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DOI: <https://doi.org/10.53893/asic.v2i1.495>

Proceedings of Academic Seminar and International Conference (ASIC)

The Future of Learning: Education in the Digital Age

Vol. 2 No. 1 January 2026

Knowledge Management Strategies in EdTech Startups: A Systematic Literature Review From 2011-2024

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ABSTRACT

The Educational Technology (EdTech) industry has grown rapidly in the post-COVID-19 era, driven by increasing demand for online learning and competency-based education, making organizational knowledge a critical asset for startup innovation and scalability. This study employs a Systematic Literature Review (SLR), following the PRISMA protocol, to examine Knowledge Management (KM) strategies in EdTech startups during 2019–2024, drawing on international and national academic databases. The findings indicate that hybrid KM strategies combining personalization practices (e.g., mentoring and social learning) with codification mechanisms (e.g., digital repositories and standardized documentation) are most effective in addressing the dynamic and resource-constrained nature of EdTech startups, while emerging technologies such as artificial intelligence and cloud-based systems further enhance KM scalability when aligned with organizational culture and leadership support, offering both theoretical and practical contributions to sustainable KM implementation in EdTech startups.

Keywords: Knowledge Management, EdTech Startups, Systematic Literature Review, Tacit Knowledge, Innovation

INTRODUCTION

The Educational Technology (EdTech) industry has experienced a significant acceleration in growth following the COVID-19 pandemic, driven by the increasing demand for online learning, competency-based training, and lifelong learning solutions. Recent studies indicate that the value and competitiveness of EdTech organizations are increasingly determined by knowledge assets including pedagogical knowledge, technological expertise, and organizational experience rather than physical assets (Tandfonline, 2020; ScienceDirect, 2020). In this context, EdTech startups rely heavily on their ability to manage knowledge effectively to support rapid decision-making, avoid



the repetition of mistakes, and ensure the scalability of products and services amid limited resources.

A growing body of research emphasizes that Knowledge Management (KM) contributes directly to innovation, organizational performance, and competitive advantage, particularly in knowledge-based organizations and small and medium-sized enterprises (SMEs). Empirical studies in business and technology sectors demonstrate that appropriate KM strategies enhance organizational innovation capacity and adaptability to market changes (ScienceDirect, 2020; BINUS Business School, 2022). Within the EdTech context, KM plays a critical role in integrating technical and pedagogical knowledge, enabling continuous development of curricula, instructional design, and the refinement of digital learning platforms (Academia.edu, 2024).

Nevertheless, EdTech startups exhibit characteristics that distinguish them from large organizations, which have traditionally dominated KM research. Several studies highlight that digital startup, including those in the EdTech sector, operate in highly dynamic environments characterized by rapid innovation cycles, flexible organizational structures, and relatively high employee turnover rates (PIJED, 2023; JKI UB, 2023). These conditions pose significant challenges to the retention of tacit knowledge, such as instructional design experience, technical problem-solving skills, and context-based decision-making. Research indicates that the lack of systematic documentation and knowledge transfer mechanisms often leads to the loss of organizational memory when employees leave the organization (Emerald, 2024).

Although the literature on Knowledge Management continues to expand, systematic studies that specifically map KM strategies in the context of EdTech startups remain limited. Most KM research focuses on manufacturing sectors, large corporations, or SMEs in general, without adequately addressing the unique characteristics of digital education startups (Tandfonline, 2020; ScienceDirect, 2020). Recent SLR studies also suggest that while models such as SECI are widely



used to explain knowledge conversion processes, their application within EdTech startup contexts where rapid and real-time tacit knowledge transfer is required has not been comprehensively analyzed (Emerald, 2024). Moreover, debates regarding the effectiveness of personalization strategies (e.g., mentoring and social learning) versus codification strategies (e.g., databases and knowledge wikis) continue to yield mixed findings, particularly in fast-paced and project-based work environments.

In addition, the emergence of advanced technologies such as Artificial Intelligence (AI) and machine learning is increasingly transforming how EdTech organizations capture and utilize knowledge. Recent studies indicate that AI-based technologies can support the automation of knowledge capture processes, the analysis of learning patterns, and the personalization of mentoring, thereby potentially enhancing the scalability of KM in EdTech startups (ScienceDirect, 2025). However, the adoption of these technologies also faces challenges, including limited trust in AI systems, user resistance, and gaps between technological capabilities and knowledge-sharing cultures (PIJED, 2023; Emerald, 2024).

Based on these conditions, this article aims to conduct a Systematic Literature Review (SLR) of studies on Knowledge Management strategies in EdTech startups published between 2019 and 2024. By following the PRISMA protocol and analyzing selected studies from various academic databases, this article seeks to map dominant KM models, identify key challenges in managing tacit knowledge, and compare the effectiveness of personalization and codification strategies within the EdTech startup context. The findings of this review are expected to contribute theoretically to the development of KM literature and provide practical implications for EdTech startup leaders in designing adaptive, technology-driven, and sustainable knowledge management strategies.



RESEARCH METHODS

This is the methodology part. Describe your method you used in this research systematically and clearly in paragraph, including research design, data source, data collecting technique, and data analysis that has been done. If you use a chart, graphic, diagram, table, or image, please refer to the format in author guidelines.

This study employs a Systematic Literature Review (SLR) approach to comprehensively examine Knowledge Management (KM) strategies implemented in EdTech startups. This approach was selected because it enables a structured synthesis of empirical and conceptual findings from prior studies, particularly within knowledge-based industries that are rapidly evolving and characterized by high dynamism, such as EdTech. SLR is also considered appropriate for identifying dominant KM models, challenges in managing tacit knowledge, and the effectiveness of personalization and codification strategies in supporting innovation and scalability in startups.

The review process was conducted in accordance with the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) guidelines to ensure transparency, replicability, and methodological rigor. The PRISMA stages applied included literature identification, initial screening, eligibility assessment, and final inclusion of articles for analysis. This approach is widely used in SLR studies within the fields of knowledge management and digital innovation, as reflected in publications indexed in Emerald and ScienceDirect, which serve as key references in this study.

Data sources were obtained from several scientific databases relevant to KM, EdTech, and startups, namely Scopus, ScienceDirect, Emerald Insight, Google Scholar, and ResearchGate, and were supported by nationally accredited Indonesian journals such as Jurnal Kajian Informasi (JKI) from Universitas Brawijaya and PIJED. The selection of these databases aimed to capture reputable



international literature while also incorporating empirical contexts from developing countries, particularly Indonesia, which has a growing EdTech startup ecosystem.

The literature search was conducted using combinations of the following keywords: (“Knowledge Management” OR “KM”) AND (“EdTech” OR “Educational Technology”) AND (“Startup” OR “SME”). The publication time frame was limited to 2019–2025 to capture post–COVID-19 dynamics that accelerated digital transformation in education and significantly stimulated the growth of the EdTech industry. This limitation is also relevant because most technology-based KM innovations, such as the use of AI and cloud-based systems, have developed intensively during this period.

The inclusion criteria of this study covered articles that explicitly discussed the implementation or strategies of knowledge management within EdTech, startups, or technology-based educational SMEs; employed clearly defined research methodologies (qualitative, quantitative, or mixed methods); and were published in English or Indonesian through a peer-review process. Conversely, articles in the form of opinions, editorials, non-scholarly publications, studies focusing on large non-digital corporations, or those lacking sufficient methodological information were excluded from the analysis.

Based on the initial search process, more than 40 articles were identified. Title and abstract screening reduced this number to approximately 30 articles deemed relevant to the research focus. Subsequently, an in-depth full-text assessment was conducted to ensure alignment with the inclusion criteria and methodological quality. From this process, 20 articles were selected as the final sample for further analysis. The selected articles included empirical studies at the startup and SME levels, conceptual research on KM models such as SECI and dynamic KM, as well as SLR studies linking KM with innovation and organizational performance.



Data analysis was conducted using a thematic synthesis approach. Each article was coded based on several main themes: (1) the knowledge management models applied, (2) challenges in managing tacit knowledge, (3) KM strategies employed (personalization, codification, or hybrid), and (4) the role of digital technologies, including AI and cloud-based systems. To enhance the validity of the analysis, cross-study comparisons were carried out between international studies and those in the Indonesian context, resulting in a more contextualized and comprehensive understanding of KM implementation in EdTech startups.

RESULTS AND DISCUSSION

Results

1. Descriptive Characteristics of the Selected Studies

The reviewed literature consistently conceptualizes Knowledge Management (KM) as a systematic process encompassing knowledge creation, storage, sharing, and application to enhance organizational effectiveness. In startup and SME contexts, KM is positioned not merely as an information-handling mechanism but as a strategic organizational capability that supports learning, adaptability, and innovation.

A systematic review by Ahmed, Salloum, and Shaalan (2021) emphasizes that startups and SMEs rely heavily on tacit knowledge embedded in founders, teams, and informal routines. Due to limited resources and high environmental uncertainty, KM in these organizations tends to be people-centered rather than system-centered, prioritizing experiential learning and collaborative knowledge exchange. This finding aligns with Indonesian studies highlighting that KM practices often emerge organically before being formalized (UNPAS Repository, 2020.; Neliti, 2019.).

From an educational and institutional perspective, KM is also framed as a mechanism to strengthen organizational learning and competence development. Studies in higher education and training institutions demonstrate that KM supports decision-making quality, instructional



improvement, and organizational memory (Universitas Terbuka Proceedings; Jurnal Pendidikan Tambusai). These findings suggest that despite contextual differences, KM consistently functions as an integrative framework connecting human capital, processes, and organizational goals. Overall, the conceptual foundation across international and national studies positions KM as a dynamic and context-sensitive system, shaped by organizational size, digital maturity, and strategic orientation (Ahmed et al., 2021; Jurnal Informatika Global).

The reviewed literature spans diverse organizational contexts that can be broadly categorized into international and Indonesian settings. International studies predominantly examine technology startups, EdTech firms, and innovation-oriented organizations, often framing KM as a strategic mechanism for sustaining innovation, managing intellectual capital, and supporting scalability within open or digital ecosystems (Costa & Monteiro, 2016; Soto-Acosta et al., 2018). Several studies also suit KM practices within open innovation networks and collaborative technological environments (Chesbrough, 2020).

In contrast, Indonesian studies largely focus on educational institutions, technology-based educational services, UMKM pendidikan, and organizations undergoing digital transformation. Although these studies do not always explicitly label their context as “EdTech startups,” they analyze KM practices in online learning environments, digital education services, and entrepreneurship-based education, which are conceptually aligned with the operational characteristics of EdTech startups (Sari et al., 2021; Pratama & Nugroho, 2022; Setiawan et al., 2023). This inclusion provides valuable empirical insights from developing-country contexts, where KM implementation is often influenced by structural, cultural, and technological constraints.

In terms of research design, the selected studies employ a variety of methodological approaches. Qualitative methods such as case studies, interviews, and descriptive analyses are commonly used to explore KM processes, organizational culture, and knowledge-sharing practices within educational and technology-based organizations (Sari et al., 2021; Handzic, 2017).



Quantitative studies primarily rely on survey-based data analyzed through regression techniques or structural equation modeling (SEM) to examine relationships between KM practices, learning organization dimensions, innovation performance, and competitive advantage (Wahyudi et al., 2022; Ramadhani et al., 2023).

Additionally, several studies adopt conceptual or framework-based approaches, proposing KM models or strategic frameworks tailored to technology-driven organizations and educational contexts. These studies synthesize established KM theories, such as the SECI model, learning organization theory, and dynamic KM and adapt them to contemporary digital and startup environments (Alavi & Leidner, 2001; Costa & Monteiro, 2016).

The level of analysis across the reviewed literature varies, reflecting the multidimensional nature of KM research. Most studies operate at the organizational level, examining KM strategies, systems, and outcomes within startups, educational institutions, or technology-based organizations (Wahyudi et al., 2022). Several studies focus on the system level, analyzing KM systems, digital platforms, open-source solutions, and technological infrastructures that support knowledge creation and sharing (Soto-Acosta et al., 2018).

A smaller subset of studies addresses the individual level, particularly in relation to educators, learners, entrepreneurs, and knowledge workers, emphasizing competencies, learning experiences, and knowledge-sharing behaviors within digital and educational settings (Pratama & Nugroho, 2022; Setiawan et al., 2023). Collectively, these levels of analysis provide a comprehensive descriptive perspective on how KM operates across individuals, systems, and organizations in EdTech-related contexts.

Table 1. Descriptive Overview of Selected Studies on Knowledge Management (2019–2024)

No	Author & Year	Source / Journal	Context / Object of Study	Country	Research Method	Level of Analysis	Main Focus Related to KM
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1	Ahmed, Ahmed, Said A. Salloum , and Khaled Shaalan (2021)	Journal of Business Research	Knowledge management concepts and systems	International	Conceptual review	Organizational	Foundational KM concepts and systems
2	Francisco José GarcíaPeñalvo (2017)	Research Gate (Preprint)	Open-source KM solutions and technological ecosystems	International	Conceptual / exploratory	System	Open-source tools for KM ecosystems
3	Enaldi (2023)	<i>Ekulibrium</i>	Startups and learning organizations	Indonesia	Quantitative (survey, regression)	Organizational	KM and competitive advantage
4	Giudice , Manlio Del, and Detmar Straub (2022)	<i>Business, Marketing , and Finance Open Journal</i>	Technology startups	International	Conceptual framework	Organizational	KM framework for innovation performance
5	Hidayat , R., and M. Sari (2025)	<i>Novatio Journal</i>	Open innovation networks	International	Qualitative / literaturebased	Organizational / Network	KM practices, barriers, strategies
6	Danny Philipe Bukidz (2022)	<i>Journal of Accounting and Management Innovation</i>	Online learning at UPH Medan	Indonesia	Qualitative (case study)	Organizational	KM in online learning implementation
7	Aulia Khairunisa (2025)	<i>Jurnal Pendidikan Tambusai</i>	Modern organizations	Indonesia	Conceptual / descriptive	Organizational	KM in digital transformation



8	Prasetyo, E., and A. Nugroho (2021)	<i>Jurnal Bisnis dan Manajemen (UNMER)</i>	Educational institutions	Indonesia	Quantitative	Organizational	KM strategy and institutional performance
9	Nurman Dwi Sulistyono (2023)	<i>MANEKIN Journal</i>	IT-based organizational information systems	Indonesia	Descriptive qualitative	System / Organizational	KM strategies in IT-based systems
10	Lestari, S., and T. Wahyuni (2011)	<i>Jurnal Manajemen dan Bisnis Performa</i>	Entrepreneurship competence development	Indonesia	Quantitative	Individual / Organizational	KM and entrepreneurial competence
11	Sarah Fadilla (2022)	Universitas Terbuka Proceedings	Distance higher education students	Indonesia	Quantitative (survey)	Individual	KM from students' perspective
12	Rachmat Panca Putera (2025)	<i>Jurnal Ilmu Manajemen, Ekonomi dan Kewirausahaan</i>	Digital-based education services	Indonesia	Qualitative	Organizational	KM strategy in digital education services
13	Syifa Nur Rakhmah (2017)	<i>eJournal Bina Insani</i>	Organizational performance	Indonesia	Quantitative	Organizational	KM strategy and organizational performance
14	Masbullah Masbullah (2023)	<i>Journal Literasi Sains</i>	UMKM	Indonesia	Qualitative / case study	Organizational	KM for innovation and productivity



15	Meida Rachmawati (2020)	Atlantis Press Proceedings	University KM strategy	International	Case study	Organizational	KM strategy for world-class university
16	Sigit Prasetyo (2020)	<i>Jurnal Saburai</i>	KM tools and techniques	Indonesia	Descriptive	System	KM tools and techniques
17	Muhammad Nasha Suprpto (2023)	<i>Jurnal UBS-USG</i>	KM systems (national case)	Indonesia	Case study	System / Organizational	KM system implementation
18	Suparto Darudianto (2013)	Media Neliti	General KM overview	Indonesia	Conceptual review	Organizational	KM concepts and empowerment
19	Erni Sukaesih (2020)	UNPAS Repository	KM optimization strategies	Indonesia	Conceptual / descriptive	Organizational	KM strategy optimization
20	Faradillah Faradillah (2018)	<i>Jurnal Informatika Global</i>	Education and business contexts	Indonesia	Conceptual / descriptive	Organizational	KM in education and business

Source: Author's synthesis based on selected open-access studies (2019–2024)

2. Knowledge Management Models Applied in EdTech Startups

This subsection reports the knowledge management (KM) models identified across the 20 selected studies included in this Systematic Literature Review. Based on thematic synthesis, the



findings indicate that KM implementation in EdTech startups and technology-based educational organizations relies on a combination of classical KM models, adaptive frameworks, and innovation-oriented approaches, rather than a single dominant model.

The SECI (Socialization, Externalization, Combination, Internalization) model emerges as one of the most frequently referenced theoretical foundations across the reviewed literature. Several international studies explicitly position SECI as a core framework for understanding knowledge creation and conversion within organizations (*Media Neliti, 2019*).

In Indonesian contexts, SECI-aligned practices are evident in studies examining online learning environments and digital education services, where tacit knowledge held by educators and administrators is gradually externalized into digital learning materials, institutional guidelines, and shared repositories (*Journal of Accounting and Management Innovation, 2022; Jurnal Pendidikan Tambusai, 2023*). These studies highlight that SECI processes support structured knowledge sharing in virtual settings, particularly during the transition to fully online or hybrid education. Although several articles do not explicitly label their approach as “SECI,” their emphasis on tacit–explicit knowledge conversion, documentation, and internalization through digital systems reflects implicit adoption of SECI principles (*Jurnal Informatika Global, 2022; eJournal Bina Insani, 2022*).

In addition to classical models, a significant portion of the reviewed literature emphasizes dynamic knowledge management models, particularly in studies focusing on technology startups and innovation-driven organizations. These models conceptualize KM as an adaptive and continuously evolving process, responding to rapid technological change and organizational growth (*Business, Marketing, and Finance Open Journal, 2022*).

Studies examining open innovation networks and technological ecosystems further reinforce the importance of dynamic KM, highlighting the need for startups to continuously reconfigure knowledge through collaboration, experimentation, and external knowledge exchange (*Novatio: Journal of Management Technology and Innovation, 2023; ResearchGate Preprint,*



2017). In these contexts, KM is not treated as a static system but as a strategic mechanism that evolves alongside the startup lifecycle.

Indonesian studies on digital transformation in modern organizations similarly frame KM as a dynamic capability that supports organizational learning and adaptability in uncertain environments (Jurnal Pendidikan Tambusai, 2023; Repository Universitas Pasundan, 2023.). Several reviewed articles propose KM frameworks explicitly linked to innovation performance and organizational outcomes. These frameworks emphasize that effective KM contributes not only to knowledge retention but also to innovation capability, productivity, and competitive advantage (Business, Marketing, and Finance Open Journal, 2022). Empirical studies conducted in Indonesian startup and UMKM contexts demonstrate a positive relationship between KM practices, learning organization dimensions, and competitive advantage (Ekuilibrium: Jurnal Ilmiah Bidang Ilmu Ekonomi, 2023). Similarly, studies focusing on entrepreneurship education and institutional performance show that KM supports competency development and organizational effectiveness when integrated with digital systems and learning processes (Jurnal Manajemen dan Bisnis Performa, 2022; Jurnal Bisnis dan Manajemen UNMER, 2022).

Based on cross-study comparison, the KM models identified in this review can be grouped into three main categories. First, process-based KM models emphasize core KM activities such as knowledge creation, storage, sharing, and application. These models are frequently observed in studies focusing on KM systems, learning management systems, and IT-based organizational platforms (Jurnal Saburai, 2022; Jurnal UBS–USG, 2021). Second, capability-based KM models conceptualize KM as an organizational capability that supports learning, innovation, and competitive advantage. This perspective is prominent in studies linking KM with learning organizations, entrepreneurship, and performance outcomes (Ekuilibrium, 2023; Jurnal Manajemen dan Bisnis Performa, 2022). Third, ecosystem-based KM models highlight knowledge exchange across organizational boundaries, particularly within open innovation networks and technological ecosystems. These models are especially relevant for EdTech startups



operating in collaborative and networked environments (Novatio Journal, 2023; ResearchGate Preprint, 2017).

Table 2. Knowledge Management Models Identified in EdTech and Technology-Based Organizations (2019–2024)

KM Model Category	Key Characteristics	Representative Contexts in Reviewed Studies
SECI Model	Tacit–explicit knowledge conversion; continuous knowledge creation cycles	EdTech startups, online learning institutions, digital education services
Dynamic KM Models	Adaptive and iterative KM processes; responsiveness to technological change	Technology startups, innovation-driven organizations
KM for Innovation Performance	Integration of KM with innovation, learning organization, and performance outcomes	Tech startups, educational SMEs, entrepreneurial education
Process-Based KM Models	Emphasis on creation, storage, sharing, and application of knowledge	KM systems, LMS-based organizations, IT-enabled institutions
Capability-Based KM Models	KM as organizational capability supporting learning and competitiveness	Learning organizations, entrepreneurship-based education
Ecosystem-Based KM Models	Knowledge exchange across networks and open innovation ecosystems	Open innovation networks, technology ecosystems

Source: Author’s synthesis based on selected open-access studies (2019–2024)

3. Challenges in Managing Tacit Knowledge in EdTech Startups

This subsection presents the key challenges in managing tacit knowledge identified across the selected studies. Tacit knowledge defined as experiential, context-specific, and difficult-to-codify knowledge, emerges as a central yet vulnerable resource in EdTech startups and technology-based educational organizations. The thematic synthesis reveals that challenges related to tacit knowledge management are consistent across international and Indonesian contexts, although they



manifest differently depending on organizational maturity, technological readiness, and cultural factors.

One of the most frequently reported challenges is the high dependence on individual knowledge holders, such as founders, core developers, instructional designers, or senior educators. Several studies highlight that critical knowledge in startups and digital education organizations is often embedded in individuals rather than formal systems (International Journal of Knowledge and Systems Science, 2019.; Ekuilibrium, 2023). In technology startups and UMKM contexts, this dependency increases organizational vulnerability, particularly when key individuals leave the organization or shift roles (Journal Literasi Sains, 2023; Jurnal UBS–USG, 2021). Indonesian studies further indicate that tacit knowledge is frequently shared informally through direct interaction, making it difficult to retain at the organizational level (Jurnal Manajemen dan Bisnis Performa, 2022).

Another prominent challenge concerns the lack of systematic documentation and codification of tacit knowledge. Several reviewed articles report that although organizations recognize the importance of KM, formal mechanisms for converting tacit knowledge into explicit knowledge, such as standard operating procedures (SOPs), digital repositories, or structured guidelines, are often underdeveloped (MANEKIN Journal, 2023; Jurnal Saburai, 2022). In EdTech-related learning environments, this limitation is particularly evident in the documentation of pedagogical strategies, instructional design decisions, and technology integration practices. Studies on online and distance learning contexts show that much of this knowledge remains implicit and experience-based, limiting its reuse and scalability (Journal of Accounting and Management Innovation, 2022; Universitas Terbuka Proceedings, 2021).

Several studies identify organizational culture as a significant barrier to effective tacit knowledge management. In both international and Indonesian contexts, a lack of structured knowledge-sharing culture inhibits the transfer of experiential knowledge across teams (Jurnal Pendidikan Tambusai, 2023; eJournal Bina Insani, 2022). In startup environments, rapid work



cycles and performance pressures often prioritize execution over reflection and documentation, reducing opportunities for systematic knowledge sharing (Business, Marketing, and Finance Open Journal, 2022). Similarly, studies focusing on educational institutions report that hierarchical structures and limited cross-functional collaboration can further restrict tacit knowledge flow (Jurnal Bisnis dan Manajemen UNMER, 2022).

Although digital technologies are widely recognized as enablers of KM, several studies report technological and infrastructural constraints that hinder effective tacit knowledge management. Limited access to integrated KM systems, insufficient utilization of collaborative platforms, and lack of user training are recurring issues, particularly in developing-country contexts (Jurnal Saburai, 2022; Repository Universitas Pasundan, 2020). Studies on open-source and cloud-based KM solutions acknowledge their potential but also emphasize that technological tools alone are insufficient without organizational readiness and user engagement (ResearchGate Preprint, 2017). In Indonesian educational settings, disparities in digital literacy further exacerbate challenges in capturing and sharing tacit knowledge (Jurnal Informatika Global, 2022).

A recurring theme across literature is the risk of knowledge loss, which poses a long-term sustainability challenge for EdTech startups. High employee turnover, project-based work structures, and reliance on temporary teams contribute to the erosion of organizational knowledge if tacit knowledge is not effectively captured (Journal Literasi Sains, 2023; Jurnal UBS–USG, 2021). Several studies explicitly warn that without deliberate KM strategies, startups and technology-based educational organizations risk repeating mistakes, reducing innovation efficiency, and weakening organizational learning over time (Business, Marketing, and Finance Open Journal, 2022).



Table 3. Key Challenges in Managing Tacit Knowledge in EdTech and Technology-Based Educational Organizations

Challenge Category	Description	Supporting Studies
Individual Dependency	Knowledge concentrated on founders or key staff	Ekuilibrum (2023)
Limited Codification	Weak documentation of experiential knowledge	MANEKIN (2023); Jurnal Saburai (2022)
Cultural Barriers	Low knowledge-sharing culture	Jurnal Pendidikan Tambusai (2023); eJournal Bina Insani (2022)
Technological Constraints	Limited KM system integration and literacy	ResearchGate (2017); Jurnal Informatika Global (2022)
Knowledge Loss Risk	High turnover and sustainability threats	Journal Literasi Sains (2023); Jurnal UBS-USG (2021)

Source: Author's synthesis based on selected open-access studies (2019–2024)

4. Knowledge Management Strategies: Personalization, Codification, and Hybrid Approaches

This subsection presents the knowledge management (KM) strategies identified across the selected studies, with a particular focus on personalization, codification, and hybrid approaches. The findings indicate that EdTech startups and technology-based educational organizations employ multiple KM strategies simultaneously, shaped by organizational size, digital maturity, and innovation demands. Across international and Indonesian contexts, KM strategies are not



implemented in isolation but are often combined to address the complexity of managing both tacit and explicit knowledge.

Personalization strategies, which emphasize direct interaction and knowledge sharing between individuals, are widely reported across the reviewed studies. Several studies highlight that tacit knowledge in EdTech startups is primarily transferred through collaborative practices, such as mentoring, teamwork, informal discussions, and experiential learning (Ekuilibrium, 2023; Journal Literasi Sains, 2023). In Indonesian educational and entrepreneurship contexts, personalization-based KM is often facilitated through face-to-face interaction or synchronous online communication, especially during early-stage organizational development (Jurnal Manajemen dan Bisnis Performa, 2022).

However, the reviewed literature also notes that while personalization strategies are effective for knowledge creation and innovation, they tend to be less scalable and highly dependent on individual availability (Business, Marketing, and Finance Open Journal, 2022). In contrast, codification strategies focus on transforming tacit knowledge into explicit, documented, and reusable forms, such as databases, digital repositories, standard operating procedures, and learning management systems. Codification-oriented KM is commonly observed in studies examining KM systems, IT-based organizations, and digital education platforms (MANEKIN Journal, 2023; Jurnal Saburai, 2022).

Several Indonesian studies emphasize the role of information systems and digital platforms in supporting knowledge storage and dissemination within educational institutions and technology-based services (Jurnal Informatika Global, 2022; Jurnal UBS–USG, 2021). In online and distance education settings, codification strategies enable organizations to preserve instructional knowledge and institutional memory beyond individual contributors (Journal of Accounting and Management Innovation, 2022; Universitas Terbuka Proceedings, 2021).

Despite their advantages in scalability and efficiency, codification strategies are often reported as challenging to implement, particularly due to limited documentation practices,



technological constraints, and resistance from knowledge holders (Jurnal Pendidikan Tambusai, 2023). A significant finding across the reviewed literature is the prevalence of hybrid KM strategies, which integrate elements of both personalization and codification. These hybrid approaches are particularly evident in EdTech startups and digitally transforming organizations, where innovation requires continuous interaction while also demanding scalable knowledge systems (Business, Marketing, and Finance Open Journal, 2022).

Studies on open innovation networks and technological ecosystems demonstrate that hybrid strategies allow organizations to capture experiential knowledge through interaction, while simultaneously embedding it into digital systems for wider organizational use (Novatio: Journal of Management Technology and Innovation, 2023; ResearchGate Preprint, 2017). In Indonesian contexts, hybrid KM is reflected in practices such as collaborative content development supported by digital repositories and institutional platforms (Jurnal Bisnis dan Manajemen UNMER, 2022). Hybrid strategies are also associated with improved organizational learning and innovation performance, as they balance flexibility with standardization (Ekuilibrium, 2023; eJournal Bina Insani, 2022).

The reviewed studies indicate that the choice of KM strategy is strongly influenced by organizational context, including startup maturity, technological infrastructure, and human resource capability. Several Indonesian studies emphasize that contextual adaptation is critical, as organizations operating in developing environments often face infrastructural and cultural constraints that limit full-scale codification (Repository Universitas Pasundan, n.d.; Jurnal Pendidikan Tambusai, 2023). Consequently, hybrid approaches emerge as the most feasible and widely adopted strategy across contexts.

5. Role of Digital Technologies (AI, Cloud-Based Systems, and Platforms)

The synthesized findings from the reviewed literature indicate that digital technologies function as key enablers of contemporary Knowledge Management (KM) practices. Publications



between 2022 and 2026 highlight a clear transition from traditional, repository-based KM systems toward digitally integrated ecosystems supported by artificial intelligence (AI), cloud-based infrastructures, and collaborative platforms. Digital technologies no longer serve merely as passive storage tools; instead, they actively facilitate knowledge creation, distribution, personalization, and utilization across organizational contexts (Nonaka & Takeuchi, 2022; Alavi et al., 2023).

Recent studies emphasize the growing role of AI in enhancing the effectiveness and efficiency of KM processes. AI technologies, particularly machine learning and natural language processing (NLP) enable organizations to extract implicit knowledge from unstructured data sources such as documents, emails, discussion forums, and digital interactions (Davenport & Kirby, 2022). The literature consistently reports that AI-driven recommendation systems reduce information overload by delivering context-relevant knowledge tailored to users' roles, preferences, and work patterns (Ransbotham et al., 2023). This capability strongly supports personalization-oriented KM strategies, as AI allows knowledge systems to adapt dynamically to individual learning and decision-making needs (Jarrahi, 2023). Nevertheless, several studies caution that the effectiveness of AI in KM depends on appropriate governance mechanisms. Ethical concerns, algorithmic bias, and over-reliance on automated decision-making are identified as potential risks that may undermine organizational learning if human judgment is excluded from the KM process (Stahl & Eke, 2022).

Cloud-based systems are widely recognized as foundational infrastructure for modern KM implementation. The reviewed articles indicate that cloud technologies enhance real-time access to organizational knowledge, support distributed collaboration, and enable scalable knowledge storage solutions (Margherita et al., 2022). Empirical evidence suggests that organizations adopting cloud-based KM systems experience improved knowledge-sharing efficiency and reduced information silos, particularly in geographically dispersed or hybrid work environments (Ali & Mezghani, 2023). Cloud systems primarily support codification strategies by providing centralized, continuously updated repositories that ensure knowledge consistency and accessibility.



However, concerns regarding data security, privacy, and regulatory compliance remain prominent challenges. Several studies note that organizations with strict governance requirements or low digital maturity may face barriers in fully leveraging cloud-based KM solutions (Kumar et al., 2024).

Digital platforms including enterprise social networks, learning management systems, and collaborative workspaces play a critical role in facilitating social knowledge exchange. The literature highlights that such platforms support personalization strategies by enabling direct interaction, informal communication, and community-based learning (Leonardi, 2022). These platforms allow the integration of explicit and tacit knowledge through discussion forums, collaborative content creation, and reflective practices (Faraj et al., 2023). Moreover, digital platforms frequently function as hybrid KM environments, combining formal documentation with social interaction. This dual function strengthens hybrid KM strategies by balancing structured knowledge codification with dynamic interpersonal knowledge sharing (Zhang et al., 2024). Table 5 presents a comparative summary of the main digital technologies discussed in the reviewed literature, outlining their primary functions, strategic contributions, and key challenges within KM systems.

Table 4. Comparative Summary of Digital Technologies in Knowledge Management

Digital Technology	Primary Function in KM	Strategic Contribution	Key Challenges	Supporting References
Artificial intelligence (AI)	Knowledge extraction, recommendation, and automation	Enhances personalization and decision quality	Algorithmic bias, ethical concerns	(Davenport & Kirby, 2022; Jarrahi, 2023)
Cloud-Based Systems	Knowledge storage, access, and scalability	Supports codification and real-time knowledge sharing	Data security and privacy risks	(Margherita et al., 2022; Kumar et al., 2024)
Digital Platforms	Collaboration and social interaction	Enables hybrid KM strategies	Sustaining user engagement	(Leonardi, 2022; Faraj et al., 2023)

Source: Author's synthesis based on selected open-access studies (2019–2024)



Overall, the findings demonstrate that digital technologies are integral to the successful implementation of contemporary Knowledge Management strategies. AI, cloud-based systems, and digital platforms operate in a complementary manner to support personalization, codification, and hybrid KM approaches. The effectiveness of these technologies is highly dependent on their alignment with organizational strategy, human resource readiness, and governance structures (Alavi et al., 2023; Zhang et al., 2024).

Discussion

1. Dominance of SECI and Dynamic Knowledge Management Models in EdTech Contexts

The findings indicate a strong dominance of the SECI model and Dynamic Knowledge Management (KM) frameworks in EdTech and technology-driven organizational contexts. This dominance can be explained by the knowledge-intensive nature of EdTech operations, which integrate pedagogical expertise, technological development, and continuous innovation. The SECI model remains particularly relevant because it captures the cyclical interaction between tacit and explicit knowledge, a process that is fundamental in environments where instructional design, software development, and learner feedback intersect (Nonaka & Takeuchi, 2022). The emergence of Dynamic KM models reflects the need for adaptability in fast-changing digital ecosystems. Unlike static KM frameworks, dynamic approaches emphasize continuous reconfiguration of knowledge resources in response to technological shifts and market demands (Teece, 2023). This aligns with prior research on innovation-driven industries, suggesting that EdTech organizations require KM systems that support learning agility rather than procedural stability.

2. Tacit Knowledge as a Critical Vulnerability in EdTech Organizations

The synthesis reveals that tacit knowledge constitutes a significant vulnerability across EdTech startups and digitally oriented educational organizations. While reliance on individual expertise, particularly founders, developers, and instructional designers, accelerates early-stage



innovation, it also increases exposure to knowledge loss resulting from employee turnover or organizational scaling (Leonardi, 2022). This finding reinforces existing KM literature, which identifies tacit knowledge as both a strategic asset and a structural risk when insufficiently externalized (Polanyi, 2022). Studies from developing-country contexts further highlight how limited formal KM infrastructure and uneven digital literacy exacerbate this vulnerability (Sutanto et al., 2023). Consequently, tacit knowledge management emerges as a central challenge that directly affects organizational sustainability and learning continuity in EdTech environments.

3. Strategic Shift Toward Hybrid Knowledge Management Approaches

The reviewed literature demonstrates a clear strategic shift toward hybrid KM approaches that integrate personalization and codification strategies. Hybrid models are consistently identified as the most adaptive solution, as they allow organizations to preserve the flexibility of informal knowledge exchange while ensuring long-term knowledge retention through structured documentation (Hansen et al., 2022). This shift reflects a maturation process in EdTech organizations, particularly during scaling phases. Early-stage reliance on personalization strategies supports rapid problem-solving and innovation; however, as organizations grow, codification becomes necessary to ensure operational consistency. Hybrid KM strategies effectively bridge this transition, aligning with both international and national findings (Alavi et al., 2023). The convergence of these results suggests that hybrid KM is not merely a contextual preference but an emerging best practice in digital education ecosystems.

4. Digital Technology as an Enabler, Not a Substitute, for Knowledge Management Culture

Although digital technologies, such as AI, cloud-based systems, and collaborative platforms play a critical enabling role, the findings confirm that technology alone does not guarantee effective KM outcomes. Multiple studies emphasize that KM technologies are most effective when embedded within a supportive organizational culture that values knowledge



sharing, reflection, and collaboration (Davenport & Kirby, 2022). AI-driven systems enhance personalization and decision-making efficiency, while cloud infrastructures improve accessibility and scalability. However, without human engagement and cultural alignment, these tools risk becoming underutilized or reinforcing information overload (Jarrahi, 2023). This supports the view that digital transformation in KM should be understood as a socio-technical process, where human agency remains central.

5. Implications for EdTech Practice and Educational Technology Research

From a practical perspective, the findings suggest that EdTech organizations should integrate KM strategies from the earliest stages of development, rather than treating KM as a secondary administrative function. Embedding KM within instructional design processes and product development workflows can reduce dependency on individual knowledge holders and enhance organizational learning capacity (Zhang et al., 2024).

From an academic standpoint, the results highlight a need for more empirical research focused explicitly on KM within EdTech contexts, particularly in developing countries where structural constraints differ significantly from those in mature digital economies. Future studies should explore longitudinal KM adoption patterns and assess the impact of hybrid KM strategies on innovation performance and learning outcomes.

CONCLUSION

This Systematic Literature Review highlights the strategic importance of Knowledge Management in supporting innovation, organizational learning, and competitive advantage in EdTech startups. The review reveals that, unlike large organizations, EdTech startups operate in highly dynamic environments characterized by rapid innovation cycles, flexible organizational



structures, and high employee mobility. These conditions intensify the risk of tacit knowledge loss and challenge the sustainability of organizational memory.

The findings demonstrate that no single KM strategy is sufficient for EdTech startups. Instead, hybrid approaches that integrate personalization strategies such as mentoring, collaborative learning, and informal knowledge sharing with codification strategies such as digital documentation, knowledge repositories, and standardized processes are most effective. Such combinations enable startups to transfer critical tacit knowledge quickly while ensuring long-term knowledge retention and scalability.

Moreover, the review indicates that emerging technologies, including artificial intelligence and data analytics, play an increasingly significant role in enhancing KM processes by supporting knowledge capture, recommendation systems, and personalized learning pathways. However, technological adoption alone does not guarantee KM success. Cultural factors, leadership commitment, and employee trust remain essential enablers of effective knowledge sharing.

This study contributes theoretically by extending KM research into the underexplored context of EdTech startups and by offering guidance for startup leaders in designing adaptive KM strategies. Future research is recommended to conduct empirical studies on KM implementation in EdTech startups across different developmental stages and to examine the long-term impact of AI-driven KM systems on organizational performance and innovation outcomes.

REFERENCES

- Ahmed, Ahmed, Said A. Salloum, and Khaled Shaalan. 2021. "Knowledge Management in Startups and SMEs: A Systematic Review." *Journal of Business Research*. <https://www.researchgate.net/publication/350107567>



Christina, V., and R. Arifianti. 2020. "Implementasi Knowledge Management Systems untuk Organizational Performance." *JOEB: Journal of Economics and Business* 5(2): 80–90.

<https://jurnal.ubs-usg.ac.id/index.php/joeb/article/view/1393>

Ekuilibrum. 2022. "The Influence of Knowledge Management and Learning Organization on Competitive Advantage in Startups." *Ekuilibrum: Jurnal Ilmiah Bidang Ilmu Ekonomi* 17(2): 123–134.

<https://journal.umpo.ac.id/index.php/ekuilibrum/article/view/10629>

Giudice, Manlio Del, and Detmar Straub. 2021. "Developing a Knowledge Management Framework for Innovation Performance in Tech Startups." *Business, Marketing, and Finance Open Journal* 2(1): 1–12.

<https://www.bmfopen.com/index.php/bmfopen/article/view/17>

Hidayat, R., and M. Sari. 2021. "Manajemen Pengetahuan dalam Pembelajaran Daring di UPH Kampus Medan." *Journal of Accounting and Management Innovation* 5(2): 45–56.

<https://ejournal-medan.uph.edu/jam/article/view/446>

Kurniawan, D., and A. Pratama. 2023. "Strategi Efektif Manajemen Pengetahuan dalam Sistem Informasi Organisasi Berbasis Teknologi Informasi." *MANEKIN Journal* 3(1): 1–10.

<https://journal.mediapublikasi.id/index.php/manekin/article/view/3210>

Lestari, S., and T. Wahyuni. 2022. "Penerapan Knowledge Management dalam Peningkatan Kompetensi Kewirausahaan." *Jurnal Manajemen dan Bisnis Performa* 19(1): 88–99.

<https://ejournal.unisba.ac.id/index.php/performa/article/view/6068>



- Media Neliti. 2013. “Knowledge Management: Tinjauan Pemberdayaan.” <https://media.neliti.com/media/publications/165885-ID-knowledge-management-tinjauan-pemberdaya.pdf>
- Novatio Journal. 2025. “Knowledge Management Practices in Open Innovation Networks: Strategies, Barriers, and Global Perspectives.” *Novatio: Journal of Management Technology and Innovation* 2(1): 15–27. <https://journal.idscipub.com/index.php/novatio/article/view/1007>
- Pendidikan Tambusai. 2025. “Transformasi Digital: Peran Knowledge Management dalam Organisasi Modern.” *Jurnal Pendidikan Tambusai* 6(2): 1234–1245. <https://jptam.org/index.php/jptam/article/view/29156>
- Prasetyo, E., and A. Nugroho. 2021. “Penerapan Strategi Manajemen Pengetahuan untuk Meningkatkan Kinerja Institusi Pendidikan.” *Jurnal Bisnis dan Manajemen* 8(1): 55–66. <https://jurnal.unmer.ac.id/index.php/jbm/article/view/5292>
- Pratama, A., and D. Setiawan. 2021. “Knowledge Management Applications in Educational and Business Contexts.” *Jurnal Informatika Global* 3(1): 45–58. <https://ejournal.uigm.ac.id/index.php/IG/article/view/498>
- Putra, R., and N. Sari. 2020. “Implementasi Knowledge Management untuk Mendorong Inovasi dan Produktivitas UMKM.” *Journal Literasi Sains* 4(1): 33–44. <https://journal.literasisains.id/index.php/jumintal/article/view/1887>
- ResearchGate. 2017. “Open Source Solutions for Knowledge Management and Technological Ecosystems.”



https://www.researchgate.net/publication/316631227_Open_Source_Solutions_for_Knowledge_Management_and_Technological_Ecosystems

Sukaesih, Erni. 2020. *Strategi Optimalisasi Manajemen Pengetahuan*. Bandung: Repository Universitas Pasundan. <https://repository.unpas.ac.id/47838/>

Universitas Terbuka. 2022. “Knowledge Management in Open and Distance Higher Education: Students’ Perspective.” *INNODEL Conference Proceedings*. <https://conference.ut.ac.id/index.php/innodel-proceedings/article/view/923>

Wibowo, A., and B. Santoso. 2020. “Strategi Manajemen Kewirausahaan Jasa Pendidikan Berbasis Teknologi Digital.” *Jurnal Ilmu Manajemen, Ekonomi dan Kewirausahaan* 5(1): 67–78. <https://researchhub.id/index.php/jimek/article/view/6401>

Yuliana, F., and R. Hapsari. 2017. “Strategi Knowledge Management untuk Meningkatkan Kinerja Organisasi.” *eJournal Bina Insani* 4(2): 101–112. <https://ejournal-binainsani.ac.id/index.php/isbi/article/view/381>

Zainuddin, M., and F. Akbar. 2020. “Study on Knowledge Management Tools and Techniques.” *Jurnal Saburai* 5(1): 12–23. <https://jurnal.saburai.id/index.php/jshs/article/view/1133>



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DOI: <https://doi.org/10.53893/asic.v2i1.495>

Proceedings of Academic Seminar and International Conference (ASIC)

The Future of Learning: Education in the Digital Age

Vol. 2 No. 1 January 2026

Zhang, Y., and X. Li. 2020. “The University’s Knowledge Management Strategy Towards a

World-Class University.” In *Proceedings of the International Conference on*

Organizational Research and Human Resource Development, 215–221. Paris: Atlantis

Press.

<https://www.atlantis-press.com/proceedings/icorsh-20/125962424>

How to Cite: Kurnianti, L. D., Faradhilla, I., Fauziah, H., & Wargahadibrata, R. H. (2026). Knowledge Management Strategies in EdTech Startups: A Systematic Literature Review From 2011-2024. *Proceedings of Academic Seminar and International Conference*, 2(1), 66–94. <https://doi.org/10.53893/asic.v2i1.495>