

Supporting SDG 4 through Teaching Factory Readiness: A CIPP Evaluation with POAC Analysis at Vocational High School

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Abstract: Teaching Factory (TEFA) connects school-based vocational learning with authentic industrial practices. However, variations in its implementation indicate the need for a comprehensive evaluation of institutional readiness. This study evaluated TEFA implementation readiness at State Vocational High School (SMK) 2 Padang using the Context, Input, Process, and Product (CIPP) model as the principal quantitative evaluation framework. The Planning, Organizing, Actuating, and Controlling (POAC) framework was applied as a qualitative analytical lens for interpreting managerial practices rather than as a separate quantitative measurement. A convergent mixed-methods design was employed. Quantitative data were collected through questionnaires administered to Grade XI students in the TKJ, BDR, and MPLB programmes, while qualitative data were obtained through interviews with three TEFA coordinators, observations, and institutional documents. Overall institutional readiness reached 76.5% and was categorized as Ready. Input achieved the highest score (79%), followed by Product (78%), Context (76%), and Process (73%). Qualitative POAC analysis indicated that planning, organizational arrangements, and programme implementation had been established, whereas controlling remained comparatively weak, particularly in monitoring, documentation, evaluation, and follow-up. Therefore, strengthening managerial control, continuous quality assurance, and industry collaboration is essential for ensuring sustainable TEFA implementation.

Keywords: CIPP evaluation; Institutional readiness; POAC; Teaching Factory; Vocational education.

Introduction

Vocational education plays a strategic role in preparing graduates with occupational competencies that correspond to changing workplace and industrial requirements. In Indonesia, the Teaching Factory (TEFA) model has been implemented to strengthen the relevance of vocational education by integrating classroom instruction with authentic production- or service-based activities. Through this approach, students are expected to develop technical competence, professional attitudes, work discipline, collaboration, responsibility, entrepreneurship, and familiarity with industrial work culture. Previous studies have

demonstrated that TEFA can strengthen vocational competence, workplace-oriented learning, employability-related skills, and the alignment between school learning and industrial practice (Wahjusaputri & Bunyamin, 2022; Wijanarka et al., 2023; Yulita & Prayitno, 2023). Therefore, TEFA should be understood not merely as a learning method but as an institutional learning system involving curriculum, facilities, human resources, school management, leadership, production units, and industrial partnerships.

Despite its potential, TEFA implementation remains uneven across vocational schools. The availability of workshops, laboratories, equipment, and production units does not automatically ensure

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authentic and sustainable industry-based learning. Implementation can remain suboptimal when production planning, responsibility distribution, teacher competence, industrial participation, monitoring, documentation, and follow-up mechanisms are not systematically managed. Research on TEFA management has shown that effective implementation requires professional governance, clearly defined responsibilities, industrial collaboration, appropriate learning arrangements, and continuous supervision (Widiatna et al., 2025). Consequently, institutional readiness must be evaluated before schools expand TEFA implementation. Without an adequate readiness diagnosis, schools may invest in physical infrastructure while overlooking managerial processes, quality control, human-resource development, and sustainable industry engagement.

Institutional readiness refers to an organization's shared capacity and commitment to implement a programme or organizational change effectively (Weiner, 2009). Within TEFA, readiness is multidimensional because it involves physical resources, competent personnel, managerial capacity, industrial partnerships, and leadership support. These components are interdependent. Adequate facilities may be underutilized when personnel lack relevant competence or organizational responsibilities are unclear. Similarly, competent teachers and students may not obtain authentic workplace experience when collaboration with industry is limited to formal agreements. Assessing these dimensions separately would therefore provide only a fragmented description of institutional capacity. A comprehensive evaluation is required to determine how contextual conditions, institutional inputs, implementation processes, and immediate outcomes interact in supporting TEFA sustainability.

Previous studies have evaluated TEFA using various approaches, including programme management, school governance, competence development, industrial collaboration, and the Context, Input, Process, and Product (CIPP) evaluation model. Thus, the present study does not claim that CIPP-based TEFA evaluation is absent from previous research. CIPP has already been employed to evaluate TEFA and other educational programmes comprehensively by examining programme needs, resources, implementation, and outcomes (Friadi et al., 2024; Muhab et al., 2024; Stufflebeam & Zhang, 2017). Nevertheless, a CIPP readiness profile primarily identifies which evaluation components are relatively strong or weak. It does not automatically explain the managerial functions that produce differences among those components. This limitation is particularly important when a school possesses adequate inputs but

obtains a comparatively lower Process score. Such a pattern requires an explanation of whether the underlying weakness concerns planning, organizational arrangements, programme implementation, managerial control, or the connection among these functions.

To address this analytical requirement, the present study uses CIPP as the principal framework for measuring institutional readiness and Planning, Organizing, Actuating, and Controlling (POAC) as a qualitative analytical lens for interpreting managerial practices (Stufflebeam & Zhang, 2017; Terry & Irwin, 2013). POAC is not treated as a separate quantitative scale; therefore, no independent POAC readiness percentages are calculated. Instead, it explains the managerial conditions underlying the CIPP results, particularly those identified within the Process component. This distinction enables the evaluation to determine both the institutional-readiness profile and the managerial mechanisms associated with that profile. It also prevents conceptual overlap between the CIPP components and POAC functions.

The five dimensions of institutional readiness are explicitly mapped into the evaluation framework. Physical readiness, including facilities, equipment, production units, and operational resources, is primarily evaluated under Input. Human-resource readiness is examined under Input and Process because it concerns both personnel availability and their participation in TEFA activities. Industrial-partnership readiness is evaluated under Context and Process through the relevance of partnerships and the actual involvement of industry in curriculum alignment, production activities, mentoring, and evaluation. School-leadership support is examined under Context and Process through policy commitment, resource allocation, supervision, and programme follow-up. Managerial readiness is primarily evaluated under Process and interpreted through Planning, Organizing, Actuating, and Controlling. Meanwhile, Product represents immediate institutional and learning-related outcomes rather than long-term graduate employability or labour-market performance.

The novelty of this study lies in developing a management-sensitive institutional-readiness evaluation rather than merely applying CIPP to another TEFA programme. CIPP is used to establish the quantitative readiness profile, whereas POAC provides a qualitative explanation of the managerial practices underlying the identified profile. The study also evaluates three vocational programmes—Computer and Network Engineering, Online Business and Retail, and Office Management and Business Services—which represent different production- and service-based characteristics but operate under the same institutional governance at SMK Negeri 2 Padang. This setting

enables the study to identify institution-wide managerial strengths and weaknesses without disregarding programme diversity. Accordingly, this study aims to determine the level of TEFA institutional readiness across the four CIPP components and explain the managerial conditions underlying the findings through POAC analysis. The findings are expected to support evidence-based improvements in institutional governance, resource management, quality assurance, and sustainable school-industry collaboration.

Method

Research Setting and Participants

The research was conducted at State Vocational High School (SMK) 2 Padang, one of the vocational high schools implementing Teaching Factory across several vocational programs. The study focused on three vocational programs that had formally implemented Teaching Factory, namely Computer and Network Engineering (TKJ), Online Business and Retail (BDR), and Office Management and Business Services (MPLB). These programs were selected because they represent different characteristics of production- and service-based learning while operating under the same institutional management system.

The quantitative phase involved Grade XI students who had participated directly in Teaching Factory learning activities. Qualitative data were collected from three Teaching Factory coordinators, each representing one vocational program. The coordinators were selected purposively because they were directly responsible for planning, organizing, implementing, supervising, and evaluating Teaching Factory activities within their respective departments.

Research Instruments

Four complementary instruments were employed to obtain comprehensive evidence. The primary quantitative instrument was a structured questionnaire developed using a five-point Likert scale ranging from

strongly disagree (1) to strongly agree (5). The questionnaire measured institutional readiness through five operational dimensions: physical readiness, managerial readiness, human resource readiness, industrial partnership readiness, and school leadership support.

Qualitative evidence was collected through semi-structured interviews, direct observations, and document analysis. The interview protocol explored institutional policies, managerial practices, industrial collaboration, implementation challenges, monitoring mechanisms, and continuous improvement efforts. Observation was conducted to verify the actual condition of Teaching Factory facilities, learning environments, industrial-standard equipment, and operational practices. Documentation analysis included the review of Standard Operating Procedures (SOPs), organizational structures, Teaching Factory work programs, duty schedules, and institutional documents supporting Teaching Factory implementation.

Operationalization of the Evaluation Framework

The evaluation framework combined the CIPP model with the operational dimensions of institutional readiness. The four CIPP components served as the primary framework for evaluating Context, Input, Process, and Product, while the readiness dimensions functioned as measurable indicators of institutional capacity. Quantitative data covering all CIPP components and operational dimensions were collected using a structured questionnaire. Interviews, direct observations, and institutional documentation provided qualitative evidence to clarify, corroborate, and contextualize the quantitative results. Within the Process component, the POAC framework was employed as a qualitative analytical lens to interpret managerial practices related to Planning, Organizing, Actuating, and Controlling. Therefore, POAC was not treated as a separate quantitative measurement but as an interpretive framework for explaining the managerial conditions underlying the Process findings.

Table 1. Operationalization of the Integrated CIPP-POAC Evaluation Framework

CIPP Component	Operational Dimension	Supporting Qualitative Evidence
Context	School leadership support	Interviews and institutional documentation
Context	Industrial partnership readiness	Interviews and institutional documentation
Input	Physical readiness	Direct observation
Input	Human-resource readiness	Interviews
Process	Managerial readiness	Interviews and institutional documentation
Product	Initial implementation outcomes	Interviews

This operationalization ensured conceptual consistency between the theoretical evaluation framework and the empirical indicators used throughout the research process.

Instrument Validity and Trustworthiness

Prior to field implementation, the questionnaire underwent content validation through expert judgment involving specialists in vocational and technology

education. Content validity was assessed using Aiken (1985) V coefficient, and all questionnaire items achieved values exceeding the minimum acceptable criterion, indicating satisfactory content validity. The questionnaire was subsequently revised based on experts' recommendations before administration.

Instrument reliability was evaluated using Cronbach's Alpha, confirming satisfactory internal consistency for all measurement dimensions. The trustworthiness of qualitative findings was strengthened through methodological triangulation by comparing evidence obtained from interviews, observations, and institutional documentation. Triangulation was employed to verify the consistency of findings across different data sources and to enhance the credibility of the evaluation results.

Data Analysis

Quantitative data were analyzed using descriptive statistical techniques to determine the level of institutional readiness across each evaluation dimension. Composite scores, percentage values, and readiness categories were calculated to describe the level of readiness for each component of the CIPP framework.

Qualitative data were analyzed using the interactive model proposed by Miles et al. (2014), consisting of data condensation, data display, and conclusion drawing. The qualitative analysis focused on identifying managerial practices, institutional conditions, implementation challenges, and supporting factors influencing Teaching Factory implementation.

The integration of quantitative and qualitative findings constituted the final stage of analysis. Quantitative results described the level of institutional readiness, whereas qualitative findings explained the contextual and managerial factors underlying those results. The integrated interpretation enabled a comprehensive understanding of institutional readiness by combining statistical evidence with field-based explanations obtained through interviews, observations, and documentation.

Result and Discussion

Overall Institutional Readiness

The overall readiness score indicates that SMK Negeri 2 Padang has established an adequate institutional foundation for TEFA implementation, although readiness remains uneven across the four CIPP components. This finding supports the view that organizational readiness is determined by the interaction of institutional commitment, available resources, implementation capacity, and collective capability to sustain change (Weiner, 2009). Previous CIPP-based evaluations similarly demonstrate that

favourable Context and Input conditions do not necessarily produce equally strong implementation processes when monitoring, evaluation, and follow-up mechanisms remain underdeveloped (Friadi et al., 2024; Muhab et al., 2024; Yoto et al., 2024). Therefore, institutional readiness should be interpreted as a dynamic organizational capacity rather than as a static condition achieved through infrastructure provision alone.

Table 2. Summarizes the institutional readiness across the four CIPP evaluation components.

CIPP Component	Mean Score (%)	Category
Context	76	Ready
Input	79	Ready
Process	73	Ready
Product	78	Ready
Overall institutional readiness	76.5	Ready

Conceptually, these results indicate that the implementation of the Teaching Factory at SMK Negeri 2 Padang has passed the establishment stage and is entering the institutional strengthening phase. This stage is marked by the availability of various basic components of the Teaching Factory, such as production units, management organizations, school policies, human resources, and collaboration with industry. However, the characteristics of the Teaching Factory as an industry-based learning system require dynamic management. Therefore, the presence of these components cannot be used as an indicator of success without consistent management mechanisms, a continuous evaluation system, and an industry work culture internalized in all learning activities.

These findings demonstrate that institutional readiness must be understood as an interconnected system. Physical readiness without effective management support will result in suboptimal facility utilization. Similarly, teacher and student competencies will not develop optimally if industry partnerships fail to provide authentic work experiences. Therefore, the success of the Teaching Factory is not determined by a single dimension, but by the synergy of all institutional components in creating a learning ecosystem that resembles an industrial work environment.

This interpretation aligns with the CIPP evaluation model, which positions the context, resources, implementation process, and program outcomes as an inseparable whole. From a vocational education perspective, the success of the Teaching Factory also supports Prosser's principle, which asserts that vocational learning will be effective if students gain learning experiences in environments that represent real-world work conditions. Therefore, institutional readiness is a strategic prerequisite for realizing

production-based learning that not only meets curriculum standards but also meets the expectations of the business and industrial world.

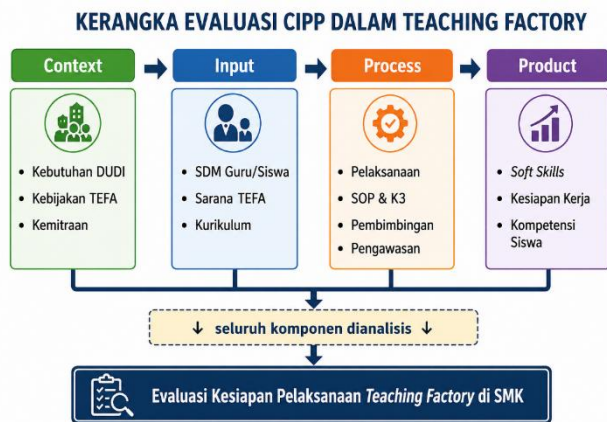


Figure 1. CIPP Evaluation Framework in Implementing Teaching Factory

Context Evaluation

The Context result demonstrates that leadership commitment and institutional policy provide an adequate foundation for TEFA implementation. However, the effectiveness of industrial partnerships should not be assessed solely from the existence of formal cooperation agreements. Sustainable TEFA requires industry participation in curriculum alignment, production planning, mentoring, technology transfer, competency assessment, and programme evaluation (Widiatna et al., 2025; Wijanarka et al., 2023). International studies similarly describe the Teaching Factory as a two-way knowledge-transfer system in which educational institutions and industry jointly address authentic workplace challenges (Chrysosouris et al., 2016; Rentzos et al., 2015). Thus, the Context findings indicate that SMK Negeri 2 Padang should progress from activity-based cooperation toward sustained and mutually accountable school-industry collaboration (Mavrikios et al., 2019).

Input Evaluation

The comparatively high Input score confirms that facilities, production units, human resources, and organizational support provide an adequate resource base for TEFA. This finding is consistent with previous Indonesian studies showing that facilities, teacher readiness, organizational structures, and operational resources are important prerequisites for successful TEFA implementation (Wahjusaputri et al., 2024; Wijanarka et al., 2023; Yoto et al., 2024). Nevertheless, resource readiness should include the institution's capacity to maintain, upgrade, schedule, and utilize its facilities according to changing technological and industrial standards. Learning-factory research

similarly emphasizes that authentic environments require the integration of physical infrastructure, learning design, competent personnel, and real industrial problems (Abele et al., 2017; Rentzos et al., 2014). Consequently, additional investment in equipment will have limited impact unless accompanied by maintenance planning, teacher development, and systematic resource management.

Process Evaluation

Planning was reflected in annual work programmes, production or service schedules, learning arrangements, operational targets, and Standard Operating Procedures. These findings indicate that TEFA activities were not implemented spontaneously. However, the planning process remained predominantly school-driven, while industry involvement in target setting, product standards, curriculum alignment, and technological updating varied among vocational programmes. Widiatna et al. (2025) emphasized that TEFA planning should connect school learning arrangements with production-unit management and industrial cooperation. Similarly, the Teaching Factory paradigm requires industry problems and educational activities to be jointly designed so that learning remains aligned with actual workplace requirements (Chrysosouris et al., 2016; Mavrikios et al., 2018).



Figure 2. Conceptual Framework

Organizing was demonstrated through formal TEFA structures, appointed coordinators, teacher responsibilities, student work assignments, and duty schedules. These arrangements supported the implementation of production and service activities across the TKJ, BDR, and MPLB programmes. Nevertheless, the findings indicate that coordination and managerial workloads remained dependent on programme coordinators. This condition may limit continuity when responsibilities, communication

procedures, and decision-making authority are not sufficiently documented. Previous research has similarly shown that TEFA sustainability requires clear organizational responsibilities, professional production-unit management, and coordination among schools, teachers, students, and industrial partners (Pradipta et al., 2021; Suhartini, 2022; Widiatna et al., 2025).

Actuating was the most visible managerial function because students were directly involved in computer services, retail and digital business activities, administrative services, and event-related services. These activities enabled students to apply vocational knowledge, interact with customers, collaborate with peers, and assume responsibility for assigned work. The finding corresponds with studies reporting that authentic, project-oriented, and entrepreneurship-based learning can improve vocational competence, collaboration, work discipline, and employability-related skills (Deliana & Anwar, 2025; Wahjusaputri & Bunyamin, 2022; Yulita & Prayitno, 2023). International Teaching Factory studies also demonstrate that participation in real industrial projects enables learners to understand workplace challenges and develop technical and professional competencies (Abele et al., 2017; Chrysosolouris et al., 2016; Rentzos et al., 2015). Controlling was the least systematic function. Monitoring and internal evaluation had been conducted, but standardized performance indicators, written evaluation records, corrective-action plans, and documented follow-up were not consistently applied across the three vocational programmes. This result resembles the Process-related weaknesses reported in other CIPP evaluations, where implementation activities operated adequately but monitoring and continuous evaluation still required improvement (Friadi et al., 2024). The weakness should therefore be interpreted as an incomplete feedback connection between Controlling and subsequent Planning rather than as the complete absence of supervision. Establishing common performance indicators, periodic reviews, documented corrective actions, and feedback to the next planning cycle is essential for transforming POAC into a continuous quality-improvement mechanism.

Product Evaluation

The Product score indicates that TEFA has generated encouraging immediate outcomes, including students' perceived discipline, responsibility, teamwork, confidence, and familiarity with workplace procedures. These findings are consistent with research showing that TEFA and workplace-oriented project learning can strengthen vocational skills, learning outcomes, collaboration, and employability-related competence (Deliana & Anwar, 2025; Prianto et al., 2021; Wahjusaputri et al., 2024; Wijanarka et al., 2023; Yulita &

Prayitno, 2023). However, these outcomes should not be interpreted as evidence of long-term effectiveness because the study did not directly measure occupational certification, employer satisfaction, graduate employment, or career progression. Future evaluations should therefore connect institutional readiness with competency-test results, product-quality indicators, employer feedback, and graduate-tracer data.

Discussion

The present study demonstrates that institutional readiness constitutes the fundamental prerequisite for sustainable Teaching Factory implementation in vocational education. Although all four CIPP components were categorized as Very Ready, the findings reveal that institutional readiness is not evenly distributed across evaluation dimensions. The differences observed among the Context, Input, Process, and Product components indicate that Teaching Factory should not be understood as a production-based learning model alone, but as a comprehensive institutional system requiring the interaction of leadership, organizational management, learning resources, industrial collaboration, and continuous quality assurance.

The Context evaluation confirms that leadership commitment and institutional policy have provided an adequate foundation for Teaching Factory implementation. The existence of formal organizational structures, school policies, and institutional support demonstrates that Teaching Factory has been recognized as a strategic component of vocational education rather than as an additional practical activity. However, the findings also indicate that industrial collaboration remains concentrated on operational activities such as internships, competency assessments, and guest teaching. This suggests that institutional readiness should not be measured solely by the existence of cooperation agreements but by the extent to which partnerships support curriculum development, technology transfer, joint production planning, and continuous industrial mentoring. This interpretation is consistent with the CIPP model, which emphasizes that contextual factors shape the effectiveness of subsequent program implementation.

Among the evaluated dimensions, the Input component achieved the highest readiness score. This finding indicates that SMK Negeri 2 Padang has successfully established the institutional resources required to support Teaching Factory implementation. The availability of production units, learning facilities, organizational structures, and teacher support reflects the school's commitment to creating learning environments that resemble authentic workplaces. Nevertheless, the findings also demonstrate that

resource availability alone is insufficient to ensure program effectiveness. Facilities, equipment, and human resources require continuous adaptation to technological developments and industrial standards. Therefore, institutional readiness should be interpreted not only as resource sufficiency but also as the organizational capability to manage and optimize those resources over time.

The Process component represents the principal managerial challenge identified in this study. Although planning, organizational arrangements, and operational implementation have generally functioned effectively, systematic monitoring, documentation, evaluation, and follow-up mechanisms remain relatively underdeveloped. The integration of the POAC management framework provides an important explanation for this condition. The findings suggest that the Planning, Organizing, and Actuating functions have largely been implemented, whereas the Controlling function has not yet operated as a continuous quality improvement mechanism comparable to industrial management systems. Consequently, weaknesses observed within the Process component originate primarily from managerial governance rather than from deficiencies in institutional resources. This finding highlights the importance of strengthening evidence-based monitoring systems, performance evaluation, and continuous quality assurance as integral components of Teaching Factory management.

The Product evaluation demonstrates that Teaching Factory implementation has generated encouraging initial outcomes from the perspective of institutional readiness. Students reported positive learning experiences, greater familiarity with industrial work culture, and improvements in work discipline, responsibility, and teamwork. However, these outcomes should be interpreted as immediate implementation results rather than as evidence of long-term educational effectiveness. Since the present study focuses on institutional readiness, it does not measure graduate employability, occupational competence, or labor market performance. Consequently, the Product component should be understood as an indicator of the school's success in establishing an authentic learning environment rather than as proof of the final effectiveness of Teaching Factory.

The findings of this study reinforce the principles of vocational education proposed by Prosser, which emphasize that effective vocational learning requires educational environments resembling actual workplaces. The present findings extend this perspective by demonstrating that workplace authenticity encompasses not only physical facilities but also organizational governance, managerial practices, quality assurance systems, and sustainable industrial

collaboration. In other words, Teaching Factory should be viewed as an institutional ecosystem in which managerial and instructional processes operate simultaneously to support authentic vocational learning.

Compared with previous studies that primarily evaluated the influence of Teaching Factory on students' competencies, work readiness, or learning outcomes, the present study adopts a different analytical perspective by positioning institutional readiness as the primary object of evaluation. This perspective enables a more comprehensive understanding of why Teaching Factory implementation differs across vocational schools. Rather than focusing exclusively on educational outcomes, the study demonstrates that leadership commitment, organizational management, industrial partnerships, and continuous evaluation collectively determine the sustainability of Teaching Factory implementation.

The integration of the CIPP evaluation model with the POAC management framework constitutes the principal theoretical contribution of this study. While the CIPP model provides a systematic structure for evaluating institutional readiness across contextual support, resources, implementation, and initial outcomes, the POAC framework explains the managerial mechanisms responsible for variations among those evaluation components. Consequently, the integrated CIPP-POAC framework offers a broader analytical perspective for evaluating Teaching Factory implementation than approaches relying solely on educational evaluation models. This integrated framework may therefore serve as a conceptual reference for future institutional evaluations within vocational education.

From a practical perspective, the findings suggest that future Teaching Factory development should prioritize strengthening managerial governance rather than focusing exclusively on infrastructure expansion. Investments in facilities need to be accompanied by systematic monitoring systems, continuous professional development for teachers, evidence-based program evaluation, comprehensive documentation, and stronger industrial engagement throughout the management cycle. Such improvements would enhance institutional adaptability while supporting the long-term sustainability of Teaching Factory implementation in vocational education.

Conclusion

This study concludes that SMK Negeri 2 Padang has established an adequate institutional foundation for Teaching Factory implementation, particularly in terms of resources, facilities, organizational support, and

immediate learning-related outcomes. Nevertheless, sustainable implementation remains constrained by inconsistencies in monitoring, documentation, evaluation, follow-up, and continuous quality assurance. The CIPP model identified the institutional-readiness profile, while POAC analysis demonstrated that Planning, Organizing, and Actuating had generally been established but were not yet consistently connected with Controlling as an integrated managerial cycle. These findings indicate that TEFA sustainability depends not only on infrastructure but also on effective governance, teacher development, systematic quality assurance, and substantive industry participation in curriculum alignment, production planning, mentoring, and evaluation. The school should therefore prioritize strengthening managerial control and using evaluation evidence to inform subsequent programme planning. Since this study was limited to one vocational school and immediate implementation outcomes, future research should examine multiple schools and vocational sectors, employ longitudinal designs, and investigate whether institutional readiness predicts occupational competence, employer satisfaction, graduate employability, and long-term organizational performance.

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Conceptualization, W.F.G., M.G., T.S., and J.M.; methodology, W.F.G., M.G., and T.S.; validation, M.G., T.S., and J.M.; formal analysis, W.F.G.; investigation, W.F.G.; data curation, W.F.G.; writing—original draft preparation, W.F.G.; writing—review and editing, M.G., T.S., and J.M.; supervision, M.G., T.S., and J.M. All authors have read and agreed to the published version of the manuscript.

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Conflicts of Interest

The authors declare that there are no financial, professional, or personal conflicts of interest that could have influenced the research reported in this manuscript.

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