



Deconstructing the SME Spectrum from a Knowledge Management Perspective: Proposing an Adapted SECI Model

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Abstract. The term SME [Small to Medium Enterprise] is used extensively, both by practitioners and by academics. However, while both argue the importance of research relevant to SMEs few follow the same definition of the term. The lack of agreement has fostered inconsistency, as within the definition of SME, multiple heterogeneous subcategories exist and research specific to each of those subcategories has not yet received serious academic attention. SME-specific research is essential, as they are not simply scaled-down versions of their larger counterparts; neither are businesses belonging to the SME category identical in terms of their characteristics and reactions. To ensure survival and continual advancement in modern environments, innovation, resourcefulness and particularly, knowledge play a crucial role in long-term success. Thus, deconstructing the differences that exist within the broad range of business categories within the SME spectrum, and how those differences impact knowledge management, offers valuable insights. This article argues that the differences between small (50 employees or less) and medium (250 employees or less) businesses are correlated with the inconsistencies in the literature, and proposes an adapted SECI model to view SME knowledge management in a new light.

Keywords: Knowledge Management [KM]
Knowledge Management Systems [KMS]
Small to Medium Enterprises [SMEs] · Knowledge attrition · SECI

1 Introduction

The foundation of organisational competitiveness has shifted from physical and tangible resources to knowledge [1]. Knowledge is regarded as an asset that is essential to the success of contemporary societies and organisations [2–4]. Due to its dynamism and complexity, knowledge is both difficult to imitate and business-specific which allows for the creation of long-term competitive advantages, cost savings and continual growth when utilised effectively [3, 5, 6]. Knowledge Management [KM] assists organisations in doing so. It aims to reshape organisational culture, structure, systems and technologies in an effort to enhance collaboration, productivity and creativity [7, 8]. Furthermore, knowledge and KM are unique concepts as they are both explicitly

and implicitly utilised within a wide range of industries, businesses and organisations, including Small to Medium Enterprises [SMEs] [3, 9, 10].

SMEs are considered as the backbone of economic development, competition and innovation in many regions throughout the world [11–13]. For instance, SMEs represent at least 90% of all businesses in America [14], the European Union [15], Australia [16] and New Zealand [13]. However, what constitutes as an SME is different depending on the governing body defining it. The Ministry of Business, Innovation and Employment [13] states that businesses within New Zealand should have less than 50 employees to be considered as an SME. In comparison to other parts of the world, America and the European Union both consider SMEs to have less than 500 and 250 employees, respectively [15, 17]. Even though this is understandable due to the variations in size and population, this difference in definitions has the potential to create issues in terms of generalisability.

1.1 Knowledge Management Systems in SMEs

Knowledge Management Systems [KMS] is defined as a combination of software and technologies designed to support the creation, transfer and application of knowledge [3]. While critical, KMS is not the same as KM. Researchers argue that KM must be seen as a business-wide shift in perspective, not just as the technology that facilitates it [18–21]. They claim that people and culture lie at the core of KM, and should be considered as the focal point during any KM related activities. This ensures that knowledge is utilised to its full potential, and that research regarding KM is applicable, comprehensive, valid and generalizable to a wide range of businesses and scenarios [22, 23].

For instance, specifically focusing on KMS instead of KM restricts the applicability of research [3]. SMEs do not manage their knowledge in the same way as their larger counterparts as their performance is inhibited by a lack of resources which restrains their utilisation of technology [24, 25]. However, knowledge- and KM-related research in the context of SMEs is a necessity as SMEs do extensively exploit knowledge throughout their day-to-day activities, just not exclusively from a technological standpoint. Wong and Aspinwall [1] state that SMEs alternatively transfer and utilise knowledge by verbally communicating with other employees or observing experts perform a task. This allows SMEs to disseminate knowledge to meet deadlines, increase creativity and further differentiate themselves from competitors without the facilitation of technology. Therefore, the success of an SME can be linked to how well they manage and utilise knowledge, both from a technological and non-technological standpoint, and research specific to these topics assists SMEs in comprehensively doing so [26–29].

1.2 SME Heterogeneity

While research from a technological and non-technological perspective is essential, simply focusing on SMEs is insufficient [25, 30]. Heterogeneity exists within the concept of SME, as research relevant to medium-sized businesses (250 employees or less) is not generalizable to small businesses (50 employees or less) [15, 30]. Small

businesses face similar challenges to medium-sized businesses; however, their effects are amplified. Resources, technology, capital and available infrastructure are further constrained within the context of small businesses due to a lack of skilled employees, revenue and high-level management [31–33]. In particular, small businesses are much less likely to utilise any form of electronic KM in comparison to medium-sized businesses [21, 23, 34]. Furthermore, a significant proportion of research focuses on medium-sized businesses as they have adopted the European Commission's [15] definition of SME [35–38]. Therefore, research specific to small businesses is a necessity and academics must go beyond abstract SME research to ensure that the different sizes of SMEs have access to information relevant to them [30].

It is evident that a substantial proportion of the existing literature related to KM may not be relevant to small businesses. In addition, as the majority of businesses in most regions are small, not providing those businesses with the appropriate guidance, support and information they need to thrive creates an environment where they are unlikely to continually grow and succeed, and become dominant players within their respective industries [13, 15–17, 39]. Thus, due to a difference in definitions of the term SME [13, 15–17] differences in characteristics and reactions between SMEs [25, 30] and the variability of technological KM implemented by SMEs [1, 25, 35, 39, 40], research relevant to different categories of SMEs may not be generalizable to others.

1.3 Research Objective

This article adopts the European Union's definition of small (50 employees or less) and medium-sized (250 employees or less) enterprises with the intention of evaluating the existing contention in SME KM literature, and proposes a new perspective on the SECI knowledge creation and transfer model.

2 SME Knowledge Attrition

The general consensus amongst academics is that a decrease in overall organisational knowledge, more commonly known as knowledge attrition, is a serious concern in the context of SMEs [25, 35, 36, 41]. In particular, Wong and Aspinwall [35] contend that SMEs must manage knowledge attrition appropriately, as these businesses are especially prone to its effects. They claim that due to a lack of advancement opportunities and low levels of remuneration, experienced employees are more likely to move onto competing businesses that offer superior salaries or better prospects [42, 43]. In addition, if these employees do leave, they are likely to take their know-how, experience and insights with them, leaving the business with a gap in their organisational knowledge structure [44]. Wickert and Herchel [37] go on to state that filling this gap may be difficult, as new employees take a significant amount of time to acquire knowledge and become accustomed to a business's environment. Therefore, not taking into account the effects of knowledge attrition may jeopardise performance, decrease efficiency and weaken a business's overall robustness [35, 41, 45, 46].

The literature regarding succession planning also contends that every business must have a plan in place to ensure that valuable knowledge is not lost [47–49]. This perspective is supported by the extensive literature regarding succession planning in SMEs [48, 50–52]. In specific, Durst and Wilhelm [25], state that succession planning, which is the “attempt to plan for the right number and quality of managers and key-skilled employees to cover retirements, death, serious illness or promotion, and any new positions which may be created in future organisation plans” [53], is a necessity in ensuring survivability, particularly in SMEs. In other words, Durst and Wilhelm [25] suggest that ignorance regarding knowledge attrition introduces avoidable risk into an already challenging environment.

Conflictingly, other researchers argue that the effects of knowledge attrition within the context of SMEs are somewhat insignificant [39, 54–56]. They state that, unlike larger organisations, most SME employees do not possess skills or experience that would result in significant gaps in the business’s knowledge structure if they were to leave. For instance, Desouza and Awazu [39] interviewed a small business manager who stated that each of his employees knew how to perform most business-related tasks. Therefore, each employee in his organisation maintained a similar level of knowledge, and if one employee were to leave, another would be able to perform his or her duties effectively [55]. This suggests that knowledge disperses itself relatively evenly throughout SMEs to form common knowledge, which decreases the amount of specialist skills held by one person, stimulates innovation, encourages creativity and assists in ensuring robustness and survivability [39, 57].

Nevertheless, if a manager or key decision maker were to leave, it would be assumed that the knowledge structure of the business would be severely affected. Evangelista et al. [56] argue against this point, stating that the close social ties that are formed between employees in SMEs are likely to deter employees from completely abandoning their position. In addition, Desouza and Awazu [39] claim that high-level employees in SMEs are much less likely to leave as they may have a personal connection with the business or hold partial ownership. Furthermore, if a high-level employee did decide to leave, in most cases, they would assist in training the next most competent person within the organisation and be contactable due to previously formed personal relationships [58]. Thus, this literature suggests that employees leaving a SME does not necessarily result in knowledge attrition, and that SMEs can generally mitigate the effects knowledge attrition due to the inherent size and structure of their businesses [56].

It is evident that the literature regarding knowledge attrition within the context of SMEs is inconsistent. Some claim that a lack of appropriate planning can have devastating effects on a SMEs long-term competitiveness [25, 35, 41, 45, 46] while others suggest that SMEs indirectly manage knowledge attrition due to the size and structure of their businesses [39, 54–56, 58]. However, it is likely that this conflict has arisen due to the aforementioned heterogeneity that exists within the term SME [30]. For instance, those that advocate the significance of knowledge attrition have adopted the European Commission’s [15] definition of SME, and therefore, solely examine SMEs from a medium-sized business perspective (250 employees or less) [35, 41]. This includes the majority of the SME related studies in the field of succession planning [48, 50, 51]. Conversely, academics that criticise the relevance of knowledge attrition within the

context of SMEs usually adopt a definition of SME that specifically examines smaller businesses. Desouza and Awazu [39] considered SMEs to have less than 100 employees and primarily focused on small businesses (50 employees or less) to gather the majority of their findings. In addition, Wee and Chua [58] carried out their study in Singapore, therefore examining businesses with less than 50 employees.

As mentioned, Curran and Blackburn [30] and Durst and Runar Edvardsson [25] clarify that heterogeneity exists in the concept of SME, as research relevant to medium-sized businesses may not be generalizable to small businesses. The literature regarding knowledge attrition within the context of SMEs is a key example of this heterogeneity in practice. Research specific to SMEs is not necessarily relevant to every subcategory within the concept of SME. Therefore, the distinct effects of knowledge attrition on different sized SMEs must be clearly identified and supported by valid findings; otherwise, vital research may not be pursued.

3 Clarifying the Difference: Adapting the SECI Model to SMEs

3.1 The Socialisation, Externalisation, Combination and Internalisation [SECI] Model

Academics researching knowledge attrition from the perspective of medium-sized businesses tend to view the effects of knowledge attrition to be more severe, and therefore, have proposed a range of solutions. Durst and Runar Edvardsson [25], Durst and Wilhelm [59] and Wong and Aspinwall [35] suggest that SMEs should document, codify and store knowledge to build up the organisations knowledge base and minimise the effects of knowledge attrition. Furthermore, Wong and Aspinwall [60] suggest that a combination of job rotation, regular training, mentoring, and technologies (such as KMS) would further diminish the effects of knowledge attrition. However, the fundamental characteristics of all of these recommendations are captured in the SECI model [19, 61, 62].

The SECI model, or SECI cycle (Fig. 1), is a widely applicable knowledge creation and transfer model. It describes the knowledge creation and transfer process, and consists of four main elements – socialisation, externalisation, combination and internalisation [19]. According to Nonaka and Toyoma [61], socialisation is the beginning of the knowledge creation process and consists of communicating tacit knowledge between individuals through shared experiences and social interactions rather than written or verbal communication [63]. Tacit knowledge is both vital and difficult to formalise. For example, when trying to teach an apprentice how to perform a task, experts may perform the task themselves as the apprentice observes. However, writing down how to perform the same task may be difficult due to the contextual nature of certain tasks and skills. Tacit knowledge can also be acquired implicitly, where there is no intention to teach or learn [64].

The process of externalisation represents the articulation of tacit knowledge to form explicit knowledge. Explicit knowledge is simpler to articulate, capture, store, edit and share. Even though tacit knowledge is relatively difficult to formalise, experts may still

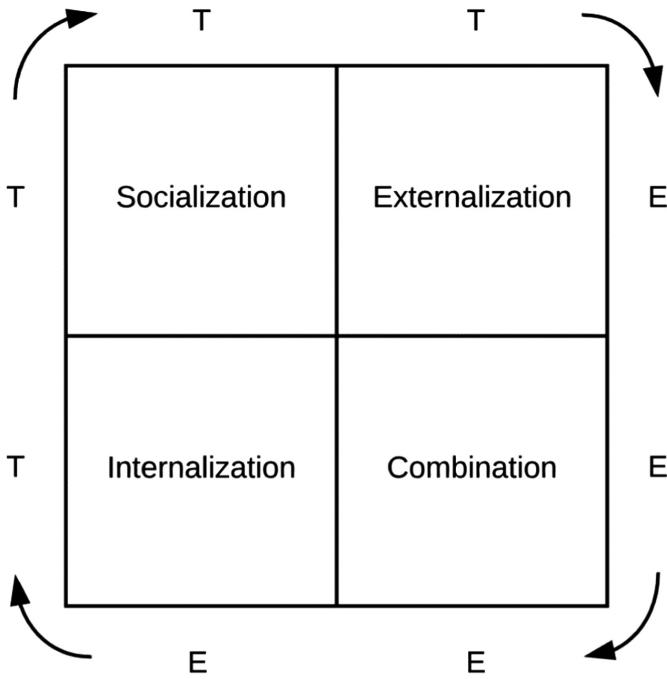


Fig. 1. The SECI model (adapted from Nonaka and Konno [63])

try to express their knowledge to others in the form of dialogue, and build upon their knowledge through discussion [63]. Combination refers to the collection, processing and editing of explicit knowledge to form a more comprehensive knowledge base. This includes collecting and integrating information from internal and external sources, disseminating knowledge, and further processing explicit knowledge to enhance usability [63]. Finally, internalisation represents the process where knowledge is utilised in practical situations to recreate tacit knowledge. For instance, new employees may read relevant manuals and documents to carry out a particular action. In doing so, employees “learn by doing”, enriching and expanding their own tacit knowledge base [19, 61, 65, 66].

3.2 Proposing an Adapted SECI Model from the Perspective of SMEs

KM research from the perspective of medium-sized businesses contend that adopting the SECI model, or at least elements of the SECI model, is a necessity as it ensures that the effects of knowledge attrition are minimised [1, 25, 67]. In addition, they argue that the facilitation of software and technology (such as KMS) allows knowledge to be more effectively collected, articulated, integrated, transferred, utilised and disseminated throughout the organisation [1, 68, 69]. However, academics who pursued KM related research in the context of smaller businesses contend contradictory results. DiPasquale and McInerney [70] state that the SECI cycle from the perspective of small businesses

is distorted due to a significant emphasis on informal tacit knowledge transfer. This notion is verified by Desouza and Awazu [39]. They state that due to the size of small businesses, employees and managers normally work in close proximity to one another. Therefore, not only do employees and managers informally communicate on a regular basis, but also, this type of regular communication fosters an environment where knowledge is shared throughout the organisation and internalised through action. New employees may ask their co-workers questions and adjust their reactions to certain scenarios based on others [64, 71]. Moreover, as small businesses do not readily implement or maintain KMS [40], gather and collate knowledge on a regular basis [39] or maintain comprehensive manuals or guidelines [72], the importance of the socialisation and internalisation elements are further amplified.

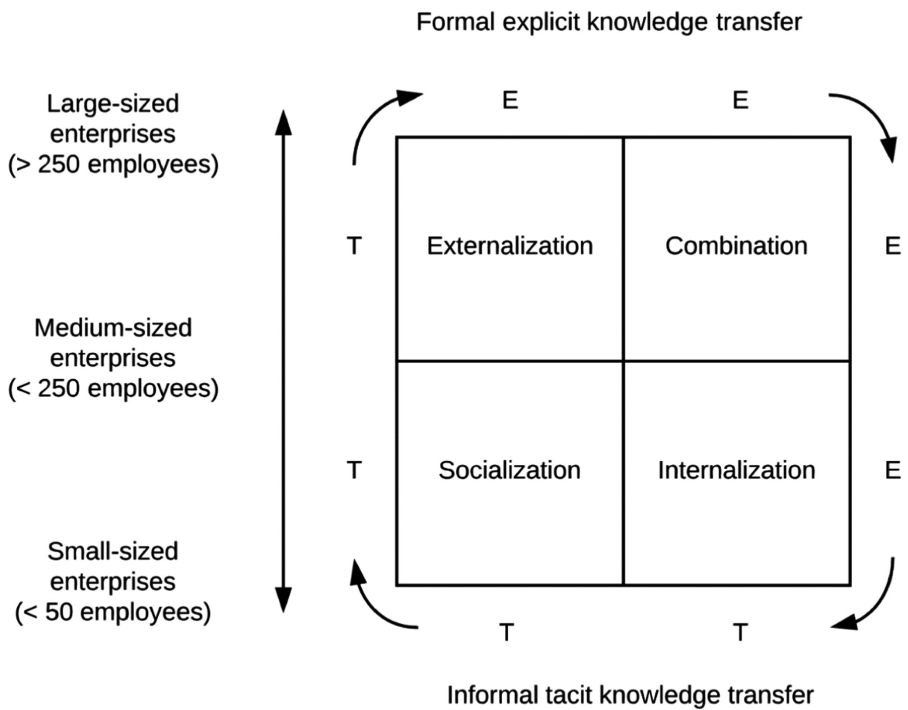


Fig. 2. The SECI model from the perspective of the SME spectrum (adapted from Nonaka and Konno [63])

Based on this, we propose that the SECI model exists on a spectrum where the focus on certain types of knowledge and knowledge transfer vary depending on the size of the organisation, especially within the context of SMEs [39] (Fig. 2). According to the literature, small businesses tend to focus more deeply on transferring knowledge (primarily tacit knowledge) through joint activities, experiences and interactions with those throughout the organisation [39, 70]. On the other hand, medium-sized

businesses face challenges in disseminating tacit knowledge due to their inherent size but still maintain some level of tacit knowledge transfer due to interpersonal relationships and organisational structure [25, 35, 39, 44, 73]. Nevertheless, knowledge in medium-sized enterprises is primarily transferred explicitly (through videos, guides, workflows and KMS), in a more structured and communicative format. Thus, as an organisation becomes larger, informal knowledge transfer tends to decrease and formal knowledge transfer tends to increase (Fig. 3).

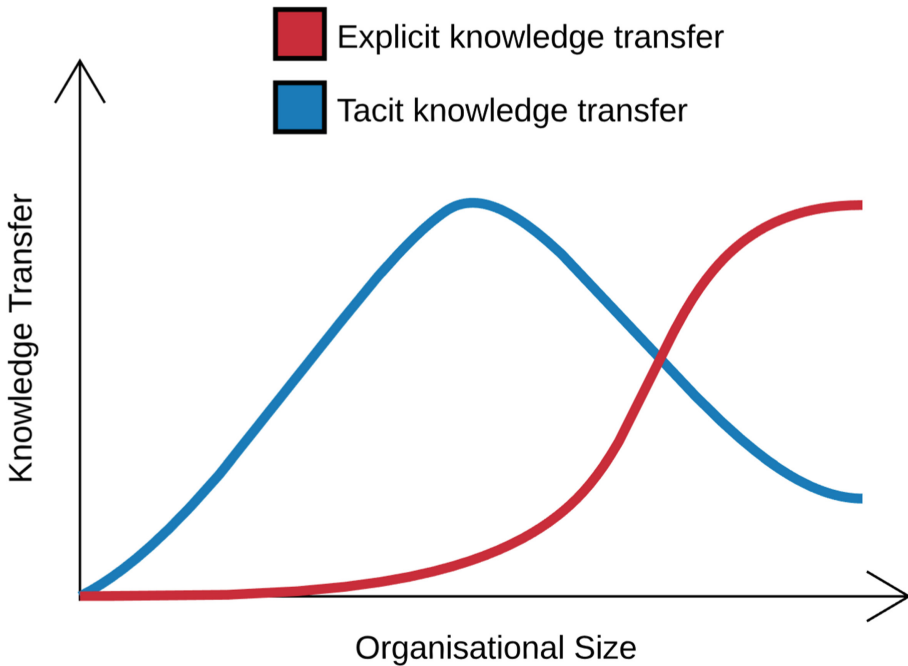


Fig. 3. The influence of organizational size on knowledge transfer

4 Conclusion

This research adopts the European Union's definition of small (50 employees or less) and medium-sized (250 employees or less) enterprises with the intention of evaluating the existing contention in SME KM literature. While size is not the only salient factor in understanding how SMEs manage knowledge, these findings suggest that KM research specific to SMEs may not be generalizable to every subcategory that exists within the concept of SME as researchers adopt varied definitions of the term. The article goes on to explore these inconsistencies from the perspectives of tacit and explicit knowledge transfer, and the four phases of the SECI cycle. Results suggest that the size of an organisation has a significant impact on the type of knowledge transferred.

This discrepancy in the literature is incorporated into an adapted version of the SECI model (Fig. 2) which proposes that smaller businesses tend to focus on socialisation and internalisation when transferring knowledge while medium-sized businesses tend to focus on externalisation and combination. As size increases, informally disseminating knowledge throughout an organisation becomes more difficult, so more structured knowledge transfer methods must be incorporated. In doing so, smaller businesses effectively transfer knowledge regarding culture, context and the intricacies associated with an organisation while medium-sized organisations allocate more resources to explicit knowledge management.

Further empirical research needs to be conducted to validate the proposed model and understand the impact of inconsistency in the literature. There is also a need to understand how small businesses can convert their abundant tacit knowledge to explicit knowledge, keeping in mind their limited resources. This could include the adoption of technological solutions (such as KMS) or non-technological solutions.

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