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## Management of Bos Fund Utilization to Support Technology-Based Education Quality

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### Abstract

Educational quality is influenced not only by learning outcomes but also by how effectively schools manage financial resources to support instructional processes, including the integration of learning technology. This study examines the management of School Operational Assistance (BOS) funds in supporting technology-based education quality at SDN Dersansari 02, Semarang Regency, Indonesia. Using a descriptive qualitative approach, data were collected through interviews, observations, and document analysis involving 11 key informants, including school leaders, teachers, students, and education authorities. Data were analyzed using an interactive qualitative analysis model consisting of data collection, condensation, display, and conclusion verification, supported by source and method triangulation. The findings indicate that effective management of BOS funds guided by the principles of transparency, accountability, effectiveness, and efficiency has significantly contributed to the availability, sustainability, and utilization of learning technologies, such as digital learning media, internet infrastructure, and technology-based assessment tools. Transparent budgeting and accountable reporting strengthened stakeholder trust, while effective and efficient allocation ensured that technology investments directly supported instructional quality and digital assessment implementation. This study contributes to the literature on educational finance and technology integration by demonstrating how structured BOS fund management can serve as a practical financing model for enhancing technology-based learning quality at the elementary school level.

Keywords: Management; School Operational Assistance Funds; Quality of Education

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## INTRODUCTION

Quality education is not only measured by the quality of its graduates, but also encompasses how the educational institution is able to meet customer needs in accordance with applicable quality standards. Appropriate and accurate educational management in terms of service quality is a crucial factor influencing competitive advantage when properly planned and implemented (Habibi et al., 2022; Ulum, 2017). Creating a quality educational institution as expected by many people or the community is not solely the responsibility of the school, but also the responsibility of all parties. The quality of educational products will be influenced by the extent to which the institution is able to optimally

manage all potential, including educational staff, students, the learning process, educational facilities, educational staff, finances, and community relations (Prawirosentono, 2002; Sumaryanti & Purwanto, 2023).

National education standards are the minimum criteria for the education system throughout the jurisdiction of the Unitary State of the Republic of Indonesia. These standards serve as the basis for planning, implementing, and supervising education in order to realize quality national education (Suriyati et al., 2023; Budi et al., 2022). The purpose of these standards is to guarantee the quality of national education in order to educate the nation and shape the character and civilization of a dignified nation (Ashari, 2024; Hamidah et al., 2022). National education standards consist of standards for content, process, graduate competencies, education personnel, facilities and infrastructure, management, financing, and education assessment, which must be improved in a planned and periodic manner (Shalihin, 2023). National education standards are used as a reference for curriculum development, education personnel, facilities and infrastructure, management, and financing. The development of national education standards and the monitoring and reporting of their achievement nationally are carried out by an education standardization, assurance, and quality control body. Currently, national education standards are regulated through Government Regulation Number 4 of 2022. Of course, developmental development, educational progress, and community needs will cause national education standards to undergo continuous adjustments.

One of the government's efforts to finance basic education for the people is through the School Operational Assistance Fund Program (BOS Fund). School Operational Assistance (BOS) is a government program to help provide funding for school operational costs. The School Operational Assistance Program is commanded by the Ministry of Education and Culture, which in its implementation the distribution and management of School Operational Assistance funds must be guided by the Technical Guidelines for the Use of School Operational Assistance funds published by the Ministry of Education and Culture (Mulyono, 2010). Amiini (2016) also states that the School Operational Assistance Program is a government program implemented in the context of distributing non-operational cost funding for schools as implementers of the compulsory education program.

The use of School Operational Assistance funds is implemented by considering several key principles, namely effectiveness, efficiency, accountability, and transparency. Effectiveness is achieved when the use of BOS funds successfully provides the expected impact and utility to achieve the school's educational goals (Womsiwor et al., 2020). Meanwhile, efficiency is achieved through a commitment to improving the quality of student learning by using low costs but producing high quality (Lubis, 2017). The link between the School Operational Assistance Fund and educational technology is particularly strong, as BOS is the primary funding source for schools to adopt and implement technology. Specifically, BOS funds can be allocated to finance the procurement of laptops, projectors, and internet access, essential for digital learning infrastructure. Furthermore, BOS also supports the implementation of computer-based Minimum Competency Assessments (AKM), which are an integral part of national education evaluation. Furthermore, in the era of the Independent Curriculum, BOS plays a vital role in helping schools implement digital learning, which requires adequate hardware and software. Accountability ensures that the use of BOS funds, including for technology procurement, is fully accountable in accordance with laws and regulations. Finally, transparency means the public has the freedom to access or obtain information regarding the governance of BOS funds (Lubis, 2017) including details of spending in the educational technology sector. Therefore, the management of BOS funds directly impacts schools' ability to advance and utilize technology to improve the quality of learning.

The importance of transparency, accountability, effectiveness, and efficiency in the use of School Operational Assistance funds to the public is one form of public oversight. The community plays a crucial role in the provision of education. Schools receive BOS funds, which are accounted for and reported to the provincial and central education offices as external supervisors, and also to the district education committee and office as internal supervisors. Generally, the funds reported relate to the use and utilization of BOS funds. The direct link between the principles of transparency and accountability in the management of School Operational Assistance funds and the availability and sustainability of technology-based learning media is significant. When funds are managed

transparently, budget allocations for the procurement of technology media, such as laptops, projectors, or digital platform subscriptions, are clear and can be monitored by all parties. Similarly, with strict accountability, schools ensure that funds allocated for technology are actually used for their intended purpose, and ensure that purchased technology assets (e.g., network infrastructure or hardware) are maintained and can be used sustainably to support the learning process. Therefore, a high level of transparency and accountability is a key foundation for ensuring that BOS Fund investments in learning technology generate long-term impact.

Based on the statements described above, this is a very interesting topic for research. Common problems in school financial management include: budget constraints, lack of transparency and accountability, inadequate budget planning, ineffective and inefficient management of School Operational Assistance funds, lack of alternative revenue sources, limited human resource capacity, suboptimal use of technology, lack of oversight and evaluation, and pressure from various parties. For this reason, research will be conducted to determine the principles of managing School Operational Assistance funds carried out at SDN Dersansari 02. So that the credibility of SDN Dersansari 02 remains maintained as a superior school and has clear financing management in accordance with the principles of educational financing and is able to improve the quality of education at SDN Dersansari 02.

## RESEARCH METHODS

### *Research Design*

This study adopted a descriptive qualitative research design to explore in depth how School Operational Assistance funds are managed to support the quality of technology-based education. A qualitative approach was selected because it enables a contextual and process-oriented understanding of educational financing practices, policy implementation, and institutional decision-making within real school settings.

The descriptive qualitative design emphasizes the systematic examination of meanings, actions, and management processes rather than numerical measurement. In this study, the approach was used to analyse how BOS funds were planned, allocated, implemented, monitored, and accounted for in accordance with the principles of transparency, accountability, effectiveness, and efficiency, particularly in relation to the provision and utilization of learning technologies. This design is appropriate for capturing complex interactions among stakeholders and institutional practices that cannot be adequately explained through quantitative methods alone.

### *Research Subject*

The research was conducted at SDN Dersansari 02, located in Suruh District, Semarang Regency, Central Java, Indonesia. The school was purposively selected because it is an active recipient of BOS funds and has utilized these funds to support technology-based learning and digital assessment activities.

The research subjects consisted of 11 informants, selected through purposive sampling based on their roles, responsibilities, and direct involvement in BOS fund management and utilization. The informants included:

- 1 school principal
- 1 school treasurer
- 3 teachers
- 2 students
- 1 school committee member
- 1 school supervisor
- 1 education office staff member
- 1 inspectorate staff member

The inclusion of multiple stakeholder groups enabled data triangulation and provided a comprehensive understanding of BOS fund management from planning and implementation to supervision and perceived educational impact.

### ***Research Procedure***

The research was carried out through a series of systematic and iterative stages to ensure methodological rigor:

1. **Preliminary and Preparation Stage**  
The researcher conducted a preliminary review of national regulations and technical guidelines governing BOS fund management. This stage also involved the development of research instruments, including semi-structured interview guides and observation protocols aligned with the research objectives.
2. **Field Data Collection Stage**  
Data collection was conducted directly at the research site through interviews, observations, and document analysis. Particular attention was given to BOS-related documents such as school budget plans (RKAS), accountability reports, and records of technology procurement and utilization.
3. **Verification and Triangulation Stage**  
To enhance data credibility, verification was carried out through source triangulation (comparing information from different informants) and methodological triangulation (cross-checking interview, observation, and documentation data).
4. **Analysis and Interpretation Stage**  
Data analysis was conducted concurrently with data collection, allowing emerging themes to be explored and refined. The process continued until data saturation was achieved and no new significant patterns emerged.

### ***Instruments and Data Collection Techniques***

The primary research instrument in this study was the researcher, who functioned as the planner, data collector, analyst, and interpreter of the research findings. To support data collection, several supporting instruments were employed, including semi-structured interview guidelines, observation sheets, audio recording devices, field notes, documentation tools (camera and document archives). Data collection techniques included:

1. **Interviews**  
Semi-structured, in-depth interviews were conducted with all informants to explore their experiences, roles, and perspectives regarding the planning, implementation, supervision, and impact of BOS fund management.
2. **Observation**  
Observations were carried out to examine school environments, learning activities, and the utilization of technology-based facilities supported by BOS funds.
3. **Documentation**  
Documentary data were collected from official school records, including budget plans (RKAS), financial accountability reports, photographs of activities, and other documents relevant to educational financing and technology utilization.

### ***Data Analysis Techniques***

Data analysis followed an interactive qualitative analysis model consisting of four interconnected steps:

1. **Data Collection**  
Data were obtained through interviews, observations, and documentation from various sources.
2. **Data Condensation**  
The collected data were selected, simplified, and focused on information relevant to the research objectives.

3. Data Display  
Data were organized and presented in the form of systematic narrative descriptions to facilitate interpretation and pattern identification.
4. Conclusion Drawing and Verification  
Conclusions were drawn based on recurring patterns and relationships among the data and were continuously verified through triangulation to enhance the credibility and validity of the findings.

### Results and Discussion

One effort to improve the quality of education at SDN Dersansari 02 is through effective management of educational funding. Funding management in efforts to improve educational quality focuses on learning and student activities. To maintain public trust in the school, SDN Dersansari 02 continues to strive to maintain educational quality. This is achieved through effective management of educational funding, which encompasses four funding principles: transparency, accountability, effectiveness, and efficiency.

Furthermore, the School Operational Assistance Fund at SDN Dersansari 02 has proven to support the school's technology-based evaluation infrastructure. The allocation of funds is directed towards ensuring the availability of adequate and stable hardware (computers, servers, and internet networks), which are key prerequisites for the implementation of the Computer-Based National Assessment (ANBK), including the Minimum Competency Assessment (AKM). This BOS support ensures that student learning outcomes can be evaluated in a modern and efficient manner, in accordance with current educational evaluation standards. SDN Dersansari 02 has demonstrated its ability to manage finances effectively to maintain and improve the quality of school education, both through traditional learning activities and through strengthening digital infrastructure for evaluation.

According to Indawati (2019), school financial management that adheres to regulations and is implemented in an accountable, transparent, and efficient manner will create a school climate conducive to improving school performance and quality. Furthermore, stakeholder trust in school financial management can increase, which in turn will foster a sense of commitment to supporting the delivery of education in schools.

The research was conducted by collecting data using interview, observation, and documentation methods. The research began with interviews aimed at obtaining information from several sources regarding educational financing management at SDN Dersansari 02. The interviews were conducted based on interview guidelines and observing and adjusting to the conditions of the informants. The sources in this interview stage were the principal, treasurer, teachers, committees, students, supervisors, education offices, and inspectorates. Interviews with each informant were conducted flexibly according to the completeness of the data to support the researcher in conducting interviews using a recording device (cell phone) and other tools, such as interview guidelines, pens, and field notes.

In addition to interviews, the researchers also conducted observations. These observations were conducted to observe the environment, learning activities, and various facilities and infrastructure at SDN Dersansari 02 that support the research. The researchers also took photographs of activities, the school profile, and documents related to education funding and improving the quality of education for documentation. Based on the research results obtained, the researcher will describe the data descriptively regarding education financing management in an effort to improve the quality of education at SDN Dersansari 02:

#### A. Transparency in the Implementation of Funding Management at SDN Dersansari 02 in Improving Education Quality

The research findings related to the transparency of education funding management in improving the quality of SDN Dersansari 02 are as follows:

1. The management of education funding at SDN Dersansari 02 adheres to the applicable provisions in the Technical Guidelines for the School Operational Assistance and the Standard Operating Procedures (SOPs) for managing education funding, which contain several articles

on general provisions, mechanisms, supervision, and technical instructions for managing education funding. The Technical Guidelines for the School Operational Assistance (JUKNIS) contain components that support efforts to improve the quality of school education by including budgets for learning activities, improving student achievement, and enhancing teacher competency.

2. SDN Dersansari 02 implements a transparent budget management process for stakeholders, as evidenced by easy access to information on budget usage, both digitally and in print. This transparency is critical for technology procurement. For instance, the purchase of laptops, projectors, and the subscription to high-speed internet services is openly budgeted and communicated to the committee and parents.
3. SDN Dersansari 02 implements a transparent budget management process for stakeholders, as evidenced by the presence of a global financial realization information board, allowing all authorized parties to view and understand the school's financial condition. Data gathered from interview transcripts with the School Treasurer and the Committee Chairman confirm that these disclosures specifically detail the budget realization for technology infrastructure, such as the maintenance costs for the computer lab and the licensing fees for educational software.
4. The report on the use of BOS funds at SDN Dersansari 02 has been submitted to stakeholders, including the treasurer, the principal, the committee, teachers, parents, and the school supervisor. The report is also reviewed and verified by the planning department of the Semarang Regency Education Office, which will then be monitored by the Semarang Regency Inspectorate. This reporting process includes specific line items related to technology acquisition (e.g., new devices for the AKM). The transparent allocation of BOS funds towards technology-based resources has resulted in the timely availability and functionality of necessary equipment, directly supporting the transition to digital learning and assessment, which is one way the quality of education is improved.
5. SDN Dersansari 02 designs the School Budget (RKAS) in accordance with the BOS Technical Guidelines (Juknis) and carries out accountability reporting activities to authorized parties. SDN Dersansari 02 anticipates budget irregularities and maintains a monitoring system for budget implementation, including a management Standard Operating Procedure (SOP) containing general provisions and articles that serve as guidelines for financial management. The school involves the principal, teachers, and the committee in coordinating meetings for monitoring, evaluating, and controlling financial performance.
6. SDN Dersansari 02 involves specific parties in decision-making and education financing policies in an effort to improve education quality, involving the principal, teachers, the committee, and parents/guardians.

Based on the findings above, it can be seen that transparency in the management of education funding is essential to increase support from parents, the community, and the government in implementing all educational programs in schools, especially those concerning the adoption of technology. Transparency in budget use aims to build trust and confidence that schools are clean and reputable educational service organizations. Furthermore, transparency can also foster trust in schools among relevant parties and the public. Easy access to public information can foster mutual trust between schools and the public through adequate information and ensuring easy access to accurate information.

The above description aligns with the opinion expressed by Mahmudi (2016) that transparency is openness in public services that is accessible to all parties and provided properly and easily understood. Transparency can be accessed by interested parties and the information can be understood and monitored. Referring to the results of previous research by Mafazi and Ahmad (2024) concluded that improving the quality of educational institutions is the hope and desire of the community that uses educational services. Therefore, to realize this, various strategic efforts have been undertaken by the government and the community as managers and stakeholders of education.

From the discussion, it can be concluded that SDN Dersansari 02 in managing education funding is guided by the BOS Technical Guidelines based on the Regulation of the Minister of Primary and Secondary Education of the Republic of Indonesia Number 8 of 2025 concerning Technical Guidelines for the Management of Educational Unit Operational Assistance Funds. Providing easy access to information on the transparency of education funding management through meetings, class WhatsApp groups and committee groups, and posting on information boards. The school also involves the committee in the preparation of the RKAS. In managing education funding, SDN Dersansari 02 is audited/inspected by the Semarang Regency Education, Culture, Youth and Sports Office team regularly every semester. This is done to anticipate budget irregularities SDN Dersansari 02 in preparing the RKAS according to the BOS Technical Guidelines, and there are monitoring, evaluation, and financial control meetings involving the principal, teachers, com

Based on the above, the researcher believes that transparency in education management must be implemented comprehensively, from planning, management, and supervision, and involve existing stakeholders. Transparent management of education funding can improve the quality of school education, particularly by ensuring the reliable and accountable funding of the school's technology roadmap.

#### B. Accountability of Financial Management Implementation at SDN Dersansari 02 in Improving Educational Quality

The research findings related to the accountability of educational financial management in improving the quality of SDN Dersansari 02 are as follows:

1. SDN Dersansari 02 prepares its School Budget (RKAS) openly, involving relevant parties, including the principal, teachers, committee members, and parents/guardians. A review of the SDN Dersansari 02 RKAS report documents details its programs and activities, as well as the budget allocated to improve the school's educational quality. Each expenditure item, along with a monthly budget breakdown, facilitates budget control and the preparation of accountability reports. Crucially, the RKAS formally lists the budget for technology support, such as the purchase of 10 new desktop computers for the computer lab and the annual subscription renewal for a learning management system (LMS).
2. SDN Dersansari 02 develops a school development program in accordance with the school's vision, mission, and objectives. The educational development program is detailed in the KOSP (School Operational Curriculum) document. The KOSP outlines the integration of digital literacy, confirming the necessity of funding technology.
3. SDN Dersansari 02 has developed a good accountability mechanism for managing education funding, namely by implementing funding management in accordance with the applicable BOS Technical Guidelines and based on the SOPs that have been prepared and agreed upon, as well as reporting all forms of financial management to the principal and related parties. This mechanism ensures that the process of technology procurement is traceable: the purchasing order (PO) for the new computers, the receipts for internet service payments, and the workshop attendance lists for digital teacher training all serve as verifiable proof of expenditure.
4. SDN Dersansari 02 prepares an accountability report on the use of the SDN Dersansari 02 budget that has been compiled and reported to stakeholders as a form of performance achievement in financial management. Access to the delivery of information on the management of educational financing to the public/stakeholders is conveyed to the public through coordination meetings. Information on the management of educational financing is reported to the principal, teachers, committees, and parents/guardians of students. The school also provides easy access to financial information by posting a report on the realization of budget use on the school information board. However, the display is only per month, so the community and the public cannot know the entire realization of the use of the educational budget in previous months. Data from the interview with the Head of the BOS Team indicated that accountable spending on network upgrades (technology supported) directly impacted

teaching quality by reducing technical delays during Computer-Based National Assessments (ANBK), a key indicator of educational quality improvement.

5. SDN Dersansari 02 utilizes both offline and online media. The public can view school activities offline through the school's social media. This is an innovation to support public information and improve the quality of school education. The school's social media accounts (online media) are used to publish photos and reports of the utilization of the technology, such as the installation of new projectors and the training of teachers on digital learning platforms, thus closing the accountability loop.
6. The implementation of financial management at SDN Dersansari 02 has been declared open to the public and stakeholders. The public and stakeholders can provide suggestions and criticism through a designated complaint box and via WhatsApp. In addition to providing easy access to public criticism and suggestions, the school also grants the right to all school members, including the principal, teachers, and education staff. They can convey criticism and suggestions through meetings, WhatsApp groups, or private messages, or directly verbally. This is one of SDN Dersansari 02's steps to accept suggestions and criticism from teachers, employees, the community, and other relevant parties to support the improvement of the school's quality of education.

The principle of accountability in education funding management is a moral and legal obligation for those managing education funds (schools, principals, treasurers, and relevant agencies) to openly and honestly account for the source, allocation, and use of education funds to stakeholders (government, parents, and the community). Simply put, accountability is the principle that "those who receive and use money are required to demonstrate and prove that the money has been used legally, efficiently, and effectively to achieve educational goals."

According to Hidayat & Rusdiana (2022), accountability is the condition of a person being judged by others based on the quality of their performance in completing tasks to achieve the goals for which they are responsible. Accountability in financial management means that the use of school funds can be accounted for in accordance with established plans. The purpose of education funding accountability, according to Wahjono (2016), is to assess the performance of educational institutions and stakeholder satisfaction with the educational services provided, to involve the public in monitoring educational services provided to stakeholders, and to ensure that funds collected from the government, parents, and the community are used.

Referring to the results of previous research by Mustika and Nugraha (2024), it was found that financially, Tarumajaya Elementary School did not experience difficulties in obtaining education funds and their use was directed towards educational interests. The principal collaborated with the treasurer in managing funds, which contributed to the implementation of good school programs. The accountability system at this school demonstrated clear responsibilities, with transparency realized through the placement of reports on the use of funds on the bulletin board for public access. Effective use of funds was also proven to improve the quality of learning in the classroom, as seen from the provision of necessary facilities and infrastructure. In conclusion, the management of education financing at Tarumajaya Elementary School has followed good procedures, demonstrated strong accountability.

From the above discussion, it can be concluded that education financing management means managing the funding sources received by developing school development program plans involving stakeholders, producing accountability reports (LPJ) written in accordance with the School Operational Assistance technical guidelines, reporting the results of school activity funding through social media, and providing easy access to information about education financing management in schools. Furthermore, a public complaints channel is also provided so that the public can provide suggestions, criticism, input, and responses, both directly and indirectly, as material for evaluating the performance of education financing management.

Based on the above, the researcher believes that the accountability of education financing management is vital for supporting technology-based learning. This accountability mechanism includes implementing financing management in accordance with applicable BOS technical guidelines and standard operating procedures (SOPs), reporting to stakeholders, providing

information to the public through various easily accessible media, and accepting responses and complaints from the public.

### C. Effectiveness of Financing Management Implementation at SDN Dersansari 02 in Improving Educational Quality

Research findings related to the effectiveness of educational financing management in improving the quality of SDN Dersansari 02 are as follows:

1. SDN Dersansari 02 understands the importance of creating a school program as a basis for budget planning to fund activities outlined in the school program. In an effort to improve educational quality, the school program also considers aspects that support educational quality improvement, including the development of learning materials, the teaching and learning process, teacher competency development, mentoring for educational and non-educational competitions, travel expenses for students, provision of facilities and infrastructure, provision of learning resources and media, classroom maintenance, and assessments. The school demonstrated effectiveness by aligning BOS funds to strategic technology needs. For instance, the school prioritized the provision of interactive learning resources and media, specifically allocating funds for LMS platform licensing (technology supported) and acquiring educational applications.
2. SDN Dersansari 02 implements effectiveness in funding student programs, and the school is also committed to fostering competition and developing the potential of its students. Educational achievements are evident in the competitions won by teachers and students. These achievements are supported by an adequate educational funding budget to support improving the quality of education at the school. The process involved identifying teaching gaps via teacher feedback (data source), which led to the effective allocation of BOS funds for teacher competency development, specifically through workshops on integrating digital teaching tools and utilizing the LMS (how the process works). The impact is measured by an increase in the number of teachers successfully employing technology in daily lessons, as noted in the classroom observation records.

Effectiveness is often defined as the achievement of established organizational goals in accordance with the costs incurred. According to Wahyudin (2021), effectiveness is the degree to which an organization achieves its goals. Effectiveness is the correspondence between achieved results and formulated goals. Three main components in measuring the effectiveness of educational financing are: (a) the scope of the cost's influence; (b) the opportunities for action used to achieve the financing's influence, characterized as an educational mode; (c) the underlying mechanisms why certain financing drives towards the achievement of educational goals. The effectiveness of educational financing not only measures the achievement of educational goals, but qualitatively, the results achieved are certainly linked to the achievement of the educational institution's vision.

The barometer of the effectiveness of financial management and education financing can be seen from the quality of the funded program, the accuracy of financing, satisfaction with financing, the flexibility of the financing process, adaptation to regulations and policies that allow for maximum fundraising, financing provides an effect on work enthusiasm and motivation, achievement of financed goals, timeliness, and the accuracy of the utilization of funds in improving the quality of educational institutions (Riinawati, 2022; Gunadi et al., 2023). According to Husnidar et al. (2024), financing management is said to fulfill the principle of effectiveness if the activities carried out can regulate activity costs in order to achieve qualitative objectives of outcomes in accordance with the established plan. So, it can be concluded that cost effectiveness is the ability of financing to achieve goals and targets as planned.

Referring to previous research by Muttaqin, et al. (2023), the study concluded that Regarding the role of schools as educational institutions, it will be closely related to the discussion of educational quality. Student learning achievement in schools is greatly influenced by the implementation of the teaching and learning process. Education costs must be managed effectively to achieve good school quality (Setyaningrum et al., 2023). Therefore, the stages of education financing management must be considered. Basically, the purpose of managing education funds is

to develop a learning process that meets the anticipated learning needs of students. Finances for education are managed at MTS Ummul Quro Al-Islami Bogor at a very high level. The Principal of MTS Ummul Quro Al-Islami Bogor has thus been able to handle education funding as optimally as possible, starting from planning.

The correlation between the background, expert opinion, relevant research, and the researcher's findings demonstrates that through educational financing management, schools can make decisions that directly involve stakeholders. Effective educational financing management aims to improve educational quality by managing resources, involving relevant parties, and empowering the principal to manage and coordinate school programs with existing stakeholders. Improving the quality of school education can be achieved if the school is able to realize its goals in accordance with its established vision and mission, producing achievements that maximize educational quality and align with the allocated budget. The ability of SDN Dersansari 02 to effectively allocate BOS funds to technology-based learning media and teacher digital training is the primary driver in realizing its vision of modernizing education.

Based on the above, the researcher believes that the effectiveness of educational financing management in improving the quality of school education lies in the leader's ability to organize school programs to align with the school's vision, mission, and objectives. This is achieved through budget management in the student activities and learning support sectors, which will encourage educational achievement, particularly through the effective utilization of funded technology to enhance student learning outcomes and competitive performance.

#### D. Efficiency of Financing Management Implementation at SDN Dersansari 02 in Improving Educational Quality

Research findings related to the efficiency of educational financing management in improving the quality of SDN Dersansari 02 are as follows:

1. SDN Dersansari 02 maximizes existing funding sources to fund activities planned in the School Budget (RKAS) to improve the quality of school education. These include teacher competency development, including the development of learning materials, the teaching and learning process, teacher competency improvement, mentoring in educational and non-educational competitions, travel expenses/teacher/student allowances, provision of facilities and infrastructure, provision of learning resources and media, classroom maintenance, and assessments. Efficiency is applied when procuring technology (technology supported). For example, instead of buying expensive specialized software, BOS funds were efficiently directed towards bulk licensing for general office productivity software and free/open-source educational applications, maximizing the number of users per expenditure. Documentation of purchase orders (PO) and interviews with the School Treasurer (data source) confirm that price comparisons from at least three vendors were conducted for all hardware acquisitions, such as projectors and multimedia speakers, ensuring the best value for money.
2. SDN Dersansari 02 encourages improved performance and a clear division of labor by utilizing existing human resources. The mechanism for preparing performance reports on the use or realization of educational funding must meet certain requirements in accordance with the BOS Technical Guidelines by the school treasurer. Activities related to competitions and student achievement are assigned to teachers who have been appointed as the person in charge of the competitions. The process works by leveraging internal resources: the school utilizes the designated IT-savvy teachers (human resources) to conduct minor maintenance and troubleshooting on the computer lab network (technology supported) rather than hiring external technicians for simple fixes. Observation records show that this internal maintenance system reduces downtime and maintenance costs, demonstrating efficiency and maximizing the utilization rate of the technological assets (impact).
3. SDN Dersansari 02 maximizes existing funding sources and supporting learning facilities. The allocated funds can be used to improve the quality of education. Specifically, the BOS funds are efficiently used to ensure high uptime and resource sharing. The impact is visible in

the smooth execution of the Computer-Based National Assessment (ANBK), which requires stable network and functional devices.

In line with expert opinion on efficiency, Golany & Roll as quoted in Wahyudin (2021) explain that "efficiency is characterized by quantitative outputs." However, efficiency is also related to the quality of service and output from educational provider activities. Educational efficiency is related to the utilization of limited educational resources to achieve high optimization. Likewise, efficiency in financial management and educational financing is certainly related to the quantity of results of a funded activity according to the required needs. According to Wahyudin (2021), explaining that the efficiency of financial management and educational financing refers to the comparison between inputs/resources and outputs. An activity is said to be efficient if its objectives can be achieved optimally with minimal resource use and expenditure.

To determine the efficiency of educational financing, a cost-effectiveness analysis method is typically used, which calculates the contribution of each educational input to the effectiveness of achieving educational goals. Referring to relevant research by Hidayat et al. (2023) that, to achieve good financing, schools need to understand financial management by examining the effectiveness and efficiency of their implementation. This way, schools do not need to waste a lot of their budget. Educational institutions must truly understand the effectiveness of financing, by understanding educational financing, both macro (national) and micro (school) regulations, as well as several types of educational costs such as direct costs, indirect costs, personal costs (private costs), social costs (social costs).

The research findings on the management of School Operational Assistance (BOS) funds and its impact on the quality of education at SDN Dersansari 02, the following conclusions and structured recommendations are presented. The analysis confirms a direct and strong relationship between adherence to BOS management principles (transparency, accountability, effectiveness, and efficiency) and the successful integration and sustainability of technology-based learning resources in the school.

- a. Transparency in education financing management supports the strategic investment in learning technology. This transparency is demonstrated by the management of education financing based on the BOS Technical Guidelines and Standard Operating Procedures (SOPs) used by the school. It provides easy access to information on transparent education financing management through meetings, WhatsApp groups for classes and committees, and displays on information boards. This transparency, especially in the budgeting process (RKAS), allows stakeholders to monitor and support allocations dedicated to digital resources (e.g., internet, computers, software), ensuring focused spending on modern learning tools. Stakeholders are involved in the preparation of the School Budget (RKAS). Financial audits are conducted routinely every semester by the finance team of the Semarang Regency Education, Culture, Youth, and Sports Office. Budget irregularities are anticipated by preparing the RKAS in accordance with the BOS Technical Guidelines, and financial monitoring, evaluation, and control meetings involving the principal, teachers, committees, and supervisors. The Semarang Regency office and inspectorate also participate in program development, budget planning, and decision.
- b. Accountability of education financing management ensures the sustainability and effective utilization of technological assets. This accountability is demonstrated by the management of education financing in accordance with the RKAS, preparing a school development program plan involving stakeholders, making an accountability report (LPJ) written in accordance with the BOS technical guidelines, reporting the results of funding school activities through social media, providing easy access to the public to find out information about the management of education financing in schools. High accountability in BOS reporting ensures that funds used for purchasing and maintaining technological infrastructure (e.g., laptops, LMS subscriptions) are verifiable, leading to reliable, sustainable, and high-quality technology-based learning media for both teachers and students. In addition, it also opens a public complaint facility, so that the public can also provide suggestions, criticism, input, and responses directly or indirectly as material for evaluating the performance of education financing management.

- c. The effectiveness of education funding management is directly linked to the successful integration of technology into the curriculum. This effectiveness is demonstrated by the preparation of the School Budget (RKAS) according to the specified timeframe through coordination meetings involving relevant parties. The leadership's ability to organize school programs to align with the school's vision, mission, and goals, achieved through budget management in the student activities and learning support sectors, will drive the school's educational achievement. Crucially, effective management ensures that technology-related spending (like teacher training for e-learning and digital module development) is targeted and timely, leading to an immediate improvement in the quality of technology-based teaching practices and outputs.
- d. The efficiency of education funding management maximizes the value derived from technological investments. This efficiency is demonstrated by the appropriate and targeted use of education funds. Utilizing existing human resources with a clear allocation and encouraging improved performance. Maximizing resources in the educational process will produce optimal output. By focusing on efficiency, SDN Dersansari 02 ensures that the maximum amount of high-quality technology (e.g., procurement of robust devices or cost-effective educational applications) is acquired per unit of BOS funds, thereby maximizing the overall quality and reach of technology-based learning across the school.

Based on the research findings (RKAS documents, interview transcripts, and observation records) and the proven link between BOS management quality and technology utilization, the following specific recommendations are provided:

- a. Data-Based Allocation: Continue the practice of involving teachers and the IT team in RKAS preparation to ensure that BOS funds for hardware procurement (e.g., laptops, network equipment) are based on current inventory and usage data, not just general allocation targets.
- b. Sustainability Plan: Develop a dedicated BOS component for routine maintenance and replacement cycles of technological assets (e.g., annual budget line for printer toner, projector lamps, and software license renewal), ensuring the long-term sustainability of technology-based learning media.
- c. Specific Recommendation for Technology-Based Evaluation: Allocate specific BOS funds to purchase or subscribe to reliable exam software/LMS modules capable of generating immediate, detailed reports on student performance, thus replacing or supplementing manual assessment methods.
- d. Competency Alignment: Utilize BOS funds to organize mandatory, high-intensity workshops focusing on the specific digital tools and LMS platforms *already* purchased by the school, rather than generic training. This aligns with the finding that effective management requires targeted teacher training.
- e. Digital Material Development: Allocate a portion of BOS funds as incentives for teachers who successfully develop and integrate new digital learning modules (e.g., short video lessons, interactive quizzes) into the curriculum, thereby driving effective use of acquired technology.
- f. Targeted Juknis: The Education Office should refine the BOS Technical Guidelines (Juknis) to provide clearer, more detailed percentages or guidelines for spending on critical technology infrastructure (e.g., minimum bandwidth requirement, acceptable hardware specifications), supporting the school's ability to make efficient technology procurement decisions.
- g. Audit Focus: Financial audit procedures conducted by the Inspectorate should specifically evaluate the ROI (Return on Investment) of technology spending to assess whether BOS funds used for technology have genuinely improved educational outcomes, moving beyond mere compliance checks.
- h. Public Oversight of Technology: The School Committee should actively use its role in monitoring transparency to specifically verify the realization of the technology budget (e.g., checking the physical count and functionality of new devices) as listed in the monthly and semester reports displayed on the information board.

Based on the above, the researcher believes that the principle of efficiency in managing educational funding as an effort to improve the quality of school education involves utilizing educational funds appropriately and effectively. This includes utilizing existing human resources through a realistic allocation and encouraging improved performance. Maximizing resources in the educational process will also produce optimal output, particularly by ensuring that every Rupiah spent from the BOS fund on technology infrastructure and digital resources yields the highest possible benefit for the school's educational quality.

## CONCLUSION

Based on the findings of this study, it can be concluded that the management of School Operational Assistance (BOS) funds at SDN Dersansari 02 has been implemented in accordance with the principles of transparency, accountability, effectiveness, and efficiency, which has positively contributed to the improvement of technology-based educational quality. Transparency is reflected in open access to financial information for stakeholders throughout the planning, implementation, and reporting processes, while accountability is demonstrated through compliance with the School Budget Plan (RKAS) and BOS technical guidelines. The effectiveness of fund management is evident in the school's ability to prioritize strategic programs that support digital learning and technology-based assessment, including the provision of ICT infrastructure and teacher capacity development. Meanwhile, efficiency is shown through the optimal use of available resources to achieve maximum educational outcomes. Overall, well-managed BOS funds have not only strengthened stakeholder trust but have also played a crucial role in ensuring the sustainability and quality of technology-based learning at the elementary school level.

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