A PERIORITY METHOD FOR VALUE FOR MONEY IMPELEMENTATION: USING THE AHP MODEL TO MAXIMIZE SCHOOL OPERATIONAL ASSISTANCE FUNDS

Muhtar[1], Salman Alfarisy Totalia[2]

[1] Department of Accounting Education, Faculty of Teacher Training and Education,[2] Department of Economics Education, Faculty of Teacher Training and Education, Sebelas Maret University
e-mail: salmanalfarisytotalia@staff.uns.ac.id

Abstract

Personnel expenses, investment expenditures, and operational costs are the three parts of the central government's support for education in Indonesia. The program has encountered a number of challenges since being put into place in 2005. To get over the difficulties, school managemnet absolutely must have an optimization tool. The primary issues with the allocation of these funds up to this point have been a lack of preparation and a lack of involvement from the school ecosystem, particularly in establishing the planning, planning papers, and the priority scale of the projects. Plans for programs and activities based on the BOS (School Operating Assistance) platform. The Analytical Hierarchy Process (AHP) model is a prioritization method that bases the priority scale on a comparison of each alternative with the others. The AHP model is a recognized decision-making tool that is effective but straightforward. Businesses, government, management, and educational sectors have all adopted this model. In this research, the BOS allotted funds in the current year were prioritized based on these specifications using the AHP model, allowing for the best possible absorption and effective implementation of Vocational School operations. The results of the research demonstrate how using AHP makes it simpler for school residents to give priority to spending money on educational activities. Managers can record strategic goals using the AHP model and prioritize the usage of funds based on weighted criteria. AHP can collaborate with various school stakeholders (principals, treasurers, teachers, committee, parents/guardians) to improve the standard and type of decision assistance used to raise academic achievement. The AHP model for planning the use of Regular BOS funding is practical to use and apply in every SMK, the researcher can conclude based on the findings of the aforementioned study.

Keywords: Analytical Hierarchy Process, Value For Money, School Operational Assistance, Vocational School.

INTRODUCTION

The allotment of 20 percent of the State Revenue and Expenditure Budget (APBN) for education has not made much of a difference in Indonesia's educational standards. (Ningsih et al., 2019). This is demonstrated by Indonesia's PISA score, which is still lower than Vietnam's. Vietnam and Indonesia are two Asian nations that both devote 20% of their national income to the education sector. Another issue has to do with how the increase in Indonesia's GDP is affected by the distribution of funds for education. (GDP). In accordance with data (Asian Development Bank, 2017), GDP was only impacted by 3.6% of education investment spending in 2012. International guidelines state that education investment spending must make up a minimum of 6% of GDP. Some of these issues show that Indonesia is not making optimal utilization of its educational funding. The reason for School Operational Assistance (BOS) could be attributed to the usually inadequate administration of funds in several locations. (Oebadillah, 2019). The education office, school-working groups, and school personnel all committed theft and embezzlement of BOS funding. This can be observed in Figure 1 on the list of BOS abuses, which shows the results of the Supreme Audit Agency (BPK) in several areas regarding the usage of 2019 BOS funds.
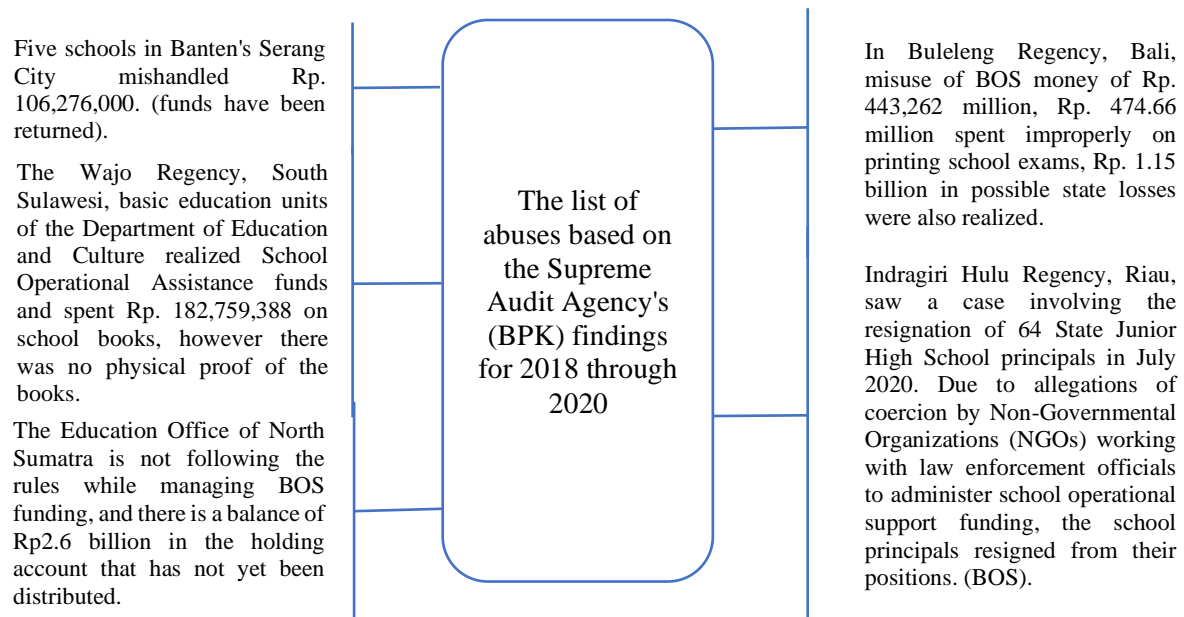
Five schools in Banten's Serang City mishandled Rp. 106,276,000. (funds have been returned).

The Wajo Regency, South Sulawesi, basic education units of the Department of Education and Culture realized School Operational Assistance funds and spent Rp. 182,759,388 on school books, however there was no physical proof of the books.

The Education Office of North Sumatra is not following the rules while managing BOS funding, and there is a balance of Rp2.6 billion in the holding account that has not yet been distributed.

The list of abuses based on the Supreme Audit Agency's (BPK) findings for 2018 through 2020

In Buleleng Regency, Bali, misuse of BOS money of Rp. 443,262 million, Rp. 474.66 million spent improperly on printing school exams, Rp. 1.15 billion in possible state losses were also realized.

Indragiri Hulu Regency, Riau, saw a case involving the resignation of 64 State Junior High School principals in July 2020. Due to allegations of coercion by Non-Governmental Organizations (NGOs) working with law enforcement officials to administer school operational support funding, the school principals resigned from their positions. (BOS).

Figure 1. List of School Operational Assistance Abuse

In contrast, the principal as the beneficiary and manager of SOAP funds must overcome certain weaknesses, such as the incompatibility of the spending implementation with the mandated targets, the principal's dominance in deciding the planning and expenditure of SOAP/BOS funds, and the planning's weakness as a result of the committee members' and related parties minimal input. Based on a study by Martono, Baedhowi, Wardani, Triyanto, Totalia, S. A., Octoria, and Laksono (2016), BOS is one of the funding requirements that affects how well education is done. On the other, inefficiencies in the use of BOS funds were also discovered; essentially, schools were oriented toward how to achieve budget absorption, which also resulted in the possibility of fraud in implementation and accountability. They were informed that BOS was provided to schools and has a significant impact on improving the quality of student learning in Senior Vocational School (SMK). These researchers also discovered that the majority of the practicum materials and supplies that could be purchased with BOS funding in SMK. (Baedhowi, Martono, T., Wardani, D. K., Totalia, S. A., Laksono, P. W., Triyanto, & Octaria, 2017). There is a high likelihood that people will spend money beyond their means.

Based on the research conducted by Totalia, (2020), the general issues and challenges schools encounter when using BOS money were caused by the planning process or financing proposals from the school's internal parties. The primary issue is the absence of planning strength and ecosystem engagement in establishing plans, planning documents, and the priority ranking of program and activity plans based on the BOS platform of the school. Second, the use of public money is governed by a complex set of regulations, which frequently creates challenges for the execution or expenditure of BOS. Third, there are many BOS applications that refer to the specifics of spending. In addition, each system has a unique format that refers to the 8 National Education Standards - SNP (Ministry of Education and Culture) and refers to the spending format (Ministry of Internal Affairs), which must adapt to the 12 BOS targets for those systems. (Halik, A., Hidayati, N. and Amin, 2018). Fourth, the school feels that the existing supervision, which lacks mentoring, has a tendency to find fault and place the blame on the school.

RESEARCH METHOD

In order to determine the priority scale of BOS on Senior Vocational School targets and budget priorities, this research is a Research and Development (R&D) project. Sukmadinata (2013) defines R&D as a research and development approach that may be accounted for in the creation of new products or the enhancement of existing ones. The researcher proceeded on to the second stage, known as the Limited Trial, where the product was tested on a number of expert validators and research subjects (principals, treasurers, teachers, committees, parents/guardians) at SMK in Indonesia to determine whether it could be implemented. Research will enhance the product based on feedback from professional validators and research samples, making it suitable to be used in the third stage, which is the testing stage. A survey of those involved in the management of the Regular BOS of SMK, including the principal, treasurer, teachers, committees, parents, or guardians, collected the data for the needs analysis. There are multiple Planning, Utilization, and Evaluation/Reporting questions in this survey. A Likert scale with a value between 1 and 9 is used to measure the stakeholders questionnaire.

The total number of SMK students included in this study was 13,710 throughout both public and private schools in Indonesia. Based on the Regular BOS disbursement data for 2020, the population was divided into three groupings. A SMK with little absorption is represented by cluster 1, an SMK with medium absorption is represented by cluster 2, and an SMK with maximal absorption is represented by cluster 3. Based on the clusters and their management for each cluster, samples were gathered proportionately from middle Java, East Java, South Kalimantan, Bali, and Nusa Tenggara Barat (NTB), which represent the western, middle, and eastern sections of Indonesia. Table 1 below lists the methods used to gather the necessary data for this study along with the data sources for each method.

Table 1. Data Collecting Techniques

Techniques	Description
Interview	This is utilized to establish the beginning conditions of the planning process for the Regular BOS fund management in SMK at the preliminary study stage. Interviews were done during the development stage, specifically (1) a preliminary field test, to learn the validator's reactions, comments, and ideas to the product being produced, (2) Interviews were performed in a number of the trial's target SMKs during the main field test. After the trial stage, interviews were conducted to determine the general reaction to the use of the Analytical Hierarchy Process (AHP) system, in order to determine how positive the response of SMK to the Analytical Hierarchy Process (AHP) model was. The interview technique utilized is a free interview, which is frequently used in basic research and allows the interviewer to ask the informants whatever questions while still gathering data.
Observation	During the product testing process, this is used to document significant occurrences and respond to students. The Analytical Hierarchy Process (AHP) Model, which was created to strengthen the information that can be gathered and make it possible to overcome challenges, is also used to collect data directly in accordance with SMK activities utilizing observation techniques. Occurs on the job. Participatory observation, as the name suggests, entails being a part of the learning process while being observed.

Document analysis	Finding the documents at the study site and digging them up also counts as data extraction. The school's name, the team's name that manages the regular BOS funds at the institution, and a number of papers that can be utilized as extra data to create the Analytical Hierarchy Process (AHP) Model are the data used in this study.
Questionnaires	A selection of written questions meant to elicit information from respondents regarding already known facts or the respondent's personality (Arikunto, 2013). A closed questionnaire, where respondents select the answers that have already been provided by the researcher, was utilized in this study.

The Analytical Hierarchy Process (AHP) model approach was used in this research design to examine all expenditure components, including the target for the use of Regular BOS funds in accordance with existing regulations, which includes library development, new student admissions/PPDB activities, learning and extracurricular activities, learning evaluation activities, school management, development of the teaching profession, industrial practice activities, Field Work Practice, and Vocational Opportunities (Pendidikan et al., 2020).

The collected survey data is then managed, processed, and finally analyzed. Both descriptive and inferential statistical analyses are part of this data management. Validity, reliability, and analysis requirements tests are all part of the data processing that is done using the SPSS software after the data has been properly organized. Analysis of test requirements covers basic assumption tests. (normality test, homogeneity test and effectiveness test). The effectiveness of the AHP model, which was applied in this study to use Expert Choice Software to identify the priority scale of the SMK BOS targets and budget priorities, was evaluated using data analysis.

RESULT AND DISCUSSION
3.1 Model of AHP

The AHP model employs measurement theory. The four different types of measurement scales that are generally employed in that order are nominal, original, interval, and ratio scales. The classification of a higher scale as a lower scale is possible, but not the other way around. Monthly revenue can be broken down into nominal categories or income levels (high, medium, low) using a ratio scale. (high, medium, poor). Data with a higher scale could not be recovered, nevertheless, if the data collected at the time of measurement were categorical or ordinal. Some of these difficulties are addressed by the AHP (Saaty, 2000).

Multiple discrete or continuous pairwise comparisons are used to construct the ratio scale using the AHP. Pairwise comparisons can be performed using absolute or relative measures of the level of similarity, interest, or emotion. Since opinions, attitudes, behaviors, and beliefs were previously challenging to quantify, this technique is quite effective at creating a ratio scale for them. (Saaty, 2007). This model begins by building a network or hierarchical structure out of the problems that need to be investigated. Within the hierarchy, primary goals, standards, substandards, and alternatives will all be taken into account. Pairwise comparisons are used to identify relationships within the structure. This pairwise comparison yields a matrix, from which the ratio scale is built in terms of the primary vector eigenvalues or eigenfunctions. The matrix's inverse, $a_{ij} = 1/a_{ji}$, can be either positive or negative. (Saaty & Vargas, 2012). AHP essentially divides an issue into parts, organizes those parts in a hierarchical fashion, and assigns values to the problem in order to simplify and speed up the decision-making process. (Saaty, 2000). A framework for choosing. Determine which variable picks the greatest priority

and tries to influence the outcome of the scenario by integrating these factors with the numerical judgment of the subjective opinion of the relevance of the variable.

As it develops, the AHP may use a variety of elements or criteria to tackle difficult or unframed problems. Uncertainty in the problem structure, perceptions of decision-making, and the availability or even absence of suitable statistical data are all factors that add to the complexity. (Harker & Vargas, 1987). There are instances when perceived and observed decision challenges need to be resolved right away, but the variations are so complicated that the data can only be documented qualitatively, that is, based on perception, experience, and intuition. However, when using the AHP technique, other models may be added to the decision-making process, particularly when examining individual decision-makers. Figure 2 below illustrates the following axioms upon which AHP is predicated:
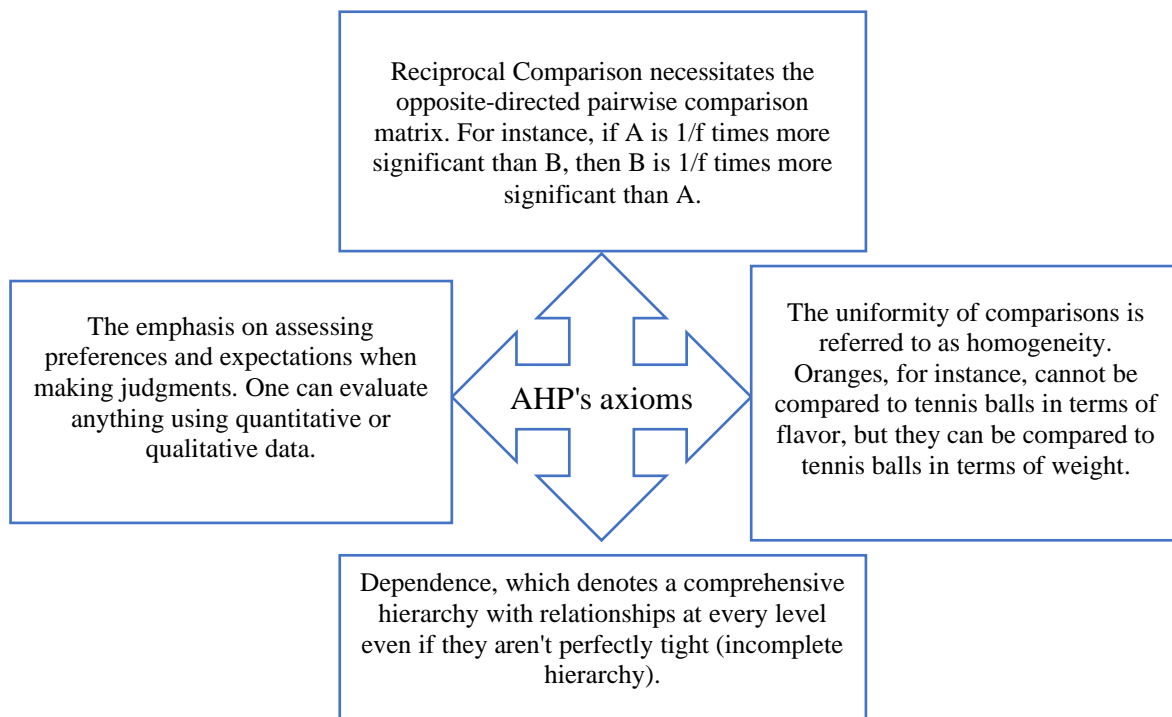
Figure 2. AHP's axioms

Additionally, Saaty (2004) provides the AHP processes for generating priorities, therefore it is important to divide the decision file into the subsequent parts: Define the issue and the level of expertise needed, (a), (b), and (c) arrange the decision hierarchy from top to bottom, with the choice's objective as the overarching goal, through the middle level (the criteria on which the following items depend), to the lowest level (which is typically a list of alternatives). After using the comparative priorities to weigh the priority at the level immediately below them, each element above the level is used to compare to the elements below it. For each component, repeat. The weighting value is then added for each element at the level below to establish its overall or global importance. Once the lowest level of the options' importance has been reached, keep adding and weighing the options. The AHP method's phases of decision-making are as follows (Saaty & Vargas, 2012): (a) Define the issue and the desired result, (b) Construct a hierarchical structure that moves from a broad goal to the criteria and options you want to rank; (c) Make a pairwise comparison matrix that details each element's relative contribution to each objective or criterion at the level above it. Comparisons are formed based on the choice or judgment of the decision maker by evaluating the degree of relevance of one feature in relation to other ones; (d)

The total value of each column is divided by the value of each component in the matched matrix to normalize the data; (e) Check for consistency after calculating the eigenvector value; if not, the data collection (recommended) must be redone. The eigenvector value in question is the highest eigenvector value found either manually or using software designed for the purpose; (f) For every hierarchical level, carry out steps c, d, and e again; (g) Find the eigenvectors of each pair comparison matrix. The eigenvector value represents each element's weight. Prioritizing elements at the bottom of the hierarchy during this phase will ensure that the goal is achieved; and (h) A technique for assessing the consistency of a hierarchy is the hierarchical consistency test. If the consistency ratio (CR) is less than or equal to 0,100, the evaluation needs to be performed.

According to the explanation in the preceding section, it is clear that the fundamental benefit of AHP is its capacity to classify possibilities according to how well they achieve competing goals. (Jusoh, Y., Chamili, K., Pa, N., 2014). Additionally, AHP is appropriate for those who deal with issues involving human perception and judgment that will have long-term effects since it recognizes that human perception is not always consistent and allows for some slight errors in judgment. (Lai et al., 2002). In addition, the use of AHP is dependent on the expertise and knowledge of experts or users to identify the variables that affect the decision-making process. (Velmurugan, R., Selvamuthukumar. S., 2001). In this research, the weight of each criterion was calculated by comparing the two criteria simultaneously after the priority scale criteria were identified based on qualitative data analysis. Decision-makers must conduct straightforward pairwise comparison analyses in AHP. (Yadav, 2013). Based on the previously provided theoretical description, the study's main claim is that "The Analytical Hierarchy Process (AHP) Model is effective for identifying the priority scale of the BOS on Vocational School objectives and budget priorities", with a particular emphasis on the consistency ratio obtained from the employed respondents.

3.2 Results

For the purpose of to determine the priority scale of targets and budget platforms for BOS Senior Vocational School (SMK), research on the construction of the Analytical Hierarchy Process (AHP) Model was conducted from August to November 2021. Table 2 below shows the distribution of respondents.

Table 2. Distribution of Respondents

Distribution	Description	Amount
Vocational School	D.I. Yogyakarta	2
	West Nusa	2
	Tenggara	2
	Bali	3
	East Java	2
	South Kalimantan	20
	Central Java	
Principal's Length of Service	>5 years	11
	1 - 5 years	15
	<1 year	5
Principal, Treasurer and Teacher Based on Employment Status	Not a civil servant	2
	Civil servant	29
Vocational High School Committee By Employment Status	Not a civil servant	21
	Civil servant	10

Parent/Guardian Based on Employment Status	Not a civil servant	21
	Civil servant	10

In addition, the user reactions to the planning of the BOS Regular SMK budget platform using the AHP model are shown in figure 3 as follows:
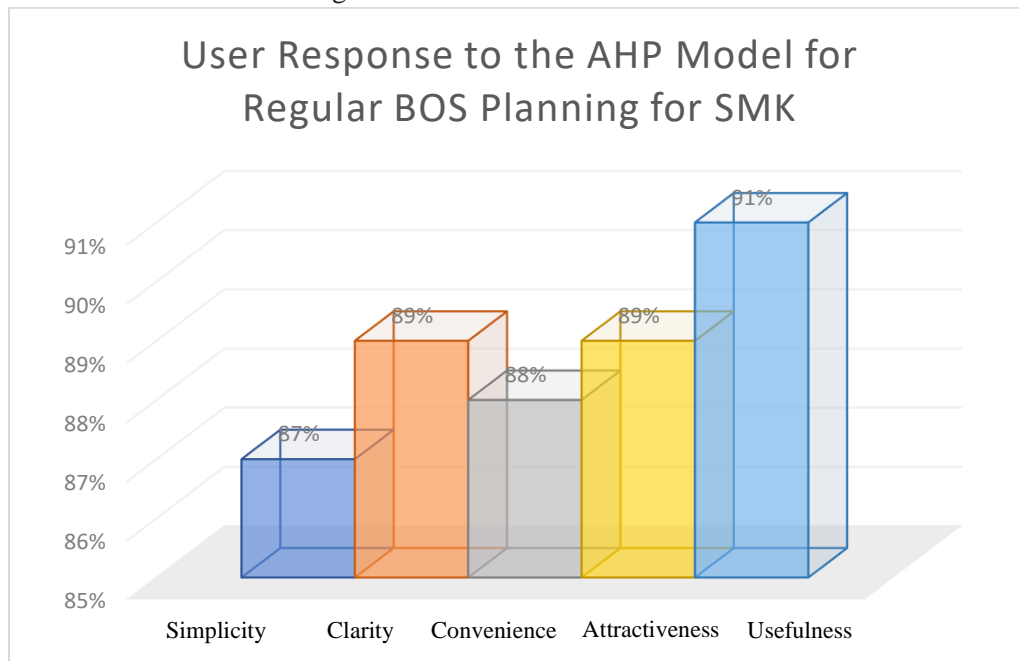

Figure 3. User Response to AHP Model

According to the illustration, the BOS Regular SMK Management team will have an easier time by using the AHP model to identify the budget platform for each Regular BOS aim while planning the use of Regular BOS funds. This is evident from the 91% usage rate for the AHP model, which is the percentage of responses from users. The BOS Regular management team as users also gave positive feedback regarding additional elements including clarity, simplicity, convenience, and attractiveness. The Regular BOS Management Team views the AHP model as simple and user-friendly, and it can be used to manage the usage of Regular BOS money and identify the budget platform for each Regular BOS aim. The AHP model for planning the use of Regular BOS funding is practical to use and apply in every SMK, the researcher can conclude based on the findings of the aforementioned study.

3.3 Discussion

The management of BOS funding generally resembles that of school finances. The following are the primary goals of managing educational funds, particularly school finance (Mulyono, 2010): (a) ensuring that the money is spent every day for school and investing the extra money; (b) Maintaining school facilities (assets); and (c)Make sure that everyone is aware of and following the procedures for receiving, recording, and disbursing money.

Pursuing the aforementioned goals, there are other concepts that must be taken into account when managing a number of schools and School Operational Assistance, such as Fairness, Efficiency, Economic, Accountability, and Transparency (Hidayat, 2012). The principle of transparency is implemented by upholding the standards of propriety and good governance with the help of the participation of the federal, state, and local governments as well as community-based educational

institutions and educational units so that: 1) They can be audited in accordance with applicable auditing standards and generate an unqualified audit opinion. 2) May be transparently accounted for to those who are involved in education (Wende, 2000).

The importance of the entire school ecosystem in the planning, implementation, monitoring, and evaluation processes is highlighted by this key indicator. The principle of transparency is intended to provide information and data disclosure for the entire school ecosystem. The accountability principle emphasizes the need for transparency in the use of public monies so that the entire school environment, which can benefit from the AHP approach, can have access to them.

The AHP technique allows users to enter inconsistent priority values. (comparison data between a pair of criteria). If this occurs, the AHP method's output is not the best one to use. The AHP approach must include a Consistency Index computation to assess the consistency of user input. The findings are compared with the Random Consistency Index (RI) for each of the n objects once the consistency index has been obtained. The RI values are shown in Table 3 for each of the n objects (2 <= n <= 10). The Consistency Index of 500 matrices, on average, is used to create the RI table. Comparing Consistency Index (CI) and Random Index (RI) gives CR (Consistency Ratio). (RI). The user's response must be consistent for the final solution to be optimal, and this is indicated if CR <= 0.10 (10%).

Table 3. Random Consistency Index

n	1	2	3	4	5	6	7	8	9	10
R	0.0	0.0	0.5	0.9	1.1	1.2	1.3	1.4	1.4	1.4
I	0	0	8	0	2	4	2	1	5	9

Formula for CR: $\frac{CI}{RI}$ (1)

The level of consistency is sufficient if CR <= 0.10 (10%). If CR is greater than 0.10, the comparison scale for a given set of criteria has been defined in a way that is inconsistent. If this occurs, it is a given that the user will find the solutions produced by the AHP approach to be nonsensical. Figures 4, 5, 6, 7 and 8 depict the consistency ratios for treasurers, treasurers, and instructors, respectively, as well as Figure 6 depicts the consistency ratio for teachers. Researchers employed expert choice software to calculate the consistency ratio. The principal had a CR value of 0.04; the school treasurer had a value of 0.01; teachers had a value of 0.02; parents had a value of 0.03; and the committee had a value of 0.02. These findings were based on the results of the computation of the Consistency Ratio (CR) utilizing the expert choice application above. All respondents CR values were 0.1, and since they all met the 0.1 criteria, it can be claimed that the results of the respondents' filling of the goals are consistent.
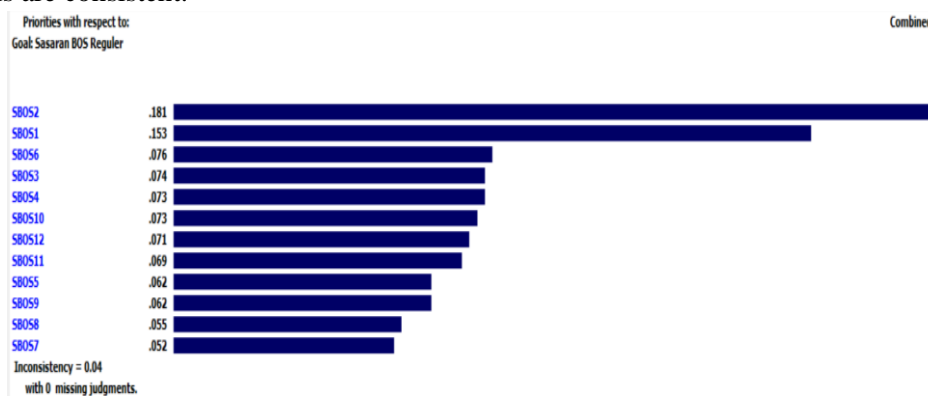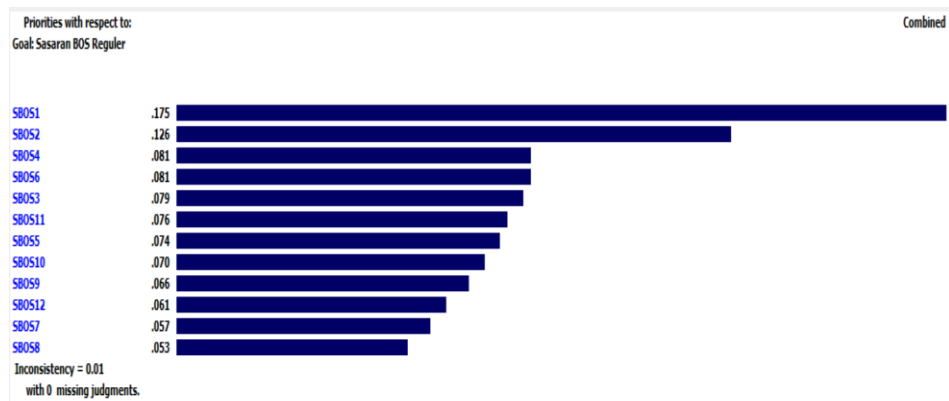

Figure 4. Principals' Consistency Ratio

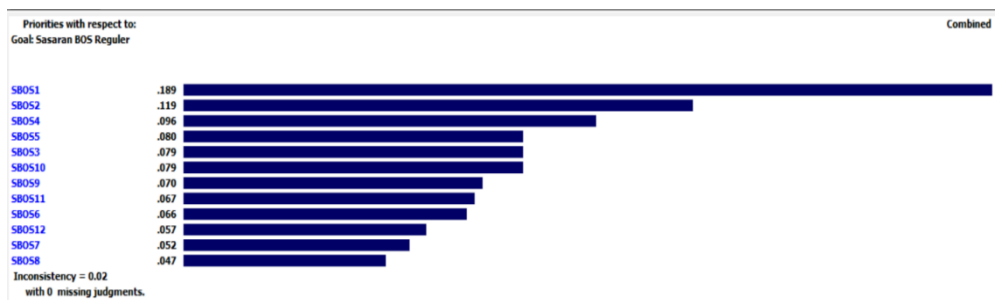Figure 5. Treasurer's Consistency Ratio
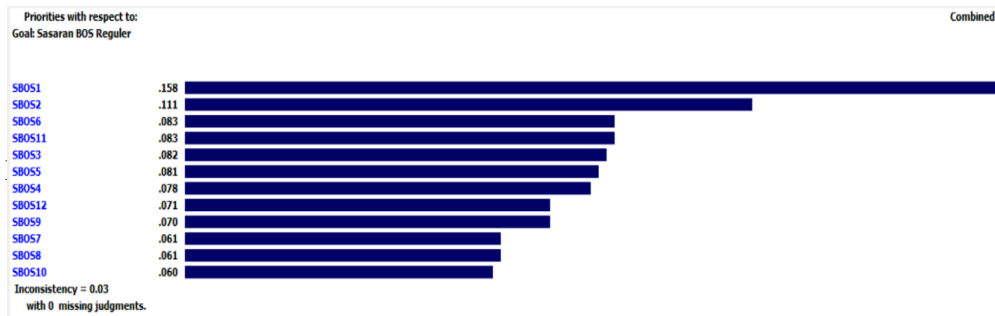

Figure 6. Teachers' Consistency Ratio
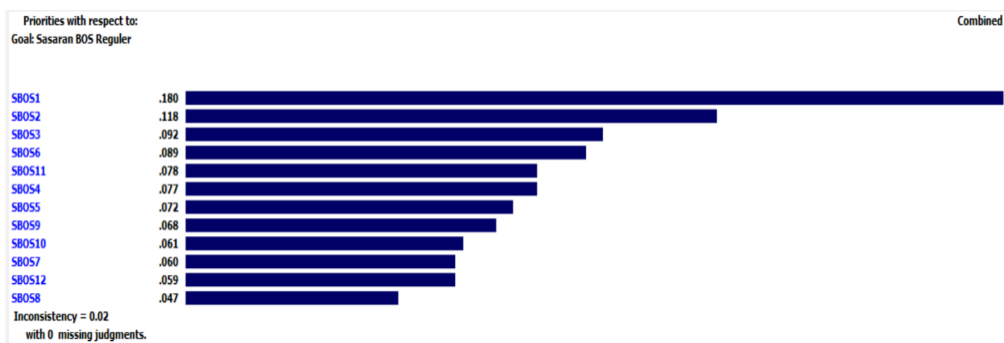

Figure 7. Parents' Consistency Ratio

Figure 8. Commitees' Consistency Ratio

CONCLUSIONS

Based on the discussion above, it is clear that the school ecosystem has a favorable impact on students' ability to comprehend, manage, and apply Regular BOS regulation for SMK. Participation, openness, and accountability are the three pillars of Good School Governance (GSG), which is implemented in schools. (Kurniadi W. Nugroho, 2012). The use of AHP BOS can increase the effectiveness of determining priority targets and budget platforms for Regular BOS SMKs. Based on the combined Consistency Ratio (CR) test (BOS SMK Management Team) it has a CR value of 0.01 < 0.1. Partially, each BOS Regular Vocational Management Team, consisting of the Principal, has a CR of 0.04 < 0.1; The treasurer has a CR of 0.01 < 0.1; The teacher has a CR of 0.02 < 0.1; The committee has a CR of 0.02 < 0.1; and Parents have a CR of 0.03 < 0.1. This shows that this model is feasible and effective for massive use. Meanwhile, based on the responses of all respondents after using the AHP BOS model, the results obtained in terms of usefulness of 91%, clarity of 89%, convenience of 88%, attractiveness of 89%, and usefulness of 87%.

The results of this research may directly propose that the principal of the school should strengthen the involvement of the full management team of the Regular BOS Vocational School, which includes the principal, treasurer, teachers, parents, and committees, in the planning of the use of Regular BOS money. This is based on data from the field that demonstrates that the BOS Management team, particularly teachers, committees, and parents, is still not fully engaged. The Principal and the Treasurer have so far been in charge of all planning for the use of Regular BOS funding, and they occasionally even merely copy and paste from the previous year's plan. The BOS management team had little input because Teachers, Parents, and Committees were only provided a copy of the plan for the use of Regular BOS funding and were not involved in its creation.

As outlined in the Regulation of the Minister of Education and Culture regarding Technical Guidelines for Fund Management of Regular BOS, schools, specifically SMKs in Indonesia, are expected to be able to use the AHP model to determine the targets and budget platforms for Regular BOS that have been prepared for the implementation of the planning for the use of Regular BOS funds. All members of the BOS Management Team should be well-versed in the administration of Regular BOS monies.

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