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# The Effect of Lecturer-Student Ratio and The Percentage of Lecturers With a Doctoral Degree on The Determination of University Accreditation in Indonesia In 2023

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**Abstract**

*University accreditation is one of the main indicators to assess the quality of universities in Indonesia. This study aims to examine the effect of the ratio of lecturers to students and the percentage of lecturers who have a doctoral degree on university accreditation in 2023. Using quantitative methods based on cross-sectional data from 20 universities (10 accredited A and 10 accredited B), this study applies multiple linear regression models to analyze the relationship. The results show that the lecturer-student ratio has no significant influence on university accreditation. On the other hand, the percentage of lecturers with doctoral degrees tends to have a significant influence at the 90% confidence level but is not significant at the 95% confidence level. This result breaks the common assumption that these two factors are the main determinants of accreditation. Instead, other factors such as institutional management, funding allocation, and student involvement in research may have a greater role in determining university accreditation. This research contributes by bringing to light variables that are rarely discussed in the context of A and B-accredited universities. It also recommends a more holistic approach to improving the quality of accreditation. Universities are advised to focus on improving the quality of human resources, good institutional management, and optimizing resource utilization. The results of this study are expected to be a strategic guide for universities and policymakers in designing more effective higher education quality improvement policies.*

## INTRODUCTION

Improving the quality of higher education in Indonesia is the main focus of the government and educational institutions to improve global competitiveness. One way to assess the quality of a university is through accreditation. Higher education accreditation in Indonesia involves assessing various aspects, including the quality of lecturers, who play an important role in determining the quality of education. In accordance with the Regulation of the Minister of Education, Culture, Research and Technology of the Republic of Indonesia No. 64 of 2020 on Higher Education Accreditation, one of the factors assessed in accreditation is the ratio of lecturers to students and the percentage of lecturers who have a doctoral degree. The data shows that universities with a lower lecturer-student ratio and more lecturers with doctoral degrees tend to get A accreditation, compared to universities with a higher lecturer-student ratio and fewer lecturers with doctoral degrees. This suggests that there is a significant relationship between these two factors and the accreditation outcome of universities.

University accreditation in Indonesia is one of the main indicators for assessing the

The quality of higher education affects the reputation of an institution, both nationally and internationally. Various factors, including lecturer-student ratio and lecturer qualifications, influence the accreditation process. An optimal lecturer-student ratio can improve the quality of interaction between lecturers and students. In contrast, the percentage of lecturers with doctoral degrees is often seen as a measure of academic quality and research capacity within a university. Table 1 below shows a comparison of the lecturer-student ratio and the percentage of lecturers with doctoral degrees against the accreditation of several universities in Indonesia in 2023:

| UNIVERSITY | CREDITATI | LECTURER-STUDENT RATIO | LECTURERS WITH A DOCTORAL DEGREE |
|---|---|---|---|
| UNIV. Indonesia (UI) | A | 38,5% | 51,6% |
| Univ. Gadjah Mada (UGM) | A | 23,8% | 58,6% |
| Institut Pertanian Bogor (IPB) | A | 45,6% | 67,0% |
| Univ. Airlangga (UNAIR) | A | 19,2% | 54,7% |
| Univ. Padjajaran (UNPAD) | A | 11,6% | 51,3% |
| Univ. Hasanuddin (UNHAS) | A | 20,2% | 69,4% |
| Univ. Sebelas Maret (UNS) | A | 20,7% | 45,3% |
| Univ. Brawijaya (UB) | A | 43,1% | 15,8% |
| Univ. Diponegoro (UNDIP) | A | 48,3% | 57,1% |
| Univ. Pendidikan Indonesia (U | A | 28,2% | 52,9% |
| Univ. Bengkulu (UNIB) | B | 25,4% | 32,1% |
| Univ. Lampung | B | 41,5% | 28,0% |
| Univ. Kep Bangka Belitung | B | 27,3% | 16,1% |
| Univ. Maritim Raja Ali Haji | B | 24,8% | 14,4% |
| Univ. Palangka Raya | B | 19,8% | 24,2% |
| Univ. Pattimura | B | 16,8% | 36,8% |
| Univ. Siliwangi | B | 33,8% | 17,1% |
| Univ. Malikussaleh | B | 29,1% | 21,2% |
| Univ. Tidar | B | 32,5% | 80,4% |
| Univ. Halu Oleo (UHO) | B | 33,5% | 94,4% |

In this study, the author wants to analyze more deeply the influence of the lecturer-student ratio and the percentage of lecturers with doctoral degrees on the determination of university accreditation in Indonesia in 2023. This is in line with the government's efforts to improve the quality of higher education in Indonesia through stricter accreditation policies.

Sanusi et al. (2023) Emphasized that the qualifications of lecturers greatly affect the accreditation process because the ability of lecturers to teach and conduct research is a determining factor in the quality of education provided. A study by Sanusi et al. (2023) Also shows that good accreditation can improve the quality of education services, which encourages universities to pay attention to these two factors in order to obtain higher accreditation. However, research that specifically examines the influence of these two factors on university accreditation in Indonesia, especially among universities with A and B accreditation, is still minimal. This study aims to evaluate the impact of the lecturer-to-student ratio and the proportion of lecturers with doctoral degrees on the achievement of university accreditation in Indonesia. This research examines how the lecturer-student ratio and the proportion of lecturers with doctoral degrees affect university accreditation. The purpose of this study is to provide greater insight into the various factors that influence university accreditation as well as provide recommendations for universities to improve the quality of their education and accreditation.

## LITERATUR REVIEW

University accreditation in Indonesia is one of the main benchmarks for evaluating the quality of higher education. It plays an important role in building institutions' reputations and increasing their competitiveness nationally and internationally. Harvey & Green (1993); Salmi (2009). Accreditation reflects the capacity of universities to provide education that meets national and international quality standards. UNIVERSITAS GADJAH MADA (2024). In this context, higher education organizational theory emphasizes that the organizational structure of higher education institutions has a major impact on academic culture and the quality of education produced. Suardi et al. (2023). Effective management in educational institutions has also been shown to contribute to the achievement of better academic standards.

The theory of education quality Harvey & Green (1993) It asserts that education.

Quality can be measured through various indicators, such as effectiveness, accountability, and the quality of human resources. This is in line with Becker (1993) View in human capital theory shows that improving the qualifications of teaching staff, such as lecturers with doctoral degrees, can support productivity and improve the quality of higher education. Another study by Sanusi et al. (2023) Revealed that lecturer qualifications have a significant impact on improving the quality of education. In addition, the ideal lecturer-student ratio also plays an important role in creating better academic interactions. Indri & Makmur (2023).

Several studies have identified elements that are key to successful university accreditation. Biggs & Tang (2011) Emphasized the importance of quality learning as the main foundation for achieving excellent accreditation. Furthermore, Salmi (2009) Explains that good institutional management, which includes management of human resources, facilities, and curriculum, contributes significantly to improving institutional quality. This opinion is also supported by Altbach et al. (2009) and Marginson & van der Wende (2007), which highlights the importance of accreditation in supporting global competitiveness through the internationalization of higher education.

Cheol & Grant (2009) Propose that improving the education system can have a direct impact on improving the overall quality of the institution. This view is in line with Marginson & van der Wende (2007), who points out that good organizational structure planning contributes to improved education quality. Research by Darling-Hammond (1999) Shows that the quality of teachers has a close relationship with student learning outcomes, while Penny & Coe (2004) Emphasize that the qualifications of teaching staff are one of the main indicators of learning effectiveness in higher education.

Brennan & Shah (2000) Highlighted that the process of quality assessment through accreditation can drive significant changes in the organizational structure of higher education. In addition, Vught & Westerheijden (1994) Offer a comprehensive quality evaluation approach to assess various aspects of higher education. Gebreyohans Gebru (2020) Also underlined the importance of considering institutional diversity in the accreditation process, given the differences in resources, study programs, and student characteristics in each college. On the other hand, Altbach et al. (2009) Highlighted that global trends encourage universities to continuously improve the quality standards of education in order to respond to the needs of the international market. In this context, the lecturer-student ratio and the qualifications of lecturers with doctoral degrees are important factors in determining university accreditation in Indonesia. However, efforts to improve accreditation require a more holistic approach, focusing not only on specific indicators but also on integrated education management to improve various dimensions of education quality.

## METHODOLOGY

### RESEARCH MODEL

The study adopted a quantitative design with a descriptive and analytical analysis of the influence ratio between lecturer-student and the percentage of lecturers who hold a doctoral degree in determining university accreditation in Indonesia. The data used is secondary data obtained from a document reporting university accreditation with A and B accreditation in 2023. Data sources were taken from the Ministry of Education, Culture, Research, and Technology Republic of Indonesia and reports from each university. Data in study This was collected through method documentation and observation of the accreditation data. For analysis, multiple linear regression was used to measure to what extent the variables were independent, namely the ratio of lecturer-student and the percentage of lecturers holding a doctorate, influencing variable dependent in the form of university accreditation. Variables were measured with the use of an index ratio between lecturer and student and the percentage of lecturers who hold a doctoral degree as variable-free. At the same time, the

University Accreditation is assessed based on categories A and B as variables. Creswell (2014). (*Creswell*, n.d.)The research model applied is multiple linear regression, which aims to test whether the ratio of lecturer-students and the percentage of lecturers holding a doctorate significantly influence university accreditation. This model aims to answer the problem that relates the second variable to university accreditation and give more insight into factors that influence the determination of accreditation.

**Information:**

Variable in study This is shaped **cross-sectionally because the data analysis covers university accreditation at one point in time (year 2023), not observed data in a periodic (time series) or cross-data** combination time and across units (panels).

## RESEARCH METHOD

For regression models, linear used form the appropriate formula with description study:

$$SAUi : \beta_0 + \beta_1 RASIOi + \beta_2 S3i + \epsilon$$

- $SAUi$ : University accreditation (variable) dependent for universities $i$, measured by category (A or B).
- $RASIOi$ : Ratio lecturer-student as variable independent first.
- $S3i$ : Percentage lecturer holds a doctoral degree as a variable independent second.
- $\beta_0$ : : Intercept or regression model constants.
- $\beta_1, \beta_2$ : Coefficient regression shows the influence of each variable independent to variable dependent.
- $\epsilon$ : The model can explain error or error term that reflects variations that are not.

## RESULT AND DISCUSSION

### Result

Table 1. Universities, Accreditation, Lecturer-Student Ratio, Lecturers with Doctoral Degrees.

| University | Accreditations | Lecturer-student ratio (%) | Lecturers with doctoral degrees (%) |
|---|---|---|---|
| UNIV. Indonesia (UI) | A | 38.5% | 51.6% |
| Univ. Gadjah Mada (UGM) | A | 23.8% | 58.6% |
| Institut Pertanian Bogor (IPB) | A | 45.6% | 67.0% |
| Univ. Airlangga (UNAIR) | A | 19.2% | 54.7% |
| Univ. Padjajaran (UNPAD) | A | 11.6% | 51.3% |
| Univ. Hasanuddin (UNHAS) | A | 20.2% | 69.4% |
| Univ. Sebelas Maret (UNS) | A | 20.7% | 45.3% |
| Univ. Brawijaya (UB) | A | 43.1% | 15.8% |
| Univ. Diponegoro (UNDIP) | A | 48.3% | 57.1% |
| Univ. Pendidikan Indonesia (UPI) | A | 28.2% | 52.9% |
| Univ. Bengkulu (UNIB) | B | 25.4% | 32.1% |
| Univ. Lampung | B | 41.5% | 28.0% |
| Univ. Kep Bangka Belitung | B | 27.3% | 16.1% |
| Univ. Maritim Raja Ali Haji | B | 24.8% | 14.4% |
| Univ. Palangka Raya | B | 19.8% | 24.2% |
| Univ. Pattimura | B | 16.8% | 36.8% |
| Univ. Siliwangi | B | 33.8% | 17.1% |

| | | | |
|---|---|---|---|
| Univ. Malikussaleh | B | 29.1% | 21.2% |
| Univ. Tidar | B | 32.5% | 80.4% |
| Univ. Halu Oleo (UHO) | B | 33.5% | 94.4% |

Source: BPS Pendidikan

Multiple linear regression analysis was conducted to evaluate the effect of lecturer-student ratio (RASIO) and the percentage of lecturers with doctoral degrees (S3) on university accreditation status. The data analyzed include 20 state universities (PTN) with accreditation status A and B in Indonesia. With the following Multiple Linear Regression model:

$$SAUi = \beta_0 + \beta_1 RASIOi + \beta_2 S3i + \varepsilon$$

**1. Descriptive Analysis**

Table 2. Descriptive Statistics of University Data by Accreditation and Lecturer-Student Ratio.

| Variables | Observations | Average (Mean) | Standard Deviations | Min | Max |
|---|---|---|---|---|---|
| **Accreditations** | 20 | 1,5 | 0,51 | 1 | 2 |
| **Lecturer-student ratio (%)** | 20 | 10,5 | 5,92 | 1 | 20 |
| **Lecturers with doctoral degrees (%)** | 20 | 10,5 | 5,92 | 1 | 20 |

Descriptive analysis was conducted to understand the main characteristics of the data based on accreditation variables, lecturer-student ratio, and percentage of lecturers with doctoral degrees. The results of the descriptive analysis are shown in Table 2, which includes the mean, standard deviation, minimum, and maximum values.

- The average accreditation of universities in the sample is 1.5 with a standard deviation of 0.51, indicating a relatively small spread among the sample
- The lecturer-student ratio has an average of 10.5 with a standard deviation of 5.92.
- The percentage of lecturers with doctoral degrees has an average of 10.5 with a standard deviation of 5.92.

These results provide an overview of the distribution of variables used as the basis for further analysis.

**2. (Shapiro-Wilk)**

Table 3. Shapiro-Wilk Normality Test Results

| Variables | Observations | W | V | z | Prob>z |
|---|---|---|---|---|---|
| **Accreditations** | 20 | 0.99799 | 0.048 | -6.133 | 1.00000 |
| **Lecturer-student ratio** | 20 | 0.96038 | 0.938 | -0.129 | 0.55137 |
| **Lecturers with doctoral degrees** | 20 | 0.96038 | 0.938 | -0.129 | 0.55137 |

The Shapiro-Wilk test is used to test whether the data is normally distributed. The test results are shown in Table 3.

- The accreditation variable shows a value of $W = 0.99799$, with a probability of $p = 1.00000$, which means the data is normally distributed.
- The lecturer-student ratio has $W = 0.96038$ dan $p = 0.55137$, indicating a normal distribution.
- The percentage of lecturers with doctoral degrees is also a result of $W = 0.96038$ dan $p = 0.55137$,

Fulfilling the assumption of normality.

Based on these results, all variables met the assumption of normality. $(p - value > 0.05)$. This allows the use of parametric statistical methods in subsequent analysis, such as linear regression.

**3. Multicollinearity Test Results (VIF)**

Table 4. Multicollinearity Test Results (VIF)

| Variables | VIF | 1/VIF |
|---|---|---|
| **Lecturer-student ratio** | 1.00 | 0.998906 |
| **Lecturers with doctoral degrees** | 1.00 | 0.998906 |
| Mean VIF | 1.00 | |

The multicollinearity test results show that the Variance Inflation Factor (VIF) value for the lecturer-student ratio variable and lecturers with doctoral degrees is 1.00 each with a 1/VIF value of 0.998906. The mean VIF value is also the same, which is 1.00.

This interpretation indicates that there is no significant multicollinearity between the independent variables in the mode. In other words, the linear relationship between the two variables is within safe limits, so the linear regression model can be used without the constraints that arise from violating the multicollinearity assumption.

**4. Heteroscedasticity Test (Berusch-Pagan/Cook-Weisberg)**

Table 5. Heteroscedasticity Test Results (Berusch-Pagan/Cook-Weisberg)

| Statistical Test | $Chi^2(1)$ | $Chi^2$ |
|---|---|---|
| Heteroscedasticity | 0.68 | 0.04084 |

The heteroscedasticity test was conducted using the Breusch-Pagan/Cook-Weisberg method. The test results show a chi-square value of 0.68 with a p-value of 0.4084. A p-value greater than 0.05 indicates that there is no heteroscedasticity problem in the regression model. This means that the error variance of the regression model is constant or the model is homoscedasticity. This supports the validity of the research findings.

**5. Multiple Linear Regression**

Multiple linear regression analysis is used to determine the effect of independent variables (Lecturer-Student Ratio and Lecturer with Doctoral Degree) on the dependent variable (University Accreditation). The results of the analysis are presented in the following table:

Table 5. Heteroscedasticity Test Results

```
. regress AKREDITASI RASIO S3
```

| Source | SS | df | MS | Number of obs | = | 20 |
|---|---|---|---|---|---|---|
| | | | | F(2, 17) | = | 1.61 |
| Model | .795574783 | 2 | .397787391 | Prob > F | = | 0.2292 |
| Residual | 4.20442522 | 17 | .24731913 | R-squared | = | 0.1591 |
| | | | | Adj R-squared | = | 0.0602 |
| Total | 5 | 19 | .263157895 | Root MSE | = | .49731 |

| AKREDITASI | Coef. | Std. Err. | t | P>\|t\| | [95% Conf. | Interval] |
|---|---|---|---|---|---|---|
| RASIO | -.0003599 | .0192955 | -0.02 | 0.985 | -.0410699 | .04035 |
| S3 | -.0345746 | .0192955 | -1.79 | 0.091 | -.0752845 | .0061354 |
| _cons | 1.866812 | .3028955 | 6.16 | 0.000 | 1.227759 | 2.505866 |

(Berusch-Pagan/Cook Weisberg).

- **Overall Model Significance**

  The F-statistic test results show a value of 1.61 with a p-value of 0.2292. A p-value greater than 0.05 indicates that the regression model is not significant overall. This means that the combination of independent variables is not able to explain the variation in university accreditation significantly. The coefficient of determination (R-squared) of 0.1591 indicates that only 15.91% of the variation in accreditation can be explained by the model. In comparison, the remaining 84.09% is explained by other variables not included in this model.

- **Variable Analysis of Lecturer-Student Ratio (Ratio)**

  The regression coefficient for the Lecturer-Student Ratio variable is -0.0003599, with a p-value of 0.985. The p-value, which is much greater than 0.05, indicates that this variable does not have a significant influence on university accreditation.

- **Variable Analysis of Lecturers with Doctoral Degrees (S3)**
  The regression coefficient for the S3 Lecturer variable is -0.0345746, with a p-value of 0.091. Similar to The Lecturer-Student Ratio variable also does not have a significant effect on university accreditation.

**Discussions**

The results of this study indicate that the lecturer-student ratio (RASIO) negatively influences university accreditation status. This is in line with the research of Fitriani et al. (2020), which states that a lower lecturer-student ratio can increase interaction between lecturers and students, thus having a positive impact on the quality of education.

In contrast, the percentage of lecturers with doctoral degrees (S3i) shows a significant positive effect on university accreditation. This finding supports the research of Susanti et al. (2018), which states that lecturer qualifications, especially doctoral degrees, are key indicators in improving academic quality and university accreditation.

However, there are anomalies in the data, such as Halu Oleo University (UHO), which has the highest percentage of doctoral lecturers (94.4%) but is only accredited B. This indicates that other factors, such as educational facilities, research performance, or university management, also affect accreditation Mulyoto et al. (2023).

This research provides insight into the fact that efforts to improve university accreditation should not only focus on increasing the lecturer-student ratio or the percentage of doctoral lecturers. Still, it should also include a holistic approach to the quality of education.

**1. Data Characteristics**

The average university accreditation of 1.5 with a low standard deviation indicates that the majority of universities have fairly uniform accreditation quality. This reflects consistent standards of assessment by accreditation agencies. However, the larger variation in the lecturer-student ratio suggests inequality in the distribution of teaching staff. Universities with non-ideal lecturer-student ratios may face challenges in providing individualized attention to students, which may ultimately affect the quality of education. The even percentage of lecturers with doctoral degrees suggests that most universities have met the minimum standards for improving lecturers' competencies.

**2. Data Normality**

The normality test results show that the data distribution fulfills the normality assumption on all variables. This supports the use of parametric statistical methods such as linear regression, which is very sensitive to violations of the normality assumption. Data normality also provides more confidence in the interpretation of relationships between variables, which forms the basis for strategic decision-making.

**3. Variable Multicollinearity**

A VIF value of 1.00 indicates the absence of multicollinearity, which means the independent variables do not have a strong linear relationship with each other. This condition is important to ensure that the regression coefficient estimates are unbiased. If multicollinearity occurs, the interpretation of the regression results becomes unreliable. With this result, the planned linear regression model can be run without concern for assumption violations.

**4. Heteroscedasticity**

The absence of heteroscedasticity problems indicates that an important assumption in linear regression has been met. It ensures that the residual variance in the model is constant and supports the validity of the analysis results.

**5. Overall Model Significance**

The overall insignificance of the model indicates that the independent variables used (Lecturer-Student Ratio and Lecturers with Doctoral Degrees) are not strong enough to explain variations in university accreditation. This result may be due to the low direct relevance of these two variables to accreditation or the presence of other variables that influence accreditation more, such as educational facilities, graduate rates, or institutional reputation.

**6. Analysis of Independent Variables**

Lecturer-Student Ratio: The insignificant relationship suggests that this ratio has not been a key indicator in determining university accreditation. This factor may Be more related to operational efficiency Than academic quality.

Lecturers with Doctoral Degrees: The non-significant results may be due to the homogeneity in the data of doctoral lecturers in the universities studied, which does not provide enough variation to affect accreditation.

**7. Implication of Findings**

Significant variations in lecturer-student ratios highlight the need for more equitable faculty allocation policies among universities, especially to meet quality education standards.

Homogeneity in accreditation and the percentage of lecturers with doctoral degrees indicate that higher education institutions have tried to meet the set standards. However, more attention needs to be paid to the lecturer-student ratio, which is an important indicator in evaluating the quality of education.

This result supports Gujarati & Porter (2009) The theory is that data normality and the absence of multicollinearity are important conditions in ensuring the validity of linear regression models.

This result underscores the importance of considering other factors when analyzing university accreditation. These findings support previous literature that suggests a multidimensional approach to evaluating the quality of higher education institutions. Gujarati & Porter (2009) Variables such as research budget, campus facilities, and student engagement may be more relevant in explaining variations in accreditation.

## CONCLUSION

Indonesian higher education accreditation is one of the most important benchmarks for quality and the level of higher education that will finally influence national and international reputation and competitiveness. The paper examines the effect of the two factors on the accreditation of A- and B-status higher education institutions in Indonesia. This analysis applies multiple linear regression to the 2023 accreditation data, which measures the relationship between the ratio of lecturers to students and the percentage of lecturers with doctoral degrees to the level of accreditation.

The results of the study show that the overall model of regression used is not significant; only 15.91% of the variation in the level of accreditation is explained by these two variables. In contrast, around 84.09% of the variation in accreditation is influenced by other factors not discussed in this study. Specifically, the lecturer-to-student ratio has an insignificant negative relationship with accreditation, contrary to the assumption that this factor is one of the main determinants. Meanwhile, the percentage of lecturers with doctoral degrees shows a negative relationship that is almost significant at the 90% confidence level. This is quite surprising because it shows that even though there are more lecturers with doctoral degrees, the effectiveness of educational management may be a challenge in itself, so it does not directly contribute to improving accreditation.

This finding provides a new perspective that challenges the common view that the lecturer-student ratio and lecturer qualifications are the main factors in accreditation. This result suggests that, in fact, the quality of higher education accreditation in Indonesia depends more on other various aspects, such as budget allocation. Further research is thus needed to understand in greater detail the various other factors influencing university accreditation to provide a holistic picture of how to improve the quality of higher education in Indonesia.

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