribution (SE) to the dependent variable can be seen based on the multiple regression analysis results. Table 3 and Table 4 illustrate the magnitude of SE and SR. A tabulation table for the calculations of SE and SR is provided below :

Table 14. Relative Contribution (SR) and Effective Contribution (SE)

Dimension	Effective Contribution (SE)	Relative Contribution (SR)
Tangibles	2.50	4.74
Reliable	3.82	7.24
Responsiveness	17.53	33.25
Assurance	28.88	54.78
Total	52.73	100.00

The tangible dimension contributes 2.5% effectively and 4.74% relative to the total, while the reliability dimension contributes 3.82% effectively and 7.24% relative to the total, according to the analysis presented in Table 14. The assurance dimension contributes an effective amount of 28.88% and a relative amount of 54.78%, while the responsiveness dimension contributes an effective amount of 17.53% and a relative amount of 33.25%. When taken as a whole, the characteristics of tangibles, assurance, responsiveness, and reliability contribute an effective 52.73% to students' academic success.

3.5 Discussion

For students majoring in business administration at Politeknik Negeri Bengkalis, the Satisfaction variable influences the Academic Achievement variable. 51.7%, with the remaining 47.3% being impacted by additional variables not covered in this study. Other variables which can influence student academic achievement could come from the community environment. And the Family Environment which can be used as subsequent research with the same research object [8].

4 Conclusion

Based on the results of the discussion in this research, it can be concluded as follows:

1. The coorelation of students'satisfaction variables with students' academic achievement is 0.726 which is fairly strong correlated.
2. The multiple linear regression equation also shows that the variables use of tangible, reliability, responsiveness, and assurance have a positive influence on students'academic achievement. This is shown by the following regression results:

   $$Y=13.091+0.015X_2+0.021X_3+0.090X_5+0.159X_6+e$$

   The constant (a) in the regression model is 13,091, which indicates that the student's academic achievement is 13,091 if the tangible (X_2), reliability (X_3), responsiveness (X_5), and assurance (X_6) dimensions are all zero. Then, given that the other independent variables stay constant, the tangible dimension coefficient value (X_2) is 0.015, which indicates that if the tangible value increases by one percent, the student's academic achievement will increase by 1.5 percent. Given that the other independent variables stay constant, the reliability dimension coefficient value (X_3) is 0.021, which indicates that if the reliability value increases by one percent, student academic achievement will increase by 2.1 percent. With the other independent variables staying constant, a one percent increase in responsiveness will result in a nine percent increase in student academic achievement (response dimension coefficient value, or X5). The assurance dimension coefficient value (X6) is 0.159, which means that, assuming all other independent variables stay constant, a one percent increase in the assurance value will result in a 15.9 percent increase in student academic achievement.
3. The students' Satisfaction Influences The students' Academic Achievement for Students Majoring In Business Administration in Politeknik Negeri Bengkalis is 52.7%.This means that 52.7 percent of the students'academic achievement variables of students majoring in business administration in politeknik neegri bengkalis can be explained by the tangible (X_2), reliability variable (X_3), responsiveness variable (X_5), Assurance variable (X_6). Meanwhile, the remaining 47.3 percent is explained by other variables outside of this research.
4. The Assurance which is one of the dimension of the satisfaction variable is the most dominantly influences students' academic achievement of students majoring in Business Administration in Politeknik Negeri Bengkalis
5. The dimension of the satisfaction dimension that has the least influence on the academic achievement of students majoring in Business Administration in Politeknik Negeri Bengkalis is the tangible dimension.

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