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STRATEGIC MANAGEMENT IN EDUCATION CONTEXT: SCIENCE MAPPING OF PRESENT AND FUTURE TRENDS

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Abstract:

This study evaluates the knowledge structure of studies on strategic management practices in the education context. Strategic management practices are one of the key elements that can enhance educational effectiveness. It is a major contribution to landscaping schools, including innovations and a creative environment. However, there has been little comprehensive understanding of knowledge structure in strategic management practices among principals in cultivating educational effectiveness in their institutions, which is lacking in the literature. Through a bibliometric approach, 472 publications on strategic management practices were retrieved from Scopus. A bibliographic coupling and co-word analysis were performed to uncover past and predict future trends in this regard. The analysis yields noteworthy themes concerning organizational leadership and innovation, data-driven decision-making, human capital development, and stakeholder engagement. This emphasizes their influence on fostering effective strategic management practices in the education context. Additionally, the study identifies emerging trends and gaps in the current literature, offering insights into future research directions. The findings suggest that adopting a strategic combination of keywords derived from the analysis can effectively foster strategic activities, drive strategic innovation, and support strategic, sustainable academic development. Overall, this study provides a foundational framework for educational policymakers and school leaders seeking to foster vibrant strategic management practices in the school environment. This ultimately advances educational practices and outcomes.

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Keywords:Bibliometric Analysis, Educational Effectiveness, Principals,
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Introduction

Researchers have stressed the value of undertaking research in the sphere of education (Narbarte & Balila, 2018; Schuelka & Sherab, 2019; Šorgo & Heric, 2020). This focus is attributed to the possibility of research to expand knowledge and understanding in various areas. This involves supporting the development of publications and technological progress, intellectual development, and improving the effectiveness of teaching and student involvement in learning (Chakraborty & Biswas, 2020; Jameel & Ahmad, 2020). Strategic management in education is increasingly recognized as a vital mechanism through which schools translate vision and mission into concrete actions that enhance organisational performance and learning outcomes. The process typically encompasses formulation of strategy, its implementation, and continuous monitoring and evaluation.

Literature Review

The literature review showed that when educational institutions implement strategic management systems with systematic environmental scanning, clear goal setting, alignment of resources, engagement of leadership, and strong feedback loops, they become more effective schools. The emphasis in strategy formulation is on creating a vision and mission statement that is compelling, establishing strategic priorities, and ensuring that objectives are shared with the stakeholders. The features of school-level strategic plans as studied recently show strong elements that are present in effective strategic plans, including ‘motivating mission and vision statements’, ‘specific and select goals that align with evidence’, and ‘processes for monitoring and evaluation’ (Chiong & Pearson, 2023).

Additionally, strategic planning in the education sector places emphasis on leadership and stakeholder engagement to ensure leadership ownership and coherence. For instance, leaders need to ensure that objectives are consistent with the needs and context of the school, involve teachers, parents and the community, and consider what is required externally and what is available on the internal side when planning for strategic goals (Ykc & Altnay, 2018). A lack of this basic understanding and direction can turn strategy into a mere ritual. For example, a study on centralised education management reported that strategic management does not affect school effectiveness because planning was viewed as an obligation rather than a cultural process in the school, suggesting that it was not a shared objective among the educators in the school (Kose & Kose, 2019). The development of an effective school, therefore, seems to be a prerequisite for having a participative, contextually informed, and mission-driven strategy.

However, after a strategy is developed, strategic management practices become the centrepiece through which organisational change and performance are attained.

Implementation involves making sure that people, processes, and resources are all in place to support strategic priorities, which are often discussed in the educational literature, such as instructional leadership, Professional Learning Communities (PLCs), data-driven decision making, and continuous improvement cycles (Plan-Do-Check-Act, PDCA). How strategic leadership in education is defined as direction setting, shared leadership, and ongoing review and adjustment of the school's strategic trajectory is closely associated with school improvement in school outcomes (Carvalho et al., 2021). Moreover, strategic planning in education has been studied, and issues such as a lack of stakeholder engagement, inadequate strategic thinking capacity, and a lack of resources in the implementation process have been highlighted. This makes it difficult to move from plan to practice (Bantilan et al., 2023). When effective, schools establish clear routines, analyze data to track progress, provide support for teaching, and modify instruction based on evidence, all of which are marks of effective schools. When successful, the school has consistent routines, monitors progress through data, offers assistance to teachers, and adjusts instruction based on evidence, all of which are correlated with successful schools. These practices do help to embed strategy in everyday school practice and not have it on a shelf. The third crucial step is evaluation and feedback. In this context, strategic management practices involve strong monitoring systems, periodic checks on progress towards strategic objectives, and the reallocation of resources or the renegotiation of strategies as required.

There are reports of schools that have very good evaluation systems and feedback loops being more effective in maintaining improvement and adapting to internal and external changes. Sustained effort toward long-term goals and feedback mechanisms that are responsive to results, for example, were found to be key elements in educational institutions from the national-level systematic review on educational strategic management (Beñalet et al., 2023). Effective schools research highlights the importance of routine checks on student achievement, visible goals for performance, and the application of assessment information to enhance school performance at both classroom and school-wide levels. Hence, strategic management is an effective lever for school effectiveness, with its processes of review and adjustment closing the gap between planning, action, and learning.

In summary, strategic management practices play a role in the creation of effective schools through three interconnected ways: strategy formulation provides clarity, coherence and instructional focus by reducing the number of priorities and organizing staff around mission and goals; implementation provides capacity, consistency and improvement routines through leadership, aligning resources, and regular monitoring; and evaluation provides the loops for review that lead to adaptation and learning, which in turn lead to sustainability, responsiveness and accountability. Within education, it means that when schools are driven by a strategic plan, not a reaction or ad hoc, they will be more likely to have a focused improvement plan, more likely to provide teacher development opportunities, more likely to keep track of student progress, and more likely to meaningfully involve stakeholders. Similarly, the evidence makes a connection between strategic management practices and the characteristics of effective schools: mission/vision, leadership, progress monitoring, high expectations, and supportive school climate.

Finally, the literature suggests that strategic management is more of an integral part of school effectiveness than an optional extra. A school that sees strategy as a fluid process, rather than a fixed plan, will be better able to manage complex school settings and allocate resources effectively, engage teachers and other stakeholders, track progress, and maintain momentum towards improvement over time. School-based incorporation of strategic management practices is a viable path towards achieving the mission of effective schools for Malaysia, which puts emphasis on leadership, data use, and accountability (KPM, 2013).

These three phases of strategic management—formulation, implementation, and evaluation provide the conceptual lens through which the bibliometric findings of this study, particularly the themes of leadership innovation, data-driven decision-making, and stakeholder engagement, are interpreted.

Methodology

Bibliometric Approach

Donthu et al. (2021) suggested that the bibliometric approach is a quantitative technique for analyzing bibliographic databases using a science-mapping technique. This work uses computer-assisted techniques and systematic review approaches to retrieve indicators, including the h-index, from online databases in particular. This involves recognizing key publications, authors, research and publishing trends, and organizations (Aliusta, 2023). Scientific visualizations created by special software applications are used to enhance the examination. In recent years, there has been an increasing spread of bibliometric evaluations (Lazarides et al., 2025). The method complements the quantitative data-based meta-analysis and qualitative data-based systematic literature review. This can be done by making the evaluation of the scientific literature objective and by minimizing the impact of researcher bias by synthesizing different scientific points of view (Zupic & Čater, 2015). Unlike a systematic review, the process of bibliometric analysis does not exclude articles from the sampling process, which reduces bias and subjectivity, as claimed by Harsono et al. (2024). This will help to examine the literature more comprehensively without the need for exclusion on the basis of criteria. In accordance with the goals of this research, the study provides two bibliometric analyses in the following manner:

1. Bibliographic coupling

This study examines the scope of the themes by evaluating the latest developments in a given field (Donthu et al., 2021; Fauzi et al., 2024). This analysis is based on the basic assumption that if two publications share common references, a unique scientific theme emerges (Rojas-Lamorenena et al., 2022; Simion et al., 2023). The assessment is done on the latest research streams, which are available in the latest publications (Azad & Parvin, 2022; Gheno, 2021).

2. Co-word analysis.

The evaluation identifies keywords from the title, abstract, and keywords of the publication (Yang et al., 2023). Rojas-Lamorenena et al. (2022) claimed that it examines the relationships among terms within a particular domain using both textual explanations and graphical depictions. Moreover, co-word analysis assesses the mutual influence of keywords within a specific subject area and proposes potential future developments (Yang et al., 2023).

Research Design and Data Collection Procedure

This study employed the following search string, as shown in Table 1, to identify publications based on relevant keywords.

Table 1: Search String in Scopus Database

No	Keywords	Justification
1	(("strateg*" management ") OR ("organizational strateg*") OR (" strateg*" leader*"))	To identify literature related to strategic management
2	("education*" OR "school*" OR "school leader*" OR "principal*" OR "headm*"))	To identify literature related to the school

Findings and Discussion

The search, as illustrated in Figure 1, was restricted to publications indexed between the years 1980 and 2020. Only journal articles and review papers written in English were included, while conference proceedings, book chapters, and non-English publications were excluded. The subject area was limited to Social Sciences and Business, Management, and Accounting to align with the scope of strategic management in education. Duplicate records identified across the search results were screened and removed before the bibliometric analysis to ensure the accuracy of the dataset.

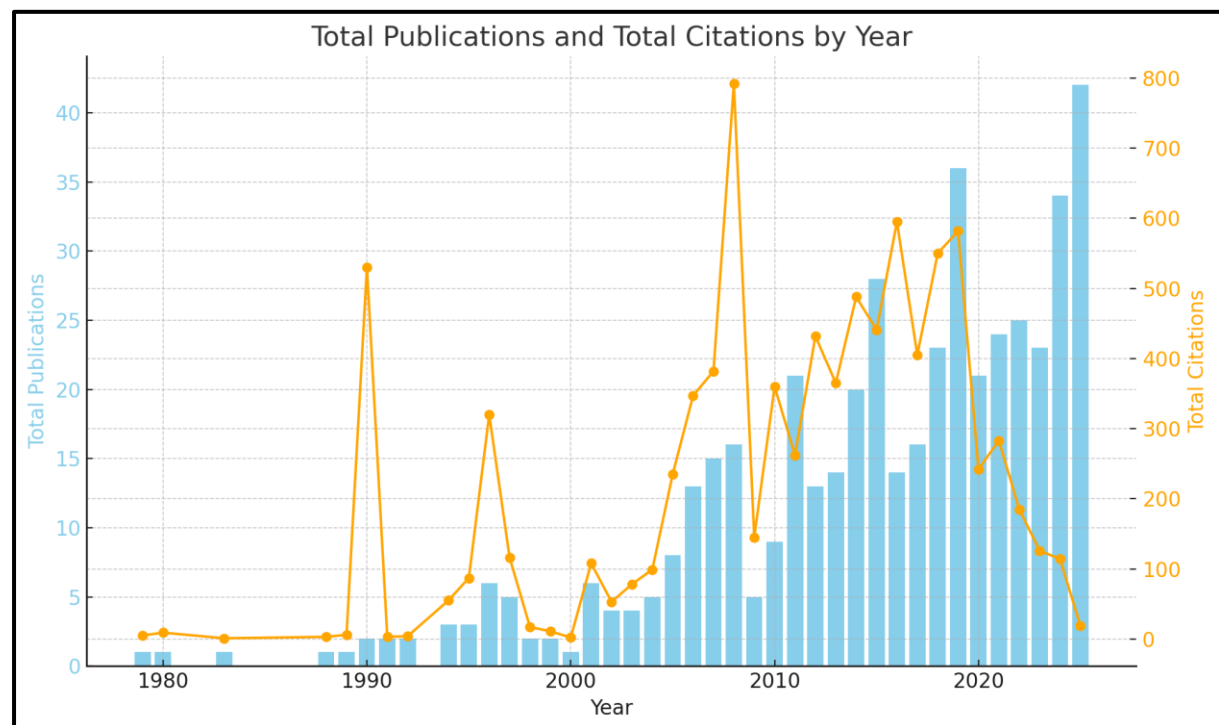


Figure 1: Number of Publications and Citations on Strategic Management in Education
Source: Scopus

Bibliographic Coupling

A minimum citation threshold of 35 was applied, following the default clustering parameters recommended by VOSviewer to ensure only sufficiently impactful and interconnected publications were retained for network visualization (van Eck & Waltman, 2010). Out of the 472 documents, 77 documents met a threshold of 35 citations. These 77 documents create 10 clusters. The top-3 documents, based on Total Link Strength (TLS), are Aarons (2012) (27 TLS), Aarons (2017) (16 TLS), and Mclearney (2008) (15 TLS).

Table 2: Top 10 Documents in Bibliographic Coupling Analysis

Rank	Publication	Citation	Total link strength
1	Aarons (2012)	231	27
2	Aarons (2017)	115	16
3	Mclearney (2008)	58	15
4	Davies (2005)	130	13
5	Locke (2019)	88	12
6	Yano (2012)	52	12
7	Mintrop (2012)	37	12
8	Matthew-maich (2010)	36	12
9	Daly (2010)	233	11
10	Carvalho (2013)	98	10

Figure 2 presents the network visualization of bibliographic coupling. Of the 10 initial clusters generated, four major clusters, each comprising at least three publications with substantial total link strength, were retained for in-depth discussion, as they represented the most thematically coherent and interconnected research streams. The remaining six clusters, each containing fewer than three publications with minimal link strength, were excluded from detailed discussion due to their limited representativeness of the overall research landscape

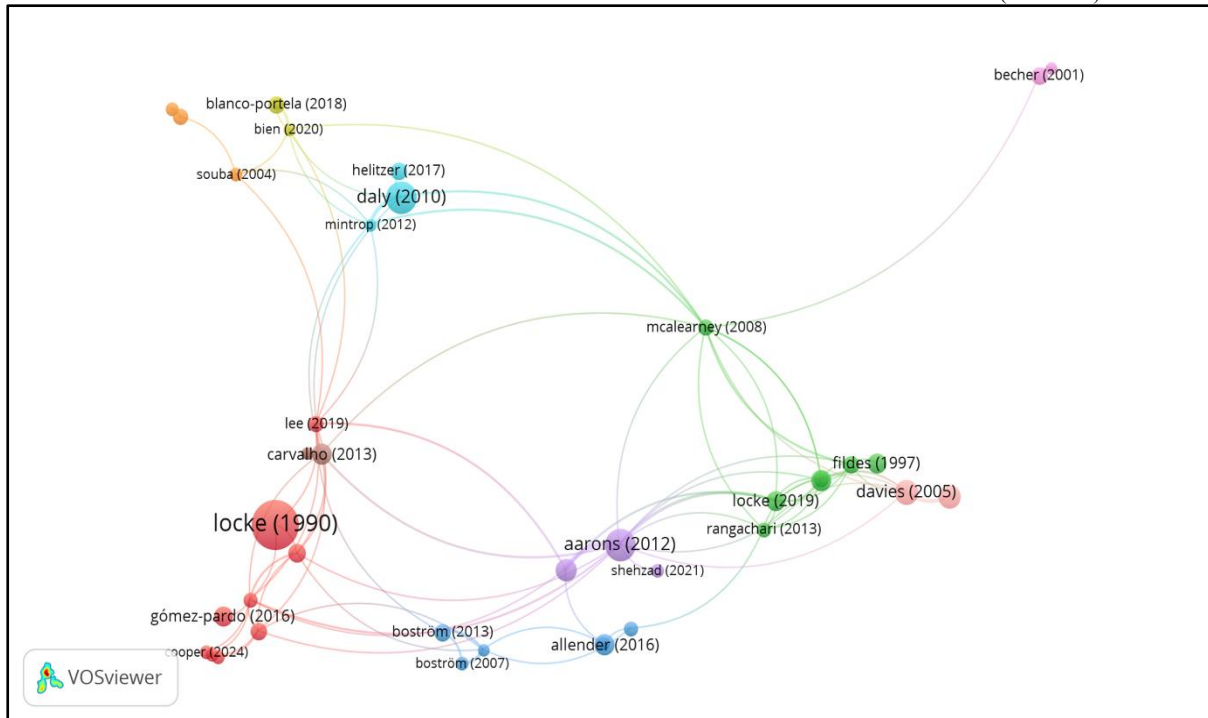


Figure 2: Bibliographic Coupling of Strategic Management in Education

Identified as a cluster on the topic of “Leadership for School Performance”, *Cluster 1 (Red)* focuses on the importance of clear, challenging, and measurable goals in ensuring school improvement, in the context of Locke’s Goal-Setting Theory (1990). Goal-setting is one of the fundamental strategic management instruments in education, where the principal sets clear performance goals, coordinates teachers’ actions, and monitors progress towards long-term goals. On this basis, Lee (2019) and Carvalho (2013) modified the theory into a context of educational change leadership and demonstrated how principals can encourage teachers to meet academic goals. Later works like Gómez-Pardo (2016) and Cooper (2024) applied the model to cross-cultural leadership and cross-cultural performance benchmarking. For instance, in practice, initiatives like Malaysia’s School Transformation 2025 (TS25) use structured goal setting to track and improve student performance. As seen in Malaysia’s TS25, structured goal formulation and regular review is used to bring vision and measurable outcomes together, thus maintaining the continuous school improvement process. It can be used as a strategic tool to establish performance goals, connect the school vision to measurable outcomes, and track performance for ongoing improvement. This is a label one might reasonably give this cluster because Gomez-Pardo (2016), Cooper (2024), and Lee (2019) are all concerned with measurable goal setting as a way of enhancing school performance.

The Cluster 2 (Green): Instructional Leadership, Organizational Learning, and School Change focuses on the cluster as a “learning-oriented school culture,” based on McAlearney’s (2008) leadership frameworks for helping principals create a learning-focused school culture. The research of Fildes (1997) and Rangachari (2013) on change management can be easily transferred to the field of education, specifically curriculum change, technology incorporation, and policy enactment. Indeed, Locke (2019) related leadership behaviors to sustained performance improvement, which is similar to what PLC is based on. Learning is a key component of strategic planning in schools, allowing them to adapt to changes in policy and reform. Leaders use PLCs strategically to strengthen collaboration and coaching and to ensure

that policy changes, such as curriculum change, technology integration, etc., are ‘planted’ in the school’s culture and grow. In practice, when a new assessment system is implemented, the focus for principals is to ensure teacher buy-in and long-term change through organizational learning strategies. This is due to the common focus that all four sources (McAlearney 2008, Fildes 1997, Rangachari 2013, and Locke 2019) place on organizational learning and organizational change management as factors that lead to instructional leadership and school improvement.

Cluster 3 (Blue) focuses on capacity building and teacher professional development, and research by Boström (2007, 2013) highlights collaborative approaches that are similar to collaborative lesson planning and peer mentoring in schools. Allender (2016) provided insights relevant to large-scale teacher-training programs, especially when implementing change in pedagogies. Capacity building is a strategic investment in human resources; it is a long-term investment that ensures that the right people are available in schools to implement long-term objectives. The strategic management in this area is to plan and provide a focused professional development, including upskilling teachers, especially who are implementing the curriculum in the schools, and prepare them according to the new curriculum in Kurikulum Standard Sekolah Menengah (KSSM). In Malaysia, the KSSM also reflects this focus, with systematic teacher upskilling activities to improve the capacity of the schools in the system and to promote ongoing school improvement. This label is warranted because of the similar perspectives on participatory, large-scale professional development as a strategic investment in teacher capacity held by both Boström (2007, 2013) and Allender (2016).

Focused on sustainability and ethical leadership in education, *Cluster 4 (yellow)* highlights the importance of incorporating long-term values, ethics, and social responsibility in school leadership. Souba’s (2004) ethics-based approach to leadership suggests that principals must be aware of the importance of leading the way in the development of moral and civic responsibility among students, while also promoting academic excellence. Schools with a culture that incorporates ethical and sustainability principles are better prepared for institutional sustainability and community trust. Principals implement strategic planning to integrate EE, civic engagement, and value-based leadership in school operations in line with a larger vision of socially responsible education in the school context. In this way, programs can include environmental education and community service learning to provide education and development of good citizenship. This is an appropriate label given the focus in Souba (2004) on embedding ethics, sustainability, and social responsibility in school leadership as a precondition for the sustainability of institutions over time.

Table 3 summarizes the bibliographic coupling analysis, including the cluster number and color, labels, the number of publications, and representative publications.

Table 3: Bibliographic Coupling Analysis on Strategic Management in School

Cluster No and colour	Cluster label	Number of publications	Representative publication
1 (red)	Educational Leadership for School Performance	9	Gómez-Pardo (2016), Cooper (2024), Lee (2019)

2 (green)	Instructional Leadership, Organizational Learning, and School Change	7	McAlearney (2008), Fildes (1997), Rangachari (2013)
3 (blue)	Capacity Building and Teacher Professional Development	6	Boström (2007, 2013), Allender (2016)
4 (yellow)	Sustainability and Ethical Leadership in Education	3	Souba (2004)

Co-Word Analysis

Applying the same database, the co-word analysis presents 57 out of 3,075 keywords that met 21 thresholds, resulting in three clusters.

Table 4: Top 15 Keywords in the Co-Occurrence of Keywords Analysis of Strategic Management in Education

Rank	Keyword	Occurrences	Total link strength
1	Human	264	2529
2	Humans	239	2365
3	Article	200	1987
4	Leadership	212	1860
5	Organization and Management	167	1664
6	Organization	115	1195
7	Female	89	1068
8	Male	85	1035
9	Education	100	1026
10	Adult	71	855
11	United States	88	845
12	Organizational Culture	70	681
13	Questionnaire	50	612
14	Qualitative Research	50	580
15	Interview	46	563

Note: Keywords are ranked by Total Link Strength (TLS), not by raw occurrence count, as TLS better reflects each keyword's overall connectivity within the co-occurrence network.

Figure 3 presents the network structure of the co-word analysis. It visibly illustrates three clusters representing three different themes. In accordance with the author's inductive interpretation, the three clusters are assigned the appropriate labels.

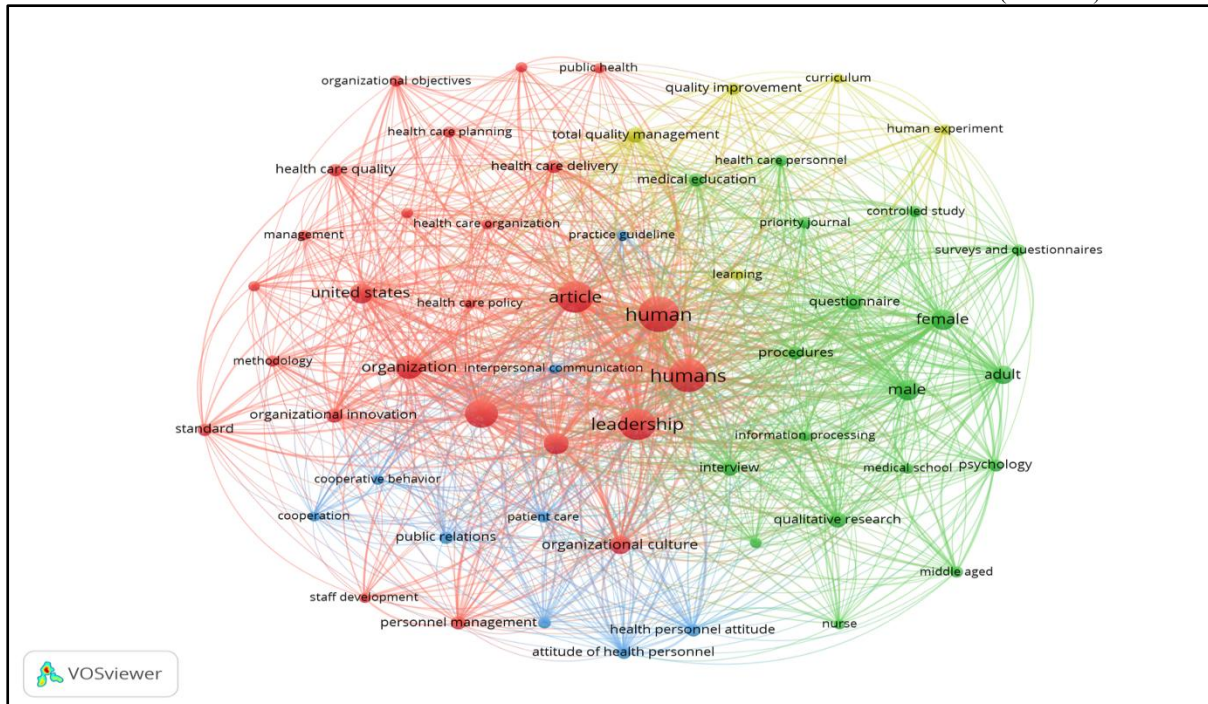


Figure 3: Co-Word Analysis on Strategic Management in Education

Cluster 1 (Red): It is classified as a cluster of “Organizational Leadership and Innovation.” This focus area emphasizes the importance of leadership in building school culture, leading innovation, and moving the school towards goals and priorities. It highlights the importance of distributed leadership, where principals are responsible for delegating authority to teachers and staff to be fully engaged in decision-making and innovation. In education, they enable the long-term sustainability of reforms, improve the coherence of the organisations and improve stakeholder ownership. Yukl (2008) noted the importance of a leader managing task-oriented, relationship-oriented, and change-oriented behavior to maintain school improvement. Schein (2010) identified organizational culture as a key component of innovation as in schools, it influences values and norms that promote teaching excellence. The study by Mumford et al (2000) correlated successful implementation of innovation in complex organisations with creative problem-solving and leadership, similar to the role of school leaders in promoting and driving the change of curriculum. Principals as strategic leaders incorporate vision, culture, and innovation as planning tools that help them connect staff practices with school goals and respond to policy changes.

Cluster 2 (Green) is considered a “Data-Driven Decision-Making” cluster because of the 19-word co-occurrence. Based on systematic data collection, Cohen et al. (2018) reported that learning outcomes improve when instructional changes occur. In the educational context, it means that both quantitative performance measures and qualitative feedback are used to adjust teaching methods. Incorporating evidence collection tools (surveys, assessment analytics) into strategic management allows leaders to focus interventions, use resources effectively, and track progress toward strategic outcomes.

Cluster 3 (Blue): Human capital development and stakeholder engagement. Day et al. (2007) found that increased teacher professional development is associated with greater student success. Fullan (2014) put great emphasis on the need for collaborative cultures with principals

as capacity builders. Leithwood et al. (2004) linked good policy implementation to strong stakeholder relations, such as parents and communities. In schools, it means making good strategic investments in teachers' learning and building trust with the school community.

A summary of the co-word analysis is presented in Table 5, including the cluster number and color, cluster labels, the number of keywords, and representative keywords.

Table 5: Summary of Co-Word Analysis on Strategic Management in Education

Cluster No and color	Cluster label	Number of keywords	Representative Keywords
1 (red)	Organizational Leadership & Innovation	20	Leadership, organizational culture, organizational innovation
2 (green)	Data-Driven Decision-Making	19	Questionnaire, learning, survey, procedures, psychology
3 (blue)	Human Capital Development & Stakeholder Engagement	10	Health, personal attitude, cooperative behaviour, cooperation

Implications of the Study

Theoretical Implications

As with the other steps of the strategic management process described above, the clusters are aligned with the steps of strategic management: formulation (leadership vision), implementation (data-driven practice), and evaluation (stakeholder feedback). This investigation's findings have made a significant contribution in the theoretical knowledge about the approaches of strategic management and its impact on school practice. Education strategic management is not uniform. Instead, it is conceptually grounded in three related areas: organizational leadership, innovation, data-driven decision-making, and human capital, along with stakeholder engagement. This is consistent with the Resource Based View (RBV) perspective which sees leadership capability, data capability and human capital as strategic resources all working together. It also provides validation of the convergence of transformational leadership theory (Yukl, 2008; Leithwood et al., 2004) with evidence-based management (Cohen et al., 2018) and stakeholder theory (Day et al., 2007). The findings build on existing theory by showing that the three key elements of leadership innovation, data intelligence, and collaborative capacity are required to occur simultaneously to create strategic effectiveness, not in isolation. Hence, a multi-capability synergy model is more appropriate for future school effectiveness models than a model that considers leadership or data as a single predictor.

Managerial Implications

The findings from this study have many implications for principals and policymakers who are interested in the effectiveness of principals. This means that the effectiveness of the principal is dependent upon integrated strategic competencies and not merely on administrative efficiency. Schools need to promote innovation in leadership, where principals are more than compliance managers, and become more like organizational architects. Data should not be

personalised; institutionalised, and become part of the culture of the school in systematic monitoring, evidence-based planning, and continuous evaluation. Teacher development and stakeholder involvement have to be seen as investment capital, not as an add-on service, which is dependent on formalized relationships and modalities of partnership (e.g., community-industry partnership, parent advisory council). Strategic foresight, data literacy, and stakeholder mobilization should not be taught in isolation, but rather in combination and should be embedded within ministry or district education office programmes for the development of leaders, in practice. For the Malaysian context, the multi-capability synergy model closely aligns with the functions of school leaders in the implementation of Pelan Pembangunan Pendidikan Malaysia (PPPM) 2013-2025: both the school leader as an instructional leader and as a data-informed School Improvement Specialist Coaches (SISC+) programme leader and as a community engagement under the Program Transformasi Sekolah.

Conclusion

The study thoroughly examines the key concepts of effective strategic management in education: (1) Innovative leadership, (2) Data-driven governance, and (3) Human capital and empowerment of stakeholders. This is an indication that school effectiveness is not solely due to the quality of instruction. Rather, it is the result of a well-planned blend of leadership actions, analytical savvy, and group development. Thus, sustainable schools are schools that can turn vision into implementation in a structured manner, which is achieved by the agility of school leaders and the synergy of their human resources, along with the intelligent use of data, and this is in line with the strategic plans of Pelan Pembangunan Pendidikan Malaysia PPPM (2013-2025). The study uses the bibliometric method, which is used to reveal the main themes and patterns, and thereby to identify the importance of transformational, instructional, and distributed leadership in developing a positive and research-laden culture. The findings highlight the importance of strategic leadership in fostering creativity and promoting sustainable academic growth. The study concludes that theory should be complemented by practice and offers educational policy makers and school administrators some insights for the development of a lively research culture. To conclude, future studies should be conducted using a qualitative case study approach to explore how principals in secondary schools in Malaysia apply the themes found in their leadership that are identified as innovative, data-driven governance, and stakeholder engagement in their daily work. Further investigation of schools in PPPM from 2013 to 2025 in a longitudinal study over 3-5 years would support the causal link between strategic management practices and the sustained improvement in students' achievements..

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