THE STRATEGY IMPROVING SCHOOL-BASED ENTERPRISE: AN ANALYTIC HIERARCHY PROCESS APPROACH IN VOCATIONAL SCHOOL

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ABSTRACT

The study aimed to design a strategy to increase a vocational school-based enterprise's effectiveness by implementing school governance (SG) and total quality management (TQM). The study is a quantitative research using the Analytic Hierarchy Process (AHP) approach to determine the appropriate strategy. The research subjects involved seven experts from the Director of Vocational High Schools of the Ministry of Education and Culture of Indonesia, the principal of Vocational School of DKI Jakarta and East Java Provinces, representatives of the Indonesian Ministry of Home Affairs, practitioners of vocational school-based enterprises, NGOs Care for vocational schools, and industry practitioners. The expert judgment used a pairwise comparison questionnaire, and then the analysis is carried out using Expert Choice V11 software. The AHP approach starts with determining the objectives, criteria, attributes, and alternatives offered. It was revealed that the School Governance strategy is the best alternative in increasing school effectiveness for the vocational school-based enterprise. The improvement of effectiveness school-based enterprise should consider implementing school governance, and it will be increased by the total quality management application. The strategy using school governance and total quality management to increase the effectiveness of the vocational school, especially at vocational school with school-based enterprise status in Indonesia

INTRODUCTION

The quality of education is an important issue in fixing the development of education policies because good quality education it will create quality graduates (Yoto, 2016). Qualified graduates will be autonomous, useful for their

families, communities, nation and country. The vocational education is a strategic program to provide skilled workers at the middle level in implementing development programs in various industrial sectors. The vocational education also includes education as a whole which not only makes vocational school graduates who have good character, good skills but also become good citizens. To create good vocational school graduates, the curriculum in SMK must be job needs oriented.

A number of empirical research results show that formal education failed in achieving the target of entrepreneurship education. Vocational high school's contribution in this matter called into question by many sides, because many graduates who do not meet the qualifications required by the sector at the same time is not ready to be entrepreneurs (Winarno, 2012). Entrepreneurial education can not be used as a strategy to solve unemployment, as entrepreneurship education can only equip students with few job skills (Fosu & Boateng, 2013).

The improvement of vocational school quality effectively and efficiently requires appropriate strategies to achieve organizational goals. Total Quality Management (TQM) is an effective management strategy in continuous improvement so as to create satisfaction and the existence of excellence of an organization (Sohel-uz-zaman & Anjalin 2016). The use of the TQM strategy is one of the strategies that can improve school quality and can be applied to schools that focus on student potential (Sadikoglu, 2014; Agus, 2011; and Ismail 2014).

TQM is a philosophy in the field of effective management for continuous improvement, customer satisfaction, and organizational excellence (Sohel-uz-zaman & Anjalin 2016). TQM follows the general definition of excellence, value addition, and appropriateness of educational outcomes and experience to produce planned goals, specifications, and requirements in education (Sahney et al. 2004). The use of TQM as a model for improving school quality is relevant to many experiences as investigated in private and public companies, and many university organizations (Sadikoglu and Olcay 2014). TQM can be implemented successfully in educational organizations, especially in schools that focus on increasing the potential of students to the highest level (Croker et al. 1996). Although this model has been used for many years outside the educational environment, this modeling has been recognized by most university leaders as one of the innovative approaches to improve the performance of higher education management for university structure units (Sadikoglu & Olcay 2014).

The condition of vocational school student achievement is still not satisfactory. Nationally, the average score of the 2019 national exam in vocational school is only 46.7 with the lowest math test score with an average of 35.26 It indicates that Vocational Schools need to improve the effectiveness of school management, especially related to the academic field of students. This gap shows the ineffective management in determining the right strategy in running the school. School effectiveness can be improved through school governance (SG) (Mulyani, 2020). The application of the SG principle as an important value

in school management will have a great opportunity to continue to improve the quality of education in schools. SG emerged as an effort to improve quality to produce strong school organizational governance performance. SG synergizes with TQM because the company's management style can be adapted to the concept of quality management if it is strengthened by the principles used to create good governance (Jaya 2016). Apriana (2019) explains that in preparing a good curriculum for vocational high school graduates looking for work, it is necessary to have a principal who has good competence.

The novelty in this research is the use of the Analytical Hierarchy Process (AHP) to see which comparison is better between TQM and SG. AHP is a method of decision making by making pairwise comparisons between criteria (Sekovski, 2020). This method is used for structuring and measuring the problem situation. AHP will choose a better alternative in choosing the problem situation. SG and TQM are right strategies in improving the quality of education. The AHP method will choose which strategy is better in solving problems in vocational school.

LITERATURE REVIEW

Total Quality Management (TQM) is the study of holistic leadership practices or a holistic approach to school improvement programs. The implementation of school management practices by the principal is considered very good, meaning that the principal can provide a culture that involves quality in all aspects of school operations. Ralph et al. (2011) show that TQM is part of excellence because it can satisfy stakeholders; meet the specific needs of end users; and meet the needs of organizational members. A good leader will improve academic performance in school (Heystek & Emekako, 2020). The leader in the school as someone who has a role in guiding and influencing the community to achieve the final goals of the school. TQM has an influence on leadership that allows an institution to improve the quality of their performance (Sriyakul, 2019). Although TQM has been used for many years outside of educational settings, it has been recognized by most university leaders as an innovative approach to improving educational management performance (Sadikoglu & Olcay 2014). TQM is one way of managing the organization as a whole in order to increase the effectiveness, flexibility and competitiveness of the organization (Phan, 2019).

Total Quality Management (TQM) is a study of holistic leadership practices or a holistic approach to school improvement programs. The principal's implementation of TQM practices is considered very good, which means that the principal can provide a culture that involves quality in all aspects of school operations. (Hanaee et al. (2011) show that TQM is part of excellence because it can satisfy stakeholders; meet the specific needs of end-users; and meet the needs of members of the organization. Also, according to Leithwood & Riehl (2003), leaders are those who continually work with clients to guide and influence in achieving goals. The leader in the school as someone whose role is to guide and influence people to achieve the school's ultimate goal. This might mean that leaders must have an ongoing desire for improvement by also expressing their cooperation to achieve common goals. Senge (1999) also believes that quality-oriented schools believe that there is always room for

improvement to meet stakeholder expectations. The above results can also be related to what Kerzner showed that what distinguishes TQM from management theory and other improvements is stakeholder satisfaction (Kerzner H, 2003).

School governance can be considered as an effective process in which participatory, democratic, transparent, accountable, law-based policies are followed. School governance includes the participation of school community, including school administrators, teachers, students, parents, school staff, representatives of local government, private sector, and non-governmental organizations in the school district in decision making, actively operated accountability, multidirectional communication channels, financial and administrative transparency, and the initiative towards the demands of the school community (Yüner & Burgaz, 2019).

School Governance (SG) refers to the application of decentralization more specifically to decision-making authorities from the central & local levels to schools. School Governance aims to empower school principals to direct teachers and students to a process of continuous improvement; support the provision of quality education services; building partnerships with communities and industry, and institutionalizing a sustainable and participatory school improvement process (Salvioni, 2017). SG is an effective management system and improves the quality of education. School community partnerships within the SG framework are any relationships that exist between and between educators, students, families, and the community as a whole to work together to improve and improve school performance. Leadership is important for the principal of Xaba (2011). Education providers must accept and carry out this role so that schools can be managed effectively. An administrator can help others improve their attitude towards high contributions to school. Amanchukwu (2015) explains that when school leaders are given the opportunity to make flexible decisions, it will affect the achievement of student learning outcomes. In being a good boss, you must have experience, knowledge, commitment, patience and negotiation skills and be able to work with others to achieve goals.

School governance is very influential on the effectiveness of education. SG is considered capable of improving the quality of education, providing a healthier learning and teaching environment which in turn can improve student achievement (Bandur & Gamage 2014; Sabas & Mokaya 2015). Schools that have successfully implemented SG have used their power and authority to implement changes that directly affect teaching and learning practices. Professional development, training to strengthen teaching, management and problem-solving skills of teachers and other stakeholders, providing adequate information to make decisions about student performance, parent or community satisfaction, school resources; and systematic and creative communication between parents and the community is also considered to have an effect on school effectiveness (Salvioni, 2015). In explaining the process, SG must have important values for the principal such as transparency, accuracy, competence, neutrality and effectiveness (Cassano, 2013).

Recent reforms of educational system that impose rapid changes in the

governance system, high demand for managerial skill and operational autonomy, impose the capability to optimize performance in the school system. So is critical an effectiveness accountability system as starting point to develop the quality of relations between the schools and their stakeholders. Salvioni & Cassano (2017) proposes the network governance as lever to improve an effectiveness stakeholder engagement and to optimize performance in the school system.

The implementation of educational reforms offered to schools by giving full authority to the schools resulted in new management theory. This system reverses the management pyramid, where responsibilities related to school management are no longer delegated to central or regional state authorities but are given to the staff of educational institutions. The shift of power and authority to the school level aims to empower school stakeholders in making school decisions that were previously made solely by central, provincial, or district government authorities(Anderson, 2016; Bandur, 2012; Bush & Gamage, 2001). This is based on the decision making that can be done quickly so that a more effective mechanism is created while encouraging a new spirit of performance for the school principal as the school manager. The delegation of authority related to decision making from the government to the school level has created a more democratic model of school administration bureaucracy (Bandur, 2012).

The relationship between SG and the effectiveness of school management is still a heated debate. Cheng and Mok (Cheng & Mok, 2007) argue that SG does not contribute to improving student learning and achievement. To produce improvements, additional interventions from SG are needed. Nir and Hameiri (Lior & Nir, 2014) also found that it was difficult to reach firm conclusions about SG's contribution to improving student learning as well as to increase school effectiveness. Robinson et al. (Robinson et al., 2008), which examined the decentralization of the four components of organizational decision making, concluded that there was no link between teaching and learning, teaching design, human resource management, and physical resource management, to school effectiveness. However, many researchers report that when school authorities are given opportunities for flexible decision making, commitment to achieving student learning outcomes increases significantly (O'Neil, 1995). Bergman (1992) also emphasized the school's reputation for academic excellence, creativity, eager involvement, and staff dedication as a result of SG.

The relationship between TQM and SG reveals that the role of the principal in implementing SG is very important in staff development, physical development, and student development in terms of improving school quality (Liantos & Pamatmat 2016). This shows that student development is highly dependent on the performance of leaders in particular and the school system in general. TQM practices related to leadership, focus on clients, stakeholders, commitment to change, and continuous improvement. Data-driven decision making, professional learning, and systems focus were found to be associated with school leadership and school improvement.

The Analytic Hierarchy Process (AHP) is a methodology for structuring,

measuring, and synthesis. AHP has been applied to a variety of problem situations in choosing between competitive alternatives or scarce resource allocation (Saaty, 2002). Although widely applicable, the AHP foundation limits the environmental scope of the problem. It is based on a well-defined structure of matrices that are consistent and associated with correct results (Saaty, 2002).

METHODOLOGY

Research Design

The study is a quantitative research using the Analytic Hierarchy Process (AHP) approach to determine the appropriate strategy. The research subjects involved seven experts from the Director of Vocational High Schools of the Ministry of Education and Culture of Indonesia, the principal of Vocational School of DKI Jakarta and East Java Provinces, representatives of the Indonesian Ministry of Home Affairs, practitioners of vocational school-based enterprises, NGOs Care for vocational schools, and industry practitioners. The expert judgment used a pairwise comparison questionnaire, then analysis is carried out using Expert Choice V11 software. The AHP approach starts from determining the objectives, criteria, attributes and alternatives offered.

Variable Measurements

Figure 1 shows the general framework of AHP which consists of 4 (four) levels. The first level shows the focus or ultimate goal, namely increasing the effectiveness of managing vocational school-based enterprises. At the second level, the hierarchical structure shows the criteria used to measure effectiveness in the management of vocational school-based enterprises which are adopted from management principles, namely man, money, method, and material. Then the next level contains criteria that become indicators of the formation of each criterion, namely leadership, expectations of student achievement, continuous evaluation, flexibility in budget management, curriculum and school climate. Leadership and student achievement expectations as part of Man, flexibility in budget management as part of Money, ongoing evaluation as part of the Method, and curriculum and school climate as part of Materials. At the last level, strategies or alternatives that can be chosen are explained for increasing effectiveness in the management of vocational school-based enterprises. As for the alternatives proposed, namely increasing the application of SG, increasing the application of TQM, and increasing both SG and TQM. In the end, the results of this analysis will be used as a basis in determining which strategies need to be carried out first in order to increase the effectiveness of the management of vocational school-based enterprises.
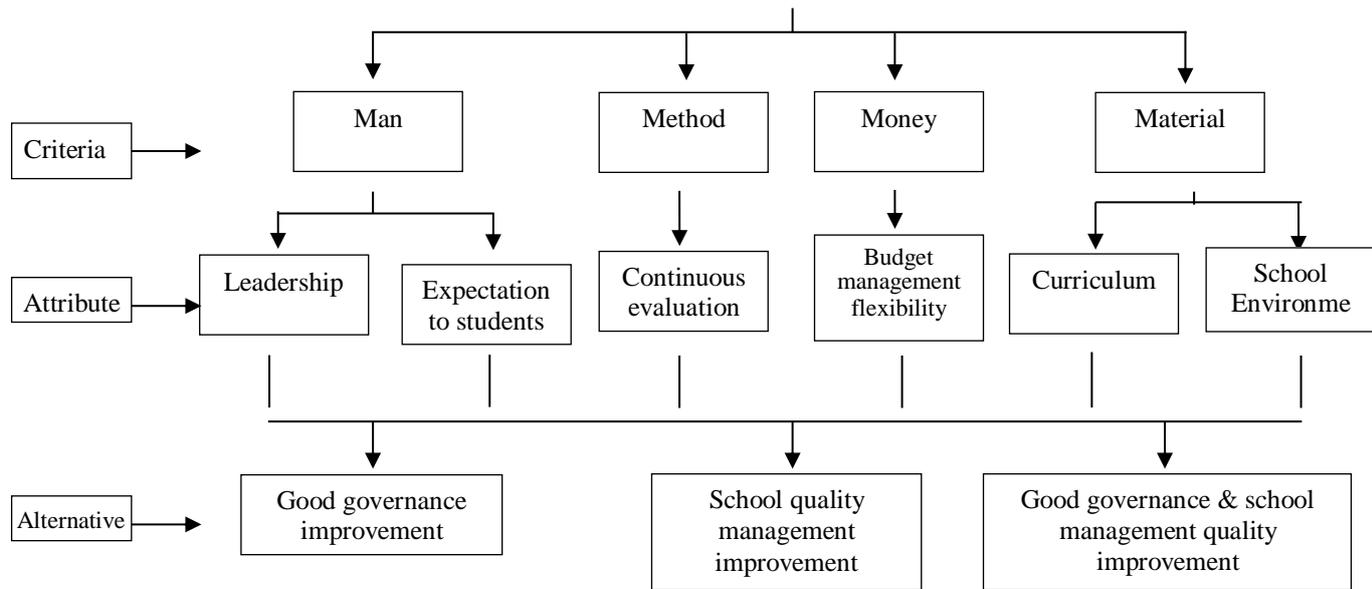
Goal	➝	The management of vocational school-based enterprise

Figure 1. The hierarchy of the management of vocational school-based enterprise

A questionnaire should be designed and distributed among the respondents (experts) to collect their opinion. It is using pairwise comparison scale. The scale ranges from one to nine where one implies that the two elements are the same or are equally important (Saaty 2008). On the other hand, number nine implies that one element is extremely more important than the other one in a pairwise matrix Taherdoost (2017). The pairwise scale and the importance value attributed to each number are illustrated in the Table 1.

Table 1: Pairwise Comparison Scale

Importance Scale	Definition of Importance Scale
1	Equally Important Preferred
2	Equally to Moderately Important Preferred
3	Moderately Important Preferred
4	Moderately to Strongly Important Preferred
5	Strongly Important Preferred
6	Strongly to Very Strongly Important Preferred
7	Very Strongly Important Preferred
8	Very Strongly to Extremely Important Preferred
9	Extremely Important Preferred

Procedures AHP Analysis

The procedures AHP analysis to determine the appropriate strategy in improving the effectiveness of management of vocational school-based enterprise with SG and TQM are as follows:
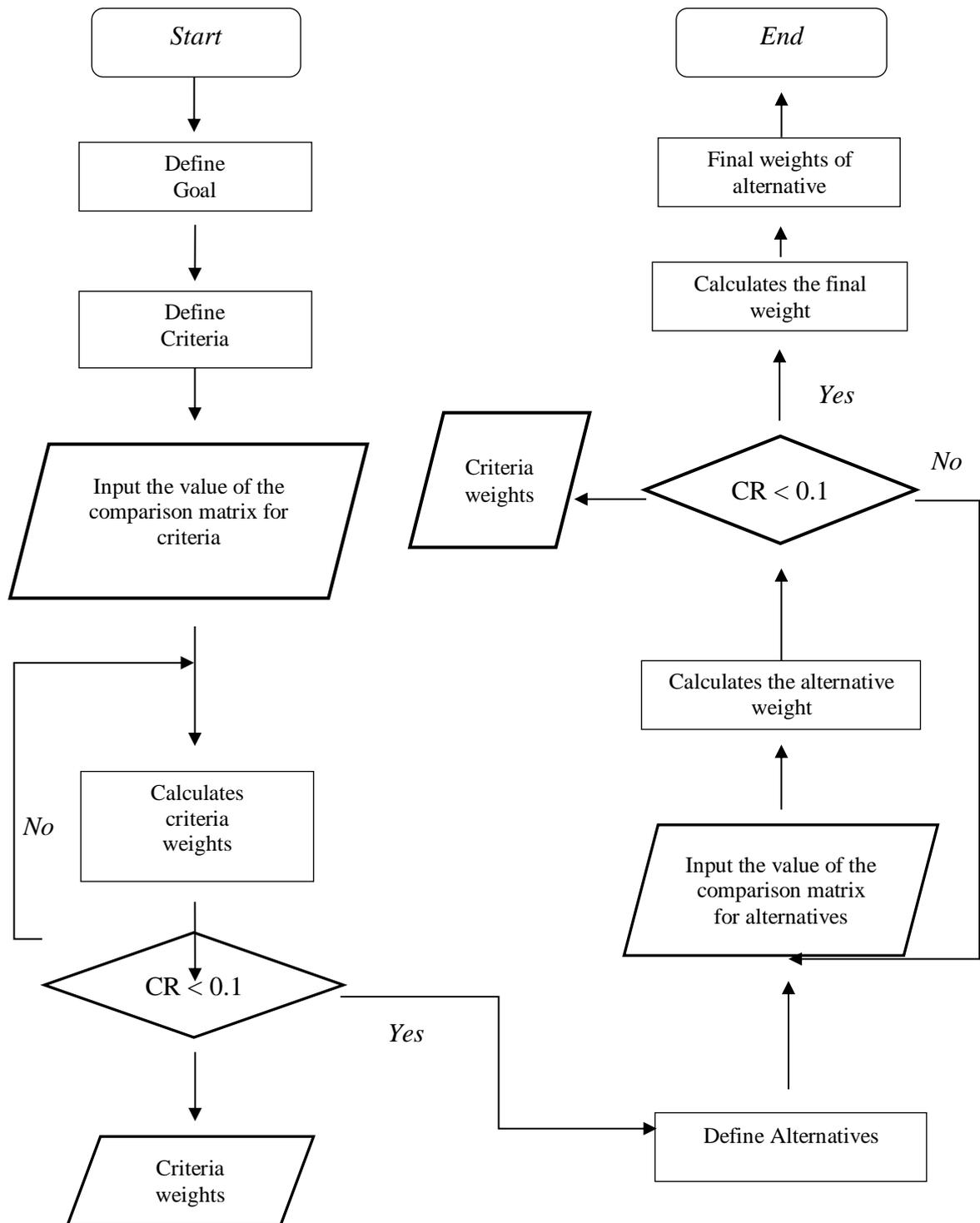
Figure 2. The Stages of Analytical Hierarcy Process

The AHP stage flow in research taken from Gunawan (2008); Batagarawa et al. (2015) is as follows:
Setting goals
1.   Determine the criteria that will be used

2.   Input the comparison matrix value between criteria

3.   The calculation of the criteria weight is based on the value of the comparison matrix between criteria

4.   After getting the criteria weights, then check the consistency for the pairwise comparison matrix. Done. One way to find out whether the pairwise comparison is consequent or not, is to use the Consistency Ratio (CR) parameter.

5.   If the CR value is consistent (<0.1) then determine the alternative

6.   Inputting comparison matrix values between alternatives

7.   When calculating the alternative weights, paired comparisons between alternatives are used

8.   If the CR value is ≥ 0.1, then the pairwise comparison between alternatives is carried out again until the ratio is less than or equal to 0.1 (consistent).

9.   If the CR value is consistent (<0.1) then calculate the final weight

10.   Then, after the criteria weights and alternative weights are obtained, a multiplication operation is carried out between the alternative weights obtained and the criteria weights.diperoleh dengan bobot kriteria.

FINDINGS AND DISCUSSION

Criteria Weighting Results

The result of the weighting of the criteria is the determination of the priority value weights for the criteria that are considered to have an effect on increasing the effectiveness of management of vocational school-based enterprise. The weighting results for each criterion are described in Table 2. The most important criterion in shaping the effectiveness of management of vocational school-based enterprise is the Man (human resources) criterion, with a weight value of 0.524. Then, the next most important criterion is the Method criteria with a weight of 0.207. Meanwhile, the criteria for Money (finance) and Material are considered not more important than other criteria. The weighted values for the two criteria are 0.118 and 0.151, respectively.

Table 2. Criteria Weighting Results

Criteria	Weight	Priority
Man	0.524	1
Method	0.207	2
Money	0.118	3
Material	0.151	4

Attribute Weighting Results

The result of the attribute weighting explains the priority attributes in increasing the effectiveness of management of vocational school-based enterprise. The weighting results for each attribute are described in Table 3. The most important attribute in forming a Man (human resource) in order to increase the effectiveness of management of vocational school-based enterprise is the

leadership attribute with a weight of 0.785. Meanwhile, the weight for the criteria for expectations of students has a weight of about three times lower, which is 0.215. Meanwhile for material criteria, the weight with the largest percentage is the school environment with a weight of 0.657. While the weight for the school curriculum is approximately 1/3 of the weight for school climate, which is 0.343

Table 3. Attribute Weighting Results

Criteria	Attribute	Weight	Priority
Man	Leadership	0.785	1
	Expectations of student achievement	0.215	2
Method	Continuous evaluation	1.000	1
Money	Budget management flexibility	1.000	1
Material	Curriculum	0.343	2
	School environment	0.657	1

Alternative Weighting Results

The weighting results for each alternative strategy are described in Table 4. The most important alternative (strategy) in increasing the effectiveness of management of vocational school-based enterprise is by improving school governance (SG) with a weight of 0.385. Then, the experts also considered that it is also important to improve TQM and SG at the same time so that the effectiveness at vocational school-based enterprise can be achieved. The weighting value for the TQM and SG alternatives is not too far away or only 0.038 different when compared to the alternative SG increase, which is 0.347. Meanwhile, the increase in TQM alone is considered not so much priority compared to others, because the weight obtained is 0.268.

Table 4. Alternative Weighting Results

Alternative (Strategy)	Weight	Priority
Good governance improvement	0.385	1
School quality management improvement	0.268	3
Good governance & school management quality improvement	0.347	2

Alternative Weighting Results for Criteria

The results of this weighting explain the strategies that are prioritized in increasing the effectiveness of vocational school-based enterprise on the four proposed criteria, namely Man (human resources), Money (finance), Method, and Material. Based on the priority of AHP analysis results as described in Table 5, it is found that the increase in SG is a priority on the criteria for man, money and material, with weights respectively 0.370, 0.591 and 0.391. This means that by increasing the application of SG in vocational school-based enterprise, the quality of man, money and materials in these vocational school will also

improve. Meanwhile, increasing SG and TQM is a priority in the method criteria with a weight of 0.368.

Table 5. Alternative Weighting Results for Criteria

Criteria	Alternatives		
	SG	TQM	SG and TQM
Man	0.370	0.284	0.346
Method	0.346	0.286	0.368
Money	0.591	0.168	0.240
Material	0.391	0.222	0.387

Alternative Weighting Results for Alternative

The results of this weighting explain the strategies that are prioritized in increasing the effectiveness of management of vocational school-based enterprise on the six proposed attributes, namely leadership, expectations of student achievement, continuous evaluation, flexibility in budget management, curriculum and school climate. Based on the priority of AHP analysis results as described in Table 30, it is found that increasing SG is a priority for three attributes, namely the attribute of leadership, flexibility in budget management, and school climate. The weights for each of these criteria are 0.372, 0.591 and 0.488, respectively. Meanwhile, the improvement of SG and TQM is a priority on three other criteria, namely the criteria for student achievement expectations, continuous evaluation, and the criteria for curriculum weight of 0.368. Each criterion has a weight, namely 0.364, 0.368 and 0.483, respectively.

Table 6. Alternative Weighting Results for Atribute

Attribute	Alternative		
	SG	TQM	SG and TQM
Leadership	0.372	0.288	0.340
Expectations of student achievement	0.363	0.272	0.364
Continuous evaluation	0.346	0.286	0.368
Budget management flexibility	0.591	0.168	0.240
Curriculum	0.206	0.311	0.483
School environment	0.488	0.175	0.337

Highest Priority Results at Each Hierarchy Level

The highest priority results at each hierarchical level are man with a weight of 0.524 for the criterion level, leadership with a weight of 0.785 for the attribute level and an increase in SG with a weight of 0.385 for the alternative level.

Table 7. Highest Priority Results at Each Hierarchy Level

Hierarchy Level	Highest Priority	Weight
Criteria	Man	0.524
Attribute	Leadership	0.785
Alternative	SG Improvement	0.385

DISCUSSION

The AHP research results show that a strategy can be formulated to increase the effectiveness of vocational school management. At the first level hierarchy, namely the hierarchy of criteria level, the priority criteria are the criteria for Man (human resources). Then at the second level hierarchy, namely the attribute hierarchy, the priority is leadership on the Man criterion. In the last hierarchy, namely the alternative level hierarchy, the priority is the increase in SG. The combination of criteria and attributes that become priority in each hierarchy will create a strategy to increase the effectiveness of vocational school-based enterprise management. The strategy to increase the effectiveness of vocational school-based enterprise is by increasing the implementation of school governance in schools by increasing the criteria for strong and firm leadership in the human resources in vocational school-based enterprise.

In general, schools only carry out predetermined standard duties and functions. However, with the existence of vocational school-based enterprise, schools have the opportunity to improve quality and service in schools. Schools that have implemented school-based enterprise must be able to provide the best service, they need a high-quality man (human resource) figure as the center of management. Human resources are the key in managing agencies that can synergize all existing components

In implementing school-based enterprise in vocational schools, leadership becomes domination because leadership forms a commitment to be responsible for improving services by implementing school-based enterprise. The leader needed is a leader who not only understands the duties and functions of a leader, but a brave leader, and has a strong and creative will to make the institution he supports to be extraordinary and more maximal in providing services. It takes a leader who can manage and control other important management elements such as methods, money and materials. The school-based enterprise will be very effective if the leaders understand the full mechanism of the school-based enterprise.

In addition, special attention is needed related to improving the climate in schools. Berkowitz (2017) explains that organizational climate is very important for achieving organizational effectiveness because climate is an indication of how well an organization can realize all its potential so that the wishes of schools can be achieved. High organizational performance tends to use everyone's abilities optimally and have a relevant effect on student academic outcomes.

Increasing the application of SG at vocational school-based enterprise is considered important because with the shift in power and authority to the school level, decision making can be done quickly so that schools create a more democratic model of school administration bureaucracy (Bandur 2012). This, of course, will indirectly be a more effective mechanism and at the same time encourage a new spirit of performance for school principals as managers. If school autonomy increases, then the design and implementation of school programs can be implemented better, faster and in accordance with the special

needs of children (Allen 2010). The increase in SG is considered capable of increasing school effectiveness so that if SG is limited to responsibility it will affect work program problems (Salvoni and Cassano, 2017; Salvioni, 2014; Mitchell, 2015)

CONCLUSION

School governance strategies and total quality management are very important in increasing the effectiveness of school management. The results of the AHP show that the most important strategy in increasing the effectiveness of the vocational school-based enterprise is school governance. With the increase in SG in vocational school-based enterprise because of the fast decision making so that the creation of a bureaucratic model of school administration and of course this creates the effectiveness of the school. By increasing SG, it can create effectiveness in accordance with school goals. The strategy to increase the effectiveness of vocational school-based enterprise is by increasing the implementation of school governance in schools by increasing the criteria for strong and firm leadership in the human resources in vocational school-based enterprise.

LIMITATION AND STUDY FORWARD

This research is still limited to vocational schools that have implemented the School Based Enterprise. Suggestions that are taken into consideration for further research are to analyze whether there are different strategies for increasing school effectiveness, both for schools with School-Based Enterprise status and for schools that have not yet become or will become School-Based Enterprise.

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Authors Contribution

Arie Wibowo Khurniawan and Illah Sailah created a conceptual and research framework; Arie Wibowo Khurniawan and Pudji Muljono were collecting and analyze the data, Bambang Indriyanto and Mohamad Syamsul Maarif analyze the data and proofreading the paper.

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