Do School Accreditation, Education Budget, and Teacher’s Competence Matter for Graduate’s Quality?

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This study examined the effect of school accreditation, education budget, and teacher competence on the quality of high school graduates. The analysis method used was a panel regression through the Fixed Effect Model (FEM) approach, and the data were from 2017-2019. The results showed that school accreditation and education budgets had an effect on the quality of graduates. Also, the implication of this study is that schools need to increase accreditation, as well as the education budget. In terms of teacher competence, the teachers need to improve their competence by taking an active role in organizations, training teacher capacity, and mastery of information technology. Meanwhile, teacher competence has no effect on the quality of graduates in senior secondary schools. Simultaneously, all variables have a significant effect on the graduates quality. The limitation of this study is the data used, regardless of the status of private and public schools. Therefore, studies to compare private and public schools are of particular interest.

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INTRODUCTION

One of the goals of accreditation is to ascertain the extent to which a school is performing in the learning and teaching process. Accreditation is a series of activities for assessing the eligibility of a school, based on criteria determined by the competent authority. In Indonesia, the authority to carry out this process is the National Accreditation Board for Schools and Madrasahs (BAN-S/M) (Ministry of Education and Culture of the Republic of Indonesia, 2019). Therefore, accredited schools or madrasahs determine their eligibility (Zulnika, 2017).

According to Law Number 20 of 2003 concerning the national education system, the purpose of accreditation is to assess programs feasibility and/or educational units. This process is hoped to improve the quality of education nationally. Therefore, the government formed an agency called the National Accreditation Board for Schools and Madrasahs (BAN - S/M). BAN - S/M is an autonomous body or institution that determines programs feasibility and/or education units at the primary and secondary school level, with reference to established national standards (Mendiknas Regulation, 2005).

School accreditation has a very broad impact, not only in the teaching and learning process, but affects every part of the institution, especially on teacher performance and quality at the school (Asrijanty, 2018; Zulnika, 2017; Mukminin et al., 2017). Subijanto and Wiratno (2012) stated that there are several issues related to the implementation of school accreditation in Indonesia, namely: (1) The results of BAN S/M accreditation do not fully reflect the feasibility of education programs in accordance with the demands of National Education Standards (SNP). Even though the accreditation implementation for each assessor uses the same guidelines, in some areas, there are still results in certain educational units that do not fully reflect accountable. This occurs because the understanding and skills of each assessor are at different levels; (2) The results of the BAN S/M accreditation have not been fully used as a reference in improving education quality in the units. Also, the results should be used as a reference for the concerned education unit in an effort to improve the quality of services and at the same time, what areas need to be improved; (3) There were still several assessors who did not have the qualifications as determined. Although at the end of each assessor training, an ability test (theory and practice) was carried out. In reality, not all the assessor training participants had passed satisfactorily. However, there are some who are declared to have passed conditionally and/or still need to carry out field guidance, whereby they are required to follow technical guidance by senior assessors in their regions in implementing school/madrasah accreditation. This often happen when the concerned individual is unable to carry out accreditation according to the established guidelines.

One important element in implementing school accreditation is the quality of teachers. Therefore, efforts to optimize teacher professionalism are increasing teacher competence (Sayekti, 2019). Meanwhile, one of the benchmarks for measuring competence is the Teacher Competency Test (UKG) score. The aim is to determine the competence level and map their mastery on pedagogical and professional competence. Furthermore, UKG implementation is focused on identifying teacher weaknesses in mastering pedagogic and professional competencies (Kementrian Pendidikan dan Kebudayaan, 2015).

Therefore, when a teacher does not have the competence or does not master teaching methods both pedagogical and professional competence, then the teacher can be said to be incompetent. Furthermore, when the teaching methods and the subject matter are not mastered, then the teacher will fail to carry out the assigned duties (Santiyadnya, 2011).

In the last ten years, several studies have been conducted on the impact of school accreditation and teacher competence. Furthermore, Blouin et al. (2018) conducted a test on the impact of accreditation on medical education in Canada. The results showed that accreditation may improve the quality of medical education. This was also expressed by Chang and Tu's (2016), which examined the impact of accreditation on business schools in Taiwan. The results showed that this process is a guarantee of education quality.

Furthermore, Rosnawati (2017) showed that the higher the understanding and implementation of pedagogic and professional competence of a teacher, the higher the learning...
quality at SMA Negeri in Wawotobi District, Konawe Regency. Also, teacher's competence has a significant effect on the quality of education in MTs schools in Tarowang District, Jeneponto Regency (Susanto, 2018). Likewise, Sayekti (2019) stated that the competency test contributes positively to the professional competence of teachers.

In terms of budget, Alfiningsih (2018) showed that budget or financing has a positive influence on education quality at SMK Satria West Jakarta. Also, IT Ar Ridwan was influenced by the education budget. Sulaiman (2017) examined the implementation of the education budget allocation in order to improve the quality of nine years of basic education in Palembang City. The results showed that budget allocation can improve the quality of education. Furthermore, it was shown that costs can affect the quality of schools and students. However, money is not the most fundamental for school improvement. Finally, Togatorop (2017) examined the effect of education costs on the quality of private high schools in Tangerang Regency. The results showed that school quality is directly affected by education cost.

Meanwhile in Indonesia, research on the impact of accreditation, education budgets, and teacher competence on the quality of students has been widely conducted. However, the research were only conducted at a school or in a district using time series data. This study used panel data from one of the provinces in Indonesia, namely Aceh province, which has 23 districts/cities.

Therefore, this study aims to determine the impact of school accreditation, education budgets, and teacher competence on the quality of high school graduates in Aceh. Also, several variables were used in this study, which are: school accreditation scores, total education budgets, teacher competency test and graduation test scores from 23 districts/cities in Aceh. In addition, data for all variables were obtained from the Aceh Province Education and Culture Office from 2017 to 2019.

**METHOD**

The researchers analyzed the effect of school accreditation, education budgets, and teacher competence on the quality level of high school graduates in Aceh. This study used panel data from 23 districts/cities. Furthermore, the variables were school accreditation, education budget, and teacher competence as independent variables. Meanwhile, the dependent variable was the quality of graduates, and the data used were from 2017 to 2019.

This study examined the factors that influence the quality of high school graduates. Furthermore, panel regression equations were performed using the Generalized Least Squares (GLS) model method. The general format used for panel regression equations in this study can be written as follows:

\[ GQ_{it} = \alpha + \beta_1 Accr_{it} + \beta_2 EB_{it} + \beta_3 UKG_{it} + \varepsilon_{it} \]  

\[ GQ_{it} = \alpha + \beta_1 Accr_{it} + \beta_2 EB_{it} + \beta_3 UKG_{it} + \varepsilon_{it} \]  

\( GQ \) is the quality of graduates proxied by the test scores of students in each district/city. Meanwhile, Accr is accreditation taken from the high school accreditation value. EB is the education budget, which is represented by the total budget in senior secondary schools. Also, UKG is teacher competency proxied by the results of the competency test scores for high school teachers in Aceh. Furthermore, \( \alpha \) is constant, \( \beta_1, \beta_2, \beta_3 \) are the coefficient estimate, \( \varepsilon \) is the error term, \( i \) is the high school in each district/city in Aceh, and \( t \) is the time period.

In general, there are two models used in the GLS method, namely the Fixed Effect Model (FEM) and the Random Effect Model (REM) (Clark & Linzer, 2015). To determine which model is better to be used, it is necessary to conduct a test. The commonly used tests are the Hausman and the Chow test. The Hausman is a statistical test for choosing FEM or REM, and it is conducted by looking at the hypothesis, namely: whether the random cross-section is less than 0.05, the panel data used is the Fixed Effect Model, and vice versa. Furthermore, the Random Effect Model is used when the random cross-section is greater than 0.05. Meanwhile, the Chow test is used to choose a data model by comparing the Pooled Least Square (PLS) with the Fixed Effect Model (FEM), which is by comparing the cross-section value of F with the critical value (0.05). When the cross-section F is greater than 0.05, the PLS Model is used for panel data. Conversely, when the
cross-section of F is less than 0.05, then FEM is better than PLS.

Therefore, when the results of the panel data testing are better for FEM and PLS, then the first equation can be rewritten as follows:

$$GQ_{it} = \alpha_i + \beta_1 Accr_{it} + \beta_2 EB_{it} + \beta_3 UKG_{it} + \epsilon_{it}$$

(2)

In this second equation, i is entered into \( \alpha \) (constant) which is the possible different intercept. The FEM model is certainly inseparable from its shortcomings, especially when there are not many observations from the research data. This deficiency can be corrected using the REM model. Also, the REM model assumes that the intercept is random. Therefore, when the obstruction is small, it is better to use the REM model.

By using equation (1), the panel regression with the REM model can be written as follows:

$$GQ_{it} = \alpha + \beta_1 Accr_{it} + \beta_2 EB_{it} + \beta_3 UKG_{it} + \epsilon_{it} + u_{it}$$

(3)

Generally, data analysis in this study used several steps, namely: (1) making a description of each research variable; (2) selecting the panel data model through the Hausman and Chow tests; (3) testing the panel data model; (4) analysis of estimates; (5) interpretation of the estimation results; and (6) discussion.

RESULTS AND DISCUSSION

Before testing the estimated influence of school accreditation variables, education budgets, and teacher competence on the quality of high school graduates, the researcher provided an overview of each studied variables. Table 1 showed that the highest graduate quality variable was in Banda Aceh City at 55.17 and the lowest was in Nagan Raya Regency with a value of 35.23. Meanwhile, the lowest accreditation score was in Aceh Tenggara with a score of 69.35, and Sabang City has a score of 100.00. Furthermore, the highest value of the education budget was in North Aceh District, reaching Rp. 711.96 billion and the lowest was in Subulussalam district, Rp. 106.99 billion. Finally, the lowest score for the teacher competency test was in Pidie Jaya district with 36.94 and the highest was in Langsa City with 57.54.

<table>
<thead>
<tr>
<th>Table 1. Descriptive of Variables</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Descriptive Statistics</strong></td>
</tr>
<tr>
<td><strong>Quality Graduates</strong></td>
</tr>
<tr>
<td>Mean</td>
</tr>
<tr>
<td>Median</td>
</tr>
<tr>
<td>Std Deviation</td>
</tr>
<tr>
<td>Minimum</td>
</tr>
<tr>
<td>Maximum</td>
</tr>
</tbody>
</table>

From the test results for selecting the panel regression model both through the Chow and the Hausman test, the Fixed Effect Model (FEM) model was the best from the Random Effect Model (REM) and the Pooled Least Square (PLS). Based on the test results shown in Table 2, the cross-section F value was less than 0.05. Likewise, the random cross-section value was less than 5%. This means that the FEM model was better than the PLS and REM.
Table 2. Chow and Hausman Test

<table>
<thead>
<tr>
<th>Effect Test</th>
<th>Chow Test</th>
<th>Hausman Test</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prob.</td>
<td>0.0000</td>
<td>0.0001</td>
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</table>

Based on the Hausman and chow test, the FEM model was the best for the regression panel to estimate the effect of school accreditation, education budget, and teacher competence on the quality of high school graduates.

Table 3. Result of Independent and dependent variable

<table>
<thead>
<tr>
<th>Variables</th>
<th>Coefficient</th>
<th>t-stat.</th>
<th>P-Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>-16.6321</td>
<td>-1.5484</td>
<td>0.1289</td>
</tr>
<tr>
<td>Accreditation</td>
<td>0.6913***</td>
<td>5.1084</td>
<td>0.0000</td>
</tr>
<tr>
<td>Education Budget</td>
<td>0.0175*</td>
<td>1.9286</td>
<td>0.0604</td>
</tr>
<tr>
<td>Teacher Competence</td>
<td>-0.0826</td>
<td>-0.9804</td>
<td>0.3324</td>
</tr>
<tr>
<td>R²</td>
<td>0.8424</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Adjust R²</td>
<td>0.7507</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Prob (F-Stat)</td>
<td>0.0000</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* and *** indicate significance at 1% and 10% levels

Table 3 showed that the school accreditation variable has a positive and significant effect on the quality of high school graduates in Aceh. Furthermore, the estimated value was 0.6913 at a significance of 1 percent. This means that each increase in school accreditation scores will improve the quality of high school graduates by 69.13 percent. Likewise, the education budget variable has a coefficient of 0.0175 at a significance of 10 percent. In other words, every 1 percent increase in the education budget will increase the quality of education by 1.75 percent. Furthermore, teacher competence has a probability value of 0.3324. This means that the teacher competency variable has no effect on the graduates quality.

Overall, school accreditation, education budget, and teacher competence have asignificant effect on the quality of high school graduates in Aceh. This is evidenced by the test results of the prob value. (F-Stat) of 0.0000. Meanwhile, Adjust R² of 0.7507 proved that the quality of high school graduates can be explained by the three variables by 75 percent. The other 25 percent can be influenced by other factors such as leadership, school environment, and school management (Karweti, 2010; Imaslihkah, et., Al., 2013; Prasasti, 2016; Yayuk & Sugiyono, 2019).

The test results showed that accreditation affects the quality of graduates. This is in accordance with several previous studies including Blouin et al. (2018), and Chang and Tu (2016), which examined the impact of accreditation on the quality of education in Canada and China. Basically, school accreditation is an activity that carries out an assessment with several criteria (Ministry of Education and Culture of the Republic of Indonesia, 2015). The aim of this process is to determine to what extent a school can improve education quality in accordance with the available facilities and infrastructure. Therefore, with this accreditation, every school will know its strengths and weaknesses. These weaknesses will certainly become challenges and needs improvements in school management. However, the strength that has existed in schools will be an opportunity to carry out their function as a catalyst for increasing human resources.

In terms of the education budget, the results also showed that there was an influence on the quality of senior secondary education in Aceh. This is not excessive because the budget in an organization is very needed in carrying out activities. Likewise with schools, which in fact require funds to cover all needs, such as buying office stationery, paying teacher salaries, building, and other operational costs. This result is also in line with some previous researchers (Chairuwidha, 2019; Sulaiman, 2017; Togatorop, 2017). However, budget is not the main factor to improve the quality of education for students and schools as a whole (Baker, 2012).

Furthermore, the teacher competency variable has no effect on the quality of high school graduates. The results showed that teacher competence as measured by the test score has not had an effect on graduates quality in Aceh. This is not in line with several previous studies by...
Rosnawati (2017), and (Susanto, 2018). The results of their research showed that a higher teacher's competence will improve education and graduates quality. Also, teacher competence can improve their professionalism Sayekti (2019). This competence has no effect on the quality of graduates because the competency test scores of high school teachers in Aceh and Indonesia as a whole are felt to be less than expected. Meanwhile, the Indonesian Teachers Association (PGRI) states that the minimum teacher competency test score is 70 points out of the 80 expected nationally (Pikiran Rakyat, 2019). From the existing data, the highest high school teacher competency test score is 57.54 points and the lowest is 36.94 points.

In principle, the purpose of school accreditation is to help the management see the extent of their strengths and weaknesses, with the hope of improvements and opportunities to improve education quality. The results of high school accreditation research have a positive and significant effect on the quality of graduates. This means that the higher the accreditation value of a school, the higher its graduate quality. Furthermore, in terms of education budget, this factor also affects the quality of graduates. The amount of budget that is spent will have an impact on the graduates quality. With an adequate budget, it will certainly be easier for schools to meet all types of expenditure.

Teacher competence has a big role in the quality of graduates. Furthermore, the teacher is one of the main factors in teaching and learning process. Therefore, a professional teacher is expected to improve the quality of graduates in senior high schools. Meanwhile, various means can be employed to improve competence, including (1) taking an active role in teacher professional organizations; (2) attending training related to capacity building; (3) utilize existing information and communication technology; and (4) mastering the basic competency standards in the scientific field being taught. Furthermore, one of the efforts to increase teacher competence is by participating in classroom action research training (Fitria et al., 2017). This can help to improve the quality of learning, and increase teacher professionalism and competence. In addition, to improve competence, it is necessary to have academic supervision from the principal in preparing the administration of the assessment (Astuti, 2016).

In management, high schools have different perceptions about public and private schools. Karlina (2016) showed that there are differences in stakeholder perception of private and state high schools (SMA) in financial management and accountability. In terms of meeting operational costs, public and private schools also experience differences. The private schools are more likely to cover any deficiencies in operational costs by seeking other sources of funding. Furthermore, in the aspect of financial management innovation, private high schools are more determined to survive and obtain funding to cover the shortage of BOS funds (Hakim & Suhendar, 2020).

CONCLUSIONS AND SUGGESTION

This study aims to determine how accreditation, education budgets, and teacher competence partially and simultaneously affect the quality of high school graduates. The test results showed that two variables partially affect the graduates quality, namely school accreditation and education budget. Meanwhile, teacher competence has no effect. However, simultaneously all variables affect the quality of graduates. The implication of this study is that schools need to increase accreditation, as well as the education budget. In terms of competence, teachers need to improve their competence by taking an active role in organizations, training capacity, and mastery of information technology.

The limitation of this study is that the data used were high school data as a whole, regardless of state or private status. Furthermore, the education budget variable included in the overall education budget was regardless of the types of costs incurred by schools. Therefore, research comparing private and public schools are certainly of particular interest to future researchers.
REFERENCES


