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## Implementing Total Quality Management to Enhance Vocational School Graduates' Competitiveness: A Case Study in West Java

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**Abstract:** This study aims to evaluate the effectiveness of the implementation of Total Quality Management (TQM) in increasing the competitiveness of Vocational High School (SMK) graduates in West Java. This topic is important because it is a strategic effort to bridge the gap between vocational education and the needs of dynamic industries. This study uses a qualitative approach to deeply understand how industrial internship programs are integrated into the curriculum and their impact on students and the school's relationship with industry. Data was collected through observation, interviews with the vice principal for curriculum, and document analysis. The data source came from SMK Negeri 9 Bandung City and SMK Negeri 1 Cimahi City which were selected using purposive sampling techniques. Data analysis is carried out interactively and continuously through data reduction, data presentation, and conclusions drawn. Case studies in two vocational schools show that the PDCA (Plan, Do, Check, Action) cycle has been implemented systematically. However, challenges still arise in terms of synchronizing the curriculum with industry needs and resource limitations. The findings show a significant increase in the readiness of graduates to enter the world of work. This study concludes that TQM can be an effective framework for improving the quality of vocational education, provided that it is supported by conducive policies and stronger collaboration between schools, industry, and the government.

**Keyword:** Total Quality Management, Pendidikan Vokasi, Kesiapan Kerja, PDCA.

### INTRODUCTION

Law of the Republic of Indonesia Number 20 of 2003 concerning the National Education System Article 3 Paragraph (6) states that the purpose of national education is to develop the potential of students to become individuals who are loyal and fearful of God Almighty, healthy, knowledgeable, skilled, creative, independent, responsible, and become democratic citizens. This goal is achieved through educational institutions that are responsible for optimizing the educational process and its components. Schools as educational institutions have a dynamic and complex system, requiring proper management planning to produce competitive graduates (Tilaar, 2000).

One of the main problems in Indonesian education is the low quality of education, which hinders the provision of high-quality human resources to meet the demands of development (OECD., 2020). Many argue that the approach used so far, which focuses on inputs, processes, and outputs, is not enough to improve the quality of education equitably. Therefore, various educational management theories have been developed, including Total Quality Management (TQM), John D. Millet's theory (1970), and the ISO 9001 standard (Hoy & Miskel, 1991). However, these theories are generally developed in the context of general education and have not taken into account the specific conditions at the vocational school level (Cheong Cheng & Ming Tam, 1997).

In the context of Vocational High Schools (SMK), various approaches have been applied to increase the competitiveness of graduates, such as a link-and-match model with industry, teaching factories, and competency-based curriculum (Ministry of Education, 2008). However, there is still a gap in understanding how this approach can be optimally integrated into school management systems. The concept of graduate competitiveness in vocational schools is often only associated with technical skills, while 21st-century skills such as critical thinking, problem-solving, communication, and collaboration have not fully become key indicators in vocational school management (Ma'mun, 2018).

Previous research shows that the implementation of TQM in vocational education has the potential to improve the quality of graduates. Research by Subaidi and Samidi (2015) shows that the implementation of TQM can improve the quality of education through effective planning, implementation, and quality control. Another research by Rully (2022) developed a TQM model that focuses on increasing the absorption of vocational school graduates in the industrial world, showing that the model can increase the percentage of graduate absorption. In addition, a study by Hadi (2018) emphasizes that the implementation of TQM in educational institutions will be effective if it is supported by careful planning and continuous innovation.

However, there are some gaps in previous research. Many studies focus more on the technical aspects of TQM implementation without considering organizational culture factors and the involvement of all stakeholders in the implementation process (Sallis, 2014). In addition, there are limitations in research that examine the direct impact of the implementation of TQM on the competitiveness of graduates in the job market (Scheerens, 2000). Research on educational effectiveness shows that various variables affect the quality of education, including school leadership styles, resource management strategies, and synergies between schools and the industrial world (Scheerens, 2000).

The high expectations of vocational education in Indonesia are reflected in the government's policy that positions vocational schools as providers of middle labor. However, the reality shows that many vocational school graduates still have difficulty finding jobs due to the mismatch between competencies and industry needs. Data from the Central Statistics Agency (BPS) in 2017 shows that the Open Unemployment Rate (TPT) of vocational school graduates reached 11.41 per cent nationally, even 16.97 per cent in West Java (BPS, 2017). The revitalization of vocational schools through Presidential Instruction Number 9 of 2016 aims to improve the quality of vocational education with two main orientations: first, anticipating the Industrial Revolution 4.0 which brings disruptive technological changes, and second, developing regional competitive advantages for national competitiveness. The implementation of this policy in West Java is regulated by West Java Governor's Regulation Number 68 of 2019, which emphasizes the alignment of the curriculum with industry needs, increasing the competence of educators, and cooperation between local governments and the business world.

Despite the implementation of various policies, there are still challenges in improving the quality of vocational school graduates to meet the demand of the labour market. Many entrepreneurs and industries complain about the mismatch between the competence of vocational school graduates and the demands of the workforce (Group, 2018). Therefore, a more systematic and holistic management approach is needed to increase the competitiveness

of vocational school graduates. By integrating the principles of continuous improvement and close collaboration between schools and industry, vocational school graduates are expected not only to have relevant technical skills but also to be able to compete in an increasingly competitive labour market.

This study aims to evaluate the effectiveness of the implementation of Total Quality Management (TQM) in increasing the competitiveness of Vocational High School (SMK) graduates in West Java. In this case, the method used is case study research at SMK Negeri 9 Bandung City and SMK Negeri 1 Cimahi City.

## **METHOD**

This study uses a qualitative approach with a case study method to explore the implementation of Total Quality Management (TQM) in increasing the competitiveness of graduates at SMK Negeri 9 Bandung City and SMK Negeri 1 Cimahi City. The qualitative approach was chosen because it allows researchers to understand phenomena in depth in a natural context, by Creswell's view (Adrias & Ruswandi, 2025; Creswell, 2014) which emphasizes the importance of in-depth exploration in qualitative research. The case study method was used to obtain a comprehensive understanding of the implementation of TQM in the two schools. Yin (Yin, 2017) stated that case studies are suitable for use when researchers want to answer "how" or "why" questions related to contemporary phenomena in the context of real life.

The data in this study were collected through in-depth interviews, participatory observations, and document analysis. In-depth interviews were conducted with school principals, vice principals for curriculum, teachers, students, and other relevant parties to explore their perspectives on TQM implementation. Participatory observation was carried out to directly observe the TQM implementation process in the school's daily activities. Document analysis involves reviewing the school's official documents, such as strategic plans, curriculum, and self-evaluation reports.

The data triangulation technique is applied to ensure the validity and reliability of the research findings. This is done by comparing and contrasting information obtained from various data sources, as suggested by Patton (Patton, 2014) to increase the credibility of qualitative research.

Data analysis is carried out through the process of data condensation, data presentation, and conclusion drawn, following an interactive analysis model proposed by Miles and Huberman (Adrias & Ruswandi, 2025; Miles et al., 2014). This process involves organizing data into thematic categories that are relevant to TQM implementation and graduate competitiveness.

## **RESULTS AND DISCUSSION**

Aspects of management planning at SMK Negeri 9 Bandung City in increasing the competitiveness of graduates include: (1) the preparation of the school's vision, mission, and strategic goals, (2) partnership with IDUKA (Industry and World of Work), (3) curriculum development based on industry needs, and (4) teacher competency development programs in a sustainable manner. Based on the results of interviews with the principal, the preparation of the vision and mission of SMK Negeri 9 Bandung City involves the participation of all stakeholders, including teachers, students, and IDUKA partners. This process is in line with the concept of the Strategic Planning Model from Bryson (Bryson, 2015), which emphasizes the importance of stakeholder involvement in formulating strategic goals to improve the quality of education.

The collaboration with IDUKA is carried out through the signing of a Memorandum of Understanding (MoU) which includes the implementation of internship programs, industrial training, and curriculum alignment. An informant from IDUKA stated, *"We are actively*

*involved in the preparation of the curriculum so that student competencies are by industry needs.*" This shows that the involvement of industry partners strongly supports the relevance of vocational education. This approach supports the theory of *Stakeholder Theory* by Freeman (Freeman, 2010), which emphasizes the importance of collaboration with external stakeholders in the development of organizational strategies.

The curriculum at SMK Negeri 9 Bandung City is prepared based on an analysis of IDUKA needs. The basic competencies taught include digital technology, entrepreneurship, and business communication. Curriculum documentation shows that there is an adjustment of teaching materials to the latest technological developments, such as the use of graphic design software and business management software. These findings support the theory of the Curriculum Development Model from Tyler (Tyler, 1950), which emphasizes that the curriculum must be structured based on the needs of students and the demands of the world of work.

Teacher competency development programs include industrial certification training, digital literacy workshops, and teacher internships at IDUKA. One of the teachers stated, *"This training helps us understand the development of technology applied in the industrial world."* This program is in line with the concept of *Human Resource Development (HRD)* from Gubbins and Garavan (Gubbins & Garavan, 2009), which states that continuous training plays an important role in improving the quality of learning. Strategic planning at SMK Negeri 9 Bandung City shows the application of the strategic management model by Wheelen & Hunger (Hunger & Wheelen, 2003), which includes the process of strategy formulation, implementation, and evaluation. Collaboration with IDUKA, the development of a curriculum based on industry needs, and teacher development programs are concrete steps in increasing the competitiveness of graduates. These results also show that the integration of external stakeholders strengthens the relevance of vocational education.

The implementation of management at SMK Negeri 9 Bandung City to increase the competitiveness of its graduates includes the following aspects: (1) Implementation of a curriculum that emphasizes project-based learning; (2) Internship program for students in the industrial and business world (IDUKA); (3) Teacher competency improvement programs (workshops, seminars, internships, continuous training); and (4) Provision of modern educational facilities that meet industry standards.

The implementation of the project-based curriculum at SMK Negeri 9 Bandung City contributes significantly to improving student competence because it provides meaningful real experience to support their readiness in the world of work. These findings are in line with Thomas' (Thomas, 2000) Statement that project-based learning improves students' critical thinking and problem-solving skills. The impact of this curriculum is measured internally through competency tests at each level, with quantitative assessments of learning achievement. At the end of grade 12, students take a competency certification aligned with industry standards.

The results of the interview with the head of the curriculum division revealed that:

*"Melalui pembelajaran berbasis proyek, siswa tidak hanya mempelajari teori, tetapi juga menerapkannya secara langsung pada proyek nyata, yang meningkatkan keterampilan pemecahan masalah dan mempersiapkan mereka untuk dunia kerja."*

In the implementation stage of the PDCA cycle, SMK Negeri 9 Bandung City and SMK Negeri 1 Cimahi City apply Total Quality Management (TQM) principles with a focus on developing project-based curriculum, internship programs, improving teacher competence, and providing modern facilities. Both schools have adopted a project-based curriculum that integrates theory and practice, ensuring that students gain hands-on experience that meets the needs of the industry. The Teaching Factory (TEFA) model applied at SMK Negeri 9 Bandung City and the Project-Based Learning (PBL) method at SMK Negeri 1 Cimahi City reflect TQM

principles that emphasize continuous improvement and relevance to the labour market (Crosby, 1979; Deming, 2018).

Based on the results of an interview with the Principal of SMK Negeri 9 Bandung City, the implementation of the TEFA model has a positive impact on improving students' technical skills. The principal stated, "The TEFA model strengthens students' practical skills and brings them closer to the work process in the industry" (Interview, 2024). Field observations show that students are actively involved in the production of goods and services according to industry standards, which are supported by adequate workshops and laboratory facilities.

In addition, the data *tracer study* shows that the absorption rate of graduates into the world of work is relatively high. Based on the school's *tracer study* report (2023), about 75% of graduates get a job within six months of graduation, especially in industries that match their field of study.

The internship program implemented in collaboration with IDUKA partners is one of the strategies to bridge the gap between theoretical knowledge and practical skills. As stated by Passarelli Smith and Kolb (Passarelli & Kolb, 2011), Internships are an important component of vocational education that helps students gain practical experience and understand the work culture. Based on interviews with internship coordinators, it was found that: "*Internships allow students to gain hands-on experience in the industry, making them more confident and adaptive to the work environment.*" In addition, feedback from companies through surveys shows that 80% of employers are satisfied with the technical skills and soft skills demonstrated by interns.

The Field Work Practice Program (PKL) is an integral part of learning, following a systematic process from planning and implementation to evaluation. The program provides students with real industry experience, developing the technical skills and soft skills required in the workforce. One of the supervisors at SMK Negeri 1 Cimahi City said, "PKL provides opportunities for students to understand the work culture and improve communication skills" (Interview, 2024). This approach aligns with TQM's "customer focus" principle, ensuring that the education provided meets the demands of the industry (Blanchard, 2018; J. R. Evans & Lindsay, 2010).

The results of the documentation show that the two schools have collaborated with various companies to support the implementation of street vendors. This collaboration involves adapting learning materials to industry needs, which contributes to increasing the competitiveness of graduates. This is in line with research conducted by Kanji & Asher. (Kanji & Asher, 1996), Which emphasizes the importance of collaboration between educational institutions and industry in improving the quality of vocational education.

Thus, the implementation of TQM at this stage shows that the combination of project-based curriculum development, internship programs, and teacher competency improvement can improve the quality of learning and the relevance of education to the world of work. This finding is in line with previous research conducted by Sallis. (Sallis, 2014), Which highlighted that the application of TQM in vocational education contributes to improving the quality of learning and stakeholder satisfaction.

To support effective learning, both schools emphasize teacher competency development through workshops, seminars, and ongoing training. According to Goetsch & Davis (Goetsch Stanley Davis, 2014), continuous training is an important element of TQM to ensure that educators are always up-to-date and adaptable to industry changes. An interview with the Principal of SMK Negeri 9 Bandung revealed that "continuous training helps teachers understand technological developments and adjust teaching methods according to industry needs." This is in line with findings from the documentation of the teacher training program which shows that teachers attend training at least twice a year.

In addition, the provision of modern educational facilities and infrastructure is carried out to support project-based learning and industrial practices. Observations at SMK Negeri 1 Cimahi City show that the automotive engineering laboratory has been equipped with the latest

equipment by industry standards. Facilities that meet industry standards help create a more effective learning environment that is relevant to the needs of students and the business world. (Besterfield et al., 2019). This is reinforced by an interview with an automotive engineering teacher who stated that "cutting-edge equipment greatly assists students in understanding the latest technology and improving their practical skills."

The application of TQM principles in education in both schools not only increases the competitiveness of graduates but also ensures continuous improvement in Indonesia's vocational education system. The results of this study are in line with the research conducted by Sallis (2002) which emphasized that the application of TQM in education contributes to improving the quality of learning and stakeholder satisfaction. In addition, a study by Abdullah (Abdullah, 2006) shows that the integration of TQM in vocational education increases the relevance of students' skills to industry needs, which is in line with the findings of this study.

Teacher competency improvement programs play an important role in ensuring educators stay abreast of industry trends. SMK Negeri 9 Bandung City routinely holds workshops, seminars, and industrial internships for teachers. According to Guskey (Guskey, 2002), Continuous professional development is essential to improve the quality of teaching and student learning outcomes.

Observational data during teacher training workshops show that teachers are actively engaged in learning the latest technological advancements and integrating them into their teaching practices. A teacher stated: "*Program pelatihan membantu kami memahami kebutuhan industri terbaru dan meningkatkan metode pengajaran agar selaras dengan persyaratan tersebut.*"

Thus, this approach strengthens the linkages between educational institutions and the industrial world, which ultimately supports the development of competent and highly competitive human resources.

The *Check* (Inspection) stage in the PDCA cycle carried out at SMK Negeri 9 Bandung City and SMK Negeri 1 Cimahi City focuses on the periodic evaluation of student performance, teacher performance, the effectiveness of Field Work Practice (PKL) programs, curriculum audits, and measurement of stakeholder satisfaction. This approach is in line with the principles of Total Quality Management (TQM), which emphasizes continuous evaluation to ensure the improvement of the quality of education and the competitiveness of graduates. (Deming, 2018; J. R. Evans & Lindsay, 2010).

Learning evaluation is carried out through formative and summative assessments, including the industry-based Skills Competency Test (UKK), which aims to ensure that graduate competency standards are aligned with the needs of the world of work. This data is used as a basis for curriculum improvement and the development of additional training programs for students who have not reached competency standards. One of the teachers at SMK Negeri 9 stated that:

*"Setiap tahun kami melaksanakan UKK dengan melibatkan asesor dari industri agar hasilnya lebih objektif dan sesuai dengan standar yang diterapkan di dunia kerja."*

Teacher performance evaluation at SMK Negeri 9 is carried out through the supervision of the principal and the annual Teacher Performance Assessment (PKG), while at SMK Negeri 1 Cimahi City, the Independent Teaching Platform (PMM) is used for self-assessment. This step is in line with the concept of continuous improvement suggested by Deming. (Deming, 2018), Where teachers are actively involved in the development of professional competencies to improve the quality of learning.

The evaluation of the street vendor program is based on feedback from companies, students, and supervisors. The results of an interview with one of the street vendor supervisors at SMK Negeri 1 Cimahi revealed: "*Kami selalu meminta umpan balik tertulis dari pihak perusahaan setelah siswa menyelesaikan PKL, untuk mengetahui kekuatan dan kelemahan yang perlu diperbaiki dalam persiapan peserta didik.*" This demonstrates the application of the

principle of *customer focus* in TQM, where continuous feedback is used to ensure the relevance and effectiveness of the internship program (Goetsch Stanley Davis, 2014).

Curriculum audits are carried out regularly by involving industry stakeholders, such as company partners and professional associations. Document observation shows that curriculum revisions are carried out every two years to adjust teaching materials to the latest technological developments. This approach emphasizes the importance of collaborative partnerships between schools and the world of work in maintaining the relevance of graduates. (Besterfield et al., 2019; J. R. Evans & Lindsay, 2010).

Students, parents, and alumni employers are satisfied through annual surveys. The results of the 2024 survey show that 85% of employers are satisfied with the competence of graduates, especially in terms of technical skills and work ethic. One employer stated: "*Lulusan dari SMK Negeri 9 memiliki keterampilan teknis yang baik, meskipun perlu ditingkatkan dalam aspek komunikasi dan manajemen waktu.*" This approach is in line with the concept of customer satisfaction measurement in TQM, which aims to identify areas that need improvement and ensure continuous improvement in the quality of education services. (Crosby, 1979; S. Evans, 2013). The survey results showed that the aspect of academic information services obtained a satisfaction level of 88%, while the aspect of teacher responsiveness in providing feedback was 84%. This data is used by the school to design policies to improve digital-based information services and effective communication training for teachers, in order to increase student and parent satisfaction on an ongoing basis.

The results of the evaluation show that the implementation of *the Check* stage in the PDCA cycle in both schools has supported the improvement of education quality through a data-driven approach and stakeholder feedback. However, there are still several challenges in implementation, such as low industry involvement in street vendor evaluation and limited technological resources in supporting curriculum audits. To address these challenges, it is recommended that schools increase cooperation with the industry through more active and sustainable partnership programs. In addition, investment in technology infrastructure and teacher training in the use of information technology is also recommended to strengthen the curriculum audit process digitally.

The inspection management aspect involves periodic assessments of student and teacher performance, evaluation of internship programs, curriculum audits, and satisfaction surveys. The school carries out summative assessments at the end of each semester, vocational competency tests (UKK), and Teacher Performance Assessments (PKG). This approach ensures transparency and accountability in the evaluation process. Feedback from the student satisfaction survey showed that 85% of students were satisfied with the learning process, while the parent satisfaction survey reported a satisfaction level of 90% with the school management and the facilities provided.

These findings are in line with Megayanti's research. (Megayanti et al., 2020), Which highlighted that project-based learning combined with industrial internships significantly increased the competitiveness of vocational graduates. However, in contrast to Widiyanto's study, which only focuses on curriculum implementation, this study integrates a comprehensive management approach, including teacher development and quality assurance mechanisms.

## CONCLUSION

The aspect of management planning at SMK Negeri 9 Bandung City involves the preparation of a participation-based vision and mission, strategic partnership with IDUKA, curriculum development based on industry needs, and teacher competency development programs. This approach supports strategic management theory, stakeholder theory, and human resource development.

The implementation of management strategies at SMK Negeri 9 Bandung City effectively increases the competitiveness of its graduates. The combination of a project-based curriculum,

industry internships, teacher competency improvement programs, and rigorous inspection management contributes to high graduate uptake rates and stakeholder satisfaction. Further research can explore the long-term career paths of graduates and the impact of digitalization on vocational education.

The *Check* stage in the PDCA cycle implemented at SMK Negeri 9 Bandung City and SMK Negeri 1 Cimahi City shows effectiveness in improving the quality of TQM-based education. Periodic evaluations, industry feedback, curriculum audits, and stakeholder satisfaction measurements contribute to improving the quality of learning and the relevance of graduates to industry needs. More intensive collaboration with industry and improved technological infrastructure are recommended to support more optimal implementation.

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