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Strategic Curriculum Planning and Implementation as Drivers of Competitive Advantage in Vocational High Schools

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ABSTRACT: This study aimed to examine the effects of strategic curriculum planning, strategic curriculum implementation, and strategic curriculum evaluation on competitive advantage in vocational high schools. A quantitative explanatory approach was employed, and data were collected using a structured questionnaire developed from the indicators of each construct. The data were analysed using Partial Least Squares Structural Equation Modeling (PLS-SEM) with SmartPLS 4 through measurement model and structural model evaluation. The findings revealed that strategic curriculum planning had a positive and significant effect on competitive advantage, with a path coefficient of 0.340 and a p-value of 0.004. Strategic curriculum implementation also had a positive and significant effect, with a path coefficient of 0.494 and a p-value of 0.000, making it the strongest predictor in the model. In contrast, strategic curriculum evaluation had no significant effect, with a path coefficient of -0.067 and a p-value of 0.607. The R-square value of 0.546 indicates that the model explained 54.6% of the variance in competitive advantage. This study concludes that vocational high school competitiveness is more strongly determined by curriculum planning and implementation. Schools are advised to strengthen adaptive planning, industry-oriented implementation, and evidence-based evaluation for continuous curriculum improvement.

Keywords: competitive advantage, curriculum implementation, curriculum planning, school competitiveness, vocational high schools.

ABSTRAK: *Penelitian ini bertujuan untuk menganalisis pengaruh perencanaan strategik kurikulum, pelaksanaan strategik kurikulum, dan evaluasi strategik kurikulum terhadap keunggulan bersaing sekolah menengah kejuruan. Penelitian menggunakan pendekatan kuantitatif eksplanatori dengan pengumpulan data melalui kuesioner terstruktur berdasarkan indikator setiap variabel. Data dianalisis menggunakan Partial Least Squares Structural Equation Modeling (PLS-SEM) melalui SmartPLS 4, dengan tahapan evaluasi model pengukuran dan model struktural. Hasil penelitian menunjukkan bahwa perencanaan strategik kurikulum berpengaruh positif dan signifikan terhadap keunggulan bersaing dengan koefisien jalur 0,340 dan p-value 0,004. Pelaksanaan strategik kurikulum juga berpengaruh positif dan signifikan dengan koefisien jalur 0,494 dan p-value 0,000, sehingga menjadi prediktor terkuat. Sementara itu, evaluasi strategik kurikulum tidak berpengaruh signifikan dengan koefisien -0,067 dan p-value 0,607. Nilai R-square sebesar 0,546 menunjukkan bahwa model mampu menjelaskan 54,6% variasi keunggulan bersaing. Penelitian ini menyimpulkan bahwa keunggulan bersaing SMK lebih ditentukan oleh kualitas perencanaan dan pelaksanaan kurikulum. Sekolah disarankan memperkuat perencanaan adaptif, implementasi berbasis industri, serta evaluasi berbasis bukti untuk perbaikan kurikulum berkelanjutan.*

Kata kunci*: daya saing sekolah, implementasi kurikulum, keunggulan bersaing, perencanaan kurikulum, sekolah menengah kejuruan.*

INTRODUCTION

Vocational high schools occupy a strategic position at the intersection of education systems and labour markets. Their role is no longer limited to providing occupation-specific skills; they are also expected to develop employability, adaptability, innovation capacity, digital competence, and lifelong learning readiness. This expectation has become increasingly important as automation, digitalisation, demographic change, and the green transition reshape occupations and alter the competencies demanded by industry (Cedefop, 2023; OECD, 2023). In this context, the competitiveness of vocational high schools depends not only on infrastructure, accreditation, or institutional reputation, but also on their capacity to continuously align educational provision with changes in work and industry. Curriculum therefore becomes a strategic instrument through which schools translate external demands into learning outcomes, teaching practices, assessment, work-based learning, and graduate competencies (Chen et al., 2021; OECD, 2021).

The strategic role of curriculum is particularly important in vocational education because curriculum relevance directly affects the relationship between schooling and employability. Recent studies emphasize that vocational curricula need to respond to industrial needs, technological development, competence-based education, transversal skills, and work-based learning (Mahmudah & Santosa, 2021; Rosina et al., 2021). However, curriculum relevance cannot be secured through periodic document revision alone. From a strategic management perspective, curriculum management requires schools to formulate a clear direction, assess internal capacity and external opportunities, identify alternative strategies, mobilize resources, execute programs, and evaluate results in relation to institutional goals (David et al., 2023). Thus, strategic curriculum management can be understood as an organizational process that links educational priorities with environmental demands and converts curriculum decisions into institutional value.

This strategic perspective is increasingly necessary because vocational education continues to face persistent problems of skills mismatch, graduate unemployment, weak employability, and declining attractiveness in some contexts (Kebede et al., 2024; Pilz, 2025). In practice, curriculum reform may remain formal and document-oriented, while implementation is constrained by limited facilities, insufficient teacher exposure to industry, weak school–industry partnerships, inadequate technological support, and inconsistent follow-up. Consequently, the central issue is not simply whether vocational schools possess a curriculum, but whether the curriculum is strategically planned, effectively implemented, and systematically evaluated. Work-based learning, internships, industry visits, teaching factories, and competency-based assessment can improve graduate readiness, but their effectiveness depends on coordination between schools and industry and on the capacity of schools to operationalize curriculum strategies (Oswald-Egg & Renold, 2021; Yoto et al., 2024).

Evidence from Indonesia also indicates that vocational school competitiveness is multidimensional. It is influenced by management

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effectiveness, school image, differentiation, market orientation, organizational culture, and industry collaboration. Amrullah et al. (2025) found that effective vocational school management can strengthen institutional performance, industry collaboration, and graduate competitiveness, while Sahrul et al. (2024) showed that differentiation strategy, market-driven orientation, artificial intelligence marketing, school image, and school culture contribute to sustainable competitive advantage. These findings suggest that competitive advantage in vocational education is not generated by a single institutional attribute. Rather, it emerges from the school's capacity to combine internal resources, distinctive programs, curriculum relevance, service quality, and responsiveness to labour-market expectations.

Recent literature on vocational curriculum further demonstrates that curriculum making is dynamic and multi-actor. Alvunger (2024) conceptualizes curriculum making as a social practice distributed across multiple sites and involving policymakers, school leaders, teachers, students, industry actors, and other stakeholders. This perspective challenges a linear view of curriculum development and highlights negotiation, interpretation, and contextual adaptation as central processes. Industry involvement is equally important. Yoto et al. (2024) show that industry contributes to curriculum synchronization, competency development, workplace culture, assistance, and evaluation, while Baihan et al. (2026) emphasize that curriculum optimization in vocational education requires school–enterprise collaboration, teaching reform, evaluation reform, and institutional support. At the same time, vocational competitiveness increasingly depends on the integration of technical and nontechnical competencies, including character, adaptability, collaboration, communication, digital literacy, and problem-solving (Sanggoro et al., 2024; Sutono et al., 2025; Wibisono et al., 2026). Digital transformation further reinforces the need for curriculum systems that are adaptive, collaborative, and technologically responsive (Suriyabutr & Williams, 2021; Zainal et al., 2022). Systemic curriculum reform can ultimately support lifelong learning, school autonomy, and national competitiveness when institutional capacity and policy support are aligned (Coudenys et al., 2022).

Despite these advances, three important gaps remain. First, much of the existing literature discusses curriculum alignment, industry partnership, employability, school management, or vocational attractiveness as separate issues, leaving the strategic relationship between curriculum management and institutional competitive advantage insufficiently integrated. Second, strategic curriculum planning, implementation, and evaluation are often treated as sequential administrative functions, yet limited empirical evidence shows whether these functions contribute equally to competitive advantage. This distinction is theoretically important because strategic planning may establish direction, implementation may convert strategy into educational practice, and evaluation may function primarily as a feedback mechanism rather than as an immediate source of competitive value. Third, previous studies have paid greater attention to curriculum reform as a policy or pedagogical agenda than to the school-level

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strategic mechanisms through which curriculum processes may shape competitiveness in vocational high schools. Based on these theoretical arguments and identified research gaps, the proposed relationships among the study constructs are presented in Figure 1.

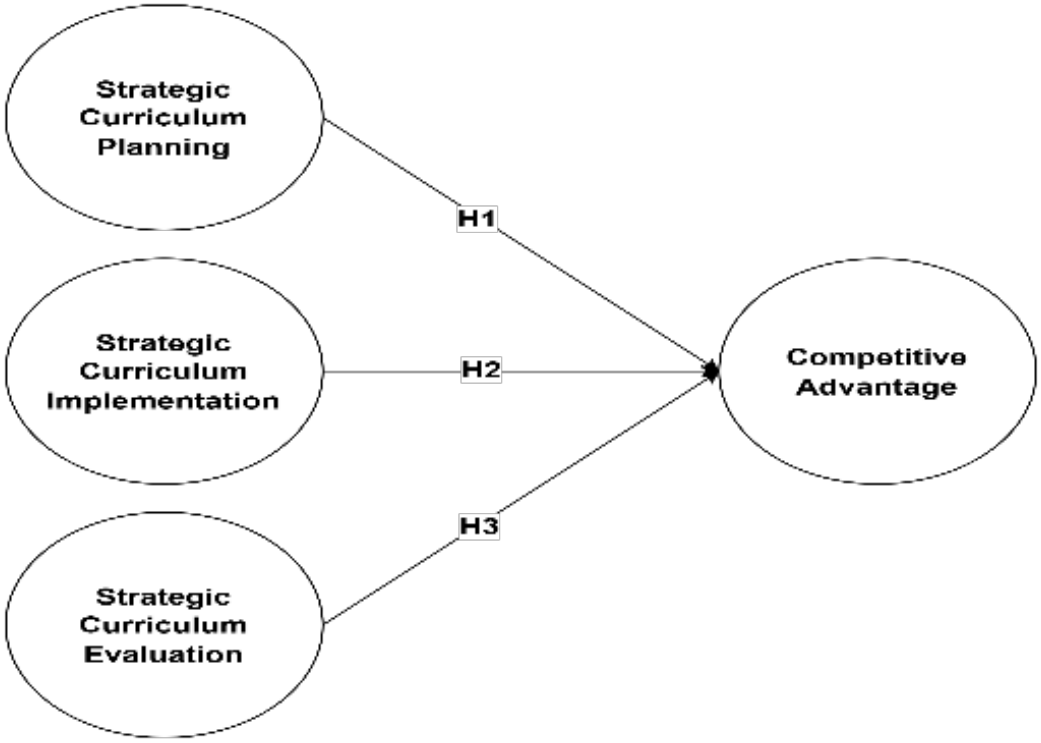


Figure 1. Conceptual Framework (Authors' conceptualization based on David et al. (2023), Alvunger (2024), and Yoto et al. (2024))

Accordingly, this study positions strategic curriculum management as a differentiated organizational capability rather than a uniform administrative cycle. The study proposes that strategic curriculum planning, strategic curriculum implementation, and strategic curriculum evaluation may play distinct roles in explaining competitive advantage. Its novelty lies in empirically testing the relative contribution of these three curriculum management functions within a single structural model and in examining whether competitive advantage is more strongly associated with strategic direction, execution capacity, or evaluative feedback. In doing so, the study seeks not merely to confirm that curriculum management matters, but to refine the theoretical understanding of how different strategic curriculum functions contribute to vocational school competitiveness. The study therefore examines the direct effects of strategic curriculum planning, implementation, and evaluation on competitive advantage in vocational high schools. By clarifying these differentiated relationships, the study contributes to educational management, curriculum studies, and vocational education, while also providing a basis for more targeted managerial and policy interventions to strengthen the relevance, adaptability, and competitiveness of vocational schools.

RESEARCH METHOD

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This study employed a quantitative explanatory design to examine the direct effects of strategic curriculum planning, implementation, and evaluation on competitive advantage in vocational high schools. This design was appropriate because the study tested predictive relationships among latent variables and explained how curriculum management functions as a strategic instrument for strengthening institutional competitiveness (David et al., 2023; Hair et al., 2022). Data were collected using a structured questionnaire developed from the constructs and indicators. Strategic curriculum planning covered vision and mission formulation, organizational profile, internal and external analysis, and alternative strategies. Strategic curriculum implementation included organizational structure, resources, support systems, technology use, and organizational culture. Strategic curriculum evaluation consisted of strategic basis, performance, and follow-up, while competitive advantage was measured through cost, program differentiation, human resource competence, service excellence, graduate competence, and graduate absorption. These constructs reflect vocational curriculum management as a strategic, multi-actor, and industry-relevant process linking school planning, implementation, and labour-market responsiveness (Alvunger, 2024; Yoto et al., 2024).

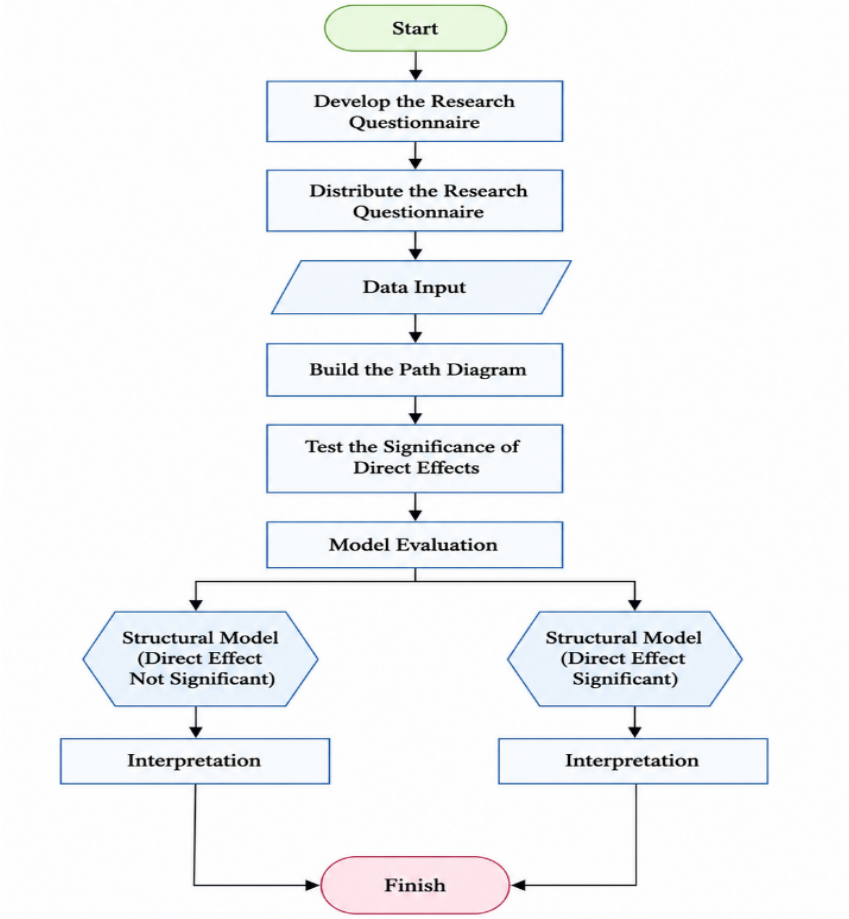


Figure 2. Research Flow Diagram for PLS-SEM Analysis (Authors' construction adapted from Hair et al. (2022))

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Data were analysed using Partial Least Squares Structural Equation Modeling (PLS-SEM) with SmartPLS 4. PLS-SEM was selected because it is suitable for prediction-oriented studies, complex latent variable models, and variance explanation in endogenous constructs (Hair et al., 2022; Sarstedt et al., 2022). The analysis involved two stages: measurement model evaluation and structural model evaluation. The measurement model was assessed through composite reliability, outer loading, average variance extracted (AVE), and discriminant validity, while the structural model was examined using path coefficients, t-statistics, p-values, R-square, f-square, and Q-square. Hypothesis testing used the bootstrapping procedure, with significance determined at $p < 0.05$ (Hair et al., 2022; Ringle et al., 2024).

RESULT AND DISCUSSION

Descriptive Results of Research Constructs

The descriptive analysis was conducted to provide an initial overview of the empirical condition of strategic curriculum management and competitive advantage in vocational high schools. Overall, the findings indicate that the four main constructs were at a relatively adequate level. Strategic curriculum planning obtained an average score of 69.50%, strategic curriculum implementation reached 68.88%, strategic curriculum evaluation reached 65.58%, and competitive advantage obtained 69.99%. These results suggest that curriculum management practices in vocational high schools have generally been implemented at a moderate-to-good level, although several dimensions still require improvement.

Table 1. Descriptive Results of the Research Constructs

Construct	Dimension	Percentage
Competitive Advantage	Cost	74.46%
Competitive Advantage	Program Differentiation	66.81%
Competitive Advantage	Human Resource Competence	75.68%
Competitive Advantage	Service Excellence	70.02%
Competitive Advantage	Graduate Competence	66.71%
Competitive Advantage	Graduate Waiting Period/Absorption	66.26%
Ave. Competitive Advantage		**69.99%**
Strategic Curriculum Planning	Vision and Mission Formulation	77.06%
Strategic Curriculum Planning	Organizational Profile	68.90%
Strategic Curriculum Planning	Internal Analysis	75.00%
Strategic Curriculum Planning	External Analysis	68.67%
Strategic Curriculum Planning	Alternative Strategies	57.87%
Ave. Strategic Curriculum Planning		**69.50%**
Strategic Curriculum Implementation	Organizational Structure	73.30%
Strategic Curriculum Implementation	Resources	73.97%
Strategic Curriculum Implementation	Support System	67.28%
Strategic Curriculum Implementation	Tools or Technology Used	66.44%
Strategic Curriculum Implementation	Organizational Culture	63.43%
Ave. Strategic Curriculum Implementation		**68.88%**
Strategic Curriculum Evaluation	Strategy Basis	63.24%
Strategic Curriculum Evaluation	Performance	68.75%

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Strategic Curriculum Evaluation	Follow-up	64.76%
Ave. Strategic Curriculum Evaluation		**65.58%**

Source: *Questionnaire data processed by the authors (2026).*

In the competitive advantage construct, human resource competence achieved the highest score at 75.68%, followed by cost at 74.46% and service excellence at 70.02%. These results indicate that vocational high schools already possess relatively strong internal capacity in terms of human resources, cost efficiency, and educational services. However, graduate absorption obtained the lowest score at 66.26%, followed by program differentiation at 66.81% and graduate competence at 66.71%. This indicates that vocational high schools still need to strengthen their distinctive programs and ensure that graduate competencies are more closely aligned with labour market expectations.

Strategic curriculum planning showed a relatively good condition, with the strongest dimension being vision and mission formulation at 77.06%, followed by internal analysis at 75.00%. This suggests that vocational high schools have generally established a clear strategic direction and are able to identify their internal strengths. However, alternative strategies recorded the lowest percentage at 57.87%, indicating that schools still need to develop more adaptive and diverse curriculum strategies to respond to changes in industry, technology, and student needs.

Strategic curriculum implementation showed that resources and organizational structure were the strongest dimensions, with scores of 73.97% and 73.30%, respectively. This indicates that vocational high schools have sufficient organizational and resource support to implement curriculum strategies. Nevertheless, organizational culture obtained the lowest score at 63.43%, followed by tools or technology used at 66.44%. These findings suggest that curriculum implementation requires stronger organizational commitment, work culture, and technological support.

Strategic curriculum evaluation obtained the lowest average among the three curriculum management constructs. The performance dimension reached the highest score at 68.75%, while strategy basis and follow-up scored 63.24% and 64.76%, respectively. These results indicate that evaluation activities have been conducted, but the use of evaluation results as a basis for strategic improvement remains relatively weak.

Measurement Model Evaluation

The measurement model was evaluated to ensure that all constructs and indicators met the requirements of validity and reliability. The analysis included composite reliability, outer loading, average variance extracted (AVE), and discriminant validity. The results show that all constructs had composite reliability values above the recommended threshold of 0.60, ranging from 0.786 to 0.923. These findings confirm that all constructs demonstrated adequate internal consistency.

The AVE values for all constructs were above 0.50, ranging from 0.604 to 0.856. This confirms that all constructs met the criteria for convergent validity. In

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addition, the outer loading values of all indicators ranged from 0.713 to 0.931, meaning that all indicators were valid and suitable for measuring their respective latent variables. The cross-loading evaluation also indicated that each construct had stronger indicator correlations with its own construct than with other constructs. Therefore, the measurement model fulfilled the requirements for reliability, convergent validity, and discriminant validity.

Table 2. Composite Reliability and AVE

Construct/Dimension	Composite Reliability	AVE
Vision and Mission Formulation	0.899	0.748
Organizational Profile	0.884	0.792
Internal Analysis	0.907	0.830
External Analysis	0.921	0.796
Alternative Strategies	0.910	0.771
Organizational Structure	0.919	0.850
Resources	0.908	0.768
Support System	0.874	0.776
Tools or Technology Used	0.871	0.771
Organizational Culture	0.923	0.856
Strategy Basis	0.914	0.680
Performance	0.913	0.839
Follow-up	0.877	0.704
Cost	0.786	0.648
Program Differentiation	0.820	0.604
Human Resource Competence	0.866	0.618
Service Excellence	0.893	0.737
Graduate Competence	0.909	0.666
Graduate Waiting Period/Absorption	0.916	0.686

Source: *SmartPLS 4 measurement model output, processed by the authors (2026).*

The PLS-SEM estimation model shows that the path coefficient from strategic curriculum planning to competitive advantage was 0.340, while the path coefficient from strategic curriculum implementation to competitive advantage was 0.494. Meanwhile, the path coefficient from strategic curriculum evaluation to competitive advantage was -0.067. These results provide an initial indication that strategic curriculum planning and implementation have positive relationships with competitive advantage, while strategic curriculum evaluation does not show a positive direct relationship.

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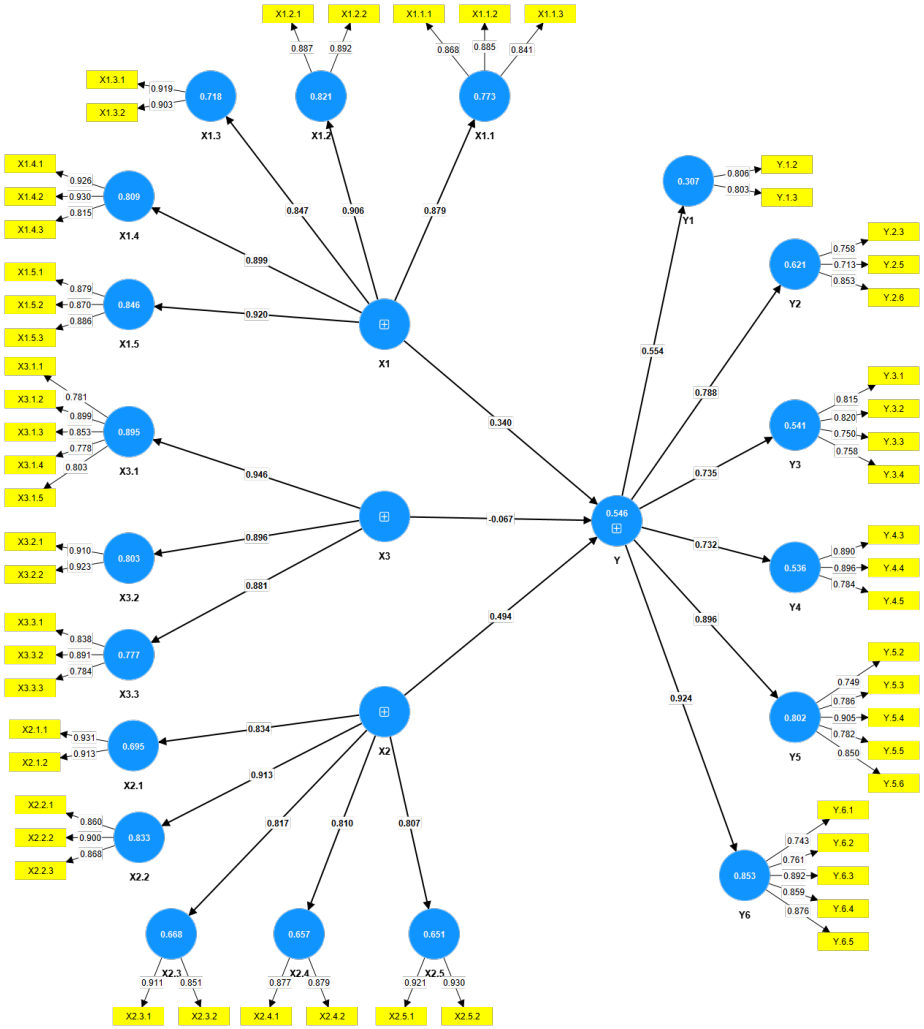


Figure 3. PLS-SEM Estimation Model (SmartPLS 4 output, processed by the authors (2026))

Structural Model Evaluation

The structural model was evaluated to examine the direct effects among latent variables. The analysis focused on path coefficients, t-statistics, p-values, R-square, f-square, and Q-square. The results of hypothesis testing are presented in Table 3.

Table 3. Hypothesis Testing Results

Hypo-thesis	Path	Path Coefficient	t-statistic	p-value	Decision
H1	Strategic Curriculum Planning → Competitive Advantage	0.340	2.848	0.004	Supported
H2	Strategic Curriculum Implementation → Competitive Advantage	0.494	3.897	0.000	Supported
H3	Strategic Curriculum Evaluation → Competitive Advantage	-0.067	0.514	0.607	Not supported

Source: *SmartPLS 4 bootstrapping output, processed by the authors (2026).*

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The first hypothesis testing result shows that strategic curriculum planning had a positive and significant effect on competitive advantage, with a path coefficient of 0.340, t-statistic of 2.848, and p-value of 0.004. Since the p-value was below 0.05 and the t-statistic exceeded 1.96, the hypothesis was supported. This indicates that better strategic curriculum planning tends to increase the competitive advantage of vocational high schools.

The second hypothesis testing result shows that strategic curriculum implementation had a positive and significant effect on competitive advantage, with a path coefficient of 0.494, t-statistic of 3.897, and p-value of 0.000. This finding indicates that curriculum implementation is the strongest predictor of competitive advantage in the model. Thus, schools that are able to implement curriculum strategies effectively tend to achieve higher levels of competitive advantage.

The third hypothesis testing result shows that strategic curriculum evaluation had a negative but non-significant effect on competitive advantage, with a path coefficient of -0.067, t-statistic of 0.514, and p-value of 0.607. This indicates that strategic curriculum evaluation did not significantly contribute to competitive advantage in the tested model. Therefore, the hypothesis was not supported.

Explained Variance, Effect Size, and Predictive Relevance

The predictive accuracy of the model was assessed using the R-square value. The R-square value for competitive advantage was 0.546, indicating that strategic curriculum planning, strategic curriculum implementation, and strategic curriculum evaluation collectively explained 54.6% of the variance in competitive advantage. The remaining 45.4% was explained by other variables outside the model.

Table 4. R-Square, f-Square, and Q-Square Results

Evaluation Indicator	Path/Construct	Value	Interpretation
R-square	Competitive Advantage	0.546	Moderate explanatory power
f-square	Strategic Curriculum Planning → Competitive Advantage	0.073	Small effect
f-square	Strategic Curriculum Implementation → Competitive Advantage	0.147	Small effect, close to medium
f-square	Strategic Curriculum Evaluation → Competitive Advantage	0.003	Very small/negligible effect
Q-square	Model Predictive Relevance	0.324	Predictive relevance

Source: *SmartPLS 4 structural model output and authors' calculation (2026).*

The f-square results show that strategic curriculum implementation had the largest effect size on competitive advantage, with an f-square value of 0.147. Although this value is still categorized as a small effect, it is close to the medium effect threshold. Strategic curriculum planning had an f-square value of 0.073,

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indicating a small effect. Meanwhile, strategic curriculum evaluation had an f-square value of 0.003, indicating a very small and practically negligible effect. These results support the hypothesis testing results, where implementation appeared to be the most influential driver of competitive advantage.

The Q-square value was 0.324, which is greater than zero. This indicates that the model had predictive relevance. Therefore, the research model was not only able to explain competitive advantage at a moderate level but also demonstrated acceptable predictive capability.

Summary of Findings

The results indicate that strategic curriculum planning and strategic curriculum implementation are significant drivers of competitive advantage in vocational high schools. Strategic curriculum implementation emerged as the strongest predictor, followed by strategic curriculum planning. In contrast, strategic curriculum evaluation did not have a significant direct effect on competitive advantage. These findings suggest that competitive advantage in vocational high schools is more strongly determined by how schools plan and implement curriculum strategies than by evaluation activities alone. Therefore, curriculum planning and implementation should be treated as strategic priorities in strengthening vocational school competitiveness.

Discussion

Descriptive Results of Research Constructs

The descriptive findings indicate that vocational high schools have developed a relatively adequate foundation for strategic curriculum management and competitive advantage, although several dimensions remain uneven. Competitive advantage was strongest in human resource competence, cost efficiency, and service excellence, while program differentiation, graduate competence, and graduate absorption were comparatively weaker. This pattern suggests that schools may possess relatively strong internal resources, but these resources have not yet been fully converted into distinctive educational value and stronger labour-market outcomes. This interpretation is consistent with studies showing that educational competitiveness is shaped by internal resources, service quality, school image, differentiation, and responsiveness to stakeholders (Rosi et al., 2022; Sahrul et al., 2024). Teachers, leaders, and institutional staff also remain important because they mediate the relationship between curriculum design, instructional quality, and graduate outcomes (OECD, 2021; Prayogo et al., 2026).

The lower scores for graduate competence and absorption are particularly important in vocational education because competitiveness ultimately depends on the extent to which schools produce graduates who are relevant to occupational standards and labour-market expectations. Previous studies emphasize that graduate employability is closely related to curriculum alignment with industry needs, workplace practices, and work-based learning opportunities (Kebede et al., 2024; Mahmudah & Santosa, 2021; Massi et al., 2026; Rosina et al., 2021). Thus, the results suggest that vocational school competitiveness remains

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stronger at the level of internal organizational capacity than at the level of external labour-market outcomes.

Strategic curriculum planning also revealed an important imbalance. Vision and mission formulation and internal analysis were relatively strong, whereas alternative strategies were considerably weaker. This indicates that schools may be capable of defining institutional direction but less capable of generating flexible strategic options. Such flexibility is increasingly important because VET systems must respond to technological change, digital transformation, changing labour-market demands, and the green transition (Cedefop, 2023; OECD, 2023; OECD, 2025). Alvunger (2024) further argues that curriculum making is a multi-actor social practice, suggesting that adaptive curriculum strategies should emerge through interaction among school leaders, teachers, students, industry representatives, and other stakeholders.

Measurement Model Evaluation

The measurement model results confirmed that the constructs used in the study demonstrated acceptable reliability and validity. Composite reliability, AVE, outer loading, and discriminant validity met the required criteria, providing an adequate empirical basis for interpreting the structural relationships. This is important because strategic curriculum planning, implementation, evaluation, and competitive advantage are multidimensional constructs that cannot be adequately represented through single indicators. Hair et al. (2022) and Sarstedt et al. (2022) emphasize that a reliable and valid measurement model is a prerequisite for interpreting structural relationships in PLS-SEM.

Beyond statistical adequacy, the measurement results also support the conceptual relevance of the dimensions used in this study. Planning includes strategic direction and environmental analysis; implementation reflects structure, resources, technology, support systems, and organizational culture; while competitive advantage includes differentiation, human resource competence, services, and graduate outcomes. These dimensions are consistent with the view that vocational school competitiveness is multidimensional and depends on both internal organizational capacity and external relevance (Pilz, 2025; Rosi et al., 2022; Sahrul et al., 2024).

Structural Model Evaluation

The structural model provides the main theoretical contribution of this study by showing that strategic curriculum planning, implementation, and evaluation do not contribute equally to competitive advantage. Strategic curriculum planning had a positive and significant relationship with competitive advantage ($\beta = 0.340$), indicating that competitiveness begins with strategic direction. Planning enables schools to connect institutional vision, internal capacity, external conditions, curriculum priorities, and labour-market requirements. This is consistent with David et al. (2023), who argue that strategic planning contributes to organizational advantage by aligning internal resources with external opportunities.

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However, strategic curriculum implementation emerged as the strongest predictor of competitive advantage (β = 0.494). This finding suggests an important theoretical distinction: planning establishes strategic intent, whereas implementation converts that intent into educational and organizational value. Competitive advantage becomes tangible when curriculum strategies are translated into teaching practices, work-based learning, resource allocation, technological support, organizational culture, and industry collaboration. Yoto et al. (2024) demonstrate that industry participation contributes to curriculum synchronization, competency development, workplace culture, and curriculum implementation, while Oswald-Egg and Renold (2021) show the importance of vocational work experience for labour-market outcomes. Similar arguments are provided by Baihan et al. (2026), Hasan et al. (2026), and Sutono et al. (2025), who emphasize institutional support, digital pedagogy, quality culture, and industry linkage.

The stronger role of implementation therefore refines the conventional understanding of strategic curriculum management. Curriculum competitiveness is not created simply because schools formulate strong plans; it depends on their capacity to convert strategic decisions into operational practices. In this sense, implementation can be interpreted as a value-conversion capability through which curriculum strategy becomes visible to students, industry partners, and other stakeholders.

In contrast, strategic curriculum evaluation had a negative but non-significant relationship with competitive advantage (β = -0.067). This does not imply that evaluation is irrelevant. Rather, its strategic value may depend on whether evaluation findings are translated into curriculum revision, teacher development, resource adjustment, graduate tracking, and industry feedback. Mende et al. (2025) and Sanggoro et al. (2024) underline the importance of governance, competency standards, and continuous alignment in vocational education, while Albaqami et al. (2026) show that curriculum misalignment and outdated assessment practices can reduce the contribution of educational systems to broader transformation.

Accordingly, evaluation may function less as a direct source of competitive advantage and more as a feedback capability that strengthens subsequent planning and implementation. Because this indirect mechanism was not tested in the present model, it should be regarded as a theoretical interpretation that requires further empirical examination.

Explained Variance, Effect Size, and Predictive Relevance

The model explained 54.6% of the variance in competitive advantage, indicating moderate explanatory power, while the Q-square value of 0.324 demonstrates predictive relevance. These results suggest that strategic curriculum management provides a meaningful, although not exhaustive, explanation of vocational school competitiveness. The effect-size pattern further supports this interpretation: implementation had the largest effect, followed by planning, whereas evaluation had a negligible direct effect. Thus, the value of strategic

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curriculum management lies not merely in completing a sequential administrative cycle, but in the differentiated contribution of its functions.

The remaining variance indicates that competitiveness is also influenced by factors beyond curriculum management, including leadership, school image, industry partnership intensity, technological infrastructure, teacher professional development, accreditation, and community trust (Amrullah et al., 2025; Mende et al., 2025; Pilz, 2025; Sutono et al., 2025). This provides a basis for future research to examine how these organizational conditions interact with curriculum strategy.

Summary of Findings and Implications

The findings support a differentiated view of strategic curriculum management. Planning provides strategic direction, implementation converts that direction into competitive value, and evaluation may sustain adaptation through feedback. This interpretation extends the discussion beyond whether curriculum management matters toward understanding how its different functions contribute to competitiveness.

Practically, school leaders should strengthen adaptive planning but place particular emphasis on implementation capacity through teacher competence, digital tools, work-based learning, organizational culture, and industry collaboration. Evaluation should be linked more directly to curriculum revision, graduate tracking, teacher development, and institutional decision-making so that evidence leads to improvement rather than administrative compliance. For policymakers, quality assurance should therefore assess not only the completeness of curriculum documents but also schools' ability to implement strategic priorities and use evaluation evidence for continuous improvement.

The findings also have relevance for international VET systems because responsiveness to technological and labour-market change is a common challenge across countries (Cedefop, 2023; OECD, 2023; OECD, 2025). However, the relative importance of planning, implementation, and evaluation may vary according to curriculum autonomy, governance arrangements, and the strength of school–industry relationships. Therefore, the model offers a potentially transferable analytical perspective while recognizing the importance of institutional context.

CONCLUSION

This study demonstrates that strategic curriculum management contributes to competitive advantage in vocational high schools through differentiated rather than uniform functions. Strategic curriculum planning positively contributes to competitive advantage by establishing institutional direction, aligning internal capacity with external demands, and defining curriculum priorities. However, strategic curriculum implementation emerged as the strongest predictor, indicating that competitive advantage is created primarily when strategic intentions are translated into teaching practices, resource allocation, technological support, organizational culture, work-based learning, and industry collaboration. In contrast, strategic curriculum evaluation did not show a

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significant direct effect. This finding suggests that evaluation may generate strategic value indirectly when its results are used to improve subsequent planning and implementation. Theoretically, the study therefore extends the view of curriculum management from a sequential administrative cycle toward a differentiated organizational capability, in which planning provides strategic direction, implementation converts strategy into competitive value, and evaluation potentially functions as a feedback mechanism. The model explained 54.6% of the variance in competitive advantage, confirming that curriculum strategy provides a meaningful but not exhaustive explanation of vocational school competitiveness.

Practically, vocational high schools should strengthen adaptive curriculum planning while prioritizing implementation capacity through teacher competence, digital resources, organizational culture, work-based learning, and sustained industry collaboration. Evaluation should be more closely connected to curriculum revision, graduate tracking, teacher development, and institutional decision-making rather than treated primarily as administrative compliance. For policymakers, curriculum quality assurance should therefore consider not only the completeness of planning documents but also schools' capacity to execute strategic priorities and use evidence for continuous improvement.

Several limitations should guide future research. The present model examined direct relationships and therefore did not test whether evaluation influences competitive advantage indirectly through planning or implementation. Future studies should examine these mediation mechanisms and incorporate additional organizational factors such as leadership, school image, industry partnership quality, technological infrastructure, teacher professionalism, and organizational innovation. Comparative studies across different vocational education systems may also clarify how governance, curriculum autonomy, and school–industry relationships shape the transferability of the proposed model.

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