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Implementation of Cost Benefit Analysis in Educational Investment at Warugunung II Public Elementary School

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Abstract: Education is a long-term investment to improve human resource quality, productivity, income, and community welfare. This study aims to outline the fundamental concepts and principles of cost-benefit analysis (CBA) in educational investment and describe its implementation at Warugunung II Elementary School, Surabaya. This study applies a descriptive qualitative approach with data collection methods that include observation, interviews, and documentation. Data analysis is conducted descriptively through the process of data collection, information categorization, data presentation, and drawing conclusions. The results show that educational institutions have implemented CBA principles in real terms, taking into account student needs, funding availability, number of users, and duration of facility use. Unfortunately, these considerations are still not supported by a formal and detailed cost-benefit analysis, so indicators such as Benefit-Cost Ratio (BCR), Net Present Value (NPV), and Internal Rate of Return (IRR) has not yet been implemented. A more structured CBA, which records costs and benefits, is recommended to support budget prioritization while still considering non-financial benefits in education.

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Introduction

Education is a long-term investment that plays a role in improving the quality of human resources, productivity, income, and community welfare. Educational investments require both

direct and indirect costs, so careful consideration is needed to determine their feasibility. Higher education can provide economic benefits through increased income and job opportunities after completing education. Higher education graduates in Indonesia earn higher incomes than secondary education graduates. (Yubilianto, 2020) This condition shows that education can be seen as an investment that produces long-term benefits.

Cost-Benefit Analysis (CBA) is a method that can be used to analyze the feasibility of educational investments by comparing the costs incurred and the benefits obtained. In education, costs can include tuition fees, learning needs, and opportunity costs during education. Meanwhile, benefits can include increased income, employment opportunities, productivity, and other economic benefits. Through CBA, educational investment decisions can be made more systematically by considering the relationship between resources expended and benefits generated (Kartika & Sasongko, 2025).

Educational investment analysis can be conducted using several indicators, namely the Benefit-Cost Ratio (BCR), Rate of Return (ROR), Net Present Value (NPV), and Internal Rate of Return (IRR). BCR compares benefits with investment costs, ROR indicates the rate of return on investment, while NPV calculates the net value of benefits based on the time value of money. Meanwhile, IRR indicates the rate of return that balances the present value of benefits and costs. These indicators are used to analyze the rate of return on educational investment and demonstrate that educational investment can be valued based on the economic benefits obtained by graduates (Gusparima, Darmawan, dan Kartika 2022). Based on the description, understanding CBA is important in the management and financing of education because it helps assess whether the investment provided benefits commensurate with the costs incurred. The use of BCR, ROR, NPV, and IRR can provide a more comprehensive picture of the feasibility of educational investments. Therefore, this paper discusses the Cost-Benefit Analysis methodology in educational investments, the basic principles of CBA, and the application of various indicators in assessing investment feasibility. This discussion is expected to provide an understanding of the use of cost-benefit analysis as a basis for decision-making in educational investments.

Based on the above description, an understanding of Cost-Benefit Analysis (CBA) is important in the management and financing of education because it can help assess the suitability between costs incurred and benefits obtained from an educational investment. However, assessing the feasibility of educational investments requires an understanding of the basic concepts and principles of CBA and the application of appropriate indicators. Therefore, this article aims to explain the basic concepts and principles of Cost-Benefit Analysis in educational investments, analyze the application of the Benefit-Cost Ratio (BCR), Rate of Return (ROR), Net Present Value (NPV), and Internal Rate of Return (IRR) indicators in assessing educational programs, and explain how the results of these analyses can be used to determine the feasibility of educational investments.

Research Methods

This study uses a qualitative descriptive approach to describe the application of Cost Benefit Analysis (CBA) in educational investment at Warugunung II Public Elementary

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School. The study was conducted at Warugunung II Public Elementary School, focusing on the school's educational investments, including the costs incurred and the benefits derived from those investments. This approach was used to obtain an overview of the school's considerations in managing educational resources and assess the benefits of these investments for educational delivery.

Data collection in this study was conducted through observation, interviews, and documentation. Observations were conducted to obtain an overview of school conditions and the use of learning support facilities. Interviews were conducted to obtain information on budget management, educational expenditures, and the benefits of investments. Documentation supplemented the data with documents on expenditures, educational facility procurement, and informants (John W. Creswell, 2009). These three data collection techniques were used to support the process of identifying the costs and benefits of educational investments based on conditions at Warugunung II Public Elementary School.

The research data was analyzed descriptively through several stages: data collection, information grouping, data presentation, and conclusion drawing. The analysis was conducted by identifying the components of educational investment costs and the benefits generated or expected by the school. Next, information regarding these costs and benefits was analyzed using the Cost Benefit Analysis concept to examine economic considerations in educational investment decision-making. The results of the analysis were then used to describe the implementation of CBA and identify the alignment between costs incurred and benefits obtained based on available data.

Results and Discussion

Education is a form of long-term investment that plays a role in improving the quality of human resources. Educational investment is not only related to the costs incurred, but also to the benefits expected to be obtained in the future. These benefits can include increased skills, employment opportunities, productivity, income, and quality of life. Therefore, decision-making in the field of education must consider the balance between costs incurred and benefits generated. It explains that higher education in Indonesia has economic value for its graduates, one of which is evident in the differences in income based on education level. Furthermore, a review of research on the rate of return on education in various countries shows that investment in education has economic benefits for both individuals and society. This indicates that education can be viewed as an investment whose benefits need to be considered in the long term. However, the benefits of educational investment cannot be measured solely in terms of income, but also require consideration of social benefits and the quality of learning (Trianung et al., nd)

One approach that can be used to assess the balance between costs and benefits is Cost-Benefit Analysis (CBA). CBA is an analytical method that compares the costs incurred with the benefits obtained or expected from a program or activity. In the educational context, costs can include procurement of facilities, purchasing learning media, operational costs, and maintenance of facilities. Meanwhile, benefits can include increased facility utilization, ease of

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teaching for teachers, and support for student needs. (Pangestu et al., 2021) discusses the use of cost-benefit analysis in school business processes to help identify the costs and benefits of an activity. In line with this, (Walcott et al., 2018) demonstrates the application of cost-benefit analysis to evaluate higher education programs through cost identification, benefit estimation, benefit-cost ratio calculation, and uncertainty analysis. Although the research was conducted in the context of higher education, the approach can serve as a reference for understanding the importance of cost and benefit evaluation in educational program planning. Thus, CBA can be a tool for schools to more effectively consider spending options based on needs and expected benefits.

Based on interviews and observations at Warugunung II Public Elementary School in Surabaya, it was discovered that the school had considered the ratio between costs incurred and expected benefits when planning programs and procuring educational needs. These considerations included student needs, budget availability, number of users, duration of use, and the benefits of the facilities for teachers and students. This finding indicates that the basic principles of CBA have been practically applied in school decision-making, although formal and systematic calculations have not yet been used. This means that procurement decisions are not based solely on the price of goods or the amount of expenditure, but also on considerations of whether the facilities are appropriate to learning needs. However, because detailed cost and benefit calculations are not yet available, this application cannot be declared to have met the criteria for quantitative investment feasibility (Indragiri et al., 2025).

Educational investment decisions require more than just considering budget availability and school needs; they also require considering the extent to which these expenditures can provide benefits consistent with learning objectives. At Warugunung II Public Elementary School, consideration of student needs, procurement costs, the number of users, and the duration of facility use demonstrates a focus on the balance between costs and benefits. However, these considerations are not yet supported by structured calculations to measure the feasibility of each expenditure. Without comprehensive cost recording, including maintenance costs, and clear benefit indicators, schools will have difficulty determining whether an investment is truly more effective than other alternatives. Furthermore, the benefits of facilities for teachers and students need to be evaluated periodically to ensure that procurement decisions are not based solely on initial estimates. Therefore, a more systematic implementation of Cost-Benefit Analysis (CBA) is needed to strengthen the basis for decision-making, increase transparency in budget use, and ensure that investments align with priority educational needs. However, the effectiveness of CBA implementation at Warugunung II Public Elementary School cannot be concluded with any measurable conclusion because quantitative data demonstrating the cost-benefit ratio or changes in learning outcomes are not available (Eva Zakiyatul Fakhiroh, Irwan Setia Budi, 2024).

Several indicators can be used to evaluate investments, including the Benefit-Cost Ratio (BCR), Net Present Value (NPV), and Internal Rate of Return (IRR). The BCR compares the value of benefits with the value of costs. The NPV calculates the difference between the present value of benefits and costs over the investment period, taking into account the time value of money. Meanwhile, the IRR indicates the discount rate that makes the NPV equal to zero.

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(Pangestu et al., 2021) This paper discusses the use of economic indicators in cost-benefit analysis of school business processes. In the context of Warugunung II Public Elementary School, these indicators can be considered in assessing procurement alternatives if the school already has data on initial costs, maintenance costs, estimated useful life, and desired benefits. Without such data, BCR, NPV, and IRR calculations cannot be carried out responsibly (Pangestu et al., 2021).

In addition to financial benefits, implementing CBA in education also requires consideration of non-financial benefits that cannot always be expressed in monetary terms. These benefits can include teachers' ease of delivery, increased student engagement, the availability of adequate learning resources, and the opening of better learning opportunities. In school management, a facility is not necessarily the best choice simply because it is affordable. Schools also need to consider the facility's quality, durability, frequency of use, and suitability to learning needs. Furthermore, (Kartika & Sasongko, 2025) examines various components of the costs and benefits of higher education, both financial and non-financial. Although the context of both studies differs from the provision of facilities in elementary schools, the discussion supports the importance of considering various types of benefits in evaluating educational investments. Therefore, the use of CBA at SD Negeri Warugunung II needs to include both financial and non-financial indicators so that the assessment is oriented not only towards budget savings but also towards supporting the educational process (Hidayat & Makassar, 2022).

The management of educational investments at Warugunung II Public Elementary School demonstrates consideration of the benefits of the expenditure and the potential long-term use of the facility. This consideration pattern can be developed through a comparative process of several procurement alternatives. For example, before purchasing learning media, the school can consider the purchase price, maintenance costs, number of users, frequency of use, and estimated duration of use. (Kartika & Sasongko, 2025) This paper discusses cost-benefit analysis in the context of higher education investment, taking into account both the costs and benefits of education. Although the research context differs from elementary schools, the principle of comparing resources expended and expected benefits remains relevant as a basis for consideration. By conducting more systematic evaluations, schools can have a clearer basis for determining procurement options according to prioritized learning needs (Dwi Pitari Damanik, 2022).

The results of this discussion have implications for financial management and educational program planning at Warugunung II Public Elementary School. The school can begin developing cost and benefit records for each procurement program or activity. These records can include purchase costs, operational and maintenance costs, number of beneficiaries, duration of use, and desired outcomes. The school can then compare several procurement alternatives based on need, cost, quality, and anticipated benefits. If the necessary data is available, the BCR and NPV can be used to help assess the feasibility of investment alternatives, while the IRR can be considered when the cost and benefit flows can be adequately estimated. The use of these methods should still be adapted to the school's circumstances and should not

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replace considerations regarding student needs, facility equity, and learning quality.

Although the basic principles of CBA are evident in decision-making at Warugunung II Public Elementary School, several challenges remain in its implementation. The first challenge is the lack of detailed quantitative data on investment costs and benefits. The second challenge is the existence of educational benefits that are difficult to quantify in monetary terms, such as skill development, student engagement, and improved learning quality. Furthermore, this article does not present a quantitative comparison of results before and after facility procurement or program implementation. Therefore, the available findings are insufficient to conclude that the implementation of CBA principles has measurably improved budget efficiency or student achievement. This situation highlights the need for more structured record-keeping to enable evaluation of educational investments based on adequate data.

Based on the overall discussion, the implementation of Cost-Benefit Analysis has the potential to support more targeted educational investment decisions at Warugunung II Public Elementary School. Considerations made by the school, such as student needs, budget availability, number of users, and duration of facility use, can serve as the basis for developing a formal cost-benefit analysis. The next step is to establish benefit indicators, record all relevant costs, and evaluate program outcomes over a specific period. Future research should also compare costs with actual benefits to more objectively assess the feasibility of the investment. Thus, CBA can be used as a tool to support transparent and accountable budget management, while still considering the primary goals of education, namely meeting student needs and supporting the learning process.

Conclusion and Recommendation

Cost-Benefit Analysis(CBA) is a method that can be used to assess the feasibility of educational investments by comparing the costs incurred with the benefits obtained, both economic and non-economic benefits. Its application can use the Benefit-Cost Ratio (BCR), Rate of Return (ROR), Net Present Value (NPV), and Internal Rate of Return (IRR) indicators to provide an overview of the rate of return and the feasibility of an investment. CBA also considers opportunity costs and the time value of money so that investment assessments can be carried out more comprehensively. Observations at SDN Warugunung 2 Surabaya indicate that the school has applied the principle of comparing costs and benefits in determining programs and procurement, especially by considering student needs, funding availability, and benefits obtained. However, these considerations are still carried out practically and have not yet used specific CBA calculations because the school is more attuned to the conditions and needs faced. A more systematic application of CBA can help schools determine budget priorities, increase the effectiveness and efficiency of resources, and consider the benefits of programs in the short and long term.

Based on these results, the principal and other parties involved in budget planning at SDN Warugunung 2 Surabaya are advised to begin implementing the Cost-Benefit Analysis principle more systematically in planning educational programs and procurement, particularly by identifying costs and benefits, and considering the investment timeframe. The use of indicators such as BCR, NPV, and IRR can be a supporting tool in determining budget

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priorities. However, CBA results should not be the sole basis for decision-making because there are educational benefits that are difficult to quantify financially, such as improved learning quality, skills, and student development.

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