

# Effect Of Education Operational Cost On The Education Quality With The School Productivity As Moderating Variable

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## ABSTRACT

This study aims to analyze the effect of educational operational costs on the quality of output of high school education in Pati, Central Java Province and to analyze the effect of educational operational costs on the quality of education output with school work productivity as a moderating variable in high schools in Pati district. This research is an explanatory research type with a quantitative approach. The population in this study were SMA in Pati district. The sampling technique used was simple random sampling. The data collection techniques used were documentation and questionnaires, while the analysis method used was descriptive statistical analysis techniques, and multiple regression inferential statistical analysis techniques with SPSS. The results showed that educational operational costs had no effect on education output in high schools in Pati district and educational operational costs had no effect on the quality of education output with teacher work productivity as a moderating variable. Teacher work productivity is a variable that cannot be used as a moderating variable or cannot be used as an independent variable that has an influence on educational output variables.

## Keywords

Educational Operational Costs, School Work Productivity, Education Output.

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## Introduction

Schools are one of the formal education providers, which try to help the community to meet their needs, which the community cannot fulfill alone. Schools as education providers have the duty to educate their students who are currently developing towards maturity to achieve positive changes in terms of knowledge, attitudes and skills. In other words, the implementation of education in schools refers to the personal formation of students who are mature and able to stand on their own. Over time, the individual develops and learns everything in his environment and forms perceptions based on his sight, hearing, and feelings for the environment. Schools as education providers have two functions, namely (1) as partners in the community and (2) as producers of labor. School as a community partner will be influenced by a person's experience in the community. Schools also have an interest in changing one's environment in society. Environmental changes can be carried out, among others, through the function of guidance services, providing communication forums between schools and other social institutions in the community. On the other hand, one's conscious participation to always learn from the community environment is more or less influenced by learning tasks and learning directions carried out at school.

In general, education financing is a complexity, in which there will be interrelationships for each of its components, which range from micro (education unit) to macro (national), which includes sources of education financing, systems and mechanisms for their allocation, effectiveness and efficiency in its use, the accountability of the results as measured by changes that occur in all structures, especially schools, and problems that are still related to education financing, so that a special study is needed to be more specific about this education financing. Fattah (2000) added that costs in education include direct costs and indirect costs. Direct costs consist of costs incurred for the implementation of teaching and student learning activities such as purchasing learning tools, providing learning facilities, transportation costs, teacher salaries, whether they are issued by the government, parents and students themselves. Meanwhile, indirect costs are in the form of lost profits in the form of lost opportunity costs sacrificed by students during learning, for example: student pocket money, purchasing school equipment (pens, bags, notebooks, etc.)

One of the achievement of educational goals can be seen from the learning outcomes or educational output. Basically, the output will be much influenced by the input and process, the effectiveness of the process. A quality input system can certainly produce quality output. Soejoto (2007) explains

that "educational unit output can be in the form of cognitive, affective, and psychomotor". Cognitive is defined as the abilities that learners have in the form of the level of knowledge they have, while affective or noncognitive means attitudes related to the learners themselves. Psychomotor is related to the skills they have. Abidin (2013) also explains in his paper that output is the result of a process, producing graduates according to certain standards and of course expected to meet the wishes of the community, parents and government. According to Supriadi (2009) states that the cost of education is one of the most important input components in the implementation of education. Education costs are needed to facilitate the implementation and school programs (intra and extra), and can develop schools as educational institutions that have quality educational output. This is in accordance with the results of research conducted by Sanjiwani (2012), which states that the cost of education has a significant correlation with the quality of the learning process and educational aspirations. According to B. Bloom (2005), there are two main factors that are dominant in student learning outcomes / student output, namely student characteristics which include (ability, interest, previous learning outcomes, motivation) and teaching character which includes (teachers and learning facilities). In realizing this, of course, requires costs that must be incurred by schools or said to be school operational costs / educational operational costs. Research conducted by Ekasari (2013) states that the effect of education costs and teacher performance on high school learning achievement is moderate, meaning that the cost of education has an influence on learning achievement. The central and local governments continue to increase the education budget to improve the quality of education. This is in accordance with the law of the Republic of Indonesia number 20 of 2003 article 49 paragraph (1) concerning the National Education System that education funds other than teacher salaries and official education costs are allocated at least 20% of the State Revenue and Expenditure Budget (APBN) in the education sector and at least 20% of the Regional Revenue and Expenditure Budget (APBD). Education Financing includes: investment costs, operational costs, and personal costs. In this article, it is explained that the operational costs of education include: basic salaries of educators and education personnel and allowances attached to salaries, consumable educational materials or equipment, and indirect educational operational costs in the form of electricity, telephones, maintenance of facilities and infrastructure, overtime pay, transportation, consumption, taxes, and insurance. Minister of National Education Regulation number 69 of 2009 also explains that non-personnel operating cost standards are the standard costs required to finance non-personnel operations for 1 (one) year as part of the total education fund so that educational units can carry out regular and sustainable educational activities according to National Standards. Education. Non-personnel operating costs include school stationery costs (ATS), consumables and materials costs (BAHP), minor maintenance and repair costs, power and service costs, transportation costs / official travel, consumption costs, insurance costs, student / extracurricular coaching costs, competency test costs, industry work practice costs, and reporting costs. Each SMA has a different amount of the costs mentioned above, it is in

accordance with the achievement of educational goals determined by the school administrator to realize quality education output. The educational operational costs incurred by the government are managed independently by each school.

Private schools have their own policies in determining the operational costs of each school. Government and private efforts that continue to increase the operational costs of education each year are intended to assist schools in increasing educational output each year. According to Flower (1998), in his research, it was explained that parents of students were brave enough to pay high education costs not to get a low quality education, but they wanted a high quality education. The high quality of education starts with the qualified teachers according to the lessons they are strong at, whereas to make this happen, of course, requires high costs. The effective and efficient use of education costs can facilitate the course of learning activities in schools, especially supporting teachers in carrying out teaching and learning activities. Thus it is expected to be able to increase student output. Good quality of learning will affect the quality of learning outcomes (output). Based on the foregoing thinking, the indicators of educational output in this study can be seen from the results of the NEM national exam (UN). The national examination is a system of evaluating the standard of primary and secondary education nationally and the quality equality of education levels between regions carried out by the education assessment center, the Ministry of National Education in Indonesia based on Law of the Republic of Indonesia no. 20 of 2003 states that in the context of controlling the quality of education nationally, an evaluation is carried out as a form of accountability of education providers to interested parties. Government Regulation (PP) article 3 No. 1 of 2005 states that the purpose of holding the National Examination (UN) is to measure and assess students' scientific and technological competences.

The quality condition of high school education output in Pati district can be seen, among others, from the average National Exam NEM obtained in the 2010/2011, 2011/2012, 2012/2013, 2013/2014 school years. 2014/2015. 2015/2016. 2017/2018. 2018/2019. The average NEM National Examination has fluctuated and increased by 1.23% for 8 years on average. Mallet et al. (2009) explained that, to maximize student output, namely by optimizing teachers as input in educational units (schools). Maximum student output can be achieved if; 1) teachers have sufficient time to work together with peers so they can exchange ideas and come up with new ideas. 2) the teacher is able to use time effectively. 3) the teacher maximizes his time to find new innovations in learning, so that students have the opportunity to develop their own ideas. 4) teachers have observations from peers. Four things that affect the maximum student output are part of teacher work productivity, while high teacher work productivity is expected to increase the quality of educational output. Research on teacher productivity has also been conducted by Jackson (2010). Jackson explained that teacher work productivity is strongly influenced by teacher salaries and increased teacher productivity results in increased student achievement. while teacher salaries are part of the element of educational operational costs. In general, what is meant

by work productivity is the ratio between the results achieved (output) and the total resources used (input). Fare et al. (2006) stated that productivity growth in education will change when the quantity of input changes, such as the growth in the number of teachers and educational facilities, while the increase in the number of teachers and educational facilities will also increase the cost of education incurred by schools. According to Sutikno (2009), the measurement of educational productivity can be done in three ways: (1) the administrative output dimension, (2) the behavior change output dimension, (3) the economic output dimension. Measurement of the administrative output dimension means seeing how well the services provided by teachers, school principals and other interested parties. The second output dimension according to Sutikno (2009) is the dimension of behavior change. In the output dimension of behavior change, teacher productivity can be seen from the values obtained by students as a description of the academic achievements that have been achieved. The results of the national exam are one of the academic achievements obtained by students as an effect of teacher productivity as in law no. 20 of 2003, the more students who pass the national exam, the more educational output the school produces. Meanwhile, according to Sutikno (2009), the third productivity measurement is seen from the dimensions of economic output. Measurement of the dimensions of economic output is carried out by linking education services with aspects of financing. According to Alin (2018) educational operational costs affect the quality of education output and school work productivity moderates educational output. According to Alexander (2000) school work productivity moderates educational output, educational operational costs affect the quality of educational output. According to Gong (2011) work productivity and school operational costs affect the quality of education output. According to Gouws (2002) school operational costs and work productivity affect the quality of educational output. From the description above, it can be said that teacher work productivity is the number of students who pass (output) compared to the number of teachers (input), so that with the maximum cost it is expected to be able to produce maximum educational output through maximum teacher work productivity as well.

## Literature Review

### Educational Operating Costs

In order to achieve optimal educational goals, one of the most important things is to manage costs properly in accordance with the required funding requirements. Minimum financing administration includes planning, implementation, and supervision. The distribution of the budget needs to be done strategically and integratively between stakeholders. To achieve this condition, it is necessary to build mutual trust, both within the Government and between the Government and the community and the community itself can be cultivated. Openness, participation, and accountability in the provision of education starting from planning, implementation and supervision are key words for realizing the effectiveness of education financing. Education financing consists of investment costs, operating

costs, and personal costs (Sulistyoningrum, 2010). The investment costs for educational units as referred to above include the costs of providing facilities and infrastructure, developing human resources, and permanent working capital. Furthermore, personal costs include education costs that must be incurred by students to be able to follow the learning process regularly and continuously. The operational costs of the educational unit as referred to include: a) salaries of educators and education personnel and all allowances attached to salaries; b) consumable educational materials or equipment; and c) indirect educational operating costs in the form of power, water, telecommunications services, maintenance of facilities and infrastructure, overtime pay, transportation, consumption, taxes, insurance, and so on (Sulistyoningrum, 2010).

Some of the types and classes of tuition fees examined in this article are as follows. First, direct cost is defined as the expenditure of money that directly finances the provision of education, teaching, research and community service (Anwar and Idochi, 1991). Direct costs are also defined as costs that directly touch aspects and processes of education. For example, costs for teacher salaries and the provision of teaching and learning facilities (Gaffar, 1991). Costs incurred for the implementation of teaching and learning activities of students are in the form of purchasing learning tools, learning facilities, transportation costs, and teacher salaries, both those issued by the government, parents, and students themselves (Fattah, 2000). Furthermore, the following are types of costs that are part of direct costs, namely: 1) Recurrent costs, which are costs used to finance educational operational activities during one fiscal year. This fee is used to support the implementation of teaching programs, payment of salaries for teachers and school personnel, office administration, maintenance and maintenance of facilities and infrastructure. According to Gaffar (1987) routine costs are calculated on the basis of "per student enrolled". According to him, routine costs are influenced by 3 (three) main factors, namely: 1) the average salary of teachers per year; 2) the ratio of teachers, students and the proportion of teacher salaries to the total routine costs; and 3) development costs (capital cost), which is the cost used to purchase land, construction of classrooms, libraries, sports fields, building construction, procurement of car equipment, replacement and repair costs. Furthermore, Gaffar (1987) states that development costs are calculated on the basis of "per student place". According to him, in calculating construction costs there are several factors that must be considered, namely: first: a pleasant place for students to study, the cost of the location or site, and the cost of furniture and equipment. Second: indirect costs (indirect cost) can be interpreted as costs which generally include the loss of student income because they are attending education (earning foregone by students), free tax burdens due to the nature of schools that do not seek profit (cost of tax exemption), free rent of school equipment that is not used directly in the educational process and depreciation as a reflection of the use of school equipment that has long been used (implicit rent and depreciation) Fattah (2000). Furthermore, here are the types of costs that are part of indirect costs, namely: 1) private costs, are costs incurred by families to pay for their children's schooling and include forgone opportunities. In this connection, Jones (1985) says

"In the context of education these include tuitions, fees and other expenses paid for by individuals". In other words, personal expenses are tuition fees paid by a family or individual; 2) community costs (social costs), are costs incurred by the community to pay for school (including personal costs). In this regard, Thomas, H. Jones (1985) said, "Sometimes called public cost, the include cost of educations financed through taxation. Most public school expenses are examples of social costs ". In other words, community fees are school fees paid by the community. Third, monetary costs are all forms of expenditure in the form of money, either directly or indirectly issued for educational activities. Fourth. Non monetary costs are all forms of expenditure that are not in the form of money, although they can be valued in terms of money, either directly or indirectly, which are spent on educational activities, for example material, time, energy, and others.

### Education quality

The Concept of Quality Education The learning process is currently experiencing a lot of development and progress. These developments and advances cannot be separated from the urgent demands for improving the quality of education. The quality of education that existed at that time was deemed not as satisfying as was expected. To obtain the same understanding of the concept of quality or quality, an initial explanation of the definition of quality or quality will be presented in this section. Edward Deming, as one of the "Father of Quality", gives the definition of quality / quality as "a degree of variation that is expected to be the standard used and has a low dependence on cost". 4 As explained by Vincent, conventionally, quality refers to the direct characteristics of a products such as performance, reliability, ease of use and esthetics. 5 While Triana provides the definition of quality or quality as a measure of assessment or award given or imposed on certain goods (products) and / or services based on objective considerations of weight and / or performance. 6 This measure of quality can be relatively determined based on satisfaction or customer needs, in addition to the manufacturer. And this quality standard can be used in various forms of organization, both referring to profit and non-profit. In relation to this quality, Jerome S. Arcaro explained that every quality program must pay attention to four important components.7 First, there is a commitment to change, both from school board members and administrators. Although change is often a frightening specter, having a commitment to change will help reduce fear of people in the educational institution / area. Even though the initial process of changing or implementing the quality has experienced many obstacles, the learning process

obtained from failure after failure will lead to the expected success. Of course this success can make the competitiveness and bargaining power of institutions / schools increasingly competitive. Second, there is a good understanding of where our school or region is now. This means that the change efforts that have been declared will be lasting and successful, it is necessary to know what the current system is. Third, there is a clear vision of the future held by everyone in the institution / school. With this vision, educational institutions will be guided and directed to stay focused and committed to the quality program. Fourth, the existence of a quality implementation plan in institutions / schools. The plan must serve as a guideline in the implementation process which is continuously updated as a sign of change, because the quality program is never stagnant. Sallis explained that the quality standard itself uses two measurements. First, measurements are based on predetermined specifications. Second, measurements are based on customer needs and demands.8 For the first measurement, use ISO 9000 standards, which refers to production and service standards, which cover three things: (1) in accordance with predetermined specifications; (2) without error; (3) error-free from the start. For the second measurement, it is marked by three indicators, namely: (a) customer satisfaction, (b) increased customer interest and expectations, and (c) pleasing customers.9 In the context of education, there are three main principles (quality) of Deming that can be used , namely: (1) establishing educational quality goals to be achieved by school boards and administrators, (2) emphasis on preventing student failure, not detecting failure after an event occurs, (3) using strict statistical control methods, can help improve student and administrative outcomes. Apart from Deming, Joseph M.Juran - who is also considered the "Father of Quality" - also put forward the basic principles of quality as the main objective, namely: (1) achieving quality is a process that has no end, (2) quality improvement is a a continuous process, (3) quality requires leadership from school board members and administrators, (4) mass training is a quality requirement, and (5) everyone in the school must receive training

### Method

This type of research is an explanatory research, which is a study to find and explain the causal relationship between variables (Sukmadinata, 2012), this study aims to empirically test the causal relationship (causality) between several variables such as the following model figure:

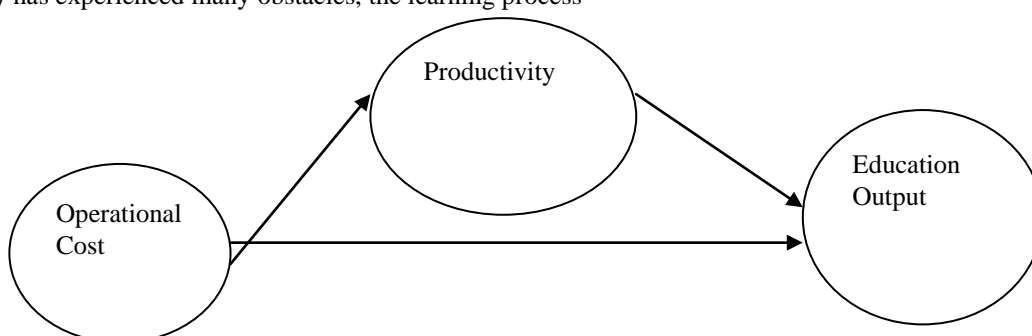




Fig 1. Research Model

Based on the research model above, the hypothesis is compiled as follows:

Hypothesis 1: Educational operational costs have a significant effect on educational output

Hypothesis 2: Teacher work productivity moderates educational operational costs and has a significant effect on educational output

The population in this study were all high schools in Pati district. The sampling technique used was purposive sampling (Sugiyono, 2008), which is a sampling technique with certain considerations. The schools used as samples were schools with the consideration that they had a minimum of 10 years of graduates, namely SMAN 1 Pati, SMAN 2 Pati, SMA N 1 Tayu, SMAN 3 Pati, SMAN 1 Juana, SMAN 1 Jakenan, SMA MUH 1 Pati. This is because the data used as research material is data on educational operational costs, teacher work productivity, and school education output for 10 years (2010 s / d 2019) in each school with the aim of increasing the validity of these data. The data in this study is secondary data where the data is already available so that the data is obtained by the researcher using the questionnaire method, which is a way of obtaining data or information about things that are related to research by reviewing past written reports in the form of numbers and information ( Arikunto, 2006). The data analysis technique used in this research is descriptive statistical analysis technique and multiple regression statistical analysis using SPSS.

### Result And Discussion

The education operational cost indicator in this study is in accordance with the law of the Republic of Indonesia number 20 of 2003 article 49 paragraph (1) concerning the National Education System and this research focuses on schools that have graduated at least 10 times, so the data taken is starting in the 2010 school year. / 2011 s / d 2018-2019. The observation results show that there are 7 high schools that have graduated students for more than 10 years. While the educational output in this study is seen from the student's national examination score as one of the educational outputs. The number of graduates shows the level of teacher work productivity towards the number of existing teachers. High school educators or teachers in Pati district, based on data from the Pati district education office from the 2010 school year to the 2019 school year, there were 1,431 teachers. The number of teachers has increased by an average of 18.92% each year, while the number of students in the 2010 school year was 5,121 students. The number of high school students in Pati district from the 2010-2019 academic year to 2018-2019 has increased by an average of 8.43% annually. This shows that the increase in the number of teachers each year is greater than the number of students.

The increase in the number of teachers and students resulted in an increase in educational operational costs which should have resulted in an increase in education output. The total operational costs incurred by each school sampled in this study from 2010 to 2019 can be seen in the table below:

Table 1. Total educational operational costs in 2010 to 2019

| N O          | School       | Operational Cost ( In Million ) IDR |       |       |       |        |       |       |       |       |        | TOTAL |
|--------------|--------------|-------------------------------------|-------|-------|-------|--------|-------|-------|-------|-------|--------|-------|
|              |              | 2010                                | 2011- | 2012  | 2013  | 2014-  | 2015  | 2016  | 2017- | 2018  | 2019   |       |
|              |              | 2011                                | 2012  | 2013  | 2014  | 2015   | 2016  | 2017  | 2018  | 2019  |        |       |
| 1            | SMAN 1       | 1,082                               | 873   | 945   | 795   | 9,900  | 803   | 914   | 938   | 4,500 | 20,750 |       |
| 2            | SMAN 2       | 666                                 | 540   | 624   | 538   | 720    | 612   | 705   | 724   | 379   | 5,507  |       |
| 3            | SMAN TAYU    | 538                                 | 603   | 689   | 572   | 728    | 661   | 763   | 804   | 276   | 5,633  |       |
| 4            | SMAN 3       | 396                                 | 553   | 592   | 773   | 764    | 758   | 659   | 312   | 345   | 5,152  |       |
| 5            | SMAN JUANA   | 1,792                               | 1,792 | 1,871 | 1,699 | 1,777  | 1,804 | 1,616 | 2,227 | 1,265 | 15,842 |       |
| 6            | SMAN JAKENAN | 54                                  | 64    | 65    | 57    | 76     | 77    | 67    | 64    | 42    | 567    |       |
| 7            | SMA MUH 1    | 96                                  | 92    | 784   | 879   | 887    | 896   | 857   | 102   | 105   | 4,697  |       |
| <b>TOTAL</b> |              | 4,625                               | 4,515 | 5,570 | 5,313 | 14,852 | 5,610 | 5,581 | 5,171 | 6,911 | 58,149 |       |

Based on Table 1 above, it shows that SMA Negeri 1 Pati is a SMA that has the highest educational operational costs for 10 consecutive years with an operational cost of Rp. 20,759 million, and the lowest educational operational cost was spent by SMAN Jakenan with an amount of Rp. 567 Million. Teacher work productivity in this study is seen from the number of graduates compared to the number of teachers. As stated by Coelli at al. (in Ahlgrim, 2010)

explains that productivity is the relationship between input and output in the production function. Teachers as part of educational input and graduates are the output of education, from this ratio, it can be seen that the work productivity of teachers in an educational unit in this case is SMA.

The development of vocational teacher work productivity from 2010 to 2021 is a comparison between the number of teachers divided by the number of graduates can be seen in the following table:

**Table 2** Productivity developments 2010-2019  
(number of teachers divided by number of graduates)

| N<br>O           | School          | Periode     |             |             |             |             |             |             |             |             |
|------------------|-----------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
|                  |                 | 2010        | 2011-       | 2012        | 2013        | 2014-       | 2015        | 2016        | 2017-       | 2018        |
|                  |                 | 2011        | 2012        | 2013        | 2014        | 2015        | 2016        | 2017        | 2018        | 2019        |
| 1                | SMA N 1         | 0.17        | 0.22        | 0.2         | 0.24        | 0.21        | 0.26        | 0.21        | 0.2         | 0.21        |
| 2                | SMAN 2          | 0.17        | 0.21        | 0.2         | 0.23        | 0.19        | 0.25        | 0.19        | 0.18        | 0.19        |
| 3                | SMA N 1 TAYU    | 0.2         | 0.21        | 0.2         | 0.19        | 0.19        | 0.2         | 0.17        | 0.19        | 0.27        |
| 4                | SMA N 3         | 0.29        | 0.26        | 0.23        | 0.23        | 0.23        | 0.22        | 0.22        | 0.2         | 0.2         |
| 5                | SMA N 1 JUANA   | 0.19        | 0.19        | 0.19        | 0.2         | 0.21        | 0.23        | 0.19        | 0.19        | 0.2         |
| 6                | SMA N 1 JAKENAN | 0.17        | 0.18        | 0.19        | 0.18        | 0.16        | 0.16        | 0.16        | 0.18        | 0.18        |
| 7                | SMA MUH 1       | 0.32        | 0.32        | 0.32        | 0.35        | 0.35        | 0.28        | 0.28        | 0.27        | 0.27        |
| <b>Total</b>     |                 | <b>1.51</b> | <b>1.59</b> | <b>1.53</b> | <b>1.62</b> | <b>1.54</b> | <b>1.6</b>  | <b>1.42</b> | <b>1.41</b> | <b>1.52</b> |
| <b>Rata-Rata</b> |                 | <b>0.22</b> | <b>0.23</b> | <b>0.22</b> | <b>0.23</b> | <b>0.22</b> | <b>0.23</b> | <b>0.20</b> | <b>0.20</b> | <b>0.22</b> |

Table 2 above shows that for 10 years, every SMA has a fluctuating teacher work productivity, but SMAN 3 Pati is a school that has a high level of work productivity for 10 consecutive years. Based on the data obtained by researchers, the total average work productivity of high school teachers in Pati regency from 2020 to 2019 is 13.74. Meanwhile, the lowest high school teacher work

productivity in Pati district is Jakenan Senior High School at 0.17. High teacher work productivity is expected to have a positive impact on the educational output of each SMA. The education output in this study is the average national exam score (NEM) of high school students in Pati district from 2010 to 2019. Based on the data obtained, the total output of high school education in Pati Regency for 10 years can be seen in the tables and graphs. below this :

**Table 3** Average NEM value 2010-2019

| N<br>O | School          | Periode |       |       |       |       |       |       |       |       | TOTAL  |  |
|--------|-----------------|---------|-------|-------|-------|-------|-------|-------|-------|-------|--------|--|
|        |                 | 2010    | 2011- | 2012  | 2013  | 2014- | 2015  | 2016  | 2017- | 2018  |        |  |
|        |                 | 2011    | 2012  | 2013  | 2014  | 2015  | 2016  | 2017  | 2018  | 2019  |        |  |
| 1      | SMA N 1         | 73.21   |       |       |       |       |       |       |       |       |        |  |
|        |                 |         | 73.91 | 75.41 | 76.30 | 75.60 | 74.32 | 76.02 | 78.77 | 74.78 | 75.369 |  |
| 2      | SMAN 2          | 64.20   |       |       |       |       |       |       |       |       |        |  |
|        |                 |         | 64.32 | 65.70 | 66.52 | 65.20 | 64.40 | 66.70 | 68.20 | 64.37 | 65.512 |  |
| 3      | SMA N 1 TAYU    | 50.11   |       |       |       |       |       |       |       |       |        |  |
|        |                 |         | 50.18 | 43.32 | 47.44 | 58.16 | 69.17 | 52.20 | 60.73 | 61.75 | 54.784 |  |
| 4      | SMA N 3         | 49.52   |       |       |       |       |       |       |       |       |        |  |
|        |                 |         | 51.38 | 46.17 | 42.93 | 64.39 | 79.76 | 75.61 | 76.82 | 73.42 | 62.222 |  |
| 5      | SMA N 1 JUANA   | 61.12   |       |       |       |       |       |       |       |       |        |  |
|        |                 |         | 60.73 | 61.88 | 62.12 | 61.28 | 61.73 | 61.00 | 63.08 | 62.94 | 61.764 |  |
| 6      | SMA N 1 JAKENAN | 61.20   |       |       |       |       |       |       |       |       |        |  |
|        |                 |         | 61.32 | 62.12 | 63.23 | 62.00 | 62.12 | 62.00 | 61.41 | 62.13 | 61.948 |  |
| 7      | SMAMUH 1        | 70.00   |       |       |       |       |       |       |       |       |        |  |
|        |                 |         | 72.00 | 70.00 | 70.00 | 73.00 | 70.00 | 70.00 | 70.00 | 72.00 | 70.778 |  |

Table 3 above shows that the output of high school education in Pati regency from 2010 to 2019 is classified as good. That is because, overall these values are above the minimum value that has been standardized by the government as the minimum standard value for graduation. The table shows that senior secondary schools in Pati district are able to produce good educational output, with an average score of 64.50. The highest educational output obtained by SMA 1 Pati is 75.4, and the lowest education output is SMA Tayu with a value of 54.78

Hypothesis testing in this study is by testing the moderation model hypothesis, this is done to determine the feasibility of a regression model. The results of data processing are as in the table below: Tabel 4. Uji Model Moderasi dengan SPSS

Table 4. t test value

| Model        | Unstandardized Coefficients |            | Standardized Coefficients | t      | Sig. | Collinearity Statistics |        |
|--------------|-----------------------------|------------|---------------------------|--------|------|-------------------------|--------|
|              | B                           | Std. Error | Beta                      |        |      | Tolerance               | VIF    |
| (Constant)   | 26,623                      | 1,062      |                           | 21,979 | ,000 |                         |        |
| Operational  | 1,730E-009                  | ,000       | ,421                      | 1,676  | ,060 | ,140                    | 5,134  |
| Productivity | -2,966E-010                 | ,000       | -,413                     | -1,526 | ,130 | ,098                    | 11,193 |

Based on the t statistical test with an error rate of 5%, the test criteria used is if  $t > t_{table}$  then  $H_a$  is accepted. And if  $t_{count} \leq t_{table}$  then  $H_a$  is rejected with a significance value  $\leq 0.05$ . The results of the t test above indicate that the tcount of educational operational costs has no effect on educational output of 1.676 while the t-table at the 5% error rate is 2.262 ( $1.676 < 2.262$ ) or  $t_{count} < t_{table}$ , then  $H_a$  is rejected. The t-test results table shows that the operational costs of education have no effect on educational output with a significance value of 0.60 or a significance value of  $\geq 0.05$ . This means that, the increase in educational operational costs incurred by schools does not result in educational output, in this case the NEM value of students, which also increases. On the other hand, schools that incur low educational operational costs do not result in low / low educational output. This study is in line with that expressed by Elberts et al. (1999) in the United States which states that paying for services in this case is included in the operational costs of education, has no effect on the average achievement index (education output), the reduction in the percentage of students who drop out of school, the decrease in average daily attendance, increase percentage of students who fail or fail. Students who do not pass here are students who have low study results. Another study was disclosed by Flower (1998) in the United States. Flower (1998) states that the high costs incurred by students does not have an impact on the high quality of education of these students, the quality of education here is the value of the study results obtained by students. The results of his research also reveal that the costs incurred by students are not used effectively and efficiently by educational institutions in terms of increasing the

competence of teachers / teaching lecturers, where the teacher / teacher is an element that is directly involved in learning with students .

The national commission for education in the United States also revealed about the cost of education written by Fitzpatrick (2006), that universities in the field of nursing academies in the United States have reformed the education system by reducing the cost of education, because so far the cost of educating students at the academy is very high, but has no impact on increasing the quality (output) of education itself. In contrast to the research disclosed by Fattah (1999), the results of this study explain that education financing makes a significant contribution to improving the quality (output) of education. Nevertheless, there are several things that may cause the operational costs of education to not affect education output. Educational operational costs in this study have no effect on educational output, the hypothesis that there is an effect of educational operational costs on educational output cannot be accepted with a significance value of 0.141 or a significance value of  $\geq 0.05$ . This is due partly to the fact that not all indicators of operational costs of education are used directly or are directly related to increasing educational output (increasing student NEM scores). These costs include; electric power costs, service fees, transportation costs, consumption costs, tax fees and insurance costs.

Table 4 above also shows that the moderator variable is proven insignificant in affecting the operational costs of education on education output. With the negative coefficient value of the moderator variable (-1.526), teacher work productivity has the effect of reducing the effect of educational operational costs on education output. The teacher work productivity variable also shows an insignificant value ( $0.130 > 0.05$ ), it can be concluded that Teacher work productivity is a variable that cannot be used as a moderating variable of the effect of educational operational costs on education output. The results of this study are in line with the research expressed by Alghrim (2010), the results of this study indicate that there is a negative or no effect relationship between social status, student population and teacher work productivity on student learning outcomes in this case, namely student output. Although in Miller's (2008) study it was revealed that teacher productivity had an effect on the quality of student learning outcomes, where teacher productivity was seen from the level of attendance at school. The presence of a teacher at school does not guarantee that the teacher communicates directly or interacts directly with students. work together to share ideas and ideas that are owned by both of them. The large number of teachers also does not guarantee that they can improve the quality of education (education output), if this quantity is not matched by good quality. As stated by Alghrim (2010), teacher work productivity in India has increased after the enactment of the teacher accountability law. So that the competence of teachers is also important to be improved according to the teaching field of each teacher.

The work productivity of teachers which did not have an effect on educational output in this study was partly possible because not all teachers were directly involved in the process of increasing the national exam score (NEM) as an indicator of educational output. Whereas in the national

exam there are only 3 subject areas and 1 competency being tested. In addition, the large number of teachers will not produce good output, if it is not balanced with good teacher quality based on competence. Each teacher basically has an important role in the process of increasing the national exam score (NEM) according to their respective competencies, so that not only teachers of national exam subjects are responsible for increasing the national exam scores (NEM) as the output of school / vocational education. . A different study was conducted by Supriadi (2004) which states that "the cost of education is a very important component of instrumental input in the delivery of education (in schools)". Therefore, the cost of education must be used effectively and efficiently to be able to produce educational output or high quality education. If the operational costs of education do not have an effect on educational output, and the productivity of teachers' work also does not have an effect on educational output, then the operational costs of education have no effect on educational output through teacher work productivity.

The analysis above is in line with that expressed by Flower (1998), the cost of education can have an effect on educational output or educational quality, after the cost of education is focused on increasing the competence and qualifications of teaching teachers / lecturers in the United States. So that teacher work productivity is not only seen from the quantity of teachers to the number of graduates. Alghrim (2010) also revealed in his writing that the cost of education is a major issue in improving student achievement (output), and makes productivity an important thing to link education costs with student achievement (student output).

The results of this study explain that teacher work productivity is not sufficient to moderate the effect of educational operational costs on educational output (low moderation). This is because not all teachers are involved in the process of increasing student national exam scores (NEM) as the output of school / vocational education, as well as the cost of basic salaries / allowances only for a number of existing teachers without a special budget for teacher competency improvement costs. The point is that the existence of teachers to produce quality graduates is not only seen in quantity, but there needs to be an increase in the competence of these teachers who are the responsibility of the school, so that it requires a special budget to make this happen, thus having an impact on increasing education output. However, some schools that have high educational output, sometimes these schools have a boarding school system for their students, so that subject enrichment can be carried out optimally, besides that the element of teacher loyalty to the pesantren family is quite good. Based on the data obtained from literacy studies, documentation studies, and interviews, the results can be obtained. That the quality and quality of education are the main objectives and provisions. The quality of education leads students to be able to take further education easily and be able to follow every learning process well. Good quality education will be created from the support of all parties, namely schools, families and communities. In other words, the quality of education includes all existing roles. The success of the quality and quality of education can be seen as a result of the achievements or quality obtained.

## Conclusion

Educational operational costs have no effect on educational output. This means that the increased educational operational costs do not result in an increase in education output in high schools in all pati districts. On the other hand, low operating costs do not result in a decrease in education output in SMA in all pati districts. The average operational cost for education is Rp. 923,000,000, -, and entered into the second category (low). Meanwhile, education output is included in the second or highest category. Educational operational costs have no effect on educational output with teacher work productivity as a moderating variable, meaning that the teacher work productivity variable is a variable that cannot be used as a moderating variable of educational operational costs in affecting education output. So that indirectly the operational costs of education with teacher work productivity as a moderating variable have no effect on education output. The average teacher work productivity is 0.22 and is included in the second category (low). The low quality and quality of education at the school level greatly affects the next level of education. The quality and quality of education is an important goal and reference in the implementation of education. The quality and quality of education can be seen from the success of creating competent and competitive student resources. There are still many schools that still have low quality education, but this is a shared responsibility to improve the quality of education at the school level. The low quality of education in schools will affect the next level of education. To be able to continue their education to a higher level, school students must be equipped with good and competent quality and quality education.

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