The Collaborative Strategy of Total Quality Management and School Governance to Improving Effectiveness of Vocational School-Based Enterprise

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Abstract

The study aimed to design a strategy to increase vocational school-based enterprise 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 followed by Interpretative Structural Modeling (ISM). 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 research is finding that the strategic plan model for increasing school management’s effectiveness must begin with improving and improving the quality of human resources. This research strategy’s implications are summarized in a matrix called the Effectiveness School Strategy Matrix, introduced as the ESs Matrix. This strategy is based on the implementation of school governance (SG) and total quality management (TQM)

Keywords: school-based enterprise, school governance, total quality management, Analytic Hierarchy Process, Interpretative Structural Modeling.

1. Introduction

Education has a crucial role in developing and manifesting individuals physically and spiritually so that they can build a nation and a state (Fatutarrokhman, 2018). Education produces a foundation of expertise, excellence, and knowledge in all disciplines, including social and economic (Falestin, 2015). It is necessary
to instill a good quality educational system to develop this potential. Vocational high school is one of Indonesia's education, which has a skilled role in building a nation and country. Vocational high school is shown to produce semi-skilled graduates. Vocational education is a strategic program to provide skilled workers at the middle level in implementing development programs in various industrial sectors (Yoto, 2016). Based on the Central Statistics Agency (BPS) from 2017 to 2019, the unemployment rate for vocational school graduates in Indonesia is still high, namely 9.27% in 2017, 8.92% in 2018, and 8.63% in 2019. This condition shows that there are problems in the management of vocational schools.

Currently, Indonesia is focusing on improving vocational high school’s quality and effectiveness by transforming into a vocational school-based enterprise. This school is given freedom in managing finances so that it can provide services. This transformation will increase vocational students’ competence and cooperation with the industry based on efficiency and productivity (Kurniawan, 2020). Vocational high schools are seen as educational institutions and companies that require overall management, which includes planning, organizing, implementing, monitoring, teaching, human resources, strategy, marketing, and development.

School effectiveness is shown by the school’s ability to properly carry out its functions and provide quality services for students (Scheerens, 2013). The efficiency of the system in vocational high schools depends on society’s availability to be dedicated, committed, and devoted to deciding the future of the nation. The quality of education is one of the most critical issues in creating and fixing vocational schools’ management problems (Yoto, 2016). These qualified vocational school graduates will produce a good performance and build themselves, their family life, community, nation, and country. Vocational education must adapt to the changing nature of work, technology, and work standards. The curriculum in vocational high schools must be oriented to the needs of the world of work.

Total Quality Management (TQM) is an approach to effectively and efficiently improve the quality of vocational schools. This TQM aims to improve sustainably to create satisfaction and excellence in an organization (Sohel-uz-zaman & Anjalin 2016). The TQM strategy can improve school quality and can be applied to schools that focus on student potential (Sadikoglu, 2014; Agus, 2011; and Ismail 2014). TQM has the most effective approach to achieving quality and performance improvement in education. General factors of this strategy seek the satisfaction of various stakeholders, including students, parents, and the community (Falestin, 2015).

Mulyani (2020) explained that school effectiveness could also be reviewed through school governance (SG). Vocational high schools in Indonesia have problems with school management’s effectiveness, as seen from the 2018-2019 National Exam scores. The mathematics score results are classified as low, namely 46.7, and the lowest score is 35.26. It indicates that Vocational high schools need to improve the effectiveness of school management. This gap shows ineffective management in determining the right strategy in running the school. The application of the SG principle as an essential value in school management will have an excellent opportunity to continue to improve the quality of education in schools. School governance emerges as an effort to improve quality to produce a strong performance of school organizational governance.

This study aims to design a strategy to increase vocational school-based businesses’ effectiveness by implementing total quality management (TQM) and school governance (SG). This research strategy’s implications are summarized in a matrix called the Effectiveness School Strategy Matrix, which is introduced as the ES2 Matrix. The strategy matrix is a novelty finding from this research.

2. Literature Review

2.1 Total Quality Management (TQM)

Total Quality Management is the study of a holistic approach to school improvement programs. The concept of TQM developed after the emergence of a quality movement led by Deming, Juran, and Feigenbaum. Gradually TQM began to emerge as a new paradigm shift (Spencer, 1994) and a leading management idea tool (Yong & Wilkinson, 2001). Organizations apply TQM to gain a competitive
advantage to win customer loyalty, gain business resources, or get massive funding (Douglas & Judge 2001; Ramlawati, 2018). Besides, TQM demonstrates high levels of benefits from increased customer focus, communication, teamwork, and effectiveness. TQM’s benefits are joint problem solving, management commitment, and employee empowerment (Witcher, 1994; Madanat, 2017).

The implementation of TQM practices by school principals is considered very good, meaning that the principal can provide a culture that involves quality in all aspects of school operations. TQM is part of excellence because it can satisfy stakeholders; meet the specific needs of end-users, and meet the needs of organizational members (Al-Dhaafri, 2020). A good leader will improve academic performance in school. Leadership at school has a role in guiding and influencing the community to achieve the school’s ultimate goal (Heystek & Emekako, 2020). TQM influences 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). Phan (2019) reveals that TQM is a way of managing the organization as a whole to increase the effectiveness, flexibility, and competitiveness of the organization.

2.2 School Governance (SG)

School Governance contains a basic definition of a school with the right to autonomy in managing its schools, especially in managing human, financial and material resources in schools (Grauwe, 2005). SG is a school management model that gives schools, especially school principals, considerable autonomy to make decisions on school management’s important issues within a framework. It includes decisions about curriculum and learning management; recruitment and management of educational personnel; and school financial management (Arar & Abu-Romi, 2016). Five principles are adopted to implement a good SG, namely: transparency, accountability, responsibility, independence, and equality (Quyen, 2014) and three other principles, namely participation, predictability, and dynamics.

School Governance (SG) refers to the application of decentralization, more specifically to decision-making authorities from the central, regional, and divisional levels to schools. The status of implementing SG by the principal is at a progressive level. It indicates increased resource mobilization and maximum effort from 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; build partnerships with communities and industry; and institutionalize a participatory and sustainable school improvement process. SG is an effective management system and improves the quality of education (Salvioni, 2017). 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. Xaba (2011) states that leadership is vital for school principals. Education providers must accept and carry out this role so that schools are managed effectively. An administrator can help others improve their attitude towards high contributions to the school.

Amanchukwu et al. (2015) explain that when school leaders are allowed to make flexible decisions, it will affect student learning outcomes. 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, the parent or community satisfaction, school resources. Frequent and creative communication between parents and the community is also considered to affect school effectiveness (Salvioni, 2015). In explaining the process, SG must-have essential values for the principal, such as transparency, accuracy, competence, neutrality, and effectiveness (Cassano, 2013).
3. Methods

3.1 Analytic Hierarchy Process (AHP)

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 from determining the objectives, criteria, attributes, and alternatives offered.

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

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 vocational school-based enterprises’ management. 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 to increase the effectiveness of the management of vocational school-based enterprises.

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:
3.2 Interpretative Structural Modeling (ISM)

Interpretative structural modeling (ISM) is used to plan strategic policies related to increasing vocational high school management effectiveness. The steps to work on the ISM carried out in this study follow the path proposed by Jayant (2014) and modified by Pancawati (2018) described in Figure 3 as follows.
Figure 3. The Stages of Interpretative Structural Modeling

4. Result and Discussion

4.1 Priority Results of AHP

The results of this weighting explain the strategies that are prioritized in increasing the effectiveness of the 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: the criteria for student achievement expectations, continuous evaluation, and the criteria for the curriculum weight of 0.368. Each criterion has a weight, namely 0.364, 0.368, and 0.483, respectively.
Table 1. Alternative Weighting Results for Attribute

| Attribute                     | 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      |

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 2. 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  |

The AHP research results show that a strategy can be formulated to increase vocational school management’s effectiveness. At the first level hierarchy, namely the hierarchy of criteria level, the priority criteria are Man's criteria (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 a priority in each hierarchy will create a strategy to increase vocational school-based enterprise management’s effectiveness. The strategy to increase vocational school-based enterprise effectiveness is by increasing the implementation of school governance in schools by increasing the criteria for strong and firm leadership in the human resources in the vocational school-based enterprise.

In general, schools only carry out predetermined standard duties and functions. However, with the vocational school-based enterprise’s existence, 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 improve services by implementing school-based enterprise. The leader needed is a leader who 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 maximal in providing services. It takes a leader who can manage and control other essential management elements such as methods, money, and materials. The school-based enterprise will be very useful 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 significant for achieving organizational effectiveness because the climate is an indication of how well an organization can realize all its potential so that schools’ wishes can be achieved. High organizational performance tends to use everyone’s abilities optimally and positively affect student academic outcomes.

Increasing the application of SG at the vocational school-based enterprise is considered necessary 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 following children's special needs (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)

4.2 Strategic Plan Model Using ISM

Furthermore, the strategy formula for improving the effectiveness of management in a vocational school-based enterprise was compiled using the ISM technique. This analysis is used to see the contextual relationship between elements and the hierarchy for the elements that make up the strategy by fixing the variables at the bottom level. The variables at the bottom level have the nature of driving power or a strong influence on the variables above (middle and top-level) and are independent. Then the variables at the bottom level will be combined or combined with a strategy that has been designed using AHP. The four elements of the ISM consist of criteria, attributes, alternatives, as described in Figure 1.

Modeling criteria on the ISM shows that the element that has a high driving force is first criterion (Man) as shown in Figure 4. Man’s criteria are included in the independent sector, meaning that the criteria for human resources (Man) have a strong driving force in increasing the effectiveness of the vocational school-based enterprise. The level of dependence on other criteria elements is also low. The third Criterion (Method) is included in the sector between independent and linkage. This indicates that the criteria method has a sub-sector with a strong driving power but not too high a level of dependence on other criteria elements, namely dependence that is neither too high nor too low.

![ISM model for criteria](image)

**Figure 4.** (a) ISM model for criteria, (b) the interaction between criteria

Alternative modeling on ISM shows that the alternative with high propulsion is the second alternative (increased TQM). This alternative is included in the independent sector, meaning that the alternative to increasing TQM has a strong driving force in improving vocational school-based enterprise management’s effectiveness. The level of dependence on other alternative elements is also low.

The third alternative (increasing SG and TQM) enters the linkage sector. It indicates that the alternatives to increasing SG and TQM have subsectors with strong driving power but not too high a
level of dependence. This alternative is an unstable alternative where the lack of attention to this alternative will be an obstacle to increasing the management effectiveness of increasing SG and TQM. Meanwhile, the first alternative (increased SG) is located in the dependent sector, which shows that this alternative has a weak driving force and high dependence on other alternatives.

The second alternative (increasing TQM) is at the lowest level, which means that this alternative is the key to modeling strategic plans to increase vocational school-based enterprise management’s effectiveness. The alternative of increasing TQM is considered to have a driver characteristic or a strong influence on alternatives that are at the upper level, namely the simultaneous increase in SG and TQM.

An increase in the application of TQM alternatives will have a positive impact and increase the SG and TQM alternatives. This means that the third alternative which is at the middle bottom level, can only be achieved if there is an increase in the alternative of increasing TQM. Meanwhile, an increase in the alternative increase in SG can only be achieved if an improvement in the SG and TQM increases. Variables at the top level have drivers’ characteristics or low influence on variables at the lower level. The combination of the variables at the bottom level with a strategic model, namely the implementation of TQM, then followed by an increase in SG.

4.3 Implication strategy to increase effectiveness of vocational school-based enterprise

The implications of this research strategy are summarized in a matrix called the Effectiveness School Strategy Matrix, which is introduced as the ES2 Matrix. The strategy matrix is a novelty finding of this study which is described in Figure 5.

![Figure 5. Effectiveness School Strategy Matrix](image)

School Effectiveness Strategy Matrix through the implementation of SG and TQM strategies in schools. The vertical line upwards shows the implementation of the TQM strategy has a greater influence. Meanwhile, the horizontal line to the right shows that the SG strategy’s implementation has a more significant influence. ES2 Matrix has four quadrants of strategy conditions, which explained as follows.

**Quadrant I:** This quadrant is named “Excellent” (effective, extraordinary). The school chooses to implement the TQM strategy and SG strategy simultaneously so that school management becomes very useful. This quadrant describes the strategies that schools can take to achieve high effectiveness.
in school management through the full implementation of the SG and TQM strategies simultaneously.

Quadrant II: This quadrant is named “Improvement” (quality, continuous improvement). This means that schools choose to prioritize the optimal implementation of the TQM strategy first, but this has not been followed by implementing the SG strategy in school management. In this condition, schools are more focused on innovation and quality improvement. This quadrant describes the strategies that schools can take to achieve effective school management at the secondary level, namely by implementing the TQM strategy, which has the greatest influence and the implementation of the SG strategy, which has little effect.

Quadrant III: This quadrant is named “Harmony” (harmony, governance). It means that schools choose to implement the SG strategy optimally first, but this has not been followed by the optimal implementation of the TQM strategy in school management. In this condition, schools are more focused on harmonizing management governance. This quadrant describes the strategies that schools can undertake to achieve effective school management at the secondary level, namely by implementing the SG strategy, which has the most significant influence, and the implementation of the TQM strategy, which has little effect.

Quadrant IV: This quadrant is called “Genesis” (beginning, growing). It means that schools are just starting to implement the TQM strategy and the SG strategy to achieve an effective school. This quadrant describes the strategies that schools can undertake at an early stage to achieve effective school management at low levels, namely by implementing the TQM strategy, which has little effect, and implementing the SG strategy, which has the least effect.

With SG practice’s existence, the principal’s decision-making authority, school decision-making, and the school board’s involvement can create a learning environment and student achievement (Bandur, 2012; Gamage & Zajda, 2009). It is increasing the application of SG at vocational schools. School-based enterprise is considered necessary 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; Ismara, 2020). This, of course, will indirectly be a more effective mechanism as well as encourage a new spirit of performance for school principals as managers. If school autonomy increases, the planning, and implementation of school programs can be implemented better, faster, and according to the special needs of children (Allen 2010). The increase in SG is considered to increase school effectiveness so that if SG is limited to responsibilities, it will affect the work program problems (Salvoni and Cassano, 2017; Salvioni, 2014; Mitchell, 2015). TQM plays a role in making the implementation of SG more optimally, increasing school effectiveness (Kurniawan, 2020).

5. Conclusion

The strategic plan model for increasing the effectiveness of school management must begin with improving and improving the quality of Human Resources (Man) in schools first then proceed with fixing the method applied in schools. Furthermore, after correcting the dimensions of the Man and Method optimally, then the improvement of the financial dimension (Money) and the learning material dimension (Material).

Improving Human Resources (Man) in schools can be done by fostering assertive and robust leadership through providing leadership training both to school principals and to teachers in schools. Then proceed with quality improvement. We are improving the method by implementing continuous evaluations and increasing flexibility in budget management by increasing the financial dimension (money). The next step is to improve the quality of the dimensions of learning material (Material), especially focusing on the climate and school curriculum.

The strategy for the effectiveness of vocational school-based enterprise management is designed to improve the quality of the implementation of vocational school-based enterprises in Indonesia so that it can run effectively. This strategy is based on the implementation of school governance (SG) and total quality management (TQM) so that it is expected to be an option for vocational high school
leaders in making decisions. The managerial implication of the resulting strategy in this study is that the implementation of the strategy can be used as input for the Central Government (Ministry of Education, Ministry of Home Affairs, and Ministry of Finance) and Local Government to reorganize their roles in the preparation of regulations, guidance and supervision related to vocational school-based enterprise. For the leadership of a vocational school-based enterprise, this strategy can be used as a reference in making decisions in providing educational services, student services; Administrative and Financial Services; and Teaching Factory Services. For industry, this strategy can be an attraction to increase interest in collaborating with vocational school-based enterprises for effective school management.

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