

Knowledge Management Practice and Organizational Performance in the Context of International Schools

Tiana Silva, University of Strathclyde, UK

Nusa Fain, Carleton University, Canada*

 <https://orcid.org/0000-0003-0771-4594>

ABSTRACT

This exploratory study delves into three private international schools' knowledge management (KM) practices amidst the Covid-19 pandemic. Utilizing Gold et al.'s KM framework, the research examines the applicability of this model in the unique industrial context of international schools and explores the potential influence of KM on organizational performance within this context. The findings highlight that teachers proficient in articulating KM processes and infrastructure perceive their schools as more successful in the international education landscape. As schools transition back to in-person learning, leaders and stakeholders are urged to evaluate their KM practices and consider targeted initiatives to cultivate specific competencies, fostering a sustainable competitive advantage and enhancing both financial and non-financial firm performance. This study's originality lies in examining KM practices in international schools during the pandemic, stimulating conversations among school leaders and stakeholders to optimize knowledge management in the post-pandemic era.

KEYWORDS

International Education, Knowledge Management, Organizational Performance

INTRODUCTION

The knowledge-based view of the firm posits knowledge as the most crucial strategic resource possessed by an organization (Bontis, 2002; Roos, 1998; Sveiby, 2001). Recognizing knowledge as a vital asset for sustaining competitive advantage has sparked increased interest in and extensive research of knowledge management (KM). KM encompasses the processes and practices that allow firms to manage their intellectual assets, thereby leveraging knowledge-based competitive advantages (Davenport & Prusak, 1998; Nonaka & Takeuchi, 1995; Heisig, 2009). Researchers (i.e., Gold et al., 2001; Zaim et al., 2007; Zack et al., 2009) have explored preconditions for effective KM, establishing significant connections to organizational capabilities and performance. There is a wide consensus that effective KM leads to positive performance, extending to both market positioning and financial metrics.

DOI: 10.4018/IJKM.336925

*Corresponding Author

This article published as an Open Access article distributed under the terms of the Creative Commons Attribution License (<http://creativecommons.org/licenses/by/4.0/>) which permits unrestricted use, distribution, and production in any medium, provided the author of the original work and original publication source are properly credited.

Although KM in higher education has been explored extensively (Hoq & Akter, 2012; Ramachandran et al., 2013; Mahdi et al., 2019; Shosham & Perry, 2009), KM practices in secondary education have garnered much less attention (Cheng, 2014; Thambi & O'Toole, 2012).

Private international schools make up an industry that has grown tremendously in the last twenty years. Since 2000, the number of international schools has increased from 2,584 to 11,616, and total tuition fees have grown 1002% (ISC Research, 2021). While continued growth is expected in the coming years, especially in China and Southeast Asia, no research to date has been conducted on KM practices in international schools. In their study of knowledge management in secondary schools, Thambi and O'Toole (2012) concluded that several aspects of KM could be found incidentally in the schools they examined. It would therefore be useful to explore KM in international schools to expand knowledge in the field.

This paper aims to start this conversation by exploring KM practices in international schools during the COVID-19 pandemic and their influence on organizational performance. We strive to do the following in this study: (a) explore knowledge management processes and infrastructure within the international school context, (b) explore conceptual implications of KM within these schools, and (c) provide recommendations to the leaders of international schools for reflection upon their knowledge management performance. As knowledge-intensive organizations, how international schools manage knowledge could have repercussions for firm success in financial and non-financial measures.

This study is organized into six parts. The following section will present a review of the literature to outline knowledge management and identify KM practices currently employed across the industry. A conceptual framework for this study will be introduced next, followed by the methodology adopted. Data collected from the interviews will be presented through the lens of the study's objectives in the findings and analysis section, followed by implications. We conclude the paper with future research recommendations.

THEORETICAL BACKGROUND

Defining Knowledge and KM

Knowledge has diverse definitions, encompassing a fluid mixture of experience, values, contextual information, and expert insight (Davenport & Prusak, 1998). It can also be seen as justified personal beliefs empowering action (Alavi & Leidner, 1999). According to Drucker (2001), information is data endowed with relevance and purpose, serving as a foundation for knowledge construction (Nonaka & Takeuchi, 1995). Individuals in organizations use information to create knowledge, from which the organization extracts value.

Polanyi (1958; 1966) distinguished knowledge into explicit and tacit forms. Scholars emphasize the importance of tacit knowledge, embedded in individual experience and influenced by personal beliefs. Farnese et al. (2019) metaphorically represented explicit knowledge as the visible tip of an iceberg, while tacit knowledge remains submerged. They propose that the socialization, externalization, combination, internalization (SECI) model captures the conversion of tacit knowledge to explicit knowledge, driving the organization's knowledge-creation process (Farnese et al., 2019, p. 71).

Wiig (1997) identified three KM approaches: managing explicit knowledge through technical means like technology-based networks; focusing on intellectual capital comprising human, structural, and relational assets; and comprehensive KM encompassing all knowledge-related aspects affecting a firm's success. In today's business landscape, systematic knowledge management is crucial to achieve a competitive advantage. Knowledge assets unique to the firm, per the knowledge-based view, contribute to sustainable competitive advantage and market relevance (Grant, 1996; Earl, 2001). Efficiently managing knowledge resources secures the firm's viability and financial success.

KM Capabilities

KM is crucial for organizations to effectively derive value from employees' personalized knowledge (Alavi & Leidner, 1999). Gold et al. (2001) proposed a model associating KM capabilities with firm success, comprising seven capabilities categorized under knowledge infrastructure and knowledge processes. Their research established a significant relationship between KM processes and infrastructure and non-financial outcomes, including market opportunities, process efficiency, speed to market, coordination, and innovation. When Zack et al. (2009) further explored the relationship between KM practices and organizational performance, they found it to be directly linked to financial performance.

Jennex and Olfman (2005) assert the importance of an organization assessing its KM success, and their KM Success Model (Jennex & Olfman, 2006) built upon DeLone and McLean's (1992) model for information system success. Net benefits of KM can be measured using metrics specific to that organization, allowing diversity in what KM success looks like in different contexts (Jennex & Olfman, 2006). Zaim et al. (2007) used a modification of Gold et al.'s (2001) model to examine the connection between KM capabilities and KM performance. Their study of 83 managers in a mobile communications company affirmed the positive impact of KM processes and infrastructure on KM practices.

Mills and Smith (2011) extended prior research by independently testing each capability within Gold et al.'s (2001) model. They confirmed that all capabilities collectively impact KM, but not all directly affect organizational performance. It was recommended that managers seeking effective KM strategies should prioritize specific capabilities tailored to their organizational context.

KM Infrastructure

KM infrastructure, the backbone of KM, enables effective knowledge transfer within organizations (Davenport & Voelpel, 2001). It encompasses technology, organizational structure, and culture (Gold et al., 2001), with the addition of intellectual capital recognized by Zaim et al. (2007).

Technology is pivotal in integrating fragmented information and knowledge through communication and IT systems (Teece, 1998). Business intelligence, collaboration, and knowledge discovery systems facilitate knowledge storage and retrieval, enhancing organizational performance (Seleim & Khalil, 2007; Pérez-López & Alegre, 2012). During the COVID-19 pandemic, distance learning accelerated the digital transformation of teaching in international schools, resulting in the adoption of various digital tools (Iacuzzi et al., 2020; ISC Research, 2020b).

Organizational structure emphasizes creating structures that foster collaboration to leverage technological systems effectively (Gold et al., 2001). Employee interaction is crucial for effective KM, and formal structures can facilitate knowledge flow even in geographically dispersed groups (Sanchez & Mahoney, 1996; Nonaka & Takeuchi, 1995). In today's globalized economy, flexible structures facilitating knowledge-sharing across borders are vital.

Culture represents a significant challenge to effective KM, with organizational values, beliefs, and norms influencing knowledge-related activities (Davenport & Prusak, 1998; Leonard-Barton, 1995; DeLong, 1997). A strong culture, supported by shared values, fosters knowledge-related activities such as relationship-building, on-the-job learning, and experimentation (Deal & Kennedy, 1982). Effective KM requires clear communication of the organization's vision and formalized recognition of knowledge-sharing efforts (Caplan et al., 1984; Blackler, 1995).

The components of KM infrastructure (technology, organizational structure, and culture) create an enabling environment for effective knowledge transfer, utilization, and creation within organizations. The COVID-19 pandemic's impact on distance learning highlights the importance of technology in education, necessitating the adaptation of KM infrastructure to meet evolving challenges and support personalized teaching. Organizations can cultivate an environment conducive to KM and enhance overall organizational performance by understanding the interplay between technology, structure, and culture.

KM Processes

KM processes encompass knowledge generation, transfer, utilization, and storage (Gold et al., 2001). Generation involves accumulating knowledge through activities like creation, capture, collaboration, and acquisition, including the transformation of tacit knowledge into explicit knowledge via externalization (Nonaka & Takeuchi, 1995). Collaborative sessions facilitate the sharing and dissemination of personal experiences, contributing to organizational knowledge creation.

Knowledge transfer involves converting acquired knowledge into a usable form for organizational benefit (Gold et al., 2001). Codification and classification of knowledge are crucial for effective utilization and integration across systems, eliminating redundancies and identifying outdated knowledge. In-house training and formal mechanisms like rules, routines, and group problem-solving support knowledge integration (Alavi & Leidner, 2001; Pérez-López & Alegre, 2012).

Knowledge utilization prompts changes in behavior, practices, and policies, transforming knowledge from potential to dynamic capability (Mills & Smith, 2011). When applied to products, services, and problem-solving, knowledge enhances organizational value and performance (Bender & Fish, 2000; Cohen & Levinthal, 1990). Effective knowledge utilization empowers organizations with dynamic capabilities to respond to challenges and opportunities.

Storage processes focus on knowledge protection and accessibility (Gold et al., 2001). Security-oriented practices safeguard vital knowledge from inappropriate use or theft, ensuring competitive advantage (Liebeskind, 1996). This can be achieved through risk assessments designed for KM, such as that of Jennex and Durcikova (2020). Appropriate indexing and storage enable easy access to knowledge for present and future employees (Zaim et al., 2007).

Comprehensive KM processes facilitate the effective flow of knowledge, from generation and transfer to utilization and storage, enhancing organizational performance and competitive advantage.

METHODOLOGY

This exploratory study aimed to understand KM practices in the international school context, particularly in response to the COVID-19 pandemic-induced digital transformation. Qualitative data was collected through semi-structured interviews with teachers from three private international schools to achieve this. The research design adopted a constructivist research paradigm to comprehend the participants' views and experiences regarding KM in their schools.

A sample of ten teachers from three private international schools in different countries and continents participated in the study. The schools represented the three types of international schools as defined by Hayden and Thompson (2013). The participant selection included at least one teacher from each school with a middle leadership role to explore potential variations in perceptions based on leadership responsibility. The sample size of ten participants is justified by the depth of insights sought, the focus on specific contextual factors, and the need for a manageable and feasible research endeavor. While such a small sample size prevents this study from making any considerable generalizations, and the experiences and perspectives of these ten teachers may not be fully representative of the broader population of educators in international schools globally, they provide a starting point for exploring perceptions of KM practices in this context.

Semi-structured interviews were conducted through Zoom video conferencing due to geographical distances and COVID-19 restrictions. The interview protocol was developed based on Gold et al.'s (2001) questionnaire, modified to elicit comments on various aspects of KM processes and infrastructure. The questions aimed to understand the presence and effectiveness of KM capabilities in the schools.

The interpretive approach was employed to analyze the qualitative data obtained from the interviews. The interviews were transcribed, and thematic analysis was conducted to identify recurring themes and patterns related to KM practices and infrastructure.

Table 1. Overview of participating schools and sample characteristics

School	Type	Location	Students	Teachers	Participants
International School X (ISX)	Type B	Taiwan	1100	74	3
International School Y (ISY)	Type C	UAE	462	47	4
International School Z (ISZ)	Type A	Germany	389	42	3

KM performance was assessed based on the presence and favorable description of each capability reported by the participants. The capability was considered present if the participant provided examples of its existence in their school, and it was considered effective if the participant described it positively. Given the private nature of international schools and limited access to organizational data, teacher perceptions of success were explored. Participants were asked about their school’s alignment with their definition of success, as their perceptions could influence teacher retention rates.

As an exploratory study, the study has some limitations. The sample size of ten participants may not provide a definitive profile of KM practices in international schools. However, it offers valuable insights into common KM practices and potential areas for further development. The self-reported and voluntary nature of data collection by organizations like ISC Research (2020a) could limit the comprehensive representation of the international school industry. Furthermore, the study is situated in the context of the COVID-19 pandemic, and the rapid digital transformation it induced. While this provides valuable insights into KM practices during a specific period, it may not capture the long-term or evolving nature of KM strategies as schools adapt to post-pandemic scenarios. These constraints, though inherent, serve as a call for future research to build upon and refine our understanding of KM practices within this distinctive educational domain.

FINDINGS AND ANALYSIS

Overall, findings suggest that KM infrastructure exists in some form in all three international schools. The degree to which KM processes could be described varied by teacher—even within the same school—and was noticeably different between those with middle leadership responsibilities and those without. The impact of digital transformation and the context of distance learning highlighted areas for improvement in each school’s KM processes. For relevant quote samples, please see Appendix A.

Questions regarding the processes for generating new knowledge centered on how schools used feedback to improve distance learning and how they found best practices. Participants 1 through 3 said the generation of new knowledge did not happen at ISX during distance learning. Participant 4 spoke of the generation of new knowledge at ISY because teachers need to adapt to the sudden digital transformation. As teachers underwent a trial by fire, they generated new knowledge using various digital tools that they sought out independently. A similar process was described at ISZ but in a much more positive light, Participant 9 said that teachers could generate knowledge by creating new possibilities for existing resources. Differences in perceived support from school leaders could explain the difference in perspective. Participants from ISY said feedback on how to improve distance learning was never requested of them, and Participant 6 described their school’s aversion to this process as so strong that recommendations made to school leaders were met with rebuke. This was a sharp contrast to ISZ, where participants described multiple channels for providing the school with feedback to improve distance learning, including speaking directly to the head of school through virtual meetings. Sharing best practices, an important part of knowledge generation was reportedly done during virtual meetings within a teacher’s department or sometimes with the secondary (high

school) section. Teachers at ISY were encouraged by school leaders in meetings to describe what had been working well in their classes, whereas teachers at ISZ were emailed a shared Google Sheets spreadsheet where they could add descriptions of what they felt were best practices. Only the teachers from ISX did not identify any processes for finding best practices. A noticeable commonality amongst the schools was that any processes for identifying best practices that did exist did not include screening or follow-up. School leaders did not evaluate whether a practice was a 'best practice' before it was shared with others, nor did they follow up on whether best practices were being implemented by other teachers once they were shared. Without these aspects of the process, the value to the organization may never materialize.

Transference of knowledge during distance learning was examined by asking participants about how organizational knowledge was transferred to teachers, how schools replaced outdated knowledge, and how knowledge was absorbed by pupils. Participants at ISZ recalled receiving organizational knowledge both through email and meetings with the head of school. While participants at ISY remembered receiving organizational knowledge through email, Participant 4 mentioned that he had not had direct communication with the head of school at any point during their 16 weeks of distance learning. None of the participants from ISX could describe processes related to replacing outdated knowledge during distance learning. At ISY, the use of Microsoft OneNote meant that schoolwide memoranda could be updated in real-time to reflect the most current knowledge. While outdated knowledge at ISZ was either archived or deleted from the secondary section's Google Drive, Participant 9 noted that emails containing updates on outdated knowledge often included instructions for use or next steps. Processes for absorbing knowledge from teachers into the organization were only present at ISZ, where recordings of teachers' online lessons were reviewed by the school's educational technology integrator in search of effective practices that could be adopted schoolwide. When Mills and Smith (2011) decomposed Gold et al.'s model and tested individual competencies for their impacts on organizational performance, all KM processes capabilities except for knowledge transfer had a measurable effect. Transfer was one of the weakest processes among the three schools, but this finding is not inconsequential. Absorptive capacity—an organization's ability to find, assimilate, and use new knowledge to its advantage—is recognized by scholars as a crucial part of the implementation stage of the innovation process (Cohen & Levinthal, 1990; Tidd & Bessant, 2020; Li, 2016). Since technology introduces opportunities for schools to innovate and create a competitive advantage, processes for absorbing knowledge from staff are worthy of development.

Knowledge utilization was examined through questions about how schools learned from mistakes, took advantage of new knowledge, and linked sources of knowledge to solve problems during distance learning. Participants at the same school gave conflicting responses regarding the application of knowledge learned from mistakes, one saying that processes did not exist while another said the processes were organized and effective. This was the case for ISZ, and it was unclear whose account was accurate because the third ISZ teacher said they could not think of any mistakes that took place during distance learning. One teacher from each ISX and ISY said they believed mistakes were hidden by school leaders, and therefore could not comment on the processes. New knowledge regarding the continued closures of schools in the United Arab Emirates helped ISY reshape its distance learning policy. As for ISX, it took advantage of new knowledge obtained from its other campuses throughout Taiwan to shape expectations for online lessons. School leaders also asked teachers about student progress and used this knowledge as a factor in deciding class placements. Participant 8 spoke of how ISZ was able to utilize knowledge from external sources, acquiring new distance learning practices from other international schools in Germany and sharing them with teachers. At each of the three schools, linking sources of knowledge to solve problems was conducted through virtual meetings that the entire secondary faculty would attend. These meetings would happen at most every week, leaving it unclear how more urgent problems would be solved in the meantime. Participants from ISY and ISZ did note, however, that they believed most problems were dealt with above the teaching staff, so they could not describe the specifics of the process.

Coding and storage of knowledge at all three schools was reported to be primarily the job of the IT department. All teachers described the protection of knowledge using intranets and password-protected cloud storage. When hosting online lessons on Google Meets or Microsoft Teams, students were required to log on with an email account that was provided and managed by the school. Another aspect of this competency that the schools reportedly had in common was that they lacked processes to protect against knowledge theft. Although all participants cited the use of restricted folders that could only be accessed by staff who had permission to do so, they did not believe their schools had processes to prevent knowledge from being copied or downloaded without the school's consent. Participant 5 said that ISY included in its contracts a clause stating that all knowledge created by staff is property of the school but noted that there was no way to enforce this as all staff could download from the school's cloud storage to their personal computers. The protection of knowledge from inappropriate use was most clearly present at ISZ, where staff are trained in the European Union's General Data Protection Regulation and are advised on which types of knowledge in the school have restrictions on how they can be used.

Mills and Smith (2011) found knowledge infrastructure to have over twice the impact on organizational performance than knowledge processes. According to Zaim et al. (2007), this means that the background and context in which KM is implemented are more important than the aspects of its application. Indeed, if Gold et al. developed their model for KM infrastructure as a manifestation of the basic organizational structures necessary for operation, then it would follow that strong KM infrastructure capability would contribute to organizational performance.

Participants were asked about their schools' technology capability as it related to the construction and delivery of lessons, collaboration, and knowledge retrieval. At all three schools, guidelines for how technology was to be used for the construction and delivery of lessons during distance learning evolved. In all cases, guidelines were lax initially but became more prescriptive as school leaders received feedback from parents. At ISX, synchronous learning that required all students to have their cameras switched on was later adapted so that students would have less screen time during the day. At ISY, teachers were initially told by school leaders that they were not expected to teach the same amount of content in their online lessons, which had been shortened to just half the length of regular lessons. Later, as described by Participant 6, teachers were prescribed the number of tasks that needed to be given to students per week and at what time of day they needed to upload their lessons. Participants from ISZ said school leadership emphasized flexibility in the delivery of lessons to help students transition to the digital environment. While students were not initially required to keep their cameras on during lessons, this was revised by school leaders in an attempt to increase student engagement. Depending on whether the school subscribed to Google or Microsoft products, collaboration between teachers took place on either Google Meets and Hangouts or Microsoft Teams. The same pattern was observed regarding the retrieval of knowledge, which was either from Google Drive or Microsoft OneDrive. Overall, it was for this capability that schools had the most clearly established infrastructure that was also described in the same fashion across all participants.

For the second competency within KM infrastructure, organizational structure, participants were asked how their schools developed their departments during distance learning, responded quickly to unanticipated changes, and reduced the redundancy of information and knowledge. When each competency within KM infrastructure was measured on its own against organizational performance, only organizational structure was shown to have a significant impact (Mills & Smith, 2011). Participants from ISX said their departments were not developed during distance learning, though Participant 2 mentioned the school's education technology specialist regularly sent emails containing suggestions for self-guided development that teachers could pursue independently. Teachers at ISY were responsible for developing their departments on their own, according to Participants 4, 6, and 7. At ISZ, teachers received training on how to administer examinations in a virtual environment, but the extent to which this is development rather than maintenance is debatable. When it came to adapting quickly to unanticipated changes, all participants from ISX described the same instance where school

leaders became aware of students using pre-recorded videos of themselves to bypass the requirement that all students be visible on camera during lessons. Though the response was perceived as heavy-handed because it meant all virtual backgrounds were disabled during lessons, even for teachers, the IT department swiftly handled the implementation. ISZ anticipated school closures by following the spread of the pandemic through Europe and training their staff to use Google Meets in the weeks before schools officially closed in Germany. On the other hand, ISY was not able to quickly adapt and multiple participants noted that this was a source of frustration among staff, who felt knowledge of school closures worldwide should have prompted better preparedness. Half of the participants said their schools made no conscious effort to reduce the redundancy of knowledge, though this was in stark contrast to two participants, both from ISZ, who said an explicit effort was made.

The last competency within Gold et al.'s model of KM infrastructure is culture. Participants were asked questions about the delivery of their school's vision for distance learning, and the extent to which teachers were encouraged to experiment and discuss their teaching with colleagues during that time. Eight of 10 participants could describe their school's vision for delivering distance learning. At ISX and ISY, this vision was centered on delivering a "high-quality education" (Participant 1) despite the many changes required in the virtual environment. Participant 9 said that the vision at ISZ involved mindfulness and positivity, where student welfare was paramount. This was supported by Participant 10, who noted that the vision included a reduction in assessments. Nevertheless, one participant from each ISY and ISZ said their schools' visions for distance learning were unclear. All three participants from ISZ said teachers were encouraged to experiment during distance learning, which contrasts with the other two schools where only one participant from each school said this was the case. Interestingly, both participants were those with middle leadership responsibilities. Participant 2 did note, however, that encouragement did not come from the school's principal but rather from the academic deputy. Participant 5 from ISY said encouragement came directly from the leader of the secondary section, but none of the other participants from ISY corroborated this. Explicit encouragement to discuss one's teaching with others was reported even less than experimentation, with only three of 10 participants saying it was encouraged by their schools. Several participants did say, however, that while this type of collaboration wasn't explicitly encouraged by their schools it was something that teachers chose to do anyhow, and high levels of collaboration during distance learning were reported at both ISY and ISZ.

IMPLICATIONS

By recognizing that a school's knowledge-based competitive advantage could be enhanced through conscious KM practice, international school leaders can strengthen their firms' position in their respective geographical markets.

As the number of international schools grows, the applicability of Gold et al.'s (2001) conceptual model within the education context opens avenues for international school leaders and key stakeholders to begin discussing how they can use KM to enhance organizational performance. Since the development of the conceptual model, numerous researchers have proven that a one-size-fits-all approach to KM does not exist. This means determining which KM capabilities may serve to increase their firm's performance and developing a KM strategy based on their organization's goals is a necessary first step. While it may require substantial time and resources upfront, the contextual and individualistic nature of how effective KM is practiced in organizations is ultimately beneficial. Although a firm cannot simply adopt the approach used by a successful firm and expect the same results, developing an approach that works uniquely for one's firm creates a factor for differentiation from competitors. The digital transformation accelerated by distance learning has provided international schools with an exciting opportunity to reevaluate their knowledge practices based on the lessons learned. The knowledge generated from the experience can be an impetus to change the way the organization generates and utilizes knowledge resources henceforth.

Directed implementation of new KM practices and/or targeted improvement of existing ones does not need to happen all at once. Since research by Mills and Smith (2011) and Seleim and Khalil (2007) showed that certain KM capabilities can have an impact on organizational performance when practiced independently, these capabilities would be a starting point for school leaders. Within KM infrastructure, this capability is organizational structure; within KM processes, this is knowledge utilization. Apart from the aspects explored in this study, other aspects of these capabilities could be considered by school leaders. Aspects of organizational structure that could be examined in an international school context include structures that promote collective rather than individualistic behavior, reward systems for sharing knowledge, processes to facilitate knowledge exchange across functional boundaries, and structures that facilitate the creation of new knowledge. Aspects of knowledge utilization that would be of interest to key stakeholders include using knowledge to adjust strategic direction, applying knowledge to changing competitive conditions, and matching sources of knowledge to problems at hand. Securing knowledge assets against technical, behavioral, and legal threats can be achieved with mitigation plans such as those outlined by Jennex et al. (2022). Evaluating how one's school currently performs regarding these aspects is an initial step that must be taken before any changes can be made. A targeted approach to the implementation of KM practices is more effective than spreading resources thin to address all capabilities at once.

Since nearly all international schools have boards of directors, the onus of this undertaking would not (and should not) fall to a single person. What is more, ownership of the school's KM strategy should not only be concentrated in the school's upper management but should be clearly communicated to the staff within every business function. Participants' understanding of knowledge management was limited, indicating that their organizations have not made them aware of KM. As previously noted, interview participants with middle leadership responsibilities were more aware of their schools' KM practices and could provide more relevant examples than the participants without such responsibilities. Although being unaware of KM practices within one's school does not necessarily mean that they are not happening, an outsider must question how efficient they are if such a large proportion of knowledge managers are unaware of their existence. The benefits to the organization that can be reaped through KM depend on the extent to which it is practiced effectively, and thus the purposeful practice of KM should be extended to teachers.

Research shows that simply engaging in KM practices does not significantly impact organizational performance. The key point for practicing knowledge managers in an organization is to prioritize high capability in the chosen practices. Firms that effectively engage in all KM capabilities are expected to have the greatest level of organizational performance, which is supported by the findings in this study. For an international school to see measurable success from its KM efforts, its strategy must be well-defined with the input of key stakeholders, its implementation must be targeted, and all knowledge managers must be aware of their role in its success. This includes clear communication and frequent collaboration among different groups of knowledge managers within the organization.

CONCLUSION

The existing body of literature on KM has consistently demonstrated a positive relationship between effective knowledge management and improved organizational performance. However, current KM research in the education sector has primarily focused on higher education institutions, leaving a significant knowledge gap regarding KM practices in secondary international schools. As knowledge-intensive organizations, these schools need to understand the implications of their KM practices, or lack thereof, on financial and non-financial measures of success.

This paper aimed to explore the KM practices of secondary international schools during the digital transformation brought about by the COVID-19 pandemic. The findings revealed a notable correlation between teachers' ability to describe KM processes and infrastructure and their perception of their schools as successful in the international education context.

These findings hold substantial implications for stakeholders seeking to enhance KM and organizational performance within international schools. The link between KM performance and overall organizational success, which has been established in the existing literature, demands greater attention in the rapidly growing and increasingly competitive education industry. By addressing latent aspects of KM and strategically focusing efforts on areas such as organizational structure and knowledge utilization, international schools can unlock their potential for greater financial and non-financial success, thereby sustaining a competitive advantage.

The successful KM practices demonstrated by international schools during the pandemic and digital transformation serve as valuable indicators for post-pandemic KM strategies and practices. Leaders and key stakeholders are encouraged to engage in discussions to assess current KM practices and identify areas for improvement. Further research in KM practices specific to secondary education and private international schools is essential to bridge the gap between theory and practical implementation, ultimately refining KM strategies tailored to the unique educational context.

While this exploratory study has considerable limitations due to its small sample size and qualitative exploration methodology, it brings valuable insights into potential future research related to KM practices in secondary education. There have been some discrepancies noted between middle management and teachers, leading to the opportunity to explore whether teachers in leadership roles exhibit different perspectives, experiences, or approaches to KM compared to their peers. This could provide insights into the role of leadership in shaping KM practices within educational institutions. Furthermore, while some aspects of KM infrastructure capabilities were discussed within this study, future research could explore how schools develop their departments, respond to unanticipated changes, and foster a KM-supportive culture during distance learning. Investigating the long-term effects of these practices on organizational performance, efficiency, and adaptability could further strengthen the need for structured KM within the international school context. Finally, while only touched upon, the speed of digital transformation has increased the need for schools to protect knowledge from unauthorized access, copying, or downloading. Assessing the effectiveness of existing security protocols, such as intranets and password-protected cloud storage, and exploring the implications of potential gaps in preventing knowledge theft would provide valuable best practices for schools to employ.

REFERENCES

- Alavi, M., & Leidner, D. (1999). Knowledge management systems: Issues, challenges, and benefits. *Communications of the Association for Information Systems, 1*(1), 7. doi:10.17705/1CAIS.00107
- Alavi, M., & Leidner, D. E. (2001). Knowledge management and knowledge management systems: Conceptual foundations and research issues. *Management Information Systems Quarterly, 25*(1), 107–136. doi:10.2307/3250961
- Barton, D. (1995). *Wellsprings of knowledge: Building and sustaining the sources of innovation*. Harvard Business School Press.
- Bender, S., & Fish, A. (2000). The transfer of knowledge and the retention of expertise: A continuing need for global assignments. *Journal of Knowledge Management, 4*(2), 125–137. doi:10.1108/13673270010372251
- Blackler, F. (1995). Knowledge, knowledge work and organizations: An overview and interpretation. *Organization Studies, 16*(6), 1021–1046. doi:10.1177/017084069501600605
- Bontis, N. (Ed.). (2002). *World congress of intellectual capital readings*. Butterworth Heinemann KMCI Press.
- Caplan, R. D., Naidu, R. K., & Tripathi, R. C. (1984). Coping and defense: Constellations vs. components. *Journal of Health and Social Behavior, 25*(3), 303–320. doi:10.2307/2136427 PMID:6501840
- Cheng, E. C. K. (2014). *Knowledge management for school education*. Springer.
- Cohen, W. M., & Levinthal, D. A. (1990). Absorptive capacity: A new perspective on learning and innovation. *Administrative Science Quarterly, 35*(1), 128–152. doi:10.2307/2393553
- Davenport, T. H., & D'Neuberg, S. C. (2001). The rise of knowledge towards attention management. *Journal of Knowledge Management, 5*(3), 212–222. doi:10.1108/13673270110400816
- Deal, T. E., & Kennedy, A. A. (1982). *Corporate cultures: The rites and rituals of corporate life*. Addison-Wesley.
- DeLone, W. H., & McLean, E. R. (1992). Information systems success: The quest for the dependent variable. *Information Systems Research, 3*(1), 60–95. doi:10.1287/isre.3.1.60
- DeLong, D. (1997). *Building the knowledge-based organization: How culture drives knowledge behaviors* (Working Paper). Center for Business Innovation. https://providersedge.com/docs/km_articles/Building_the_Knowledge-Based_Organization.pdf
- Earl, M. (2001). Knowledge Management Strategies: Toward a Taxonomy. *Journal of Management Information Systems, 18*(1), 215–233. <https://www.jstor.org/stable/40398522>. doi:10.1080/07421222.2001.11045670
- Farnese, M. L., Barbieri, B., Chirumbolo, A., & Patriotta, G. (2019). Managing knowledge in organizations: A Nonaka's SECI model operationalization. *Frontiers in Psychology, 10*, 2730. doi:10.3389/fpsyg.2019.02730 PMID:31920792
- Gold, A. H., Malhotra, A., & Segars, A. H. (2001). Knowledge management: An organizational capabilities perspective. *Journal of Management Information Systems, 18*(1), 185–214. <https://www.jstor.org/stable/40398521>. doi:10.1080/07421222.2001.11045669
- Grant, R. M. (1996). Toward a knowledge-based theory of the firm. *Strategic Management Journal, 17*(S2), 109–122. doi:10.1002/smj.4250171110
- Hayden, M., & Thompson, J. (2013). International schools: Antecedents, current issues and metaphors for the future. In R. Pearce (Ed.), *International education and schools: Moving beyond the first 40 years* (pp. 3–24). Bloomsbury Academic.
- Heisig, P. (2009). Harmonisation of knowledge management—comparing 160 KM frameworks around the globe. *Journal of Knowledge Management, 13*(4), 4–31. doi:10.1108/13673270910971798
- Hoq, K. M. G., & Akter, R. (2012). Knowledge management in universities: Role of knowledge workers. *Bangladesh Journal of Library and Information Science, 2*(1), 92–102. <http://bit.ly/HoqAkter2012>. doi:10.3329/bjlis.v2i1.12925

- Iacuzzi, S., Fedele, P., & Garlatti, A. (2021). Beyond Coronavirus: The role for knowledge management in schools responses to crisis. *Knowledge Management Research and Practice*, 19(4), 433–438. doi:10.1080/14778238.2020.1838963
- Jennex, M., & Olfman, L. (2005). Assessing knowledge management success. *International Journal of Knowledge Management*, 1(2), 33–49. doi:10.4018/jkm.2005040104
- Jennex, M. E., & Durcikova, A. (2020). Knowledge Systems and Risk Management: Towards a Risk and Threat Assessment Framework. *Proceedings of the Annual Hawaii International Conference on System Sciences*. IEEE. doi:10.24251/HICSS.2020.608
- Jennex, M. E., Durcikova, A., & Ilvonen, I. (2022). Modifying knowledge risk strategy using threat lessons learned from COVID-19 in 2020-21 in the United States. *Electronic Journal of Knowledge Management*, 20(3), 138–151. doi:10.34190/ejkm.20.3.2606
- Jennex, M. E., & Olfman, L. (2006). A model of knowledge management success. *International Journal of Knowledge Management*, 2(3), 51–68. doi:10.4018/jkm.2006070104
- Li, C. H. (2016). From adaptive to generative learning in small and medium enterprises-A network perspective. *Journal of Global Entrepreneurship Research*, 6(1), 11. doi:10.1186/s40497-016-0054-y
- Liebeskind, J. (1996). Knowledge, strategy, and the theory of the firm. *Strategic Management Journal*, 17(S2), 93–107. <https://www.jstor.org/stable/2486993>. doi:10.1002/smj.4250171109
- Mahdi, O. R., Nassar, I. A., & Almsafir, M. K. (2019). Knowledge management processes and sustainable competitive advantage: An empirical examination in private universities. *Journal of Business Research*, 94, 320–334. doi:10.1016/j.jbusres.2018.02.013
- Mills, A., & Smith, T. (2011). Knowledge Management and Organizational Performance: A Decomposed View. *Journal of Knowledge Management*, 15(1), 156–171. doi:10.1108/13673271111108756
10.1108/13673271111108756
- Nonaka, I., & Takeuchi, H. (2009). *The knowledge-creating company: How Japanese companies create the dynamics of innovation*. Oxford University Press.
- P. (2001). *Management challenges for the 21st century*. Harper Business Press.
- Pérez-López, S., & Alegre, J. (2012). Information technology competency, knowledge processes and firm performance. *Industrial Management & Data Systems*, 112(4), 644–662. doi:10.1108/02635571211225521
- Polanyi, M. (1958). *Personal knowledge: Towards a post-critical philosophy*. The University of Chicago Press.
- Polanyi, M. (1966). *The tacit dimension*. The University of Chicago Press.
- Ramachandran, S. D., Chong, S., & Wong, K. (2013). Knowledge management practices and enablers in public universities: A gap analysis. *Campus-Wide Information Systems*, 30(2), 76–94. doi:10.1108/10650741311306273
- Sanchez, R., & Mahoney, J. T. (1996). Modularity, flexibility, and knowledge management in product and organization design. *Strategic Management Journal*, 17(S2), 63–76. doi:10.1002/smj.4250171107
- Seleim, A., & Khalil, O. (2007). Knowledge management and organizational performance in the Egyptian software firms. *International Journal of Knowledge Management*, 3(4), 37–66. doi:10.4018/ijkm.2007100103
- Shoham, S., & Perry, M. (2009). Knowledge Management as a Mechanism for Technological and Organizational Change Management in Israeli Universities. *Higher Education*, 57(2), 227–246. <https://www.jstor.org/stable/40269118>. doi:10.1007/s10734-008-9148-y
- Sveiby, K. E. (2001). A knowledge-based theory of the firm to guide in strategy formulation. *Journal of Intellectual Capital*, 2(4), 344–358. doi:10.1108/14691930110409651
- T. H. & Prusak. L. (1998). *Working knowledge: How organizations manage what they know*. Harvard Business Press.
- Teece, D. J. (1998). Capturing value from knowledge assets: The new economy, markets for know-how, and intangible assets. *California Management Review*, 40(3), 55–79. doi:10.2307/41165943

Thambi, M., & O'Toole, P. (2012). Applying a knowledge management taxonomy to secondary schools. *School Leadership & Management*, 32(1), 91–102. doi:10.1080/13632434.2011.642350

Tidd, J., & Bessant, J. R. (2020). *Managing innovation: integrating technological, market and organizational change*. Wiley.

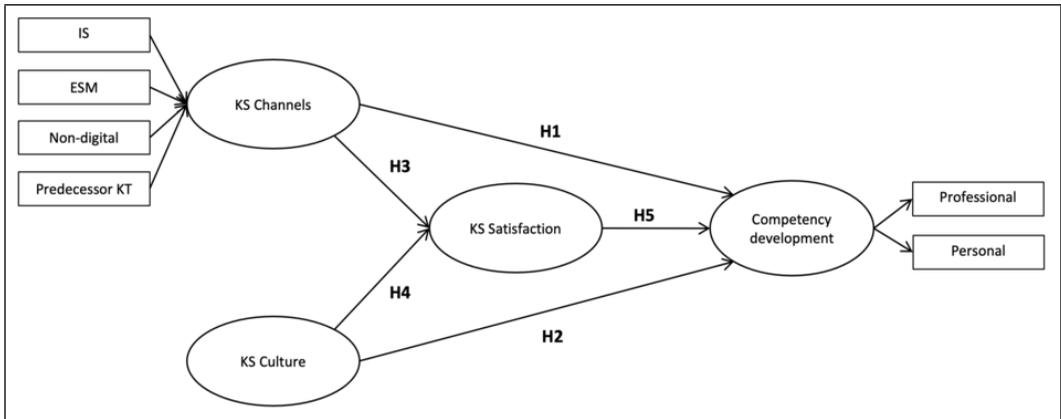
Wiig, K. M. (1997). Knowledge Management: An Introduction and Perspective. *Journal of Knowledge Management*, 1(1), 6–14. doi:10.1108/13673279710800682

Zack, M., McKeen, J., & Singh, S. (2009). Knowledge management and organizational performance: An exploratory analysis. *Journal of Knowledge Management*, 13(6), 392–409. doi:10.1108/13673270910997088

Zaim, H., Tatoglu, E., & Zaim, S. (2007). Performance of knowledge management practices: A causal analysis. *Journal of Knowledge Management*, 11(6), 54–67. doi:10.1108/13673270710832163

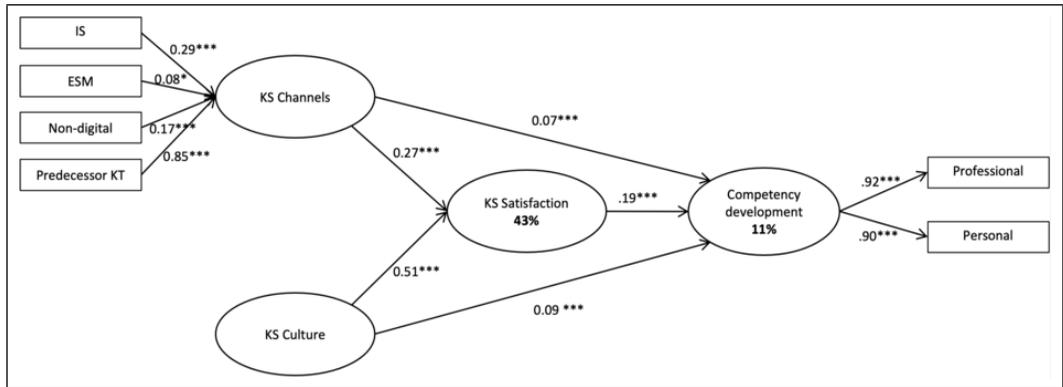
APPENDIX A

Summary of results



APPENDIX B

Success measures as perceived by respondents



Tiana originally hails from California but has spent most of her professional life teaching in Taiwan, the UAE, and Singapore. Her research interest in knowledge management stems from her work in education and is primarily focused on how international schools can use knowledge management to maintain a competitive advantage while undergoing digital transformation.

Nuša Fain is an Assistant Professor of Entrepreneurship at the Sprott School of Business. She teaches and supervises graduate students within Carleton's Technology Innovation Management (TIM) program. Holding a Ph.D. in Mechanical Engineering and a BSc in Marketing Communications, she specializes in open innovation, entrepreneurship, and human-AI interaction in innovation. With extensive consulting experience in supporting the implementation of innovation practices across various industries, including oil and gas, retail, manufacturing, and energy, Nuša brings a wealth of practical knowledge to her teaching. Nuša's research interests focus on the implementation of open innovation practices in established organizations. She investigates strategies for fostering innovation in mature contexts, aiming to enhance organizations' capabilities for adapting and thriving in the volatile, complex, and ever-changing business environment. More recently, her research focus has been on the dynamic interplay between humans and AI in design thinking and innovation management within diverse industrial environments. By examining the potential for collaboration between humans and AI systems, she seeks to optimize innovation processes and enhance their effectiveness and efficiency.