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Transformation of Building and Space Management from an Administrative to a Strategic Approach: A Qualitative Study in Vocational High Schools (SMK) in Tangerang Regency

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ABSTRACT

The management of school buildings and learning spaces plays a critical role in supporting the quality of vocational education. However, existing studies largely emphasize administrative compliance, with limited attention to how facility management can strategically support pedagogical objectives, particularly in vocational high schools (SMK). This gap highlights the need to reconceptualize facility management as a strategic function aligned with learning outcomes. This study aims to explore the transformation of building and space management from an administrative approach to a strategic perspective in SMKs in Kabupaten Tangerang. A qualitative research design was employed, using observations, semi-structured interviews with school administrators and teachers, and document analysis. The findings indicate that although formal procedures for facility management are in place, their implementation remains predominantly administrative. Space utilization is often disconnected from instructional needs and technological integration. The study reveals limited adoption of strategic practices that align physical space with vocational learning requirements. The novelty of this research lies in its focus on repositioning educational facility management as a strategic component that directly supports skill-based learning in vocational education. The study underscores the importance of integrating space planning, technology, and pedagogy to enhance learning effectiveness and optimize resource use. These findings have practical implications for policymakers and school leaders in promoting sustainable, strategic management of educational facilities.

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1. INTRODUCTION

The management of educational facilities, particularly buildings and learning spaces, plays a crucial role in supporting the effectiveness of teaching and learning. In vocational

education, such as vocational high schools (SMK), physical facilities are fundamental because learning is practice-oriented and requires specialized environments. Classrooms, laboratories, and workshops must not only be available but also functionally aligned with instructional objectives to ensure optimal learning outcomes. Previous studies show that well-managed school infrastructure significantly influences students' learning experiences and academic achievement [1], [2].

Despite its importance, the management of school buildings and spaces in many institutions remains predominantly administrative. It tends to focus on inventory control, maintenance routines, and regulatory compliance rather than on how facilities can actively support teaching and learning. As a result, a gap emerges between the availability of facilities and their effective pedagogical utilization. Prior research indicates that facility management is often not integrated with instructional planning, limiting its contribution to educational quality [3], [4]. This condition highlights a critical research problem: the lack of a strategic approach in managing educational facilities, particularly in vocational contexts.

To address this issue, it is important to move beyond administrative perspectives and adopt a strategic management framework. Strategic management in education emphasizes the alignment between organizational resources and long-term educational goals. In the context of facility management, this perspective aligns with frameworks such as the resource-based view (RBV) and strategic alignment theory, which emphasize that physical resources, including buildings and learning spaces, should be managed as strategic assets that support institutional performance and competitive advantage. A strategic approach to educational facility management includes flexible space design, integration of technology, and responsiveness to evolving pedagogical needs [6], [7]. However, the application of such frameworks in vocational school settings remains underexplored.

Furthermore, in the context of vocational education in Kabupaten Tangerang, this issue becomes more urgent due to rapid industrial development and the growing demand for skilled graduates. Vocational schools are expected to provide learning environments that simulate real-world working conditions. Nevertheless, existing studies and preliminary observations suggest that space utilization is often suboptimal, technological integration is limited, and long-term planning for facility use is insufficient [5]. While several studies have examined facility management from administrative and technical perspectives, there is still limited research that specifically investigates the transformation toward a strategic approach in vocational education. This gap underscores the need for context-specific and practice-oriented research.

Based on these challenges, this study aims to explore the transformation of building and space management from an administrative to a strategic approach in vocational high schools in Kabupaten Tangerang. This research seeks to (1) analyze current facility management practices, (2) identify gaps between administrative and strategic approaches, and (3) propose opportunities for improving the alignment between physical spaces and learning objectives. A qualitative approach is employed to gain an in-depth understanding of practices and perspectives from key stakeholders.

The expected contribution of this study is both theoretical and practical. Theoretically, it enriches the discourse on educational facility management by integrating strategic

management perspectives into vocational education contexts. In practice, it provides policymakers and school leaders with insights for developing more effective and sustainable facility management strategies. The novelty of this research lies in its focus on transforming facility management into a strategic function that directly supports skill-based learning in a rapidly developing industrial region, a perspective that has received limited attention in previous studies.

2. METHOD

This study employed a qualitative research design to explore the transformation of building and space management from an administrative to a strategic approach in vocational high schools (SMKs) in Kabupaten Tangerang. A qualitative approach was selected to gain an in-depth understanding of management practices, stakeholder perceptions, and contextual conditions in real educational settings [8], [9].

2.1 Research Design

This research used a descriptive qualitative design with a multi-case study approach. The multi-case study design enables an in-depth exploration of phenomena across different contexts and supports comparative analysis between cases. It is particularly suitable for understanding variations in the implementation of building and space management practices. The study involved four vocational high schools (SMKs) in Tangerang Regency, selected purposively. The selection criteria were based on variations in the level of facility management implementation: administrative, transitional, and strategic.

To maintain research ethics and confidentiality, the schools were anonymized as SMK A, SMK B, SMK C, and SMK D. Each school represents different characteristics:

a. SMK A: strategic approach, supported by integrated digital systems
b. SMK B and SMK C: transitional phase, with partial adoption of digital systems
c. SMK D: administrative approach, characterized by manual and reactive management

This variation allows for a comprehensive understanding of the transformation process and supports systematic cross-case comparison within the same regional context.

2.2 Research Procedure

The research was conducted through several stages:

1. Determining the research focus and selecting sites
2. Conducting preliminary observations
3. Collecting data through interviews, observations, and documentation
4. Organizing and preparing data for analysis
5. Conducting data analysis and interpretation
6. Drawing conclusions

2.3 Data Collection Techniques

Data were collected using three primary techniques [13]:

1. Observation: to examine the physical condition and utilization of school buildings and learning spaces

2. Semi-structured interviews: conducted with principals, vice principals, teachers, and administrative staff to capture perspectives on facility management practices
3. Documentation: analysis of facility records, maintenance reports, and school planning documents

2.4 Data Analysis

Data analysis followed an interactive qualitative analysis model [14], consisting of data reduction, data display, and conclusion drawing. In addition, the study applied a systematic coding process to enhance analytical rigor:

1. Open coding: Initial identification of meaningful units from interview transcripts, observation notes, and documents
2. Categorization: Grouping similar codes into broader categories related to facility management practices
3. Theme development: Developing overarching themes, such as administrative practices, transitional processes, and strategic management approaches

To strengthen the analysis, a cross-case comparison was conducted. This involved comparing patterns, similarities, and differences across the four cases. Each case was first analyzed individually (*within-case analysis*), followed by *cross-case analysis* to identify common themes and distinctive characteristics in the transformation process of building and space management.

2.5 Data Validity

To ensure the credibility and trustworthiness of the findings, this study employed triangulation techniques [15], including:

a. Source triangulation: comparing information from different participants
b. Method triangulation: integrating data from interviews, observations, and documentation

3. RESULTS AND DISCUSSION

This section presents the research findings along with an integrated discussion. The analysis focuses on how building and space management is practiced, how transformation occurs, and what challenges are encountered in vocational high schools (SMKs) in Tangerang Regency. Data were derived from observations, semi-structured interviews, and document analysis.

The findings are discussed in relation to existing studies on educational facility management, particularly those emphasizing the shift from administrative to strategic approaches. Previous research highlights that effective facility management contributes to improved learning environments and institutional performance [23]–[26]. However, this study reveals how such principles are (or are not) implemented in real school contexts.

3.1.1 Administrative Management Practices

The findings indicate that administrative practices still dominate building and space management in most SMKs, particularly in SMK D and, to a lesser extent, in SMK B and

SMK C. These practices are characterized by routine, compliance-oriented activities rather than strategic planning.

Empirical evidence shows that room scheduling is mostly conducted manually, often leading to inefficiencies and scheduling conflicts. One respondent stated:

> *"We still use a manual system for classroom scheduling, so sometimes there are overlaps, especially when practical sessions increase." (Vice Principal, SMK D)*

Maintenance activities are largely reactive. Facilities are repaired only after damage occurs, rather than through preventive planning. As expressed by a staff member:

> *"Repairs are usually done only when something is broken. There is no regular maintenance schedule." (Administrative Staff, SMK C)*

In addition, documentation of facilities is predominantly paper-based, making monitoring and evaluation difficult:

> *"Most records are still in files. It is quite difficult to track the condition of equipment quickly." (Teacher, SMK B)*

These findings confirm previous studies [23], [24] indicating that facility management in schools often focuses on administrative compliance rather than pedagogical effectiveness. The lack of integration between facility management and instructional needs limits the potential contribution of physical resources to learning outcomes.

3.1.2 Strategic Management Practices

Despite the dominance of administrative approaches, some schools, particularly SMK A, have begun implementing more strategic practices. These practices demonstrate a shift toward aligning facility management with educational goals.

One key finding is the use of digital systems to monitor and manage facilities. For example:

> *"We use a digital platform to track room usage and equipment availability so that teachers can plan their lessons more effectively." (Principal, SMK A)*

This supports earlier research [24] suggesting that technology integration enhances efficiency and transparency in facility management. Furthermore, strategic alignment between space utilization and school vision is evident:

> *"Workshop spaces are designed based on industry standards to ensure students are ready for real working environments." (Vice Principal, SMK A)*

Stakeholder involvement also emerges as an important element. Schools adopting a strategic approach tend to involve teachers, students, and industry partners in planning processes:

> *"We involve industry partners when planning lab facilities to match current industrial needs." (Teacher, SMK A)*

This finding is consistent with studies emphasizing participatory planning and stakeholder engagement as key factors in effective facility management [25], [26].

3.3 Transformation Process and Cross-Case Comparison

The cross-case analysis reveals three levels of transformation:

1. Administrative stage (SMK D): characterized by manual, reactive, and compliance-based practices

2. Transitional stage (SMK B and SMK C): marked by partial adoption of digital tools and initial efforts toward integration
3. Strategic stage (SMK A): characterized by systematic planning, technology integration, and alignment with pedagogical and industry needs

The transition from administrative to strategic management is not linear but influenced by several factors, including leadership commitment, technological readiness, and external collaboration.

A key challenge identified across cases is the limited capacity for strategic planning. As one respondent noted:

> *"We understand the importance of improving facility management, but we still lack the system and training to implement it fully." (Vice Principal, SMK C)*

This finding extends previous research [24] by showing that transformation requires not only policy direction but also institutional capacity and cultural change.

Table 1. Presents a comparison of the characteristics of administrative and strategic management approaches:

Aspect	Administrative Approach	Strategic Approach
Planning	Top-down, fixed schedule	User-oriented, data-driven, based on learning needs
Maintenance	Reactive, performed only when damaged	Preventive and routine, supported by monitoring systems
Space Utilization	Rigid, inflexible	Flexible, adaptable for collaborative learning
Technology	Minimal use	Digital facility management systems implemented
Stakeholder Involvement	Limited	Involves teachers, students, industry partners, and the school committee
Efficiency	Less optimal	More effective, supports 21st-century learning

The table illustrates the differences in characteristics between administrative and strategic approaches to building and space management in vocational high schools.

a. Planning: The administrative approach is top-down and follows fixed schedules, making it less responsive to the actual needs of space users. In contrast, the strategic approach is user-oriented and based on learning needs data, allowing for more adaptive and flexible planning.
b. Maintenance: In the administrative approach, maintenance is reactive and performed only when damage occurs. The strategic approach emphasizes preventive and routine maintenance, supported by monitoring systems that facilitate early detection of facility issues.
c. Space Utilization: Administrative space management tends to be rigid and inflexible, making it difficult to accommodate diverse learning activities. The strategic approach provides greater flexibility, allowing spaces to adapt to collaborative needs and modern learning activities.

d. Technology: Schools using the administrative approach have minimal technology integration. Strategic management, however, utilizes digital facility management systems that facilitate monitoring, scheduling, and evaluation.
e. Stakeholder Involvement: Stakeholder involvement in the administrative approach is limited, usually confined to internal school staff. Strategic management engages teachers, students, industry partners, and school committees in planning and evaluating facilities, resulting in more inclusive decision-making.
f. Efficiency: Facility efficiency under the administrative approach is suboptimal due to manual, reactive processes. The strategic approach is more effective, supporting 21st-century learning by optimizing the use of spaces and facilities.

Overall, the table demonstrates that the strategic approach is significantly more adaptive, participatory, and efficient than the rigid, reactive administrative approach. Transitioning to a strategic approach supports the integration of school vision and mission, the utilization of technology, and improved quality of educational services.

3.1.3 Drivers of Transformation

Interviews revealed the primary drivers of transformation:

a. Visionary school leadership.
b. Pressure to improve educational quality.
c. Availability of information technology for facility monitoring.
d. Active engagement of stakeholders in planning and evaluation [16], [17].

3.2 Discussion

The transformation from administrative to strategic management demonstrates that a strategic approach is more adaptive to modern learning needs. Administrative practices tend to be static and less responsive to teachers' and students' actual requirements. Key implications include:

a. Learning Effectiveness: Strategic space management increases flexibility in learning activities, interaction, and student collaboration.
b. Facility Efficiency: Data-driven scheduling and technology usage reduce conflicts and optimize space utilization.
c. Educational Service Quality: Stakeholder involvement and strategic planning enhance facility quality and support school objectives.

These findings align with prior studies highlighting the importance of strategic educational facility management in supporting effective learning [18].

Implementation challenges include budget limitations, staff resistance to new technology, and limited capacity to operate digital management systems. Therefore, school leadership is crucial for initiating changes, providing training, and allocating resources efficiently [16].

3.3 Synthesis

Overall, the study shows that:

a. Transforming management from administrative to strategic improves the quality of facility management.
b. A strategic approach enables alignment with the school's vision and mission, data utilization, and stakeholder engagement.
c. Best practices from these SMKs can be replicated in other schools to enhance educational quality [16]–[18].

4. CONCLUSION

This study highlights the importance of transforming building and space management in vocational high schools from an administrative function into a strategic one. Rather than merely supporting operational needs, facility management is shown to play a critical role in aligning physical resources with pedagogical goals, technological integration, and industry demands. This shift enables schools to better respond to the evolving requirements of vocational education.

4.1 Theoretical Contribution

This research contributes to the literature by positioning educational facility management as a strategic organizational function. It introduces a transformation continuum (administrative–transitional–strategic) that offers a dynamic framework for understanding how schools develop their facility management practices. This perspective extends prior studies that predominantly view facility management as technical and administrative.

4.2 Practical Implications

The findings provide actionable insights for policymakers and practitioners:

a. Policymakers should promote strategic facility management through supportive regulations, funding for digital infrastructure, and long-term planning frameworks.
b. School leaders need to strengthen leadership capacity, encourage technology adoption, and foster stakeholder collaboration to drive transformation.
c. Vocational institutions should align facility planning with industry standards to better align student competencies with them.

4.3 Research Limitations

This study is limited to a small number of vocational schools within a single region, which may limit the generalizability of the findings. In addition, the qualitative design focuses on in-depth understanding rather than broad measurement and relies on participants' perspectives and contextual interpretation.

4.4 Future Research Directions

Future studies could expand the scope by including more diverse regions, applying mixed-method approaches, or quantitatively measuring the impact of strategic facility management on learning outcomes. Further research is also needed to explore policy

implementation models and digital transformation strategies in educational facility management.

4.5 Overall Contribution

Overall, this study demonstrates that strategic facility management can serve as a key driver of educational quality and institutional effectiveness. The findings offer not only academic value but also practical guidance for improving vocational education systems in contexts facing similar challenges.

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