PPSDP International Journal of Education
Volume 4 (2) 2025, 599-608
E-ISSN 2829-5196, P-ISSN 2830-3229

Integrating the SECI Model into Knowledge Management Practices in Elementary Schools

Risa Fahriyani Purnamawati[1], Rais Hidayat[1]
[1]Universitas Pakuan Bogor, West Java, Indonesia

Corresponding author e-mail: risa.fp@gmail.com

Article History: Received on 24 January 2025, Revised on 13 April 2025, Published on 29 April 2025

Abstract: Knowledge Management (KM) is an essential strategy for improving organizational performance in a highly competitive and ever-changing landscape. This research investigates the application of the SECI Model, which stands for Socialization, Externalization, Combination, and Internalization, is a framework for understanding knowledge creation and management. within KM and its impact on individual performance at the Integrated Islamic Elementary School Darul Fallah in Bogor Regency. The study includes surveys to assess the effectiveness of KM strategies, utilizing an instrument with reliability scores ranging from 0.61 to 0.71. The findings reveal that the Internalization dimension significantly impacts individual performance ($r = 0.72$, $p < 0.05$) and accounts for 52% of performance variability ($R^2 = 0.52$), followed by Socialization (mean score = 4.10). Despite challenges such as limited time, staff resistance to knowledge sharing, and inconsistencies in documentation, KM implementation has led to improved learning innovation, administrative efficiency, and teacher collaboration. This study highlights the need for targeted training, a strengthened collaboration culture, and a user-friendly documentation system to optimize KM practices. The study adds to the current body of literature by providing empirical evidence on the importance of the SECI Model dimensions within the realm of primary education. Practical recommendations are offered to policymakers and administrators to foster a knowledge-sharing culture and enhance organizational performance. Future research should explore the application of the SECI Model across various educational contexts and levels to evaluate its broader effectiveness.

Keywords: Knowledge Management, Organizational Performance, SECI Model

A. Introduction

Knowledge is a crucial organizational asset that offers a sustainable competitive edge in today's dynamic and rapidly evolving economic environment(Davenport & Prusak, 1998)(Foss & Pedersen, 2002)(Spender & Grant, 1996). To maintain this advantage, organizations need to establish robust staffing and training systems that focus on recruiting individuals with the required knowledge, skills, and competencies, as well as supporting their continued development (Brown & Duguid,

1991), Additionally, effective strategies for transferring expertise and knowledge from experienced employees to novices are vital to foster organizational growth(Hinds, Patterson, & Pfeffer, 2001). This emphasizes the importance of efficiently utilizing and developing existing knowledge-based resources within organizations (Damodaran & Olphert, 2000) (Davenport & Prusak, 1998).

In this context, Knowledge Management (KM) has emerged as a strategic approach for organizations to adapt to the challenges of globalization and increased competition. KM involves systematically creating, sharing, utilizing, and managing knowledge and information within organizations (Becerra-Fernandez, I;Sabherwal, 2015). Among various models, the SECI framework (Socialization, Externalization, Combination, Internalization), developed by Nonaka and Takeuchi, has become a foundational reference for understanding how tacit and explicit knowledge can be effectively managed to drive innovation and productivity(Nonaka & Takeuchi, 1995)(Nonaka, Toyama, & Konno, 2002) Furthermore, Nonaka and von Krogh emphasize the importance of knowledge conversion in creating value for organizations (Nonaka & von Krogh, 2009).

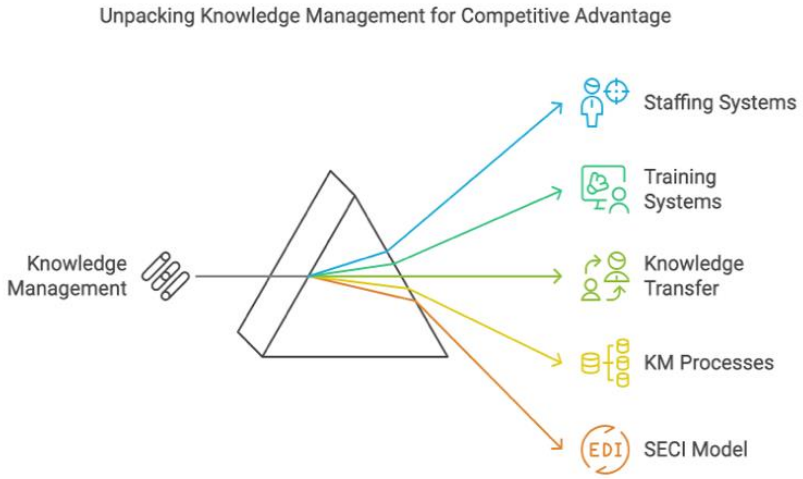

Figure 1. Key Components of Knowledge Management for Building Competitive Advantage

Despite the widespread adoption of KM, its implementation across organizations has yielded diverse results. Some organizations report significant success, while others face challenges such as a lack of management support, cultural resistance, or reliance on inadequate technology (Masa'deh, 2012)(Iqbal & Latif, 2020;,. Literature highlights that effective knowledge documentation and a culture of knowledge sharing are critical elements of KM, enhancing work efficiency and collaboration (Serenko & Bontis, 2013)(Davenport & Prusak, 1998). In the educational context, KM is particularly relevant for bridging tacit and explicit knowledge between teachers and management to improve learning outcomes (Politis, 2003).

Additionally, advances in technology, including Artificial Intelligence (AI), present opportunities to improve KM efficiency(Bereiter, 2022)(Liebowitz, 2001). However, the integration of KM strategies into primary education remains underexplored, particularly regarding their impact on organizational performance and learning innovation.

This study proposes an integrated strategic approach to KM implementation, focusing on optimizing organizational performance in primary education. By addressing success factors, challenges, and practical recommendations, the study contributes to bridging the gap in understanding KM's role in this context. The research specifically seeks to answer: (1) What are effective KM implementation strategies to optimize organizational performance? (2) What factors influence the success of KM? (3) What are the strategic implications of KM on organizational performance in primary education?

B. Methods

This research adopts a mixed-methods approach, integrating qualitative and quantitative techniques, to examine the application of Knowledge Management (KM) based on the SECI Model at the Integrated Islamic Elementary School Darul Fallah, located in Bogor Regency. The research population consists of the principal, teachers, and administrative staff at the school, which has implemented several KM elements, such as discussion forums and learning documentation. Using purposive sampling, 20 respondents were selected, comprising 1 principal, 15 teachers, and 4 administrative staff, focusing on individuals with direct experience in KM implementation (Gold, Malhotra, & Segars, 2001).

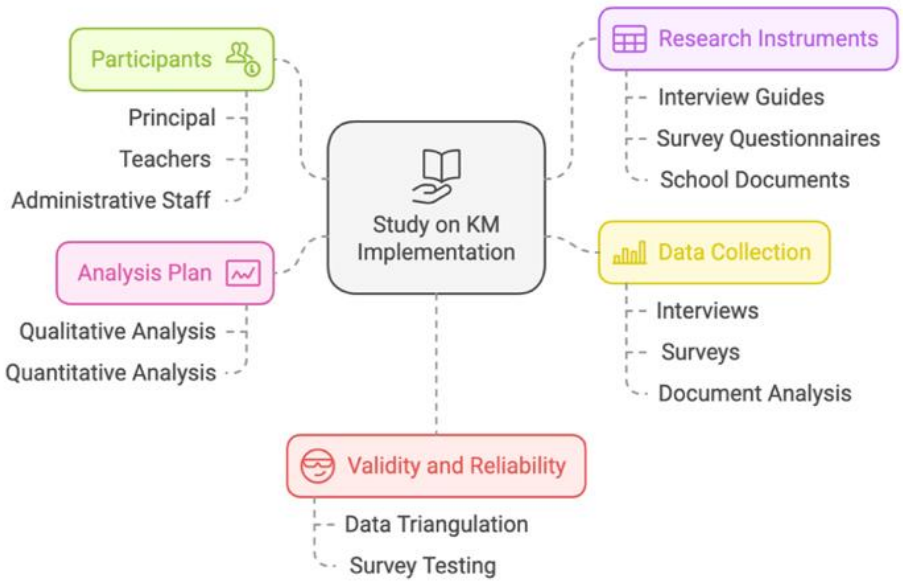

Figure 2. Research Methodology Overview: Study on KM Implementation

The research instruments included three components: (1) an interview guide for the principal and teachers, (2) a survey questionnaire for teachers and administrative staff, and (3) school documents as supporting data. The interview guide included questions on KM strategies, the role of technology, collaborative culture, and training. The survey measured perceptions of KM effectiveness in information accessibility, collaboration, and its impact on learning innovation and administrative efficiency (Lee & Choi, 2003)(Nonaka & Takeuchi, 1995). The research instruments included three components: (1) an interview guide for the principal and teachers, (2) a survey questionnaire for teachers and administrative staff, and (3) school documents as supporting data, focusing on priority documents directly related to teacher performance, such as the school's work plan, annual reports, and evaluation results on staff performance.

The research procedure consisted of three stages: (1) qualitative data collection through in-depth interviews to explore KM challenges and successes, (2) distribution of the survey questionnaire to gather quantitative perceptions, and (3) document analysis to triangulate findings. Data collection was conducted over two weeks within a one-month research period.

Data analysis involved thematic analysis for qualitative data to identify patterns in KM strategies and challenges, while quantitative data were processed using descriptive statistics, correlation analysis to assess the relationship between KM and performance, and linear regression to evaluate the impact of each SECI dimension on performance variability(Serenko & Bontis, 2013). The reliability of the survey instrument was confirmed with a Cronbach's Alpha value of 0.917, and data triangulation enhanced the validity of findings.

Reliability Statistics

Cronbach's Alpha	N of Items
.917	16

Figure 3. Summary of Instrument Reliability Analysis

C. Results and Discussion

No. Item	Sig. (2-tailed)	Pearson Correlation
1	0,000	.706**
2	0,000	.754**
3	0,004	.620**
4	0,004	.616**
5	0,001	.692**
6	0,003	.624**
7	0,000	.773**
8	0,002	.644**
9	0,002	.652**
10	0,001	.697**
11	0,000	.717**
12	0,001	.665**
13	0,001	.681**
14	0,001	.675**
15	0,001	.666**
16	0,003	.625**

Figure 4. Results of Item Validity Testing for Strategic Thinking Instrument

This study demonstrates that the implementation of the SECI Model in Knowledge Management (KM) significantly influences individual performance at Integrated Islamic Elementary School Darul Fallah, Bogor. The results of the validity test indicate that all items in the questionnaire exhibit a significant correlation with the total score, with correlation values ranging from 0.61 to 0.71, indicating strong contributions of each item to the associated dimensions. This makes the questionnaire valid for evaluating KM aspects, such as information accessibility, collaboration, and its impact on individual performance. Hence, the instrument is suitable for further research without requiring major revisions. The results of the reliability test reveal a Cronbach's Alpha value of 0.917, indicating an exceptionally high level of reliability and suggesting that the instrument is both consistent and trustworthy for future assessments.

No.	Document Type	Available (Yes/No)	Completeness (Complete/Partial)	Relevance (Relevant/Not Relevant)
1	School Work Plan (RKS)	Yes	Complete	Relevant
2	School Self-Evaluation Report (EDS)	Yes	Partial	Relevant
3	Annual Program (Prota)	Yes	Complete	Relevant
4	Semester Program (Promes)	Yes	Complete	Relevant
5	Syllabus	Yes	Complete	Relevant
6	Lesson Plan (RPP)	Yes	Complete	Relevant
7	School Financial Report	Yes	Partial	Relevant
8	Monitoring and Evaluation Results Document	Yes	Partial	Relevant
9	Teacher and Student Attendance Data	Yes	Complete	Relevant
10	Extracurricular Activity Documentation	Yes	Complete	Relevant
11	Student Assessment and Evaluation Documents	Yes	Complete	Relevant

Figure 5. Summary of School Document Validation Results

The school document checklist results reveal that most essential documents, such as the School Work Plan (RKS), Annual Program (Prota), and Syllabus, are available in complete and relevant conditions. However, some documents, such as the School Self-Evaluation Report (EDS), are only partially available, indicating the need for completion. This checklist provides insights into the readiness of the school's administrative documents and helps identify areas requiring updates or improvements.

Interview results show that KM implementation strategies align with the key elements of the SECI Model: discussions and training for knowledge sharing (Socialization), learning documentation (Externalization), technology use for knowledge integration (Combination), and the adoption of new knowledge into daily practices (Internalization). Challenges such as limited time, staff resistance to knowledge sharing, difficulties adapting to technology, and inconsistencies in documentation were identified as major obstacles. Despite these challenges, KM has led to improvements in learning innovation, administrative efficiency, and teacher collaboration, supported by discussion forums and rewards for active knowledge sharing. To optimize KM, the school needs technology training, allocated time for knowledge sharing, a strengthened culture of collaboration, and a user-friendly documentation system. These enhancements will unlock the full potential of SECI Model-based KM in improving organizational performance in primary education.

The findings emphasize that the Internalization dimension is the most significant factor in connecting explicit and tacit knowledge, with a correlation value of $r = 0.72$ ($p < 0.05$). Additionally, regression analysis indicates that the SECI Model accounts for 52% of the variability in individual performance ($R^2 = 0.52$), with Internalization being the primary predictor ($\beta = 0.45$, $p < 0.01$). Socialization also scored highly (4.10), driven by a culture of knowledge sharing through joint training and informal discussions.

These results align with previous literature highlighting the importance of Internalization in the knowledge management process to drive organizational innovation and productivity (Nonaka & Takeuchi, 1995)(Alavi & Leidner, 2001)(Rhem, 2016). Research by Serenko and Bontis further emphasizes that a culture of knowledge sharing (Socialization) can enhance work efficiency(Serenko & Bontis, 2013). This finding is further supported by Politis, who argues that the relationship between tacit and explicit knowledge can be enhanced through effective Knowledge Management (Politis, 2003). Additionally, research conducted by Wang and Noe suggests that knowledge sharing among employees can enhance both team and overall organizational performance (Wang & Noe, 2010). This aligns with the findings of this study, which demonstrate that collaboration and joint training significantly contribute to improved individual performance.

Additionally, Choi et al. found that appropriate KM strategies can improve organizational performance (Wang & Noe, 2010), supporting the results of this research. Davenport and Prusak underscore the importance of good documentation to strengthen information transfer (Davenport & Prusak, 1998). Other studies in the education sector by Iqbal and Latif (2020) identify that structured KM can enhance operational efficiency and learning outcomes. Budur et al. highlight the relevance of KM in supporting the sustainability of educational organizations through collaborative learning and innovation(Budur, Abdullah, Rashid, & Demirer, 2024). However, these results are not universally consistent with some prior studies. For instance, Masa'deh and Shannak identified that, in certain instances, the implementation of Knowledge Management encounters substantial obstacles, including a lack of leadership engagement and cultural resistance within organizations(Masa'deh, 2012). Liebowitz also noted that excessive reliance on technology without considering human factors can lead to KM implementation failures (Jennex, 2005)(Jasimuddin, Klein, & Connell, 2005)(Liebowitz, 2001). Such constraints can pose major challenges in integrating KM within educational organizations. Research by Hislop also indicates that poor knowledge management can hinder innovation and organizational performance (Hislop, 2005). Additionally, Maier and Remus emphasize the importance of process-oriented KM strategies to achieve desired outcomes (Maier & Remus, 2003). Research by Zack et al. adds that effective knowledge management can contribute to better organizational performance (Choi, Poon, & Davis, 2008)(Zack, McKeen, & Singh, 2009). This study has several limitations that need to be considered. The focus on a single elementary school restricts the generalizability of the research findings to other educational contexts. Moreover, the relatively small sample size may impact the representativeness of the findings. Therefore, further research with a broader scope and longitudinal analysis is necessary to gain a deeper understanding of the long-term effects of SECI Model implementation in Knowledge Management. As a recommendation for future studies, exploring the application of the SECI Model across various educational levels could help assess its effectiveness in different contexts. Additionally, developing more specific measurement instruments for each dimension of the SECI Model could enhance the validity of future research outcomes.

Beyond its theoretical contributions, this research also carries practical implications. By prioritizing SECI Model-based training and cultivating an organizational culture that supports the knowledge conversion process, elementary schools can foster a more innovative and adaptive learning environment. This aligns with the findings of Gold et al., who assert that managing organizational culture is a crucial element of successful Knowledge Management (Gold et al., 2001).

D. Conclusions

This study demonstrates that the implementation of the SECI Model in Knowledge

Management significantly enhances individual performance at Integrated Islamic Elementary School Darul Fallah, Bogor Regency, with Internalization serving as the primary dimension bridging explicit and tacit knowledge, and Socialization fostering a culture of knowledge sharing to support collaboration. These findings are significant as they provide empirical evidence regarding the effectiveness of the SECI Model in the primary education setting, underscoring the importance of structured knowledge management in enhancing work efficiency and fostering learning innovation. The results of this research align with previous literature, particularly the work of Nonaka and Takeuchi, which emphasizes the significance of Internalization. Additionally, this study contributes new insights by examining the role of each dimension of the SECI Model in detail within the context of primary education. The originality of this research is highlighted by its data triangulation approach, which improves the validity and reliability of the results. Furthermore, the implications of this study offer practical recommendations for policymakers and school administrators to prioritize SECI Model-based training and cultivate an organizational culture that supports the Internalization process. Future research is encouraged to assess the effectiveness of this model across various educational levels and within different organizational contexts.

E. Acknowledgement

We acknowledge the Rector, and Dean of Faculty Education Universitas Pakuan, Bogor, West Java, Indonesia

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