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Factors shaping organizational dynamics in strategic knowledge management

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Abstract
Knowledge as a valuable asset of organizations is increasingly incorporated into thinking about strategy. Studies of knowledge management (KM) suggest that executives engaged in decision making often have a slender understanding of the strategic significance of knowledge. When addressing the challenge of explicating and designing a knowledge strategy, logics of codification and personalization have been differentiated and commended. The paper draws upon evidence from four case studies to identify factors that shape the evolving contexts of knowledge strategies. It is in these contexts that the challenge of continuously reviewing and revising the mix of codifying and personalizing aspects of strategic KM is practically accomplished. The cases are analysed with reference to external competition, leadership, organizational politics, culture and technology as a basis for advancing a more dynamic framework for the analysis of knowledge strategies.
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Introduction

Knowledge management (KM) is increasingly identified as having significance for the strategic intent of gaining and sustaining competitive advantage (Drucker, 1999; Edwards *et al*, 2003). Yet a substantial body of literature suggests that key decision makers often have a sketchy understanding of the strategic significance of knowledge (Bierly & Chakrabarti, 1996; Quintas *et al*, 1997; Zack, 1999; Earl, 2001; Edwards *et al*, 2003; Winter, 2003; Peltokorpi & Tsuyuki, 2006). If it is accepted that decision makers' understanding of strategic KM is rudimentary then there is a significant lacuna in the theory as well as in the practice of strategic KM (Zack, 1999; King & Zeithaml, 2003). It is this lacuna that this paper seeks to address.

The most influential and highly referenced (Google scholar reports citations of ~4000) contribution to the strategic KM literature has been the identification and application of codification and personalization strategies proposed by Hansen *et al* (1999). The research of Hansen *et al* (1999) and related studies (Haas & Hansen, 2007) has contributed widely endorsed insights relevant for developing competitiveness in relation to knowledge strategy (Porter, 1986; Wernerfelt & Karnani, 1987); it does not address knowledge strategies in relation to changes in a firm's internal and external business environment.

As a working definition of knowledge strategy dynamics, we conceive of them as 'aligning an organization's knowledge (i.e., tacit and codified know-how and expertise) with its knowledge of its competitive landscape'. The latter, environmental knowledge as well as organizational knowledge are each subject to continuous (re)formation. We attend to these dynamics by

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considering the influence of, and interaction between, the following factors: competition, leadership, organizational politics, culture and technology. Their significance and interaction, we contend, is inadequately appreciated in much strategic KM analysis. These factors are not exhaustive but their significance has been repeatedly emphasized in the field of organization studies and especially in literatures that consider how they shape the strategic positioning of firms (Hofer, 1975; Ginsberg & Venkatraman, 1985; Kim & Rhee, 2009).

Hansen *et al*'s (1999) work draws attention to the contextuality of KM but it gives scant consideration to the factors influencing knowledge strategy dynamics (Porter, 1991; Kim & Rhee, 2009). It does not situate these dynamics in relation to changes in a firm's internal and external business environment (Miller *et al*, 1982; Teece *et al*, 1997; Peteraf & Bergen, 2003; Scheepers *et al*, 2004; Kim & Rhee, 2009). The motivation of this paper is to highlight and address a number of the factors that influence the organizational dynamics of knowledge strategy development, and thereby suggest how the limitations of Hansen and colleagues' influential thinking might be remedied and a new research agenda developed.

Our approach draws inspiration from Deetz's (1996) framework on discourses of organizational enquiry. According to Deetz (1996), phenomena like knowledge and culture are multiple, fragmented and amenable to diverse interpretation. Of most direct relevance for the present discussion, Deetz's framework points to the situated formation and operation of knowledge strategies that, as we will show, are shaped by a range of factors (e.g., leadership etc., see Table 3, as well as others that are not directly considered here, such as industry structure and organizational size). Closer attentiveness to the contextual embeddedness of firms' knowledge strategy, we argue, places in question the plausibility and viability of universal prescriptions, such as those commended by Hansen *et al* (1999). We do not doubt that executives often recognize the importance of their firm contexts, yet they have at their disposal frameworks that are restricted or impoverished in their capacity to identify the (interacting) factors to which knowledge strategies are variably responsive. Greater awareness of these factors, we believe, can be instructive in moving management practice in the direction of making better informed and recurrent assessments of the relevant mixing of codification and personalization knowledge strategies. This involves a step away from comparatively crude and potentially misleading generalized prescriptions – such as the suggestion that the balance between codification and personalization should be around 80/20 or 20/80 (Hansen *et al*, 1999) – to a more customized and nuanced approach that takes fuller account of both the specifics of the context and the dynamic interaction of key factors.

The paper is organized as follows. The next section selectively discusses the literature on the strategic aspects of managing knowledge, paying particular attention to Hansen *et al*'s (1999) conclusions and recommendations. Following a presentation of our research methodology, we describe each of our four cases and explore their distinctive organizational dynamics. A close consideration of these cases provides a basis for drawing out key elements of knowledge strategies that developed within the business strategy of the four companies. In conclusion, we commend an alternative, context-sensitive conceptualization of knowledge strategies that may also serve as a heuristic tool for appreciating the importance of their dynamics.

Strategic organization and KM

Knowledge is conceived to develop when information is applied in a context of action that is based on relevant experience (Alvesson & Karreman, 2001). Explicit knowledge is articulated in forms such as books, reports, manuals and so forth (Gourlay, 2006; Janicot & Mignon, 2012). Tacit (or personal) knowledge is interpreted in less formalized forms such as intuitions, perspectives, beliefs and values that evolve from experience (Polanyi, 1962; Gourlay, 2006). Organizing and managing are understood to rely on a combination of explicit or codified and tacit or personalized knowledge. On strategic organization, Porter (1991, p. 97) has noted that 'The early scholars in the strategy field, especially those at Harvard recognized that firms were composed of numerous functions and subfunctions, and that many diverse aspects of a firm and its environment could be important to success in particular cases'. In underscoring the significance of strategy, Porter contends that 'it was the act of achieving consistency of action in the many parts of the firm that was seen as crucial to competitive success'. At the same time, Porter refers to the work of scholars such as Andrews who conceive of 'each company as unique, with its own history, personality, capabilities and set of current policies [and] every period of time … as unique because both companies and their environment were in a state of constant change'. This emphasis on the importance of strategy and its particularity as well as its dynamics is complemented by an appreciation of the capacity of organizations to 'build on their strengths and overcome their weaknesses, [have] latitude in influencing or altering their environment, and the ability to influence change over time, not merely respond to it' (Porter, 1991, p. 97). When understood from this perspective, strategic KM is concerned with harnessing know-how that is comparatively non-replicable so as to influence environments as well as respond to them.

Knowledge strategies involve the use of different types of know-how linked to the operation of business processes that are oriented towards the improvement of competitiveness. Such know-how includes knowledge of suppliers, customer knowledge, employee knowledge, competitor intelligence, industry knowledge, firm innovation through exploration and exploitation of organizational knowledge capabilities and so on (Kogut & Zander, 1992; Quintas *et al*, 1997; Zack, 1999; Nonaka & Toyama, 2003). Our understanding of 'knowledge' and 'knowledge strategies' is

consistent with Zack's (1999, p. 131) definition of the latter as '… balancing knowledge-based resources and capabilities to the knowledge required for products or services in ways superior to those of competitors'.

To address the challenge of developing knowledge strategies, with particular reference to knowledge-intensive organizations, there are difficulties of defining knowledge, its significance and 'intensiveness' (see Alvesson, 1993; Makani & Marche, 2010). A variety of solutions to this problem have been proposed, including the suggestion that knowledge should be addressed pragmatically by treating it as a substantial capacity that can produce 'good results' (see also Hedberg, 1990; Starbuck, 1992). In this paper, we adopt a broad definition of a knowledge-intensive organization 'as one that produces exceptionally good results through the help of outstanding expertise' (Alvesson, 1993, p. 1001). Such expertise, we stress, is by no means restricted to 'professional' or certified forms of knowledge (Starbuck, 1992; see also Karreman, 2010). We now consider how the alternative logics of codification and personalization can provide some valuable, but ultimately limited, insights and guidance (Hansen *et al*, 1999; Kautz, 2002).

Knowledge strategies – codification *vs* personalization

Hansen *et al*'s (1999) model of knowledge strategies conceives of strategy in relation to the mix of personalization and codification within an organization deemed relevant for the effective attainment of its main objectives. *Codification as a knowledge strategy* is based on capturing, codifying and storing knowledge in explicit form (i.e., web pages, documents and books) and making knowledge accessible for authorized users in the organization (Hansen *et al*, 1999; Alvesson & Karreman, 2001). This strategy is intended to enable organizations' 'reuse' of knowledge and thereby to reduce the costs associated with the reinvention of knowledge assets (Hansen *et al*, 1999; Kautz, 2002; Nielsen & Michailova, 2007).

Personalization as a knowledge strategy is based on mobilizing and transferring knowledge in tacit form (i.e., in individual skills and expertise) (Hansen *et al*, 1999). It is facilitated by supporting the creation and operation of networks between people who engage in mutual learning based on their experiences and insights. Personalization enables people to get ready access to various knowledge experts in the organization. This strategic approach favours a focus on people interaction rather than information infrastructure as a means of managing knowledge (Hansen *et al*, 1999; Dunford, 2000; Denford & Chan, 2011; Venkitachalam & Busch, 2012).

Hansen *et al*'s (1999) central argument and recommendation is that high-performance organizations gain an appropriate mix of the 'two strategies' and thereby 'use knowledge effectively' (p. 112). The choice between codification and personalization, it is claimed, 'faces virtually all companies in the area of knowledge management' (Hansen *et al*, 1999, p. 107). Of most direct relevant to our discussion and critique, it is argued that the two strategies should be a 80–20 mix of codification/personalization or vice versa, depending on the resources – human and material – available to the organization. To be more specific, it is claimed that 'companies that use knowledge effectively pursue one strategy predominantly and use the second strategy to support the first. We think of this as an 80–20 split: 80% of their knowledge sharing follows one strategy, 20% the other'. They then add: 'Executives who try to excel at both strategies risk failing at both' (Hansen *et al*, 1999, p. 112). Placing a more equal emphasis on both strategies, Hansen and colleagues contend, is invariably sub-optimal.

When choosing between the 80/20–20/80 alternatives, Hansen and colleagues advise that knowledge strategists should be clear about a number of contingencies such as whether the organization's strategic direction is driven by standardized or customized products and services; whether their business strategy is focused on offering mature products or product innovation; and whether their employees rely more on explicit or tacit knowledge to solve business problems. These factors are doubtless relevant for choosing a knowledge strategy. What Hansen *et al* (1999) disregard is the significant opportunity costs associated with each of these strategies: in practice, it is difficult, and perhaps ineffective, to aspire to, let alone achieve and preserve, a 20/80 mix, irrespective of changing circumstances. While Hansen and colleagues' schema is relevant for appreciating broad options and parameters when developing or reviewing a knowledge strategy, the development of this field requires a more nuanced appreciation of the changing context of internal/external organizational dynamics in which an expedient and/or effective balance of codification and personalization knowledge strategies takes shape.

Pointers towards a more context-sensitive approach have been given by scholars who argue that personalization and codification strategies should be better integrated, rather than simply balanced, in order to realize the benefit of tacit and explicit knowledge available in organizations (Ancori *et al,* 2000; Jasimuddin *et al*, 2005; Denford & Chan, 2011). Notably, Jasimuddin *et al* (2005) contend that organizations should consider a symbiotic approach to codification and personalization knowledge strategies: creating contexts for easy replication of knowledge internally within the firm while ensuring that its competitors face difficulties in copying the tacit organizational know-how. Similarly, studies (e.g., Choi & Lee, 2003; Scheepers *et al*, 2004) have found that a dynamic view of knowledge strategy can enhance both codification (i.e., knowledge reuse) and personalization (i.e., knowledge sharing) resulting in organizational performance. De Toni *et al* (2011) take a broader perspective and suggest that executives should adopt and implement a knowledge strategy that is coherent with their existing competitive environment, context and business strategy.

Other strategic perspectives (Cowan & Foray, 1997; Denford & Chan, 2011) draw a link between types of

computing and knowledge strategy approaches. They conclude that organizations that are dependent on client–server computing are generally more closely tied to a codification strategy, and conversely, that distributed peer-to-peer computing is more congruent with personalization as a knowledge strategy. Prencipe & Tell (2001) suggest that Hansen and colleagues' proposal fails to appreciate the variance and dynamics of knowledge strategies. Their view is that organizations can have diverse and feasible strategies to manage knowledge. Such interpretations of Hansen and colleagues' schema valuably raise questions about its universalising claims. But they offer few clues for remedying limitations of their bifurcated model of context.

In line with the framework that we commend here, Ginsberg & Venkatraman (1985) advocate a contingent model of context and a more dynamic view of the broader sweep of business strategy development. Specifically, they conceive of 'organizational context' as referring to an interaction of factors such as managerial leadership (Miller *et al*, 1982; Quintas *et al*, 1997), organizational performance (Nielsen & Michailova, 2007) and structure (Burgelman, 1983; Siggelkow & Levinthal, 2005). Studies related to contingency effects on strategy formulation and development (Hofer, 1975; Ginsberg & Venkatraman, 1985) also call for a better understanding of the implications of an appreciation of context for the development of strategy. Bromiley & Papenhausen (2003), for example, contend that a behavioural view of strategy helps to appreciate how organizations and managers behave in different firm contexts. Subsequent studies (Scott, 1995; Pye & Pettigrew, 2005) have emphasized the role of behavioural factors, such as psychological contracts and cultural norms, in shaping strategy development.

In addition to studies that examine the influence of behavioural factors on strategy development, Porter (1991, p. 97) has been influential in conceiving of strategy as 'the act of aligning a company and its environment'. Porter also emphasizes the importance of change when noting how a firm's 'environment, as well as the firm's own capabilities, are subject to change. Thus, the task of strategy is to maintain a dynamic, not a static balance' (p. 97). This emphasis on strategy as a dynamic process is consistent with a more nuanced understanding of how codified and personalized forms of knowledge are embedded and engrained in organizations, and an appreciation of how such knowledge is challenged and developed as organizations/institutions expand, transform or adapt to changing circumstances.

Methodology

A qualitative multiple case-study method is adopted in this study (Yin, 2009). A benefit of case study research is that it provides insights into events and processes, such as the dynamics of knowledge strategies, within the evolving contexts of organizations (Eisenhardt, 1989; Helfat, 2007). Four case organizations were chosen as representative of diverse sectors of education, consulting, manufacturing and research. They share a concern to develop a more effective strategy for managing knowledge. An overview of the methodology used in this study and exemplars of research using similar methods are presented below.

Data collection

Data were collected from multiple sources that include formal and informal interviews, email communication, organizations' websites, presentations and documents related to KM and strategic initiatives. The interviews provided the key source of evidence and have enabled a more in-depth exploration of the contexts (Patton, 1990; Helfat, 2007; Yin, 2009) and dynamics of the four organizations. The formal interviews were semi-structured based on an interview guideline developed from the literature on knowledge strategies (Patton, 1990; Yin, 2009). A total of 35 formal interviews (each lasted for about an hour) including 7 follow-up interviews after a period of 8–12 months (indicated in brackets presented in Table 1) were conducted across the 4 case organizations.

In the study of the research organization (Case D), for example, the sources of data included interviews, knowledge strategy documents and the CEO's statement about the importance and relevance of KM and its value to the firm. One of the interviewees was the Director of KM, who reported directly to the CEO. This executive is a key member of the senior strategic leadership team of the organization and closely represents the CEO's vision of a knowledge-focused organization. In the other cases, interview participants included CEOs, Directors and Managers from business, IT and KM divisions of the organization. The interviews were recorded, transcribed and subsequently verified with the interviewees to check for transcription errors (Yin, 2009). Using multiple sources of data enabled triangulation between different data sources.

The study applied Yin's (2009) tests in assessing the quality of the research design. 'Construct validity' is one of the first tests in evaluating the quality of data collected using multiple sources of evidence. The process with respect to this study is explained as follows. Interviews

Table 1 List of interviews and roles

Interview participants	*Case A (education)*	*Case B (consulting)*	*Case C (manufacturing)*	*Case D (research)*
Managers/Regional Managers (in business, IT and KM units)	6	8+(2)	5+(1)	1+(1)
Directors/Vice Presidents/General Managers	1+(1)	1	3+(1)	1+(1)
CEO/President	1	—	1	—

were the main source of data to examine the dynamics between codification and personalization knowledge strategies. In this regard, the Directors/Managers (and similar persons in senior management involved in the formulation/implementation of strategic KM) were interviewed. For each organization, a case report was prepared. This provided the logical chain of evidence pertaining to codification and personalization knowledge strategy choices and emphases, strategic direction, supporting information infrastructure and the management of organizational knowledge. An external reviewer undertook an independent corroboration of the conclusions drawn from the case descriptions.

The 'internal validity' test helped to establish credible relationships – either causal or associative and enables the avoidance of improbable relationships. In avoiding improbable relationships, Yin (2009) has suggested the application of two steps. The first is the use of pattern-matching logic in theoretically replicated cases – showing that different patterns of anticipated results of the dependent variable are accurately evident from the genuine empirical data (Dube & Pare, 2003; Yin, 2009). For example, pattern-matching logic was applied to compare the pattern of findings of dependent variables (Dube & Pare, 2003). These variables included strategic choice in codification and personalization, organizational dynamics in strategic KM and its effectiveness in the management of organizational knowledge. The pattern of findings was derived from the case data collected through multiple sources of evidence. The second step is assuring that existing theoretical frameworks are ineffective in explaining the empirical data (Yin, 2009), in which we show that the Hansen *et al* (1999) framework of dominant and supporting mix of knowledge strategy choices is less adequate in explaining organizational dynamics and its influence on knowledge strategy development.

The test of 'external validity' provided the basis of knowing whether the study's findings are generalizable beyond the immediate research environment. In quantitative study, the use of statistical techniques is helpful in generalizing the findings through choosing a sample that represents a larger population (Yin, 2009). In qualitative-based research, in contrast, theoretical replication and literal replication tests are applied (Dube & Pare, 2003; Yin, 2009). The aim is to generate explanations that have theoretical generalizability. The case organizations represented multiple sectors, different types of knowledge strategy choice and an emphasis under various organizational contexts. The design of the research was intended to examine the 'factors shaping the organizational dynamics of knowledge strategies' in different organizational contexts through the development of analytical generalizations. As Yin (2009, p. 38) puts it, 'an analyst should try to generalize findings to "theory", analogous to the way a scientist generalizes from experimental results to theory (Note that the scientist does not attempt to select "representative" experiments)'. A case study protocol and a coding scheme were developed to classify the empirical data into sub-themes (Miles & Huberman, 1984; Yin, 2009). The process of verifying the coded interview text (Miles & Huberman, 1984; Yin, 2009) was also repeated with the co-researcher who helped in the understanding in terms of how managers in the four case organizations made different choices with respect to the following thematic categories: knowledge strategy and its focus, organizational dynamics, managing knowledge processes (e.g., capture, storage and transfer) and supporting information infrastructure.

Case studies

The research design comprised four case studies, rather than one or two, as this provides multiple points of comparison and insight into organizational dynamics. The cases were an educational advisory service (Case A), a management consulting firm (Case B), a chemical manufacturing company (Case C) and a research and statistics organization (Case D). Each case organization that participated in the study was given a pseudonym for the purpose of confidentiality. These organizations were specifically chosen to examine the dynamics between codification and personalization knowledge strategies. This examination was designed to explore the thematic categories identified above.

Case A

Case A's business provides counselling, advisory and support services to international students. Its staff are also involved in providing a number of workshops and related seminars for international students willing to study and live in the region. The services include: seminars on orientation, community involvement programmes, language support programmes, counselling services, returning home programmes and so on. The presence of networks and a culture of knowledge transfer has enabled the members to solve certain knowledge-oriented issues such as providing expertise on international student policy advice, student orientation, living abroad and related topics to its clients. For example, one of the branch managers said … *there is a big emphasis on transfer of knowledge amongst us … making sure that members are aware of bits and pieces happening in Case A*.

To deliver services to its clients requires rich expertise and know-how in the field of international student advice and educational policy. The programmes and seminars on different aspects of international education primarily rely on the personal expertise of the international student advisers. A senior management executive concerned with student advice solutions explained:

> Some of the solutions are custom-based. For example, a mail from one of the branches came through regarding how to handle one of the critical incidents – the person who sent the email was enquiring about what happens if a student dies in the institution from overseas, what do you do, whom to contact, what they have to do.

Besides the dependence on the know-how of Case A's members, certain aspects of their knowledge-based services

can be codified and reused for international students facing similar contextual issues, as an extract from the strategy documents indicates:

> providing a means for the exchange of knowledge and networking, facilitating professional development of members, building links with associated organizations locally and overseas, recognizing the interests and rights of international students in Australia and New Zealand.

As pointed out by the Vice President:

> Knowledge is classified based on the range of organization's services. So being an advising body for international students, classification is done such as life cycle of international students, studying in Australia such as pre-departure briefing, airport pick up, accommodation, orientation program etc. (a full range of services to students who come to study in this region)

Case A members often rely on their personal email account to exchange knowledge and expertise. The members themselves manage the work-based documents. A large part of the organization's document system exists in hardcopy format and is distributed between branches through the postal services.

Case A's senior management leadership is changed every year, which constantly influences the dynamics of the organization. It is headed by the President who is elected by the members of Case A's executive council at the annual meeting. Due to the dynamic nature of their management structure, the transfer of knowledge between members becomes critical. As the President noted: *in international education, one of the key things is to disseminate knowledge within the organization, share it through various avenues, may be on paper or may be electronic and so it is absolutely central to our function*. Currently, Case A has eight branch offices in Australia and one in New Zealand. Each of these has an appointed president elected by its members annually, and manages the branch's activities related to international students living and studying in the region. The management team is responsible for framing knowledge-based strategies related to international education services for the organization.

Case A's dynamic development has influenced a substantial increase and flow in the amount of knowledge and experience across the organization. The minimal infrastructure support and fast-growing membership has contributed to a number of KM problems within the organization. The lack of a rich information infrastructure to capture and store knowledge has resulted in knowledge being lost (and reinvented) within the organization. For example, the President reiterated this point: *[It is the] lack of IT … and much of the knowledge and those materials are on hard copy files*. The duplication of knowledge is also considered to be a major problem for Case A. To provide solutions to these problems, the organization is seeking ways of investing in a suitable infrastructure to capture, store and access the knowledge based on the needs of its members. The Vice President anticipated that this approach will help improve effective management of knowledge:

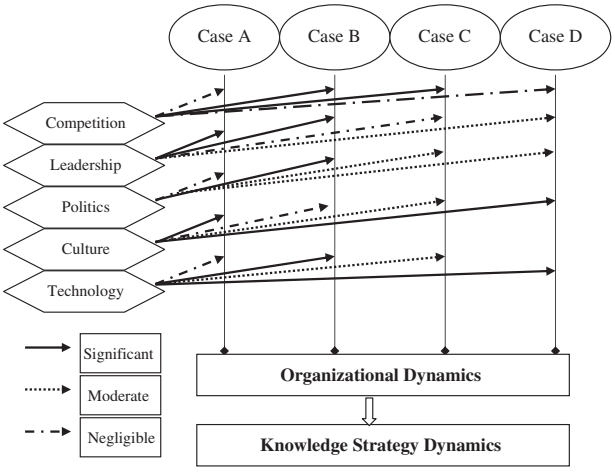

Figure 1 Five factors influencing dynamics of four case organizations.

> Technology is to help us manage better. There are pockets of knowledge everywhere in the organization … If we have a system and then we contribute to the system, it takes care by automatically sending it off [electronically] … and not reinvent the wheel. […].

A rich sharing environment exists among its members. In this regard, the President stressed the point: *[we are] a people focused organization with the appropriate sharing and use of knowledge*. But the resources available in the organization to support KM are extremely limited. Besides the existing focus on personalization, the management of processes, particularly knowledge storage/retrieval, has been poor, as one employee noted:

> [we need] a centralized web-database to which members can contribute … we want central access to knowledge in the organization and an information system to access files and records so that the organization can use [and apply] its available knowledge efficiently.

In summary, the legacy of reliance on personalization culture and the exchange of tacit knowledge meant there was negligible information infrastructure support for knowledge codification and storage. Case A is faced with a growing membership base as well as annual changes to their leadership and management. These dynamics are significant influencers for their approach to KM, not least because of the challenges of transferring know-how in student education across its various branches in an effective manner. A diagrammatic representation of the influences on Case A's organizational dynamics is shown in Figure 1.

Case B

Case B's business is to deliver know-how and expertise related to management consulting services worldwide in a

number of domains such as integrated enterprise solutions, e-technology integration, learning, performance and change consulting, business intelligence and so on. Consultants develop solutions for various client projects that are then codified and stored in electronic repositories. These solutions are routinely reused for similar client projects globally. The organization places a strong emphasis on storage and reuse of knowledge. As reported in their strategy documents:

> Knowledge management is critical to support the firm's globalization, growth, profitability, agility, service delivery and eminence objectives – by continuously improving the efficiency and effectiveness of the 'knowledge marketplace' that exists within the organization.

KM is implemented globally across the parent organization and its country operations. A dedicated team manages various processes focussed on KM. Case B has a strong emphasis on codification; however, transfers of knowledge between consultants were not always managed effectively as stated by one employee:

> … there is no real discussion [knowledge transfer] between groups … I might do a project and might want to tap into [specific] knowledge that is not [codified], which means that my answer [the answer that this consultant is seeking] is probably out there somewhere but I cannot even look to see if it is there or not.

The IT support relevant for interpersonal networks and people–people sharing is regarded as ineffective, and heavy reliance on information technology for purposes of codification is considered a major problem. The Technology Leader for the North American region remarked:

> Certainly, a consulting firm cannot transfer knowledge without technology. You can create great things on the greatest technology, but if people don't care to share knowledge, then it is difficult for the organization ….

To address this challenge, the organization has created new KM roles and responsibilities in an effort to improve the weak personalized aspect of their knowledge strategy. A knowledge market leader role (KML) is responsible for supporting and facilitating best practices in knowledge transfer. The KML for the Asia-Pacific region stressed the importance of adopting personalization in the organization:

> The most important thing for knowledge management to work is building knowledge networks and sharing relationships. My philosophy is [that] building networks is important in consulting. In the end the bigger the knowledge networks are, the more beneficial it is for organizational use of knowledge and its transfer.

The organization has 20,000 employees across 40 countries, and provides consulting services to a number of global Fortune 500 organizations. The use and sale of knowledge is considered the primary revenue business model of the organization. In Case B, the use of information technology is considered to be an enabling influence for its consultants to work and communicate effectively with each other, across the organization and with its clients. An extract from its strategy documents emphasises the centrality of codification:

> The enabling use of technology … is to leverage the capabilities of commercial software supporting KM processes … establish a consistent information infrastructure without restricting local flexibility … maintains a flexible and scalable deployment … protect data and still maintain good performance … and ensure no single point of failure.

The Technology specialist remarked about the importance of factors such as IT and culture in processes of knowledge strategy development: *You develop your strategy, you know that … technology could be one factor in developing your strategy, you obviously have to consider your organizational culture, your overall objectives for knowledge transfer etc*. Case B faces challenges in the exchange of knowledge across different groups working in various fields of consulting (e.g., Enterprise Resource Planning, Customer Relationship Management, Supply Chain Management and so on). A regional knowledge manager explained the difficulties:

> It is all very much sort of everyone putting things into the knowledge management system and then pulling things out. And this is why we need to get everybody together and make use of knowledge more often. For example, I might be doing a SCM project and I might want to tap into SCM knowledge that is not in the portal ….

Besides the above concerns, Case B was encountering issues in managing the regional dynamics in some of the country offices. For example, the staff working in Japan were seen to have political issues with the transfer of their knowledge globally across other offices. The Global Knowledge Manager explained this:

> I will give an example the Japanese practice is notorious for not wanting to share knowledge …. They very rarely use the global portal and it is because of the belief that the Japanese do it their way … and they do not need the global way. And so when we see that they are not contributing anything to [Case B's] global portal, we say hey guys it is important for you to contribute because imagine if other country practices do not contribute … you could not share their knowledge and they say we do not want their knowledge … and they have their own Japanese base and they just do not have any desire to share knowledge.

In summary, Case B's current focus on codification and reuse of knowledge to service its clients had a negligible influence on the role of knowledge networks in relation to the transfer of knowledge between consultants globally. This organization's dynamics is significantly influenced by information technology developments (e.g., sophisticated databases, content management systems, portals, intranets, communication tools and applications etc.). Differences between Case B's regional offices can enable, but can also impede, the way tacit know-how is transferred between consultants globally. Operating in highly

competitive and dynamic markets, there is intense pressure to identify new niches and to diversify into emergent areas of business, creating continuous turbulence in the management of organizational knowledge and know-how. A diagrammatic representation of the influences on Case B's organizational dynamics is shown in Figure 1.

Case C

Case C is a manufacturing company producing a chemical compound ChemX for a range of industries. ChemX is used in packaging applications and manufacturing many consumer products (e.g., garden hoses, textiles, footwear and furniture) that demand durability. One of the knowledge systems considered important in the business is an electronically codified document covering environmental safety procedures. This forms a part of Case C's application capability and expertise required for running a major hazard facility. The purpose of the safety report system is to have a transparent and comprehensive overview of potential hazards associated with operating the plant.

Five years ago, the senior management decided to implement a business management system (hereafter BMS) to integrate its business processes with safety, occupational health, environmental responsibility, quality and financial control. The (codified) management system summarizes the organizational processes involved in the production and supply of ChemX and other specialty products. The system illustrates the detail of procedures related to the production of ChemX to its employees, and in addition it references other documents such as task guidelines, training programmes and process requirements for manufacturing ChemX.

The organization employs around 120 people to manage its business operations. ChemX is a key material supplied for construction, electrical and rubber businesses, and it enjoys a growing customer base. Different types of industry customers contribute to the increased demand for its products that has placed mounting pressures on the safe operation and productive capacity of Case C's manufacturing plant. In response, Case C has developed a strategy of relying on the integration and transfer of the available tacit knowledge among its specialists (i.e., the manufacturers and the technologists) in order to ensure safety while improving productive capacity. Case C is obliged to focus on cost-reduction and production efficiency, as additional capital expenditure on the plant cannot be considered in the context of the threat of low-cost imports from overseas. Thus, Case C's strategy aims to maximize the production output based on the existing infrastructure of the plant but without compromising safety. The Chief Financial Officer explained:

> The local market is about 180–190 thousand tonnes per annum. We plan to produce 130,000 tonnes. We are not quite consistently there. We do it at different times, but not consistently. There is a need for improvement in production efficiency. So therefore the business strategy is to get the 130,000 tonnes consistently, and then to increase that to 150 thousand tonnes … but not adding a lot of fixed costs.

Aiming to achieve economies of scale, Case C has invested in information technology applications to support manufacturing processes of the chemical compound and in other business operations in an effort to improve production process efficiency. Case C's approach to information infrastructure includes the progressive automation of various manufacturing processes. One of the automated systems is a sensor-based communications application at clients' sites that automatically notifies Case C when the stock of ChemX reaches a specified supply level. Case C has numerous such applications as part of its information infrastructure but these are operated on different computing platforms. For example, the production and distribution system is not linked to the customer management system. Knowledge codified in these different systems is available only within silos and so is not readily accessible to all potential users in the organization.

In short, the organization does not have effective codification and reuse mechanisms of knowledge associated with its manufacturing processes resulting in significant difficulties and associated dynamics in managing knowledge. The General Manager of Technology commented on the fragmented nature of the infrastructure and pointed out that the low priority on codification and reuse of knowledge in their systems created problems of reinvention:

> Lots of the early work tends to die within the IT system. This is referring to the documents, reports sitting somewhere, no longer accessible conveniently, no longer accessed and known about by the new people in the organization. They don't have a clue that the knowledge exists. This eventually leads to knowledge reinvention.

The CEO noted how the lack of effectiveness in managing knowledge caused heavy production losses:

> We lost 5000 tonnes in production through the operating group last year. They got it wrong and all those things [that went wrong] are known and should not have re-occurred. So in a [worker's] whole lifetime, a specific problem may only come up once. When it comes up, they have never seen it before. But it has happened 15 years ago and someone else knew the answer. That's the challenge we have to get beyond.

Another executive of the senior management team remarked:

> I think the biggest issue we have got with knowledge management, is making sure that we capture all the great intelligence, know-how and the engineering smarts (people) we have got out here … that other people can have access to their experience and knowledge, so that we are not reinventing the wheel. We can keep the history of what we have done at work that has not worked, having good access, good structural control around it electronically but having access to the right people, they will be able to get access to that knowledge.

Case C lacked any particular focus on personalization or codification. There were specific problems with

knowledge storage/retrieval and transfer as their CEO commented:

> There is a lack of strategy towards knowledge … there are some groups that are managing information. But I don't know there is anybody … taken the whole organization and said let us come up with an overall strategy because we keep solving the problem over and over again … when a production problem comes up we haven't seen it, but it happened many years ago and someone knew the answer.

In Case C, there are aspirations to improve and integrate the codification of knowledge but there is no clear or consistent direction of knowledge strategy. The organizational context is strongly influenced by changes in its external environment of competition. Although their information infrastructure is not integrated and so presents problems in managing codified knowledge, an even bigger influencing challenge is to address the growing demand for its product. As the market leader in the production and supply of ChemX, Case C faces future competition from new entrants and importers of its product. To meet these challenges, the company is harnessing its knowledge of its production processes to increase their capacity as a way of reducing unit costs without increasing the risk of accidents resulting in organizational dynamics. KM is being deployed to improve effectiveness through the flow of know-how and expertise in the middle and senior echelons of management as well as in the operating plant. When introducing changes, there are constraints associated with the manufacturing environment, where, for example, knowledge transfer is dependent on coordination and cooperation between employees who work in shifts. A representation of the factors influencing Case C's organizational dynamics is shown in Figure 1.

Case D

Case D's business is principally focused on the production and dissemination of economic analysis and research about a range of national economic indicators – such as gross domestic product, inflation, growth rate and other social indicators. The organization also conducts national surveys on housing, infrastructure development, household expenditure and economic activity surveys. Case D provides other client services such as economic modelling and analysis, and training and support as well as knowledge services such as evaluating survey effectiveness and expert reviews on methodology.

Case D's KM vision seeks to assist and encourage 'informed decision making, research and discussion', as stated in its mission objectives. The organization has a broad set of knowledge initiatives, and continuously addresses the changing conditions of its business environment. A flavour of Case D's approach is conveyed in their knowledge strategy documents:

> Promote awareness of benefits and advances in KM through Case D's News, Annual Report and the inclusion of a set of KM performance indicators for inclusion in Branch Reports … and Publicize our proficiency/leadership in KM externally to raise our organizational profile … Review our Professional Development program and incorporate suitable KM related courses and resources …. Develop and promote a set of individual KM competencies which nurture knowledge practice and assist staff to act knowledgeably.

Further, an extract of the Chief Information Officer's (CIO's) comments as reported in one of the strategy documents is as follows:

> We sought to create an organisation-wide working environment (not just a networked version of a set of personal productivity tools) … collaboration and sharing, are strongly supported and knowledge created by anyone can be treated as a corporate asset …. Case D is seeking to create an organisation which is not just knowledge-aware, but one in which its people are knowledge-enabled, managed and focused.

Case D has been one of the leading governmental organizations involved in the information and knowledge business since its establishment in the early 1900s. The organization has around 3000 employees. A key aspect that has shaped the development of Case D's business includes the introduction of the cadet scheme in late 1950, which produced and trained employees uniquely suited to Case D's knowledge-oriented work. In the 1960s, Case D introduced computers into the organization. This had a profound impact on the number and size of research and statistical data collections that it was possible to undertake. The CIO highlighted the dependence on information infrastructure in one of the regular organizational seminars, a view that is echoed in one of the organizational strategy documents:

> Within our company, we place a lot of emphasis on our corporate approach to information infrastructure … selecting strategies and technologies that are a best fit with overall business needs, and consequently provide us with a significant return on investment.

Case D's business focuses on product innovation and increased productivity as regards research and statistical analysis and reports. In this respect, one of the Directors explained:

> The strategy aims to find basically new ways to do business. When you are in a business which is about information and knowledge, you really have to work at trying to get better …. Productivity is a very important aspect of what we have been trying to achieve.

Case D provides a range of services (e.g., economic and statistical analysis, policy planning and development, and information and statistical consulting). Its knowledge strategy emphasizes codification processes such as storage, integration and reuse of knowledge that is created within and outside the organization. The strategy also focuses on the facilitation of interpersonal networks, collaboration and person-to-person knowledge transfer. Employees share their personal experiences and tacit knowledge in the preparation of various research reports, economic

Table 2 Summary of four case organizations

	Case A	*Case B*	*Case C*	*Case D*
Organization type; size; industry standing; and knowledge strategy direction	Educational advisory; 100–500 staff; regional market leader; predominantly personalization	Management consulting; 20,000 plus staff; one of the top four global firms; predominantly codification	Chemical manufacturing; 100–500 staff; sole producer in the region; no direction	Research and statistics; 3000–5000 staff; market leader includes clients such as national governments and major corporations; both codification and personalization
Effectiveness of knowledge strategies and implications	Strong personalization but patchy codification Ineffective knowledge capture and storage electronically	Developed codification but weak personalization Ineffective knowledge transfer between consultants	Ineffective codification and personalization Weakness in knowledge capture, storage and transfer	Effective codification and personalization Continuous challenge of adjustment to ensure effectiveness in capturing, storage and transfer of knowledge
What are the factors shaping organizational dynamics resulting in knowledge strategy dynamics?	Rapid growth, change in senior leadership (annually)	Technology change, internationalization and diversification of consulting business, organizational politics in some regional offices	Competitive pressures and self-induced pressures to move down unit costs by increasing capacity	Highly stable demand. Sophisticated developers and users of information technology infrastructure
Shift in knowledge strategy dynamics	Hesitant movement from personalization to codification	Hesitant movement from codification to personalization	Not happening but intending to develop a strategic direction	Recurrent rebalancing of codification and personalization

analysis and other consulting projects. Case D also has online group discussion forums to enable rapid communication and transfer of insights from various economic experts and business analysts to other employees. This openness and support towards a knowledge-sharing culture has been practiced for many years. A Senior IT specialist working for the KM division observed that:

> Our CEO and his predecessor, they both – and nearly all our people – are well educated in knowledge management, and we regard it absolutely fundamental to the organization … the organizational culture has a very good influence in designing the knowledge strategy and [knowing] what information infrastructure applications the organization should look for.

Over the past two decades, Case D has invested in a wide range of applications to support the knowledge processes of the organization. Their existing information infrastructure is extensive in nature and includes large networks, communication tools, stored audio and video clips, groupware systems, intranet and a number of databases. Investments in various applications have supported research since the 1980s, and are considered essential to manage Case D's knowledge work processes. The Director of KM puts it as follows:

> The current information infrastructure is dependent on our strategy…for example statistical reports published in one department can be accessed and used in another department … with the help of systems that link them through. So IT is doing a lot to assist the processes … and supports our employees to work knowledgeably rather than to manage knowledge.

The KM director further highlighted the knowledge use in Case D by indicating how both codification and personalized processes function effectively in the organization:

> Our staff contribute explicitly and tacitly. So if we can put it down in databases … we codify it … but if it is not we get people to talk about what they are doing and this gets transferred across groups … and processes such as [creation, storage … application etc] they are all well interlinked … in our knowledge strategy.

Another senior executive noted:

> From a codification view, we have ready access to highly functional facilities which can act as enablers for knowledge management … and personalization, we have the culture and networks for sharing and drawing on expertise held in the organisation … [so] both behavioral and technical aspects to manage knowledge in the organization work for us better now.

In summary, Case D has developed rich capabilities in the management and effective use of knowledge. Over many years, the organization has developed an integrated approach to codifying and personalizing aspects of managing knowledge. Its dynamics has been evolving in relation to technology, and has been significantly influenced by a culture of greater openness in the sharing of know-how across the organization. Despite the stable nature of its business, Case D is engaged in the close monitoring of its environment to respond rapidly to potential threats and to seize new opportunities. A diagrammatic representation of the influences on Case D's organizational context is shown in Figure 1. In addition, summaries of the four case organizations are presented in Table 2.

Discussion

Among contextual factors that have influenced the four organizations' strategic management of knowledge, we have included competition, leadership, organizational politics, culture and technology. Our understanding of these contextual factors is drawn from a number of studies across relevant literatures (see Table 3). As limitations of space make it impossible to provide more than an indication of the presence and interdependent effects of these factors, we illustrate them with reference to Cases B and C. The framework can be readily applied to the other cases, and we give brief examples of how this might be done.

Competition

Case B, a global management consulting firm, operates in a highly competitive environment. Over time the firm expanded geographically and took on more client projects globally. As part of this expansion, Case B diversified its services in business process outsourcing, market intelligence, security risk and so forth. The firm's knowledge strategies became dynamic as it had to constantly update and renew the know-how and know-what in different service domains in order to withstand increasing competition in its business environment.

Similarly, in Case C, a chemical manufacturer, competition influenced the strategic dynamics of knowledge. This was evident where the organization responded to emerging market pressures by increasing the production capacity of its plant. Here the dynamics revolved around knowing how to improve the efficiency of the plant, raise production levels and thereby proactively meet the increasing market demand for its product. Being the sole producer of chemical compound in their market, Case C developed esoteric knowledge related to plant safety and associated procedures. Expertise in quality and safety has contributed significantly to the company's capacity to restrict new entrants to the market despite growing customer demand.

Leadership

Case B's business is partnership-based and leadership is focused on individual lines of consulting business. The strategic leadership team can be linked to a decentralized approach to decision making that creates variability in the strategic management of knowledge for the whole organization. The senior leadership consists of number of partners responsible for different consulting services, and the strategic agenda is focused on their respective lines of business and regions in which they compete. This contributes to discontinuities in firm-level strategic leadership and influences knowledge dynamics with respect to which consulting solutions should be codified and reused (i.e., enterprise sustainability, technology, supply chain, business analytics etc.). Examples are the higher demand for technology consulting in the European market and for business analytics consulting in the Asian market. In such distinctive scenarios of competition, with decentralized leadership for different regions and lines of consultancy business, there are uncertainties and complex strategic options for the dynamic balance of what is codified and what is personalized.

In Case C, we found little evidence of the overt influence of leadership in altering the dynamics of knowledge. We attribute this to long-term stability in the senior

Table 3 Summary of working definition of contextual factors

Constructs depicting dynamics of knowledge	*Our working definition*	*Exemplar studies*
Competition	We follow Zack (1999, p. 128) in his view on 'knowledge can be the most important strategic resource and the ability to acquire, integrate, store, share and apply it the most important capability for building and sustaining competitive advantage'	Grant (1996), Hansen *et al* (1999), King & Zeithaml (2003) and Zack (1999)
Leadership and politics	We commend Hansen *et al*'s (1999, p. 116) argument that 'Within the organization, employees will be confused about priorities. The issue will become quickly politicized and people will battle for resources without seeing the whole picture'. They further contend that 'Only strong leadership can provide the direction a company needs to choose, implement and overcome resistance to a new knowledge management strategy'	Ginsberg & Venkatraman (1985), Earl (2001), Hansen *et al* (1999) and Miller *et al* (1982)
Culture and technology	We adopt Alavi and Leidner's (2001, pp. 115–116) view of understanding of 'organizations as knowledge systems that represent both the cognitive and social nature of organizational knowledge and its embodiment in the individual's cognition and practices as well as the collective (i.e., organizational) practices and culture. These processes do not represent a monolithic set of activities, but an interconnected and intertwined set of activities'	Alavi & Leidner (2001), Earl (2001), Ginsberg & Venkatraman (1992), Hansen *et al* (1999), Kautz (2002) and Nonaka (1994)

management team and, in particular, to the CEO's ownership of the company. This has ensured consistency and stability within what is a centralized approach to strategic decision making. Of course, in the future – when, for example, the current CEO retires or sells the company – leadership may become an issue or overt influence with potentially great implications for the balance of personalization and codification.

Organizational politics and culture

Organizational politics and culture influence the dynamics of Case B's context. This was evident when a lack of openness attributed to the culture of Japanese consultancy practices resulted in knowledge being codified within their local infrastructure in a way that impeded the global transfer of knowledge between offices. This fragmented nature of the transfer of consulting know-how between regions exacerbated tensions between offices and impeded the capacity of consultants to collaborate, and their willingness to share knowledge with the Japanese office.

In Case C, culture played a considerable influence in the strategic dynamics of knowledge. The shift-based manufacturing culture contributed to uncertainties with regard to the strategic management of knowledge. Operational employees working in different shifts created deficits and inefficiencies in strategic KM. Inefficiencies were associated with gaps in strategic know-how and know-what with regard to improving the plant's production capacity. The absence of a strong culture of sharing of production knowledge between shifts tilted the knowledge strategy dynamics towards personalization. Operational-level politics associated with the sharing of knowledge (of plant performance) between shifts came to a head when an exceptionally high loss of production occurred (which the CEO felt could have been avoided, if there had been more effective codification and transfer of plant performance knowledge between shifts) with a corresponding impact on profitability. Organizational politics – where shifts were reluctant to take responsibility for their contribution to production (and loss of output) and where communication and knowledge between shifts was limited and unreliable – contributed to poor interaction and alignment of codification and personalization mechanisms.

Technology

The dynamic nature of innovation and development of technologies and systems demanded the repeated updating of Case B's information infrastructure. This influenced the knowledge dynamics, with implications for the organization's reliance on a strategy of codification. Concerns were raised about the capacity of technology to manage Case B's knowledge effectively (e.g., as noted by the Technology Leader) that were accompanied by a call for increased personalized transfers of knowledge.

In Case C, existing technology and manufacturing applications were dated, fragmented and ineffectively managed. There was inadequate codification and reuse of production know-how. In addition to the unreliable exchange of knowledge between staff working in different shifts, there was limited sharing of expertise between specialist functions such as engineering, information systems, marketing and production. In short, the company's legacy-bound infrastructure gave rise to problems in KM processes, as the mix between codification and personalization strategies become resistant to dynamic rebalancing.

In the remaining Cases A and D, there was also much evidence of dynamic factors affecting the strategic management of knowledge. In Case A, a voluntary association of international education professionals, it was the annual change in senior management leadership (selected by its council members) that heavily influenced the strategic dynamics of knowledge, especially the degree of reliance on personalization. In Case D, an advanced user of information technology, the rebalancing of codification and personalization strategies occurred continuously. Its competitiveness depended on continuous knowledge creation accomplished through a culture of openness in sharing of ideas and insights between experts working in different specialist fields and functions. This has been led and supported by senior managers who, by renewing and updating the processes integral to the strategic management of knowledge, have been proactive in the dynamic balancing of personalization and codification. Table 4 summarizes how each of the five factors shaped the knowledge strategy dynamics of the four organizations.

We now illustrate the intricacies of knowledge dynamics in relation to strategic management by considering how the five factors interact within one of the organizations, Case B.

The dynamic interaction of factors – the example of Case B

We take up Case B in order to explore some of the nuances in the dynamic interaction of the five factors under examination. Space limitations restrict us to a focus on one case but a comparable analysis could be applied to our other three cases.

Competition and technology innovation (e.g., emergent technologies) are interconnected and often influence the strategic dynamics of KM with regard to the balancing of codification and personalization. In Case B, a strategic driver for competition was to keep abreast of emerging technologies and to adopt them rapidly to maintain or improve organizational performance (e.g., diversification of the client base). When evaluating new technologies (e.g., enterprise portals and content management systems), a major consideration was the development of consultants' capacity to deploy the technologies in a manner that could enhance their productivity and improve their effectiveness in delivering client solutions. In short, competitive position was maintained by continuously renewing know-what and know-how with respect to new technologies.

Table 4 Summary of influences on knowledge dynamics in four case studies

Influence of factors on dynamics	*Case A education*	*Case B consulting*	*Case C manufacturing*	*Case D research statistics*
Competition	Negligible, because of not-for-profit business	High, because of business diversification and global expansion	High, because of strong customer demand and pressures to improve production capacity in order to exclude new entrants by exploiting know-how (e.g., safety and quality)	Negligible, because of stable business
Leadership	High, because of senior leadership change (annually), creating new dynamics of knowledge	High, because of decentralized leadership based on individual consulting services and often creating uncertain dynamics of knowledge	Negligible, because of centralized leadership that is stable, creating less knowledge dynamics	Moderate, because senior leadership is stable over time, contributing to lower dynamics of knowledge
Politics	Negligible, due to voluntary purpose of organization	High, due to strong influence of politics on some regional offices (e.g., Japanese operations resisting knowledge transfer)	Moderate, because some politics is evident between shift staff during times of production performance problems	Moderate, because politics can occur due to external environment influences (e.g., government)
Culture	High, because of openness in exchange of ideas, expertise and so on, creating dynamics of know-how	Negligible, because no clear evidence of effective exchange of ideas, expertise and so on	Moderate, because of very limited exchange of ideas, expertise and so on due to shift work culture	High, because of openness in exchange of ideas, expertise and so on, creating dynamics of know-how
Technology	Negligible, because of low reliance on technology	High, due to heavy reliance on technology, and its change is dynamic creating the need for new technology know-what and know-how	Moderate, due to continued emergence of new technologies in manufacturing and information infrastructures	High, due to strong users of technology; change is dynamic, creating a need for new technology know-what and know-how

A mutually constitutive interaction between leadership and a technology-dependent and mediated culture contributed to Case B's dynamic balancing of its strategic management of knowledge. It will be recalled that Case B's business is technology-enabled and its dominant focus is on processes of knowledge codification and reuse. Knowledge strategy dynamics (e.g., when and how to adopt new technologies/applications) often rested on senior leadership decision making. Decentralized leadership engendered cultural tensions and complexities (as evident in assessments of, and relations with, the Japanese consulting division) and presented a political impediment to the global sharing of know-how between consultants. Limited overall global strategic leadership allowed for autonomous management of each consulting business unit (e.g., audit, business analytics, supply chain etc.) and in different regions. An outcome was weak personalized networks and patchy access to codified knowledge. Overall, in Case B, which operated in a highly competitive context and depended on innovations in technology, the process of balancing the mix of codification and personalization strategies was hampered by organizational politics manifested in professional and geographical autonomy and cultural diversity (e.g., with respect to knowledge sharing). As Van Wijk *et al* (2008, p. 845) argue, 'differing cultural aspects may be more detrimental to knowledge sharing'.

Increased understanding is required of how contextual influences, including 'cultural aspects' (Van Wijk *et al*, 2008, p. 845), matter and contribute to the dynamics of knowledge strategies, both explicitly and tacitly. In each case study, a range of factors was shown to exert such an influence, but it should not be assumed that each case was influenced by those factors alone or in combination. Strategies of KM are conditioned by an interaction of many factors that include those examined here (competition, leadership, organizational politics, culture and technology) but, as we acknowledged from the outset, extend to others such as industry structure, organizational size, business growth and so on.

Conclusion

This paper has addressed an understanding of KM that conceives of it in terms of strategies of personalization and codification. Their practical and effective combination, we have shown, is contingent on the presence and interaction of diverse internal and external environmental factors.

One important outcome and benefit of undertaking detailed case studies is an appreciation of the embeddedness and path-dependency of strategies in the dynamics of organizational evolution, growth and performance. When placed in the contingent and dynamic strategic contexts of specific organizations, the effort to reach and sustain a specific (e.g., 80/20, 60/40, 50/50 etc.) mix of personalization/codification, or vice versa, may involve a counterproductive distraction from developing a flexible knowledge strategy that is practical and cost-effective in realizing current priorities and/or preparing for evolving activities and uncertain eventualities.

In relation to business strategy and key performance indicators, the primary consideration is whether the blending of codified and personalized elements is congruent with, and relevant for, current and potential changes in the dynamic interaction of internal and external environmental factors in relation to strategic ambitions. We have addressed this conjecture by reference to the factors of organizational politics and leadership, culture, external competition and technology. These factors are not exhaustive but their identification is grounded in both relevant literatures and in the empirical data of our four case study organizations. Recognition of the significance and dynamic interaction of these factors can, we suggest, enable the flexible development of knowledge strategies so that they are more congruent with their changing context as well as with overall business strategy, rather than being myopically governed by a static and inflexible formula, such as that commended by Hansen *et al* (1999). The relevance and effectiveness of a specific mix of codification and personalization should not be presumed or taken for granted, especially where the context is dynamic. Where the mix has been skillfully developed to take an account of the context and to be responsive to the interplay of factors that condition its effectiveness, it is hazardous, and potentially disastrous, to make a doctrinaire shift to what Hansen *et al* (1999) claim to be a universally beneficial combination of personalization and codification elements. Our purpose has been to demonstrate that linking or correlating knowledge strategy to one or two key factors is likely to mislead decision makers as contexts are different and dynamic, and the importance of factors is variable. Of greater relevance and value is sensitivity to changes of context and the interaction of key factors.

Given the dynamic interplay of the above factors, knowledge strategy choices are more likely to be effective when they are sensitive to contextuality and the interplay of factors. That said, our emphasis on appreciating the significance of contextuality and indexicality, or deixis, as illustrated by our analysis of knowledge strategies in four organizations, is not intended to produce needless complexity. Instead, our concern is to recall some basics of managing and organizing – by appreciating the embeddedness of practice in specific life-worlds (Sandberg & Dall'Alba, 2009) in a manner that engages with an established – codification/personalization – perspective on knowledge strategy. Our attentiveness to contextuality is an example of 'gap-spotting' (Sandberg & Alvesson, 2011), in which empirical data is deployed to remedy a deficit of evaluations of a central claim in the field of strategic KM. But, in this process, we have also offered a 'problematization' of some of its assumptions (Sandberg & Alvesson, 2011) about the relationship between personalization/codification and the context of their balance.

For practitioners, a lesson to be drawn from our analysis is that the evaluation of an organization's knowledge strategy should initially be guided by a contextually sensitive review of the influence and interaction of relevant contingencies, including the five factors identified here. The largely implicit lesson of the paper for practitioners is to pay closer and continuous attention to the particular circumstances of their business when attending to its strategic management of knowledge, and not to rely on a universalizing ('one best way' or 'best practice') recipes for action. We have identified a number of factors that executives might usefully consider when reflecting on the dynamics of knowledge strategies and aligning to business strategy. We have also stressed that these are not exhaustive, and also that they are interactive.

Mindful of the possible stupidities (Alvesson & Spicer, 2012) that may result from emulating universal prescriptions in particular contexts, we hesitate to be drawn further in suggesting when an approach to the firm's knowledge strategy might be of benefit without knowing the circumstances of the firm. Instead of striving to identify a single formula or set of predetermined prescriptions for developing a knowledge strategy, we have proposed a framework that may serve as a heuristic tool (see Figure 2) for appreciating the complex dynamics of knowledge strategies. When used as a 'tool', the value of this framework is dependent on decision makers' diagnostic capabilities, including their powers of critical assessment, to determine what mix of codification and personalization elements is feasible and will prove to be effective. Our view is that effective strategic management of knowledge depends on sensitizing decision makers to the dynamics of the context, including their own frameworks for identifying and enacting the factors that condition their decision making. In this respect, we are supportive of ambidextrous capabilities (Gibson & Birkinshaw, 2004; Tushman & O'Reilly, 1996) that replace a rule of thumb approach, such as that advocated by Hansen *et al* (1999) with a more

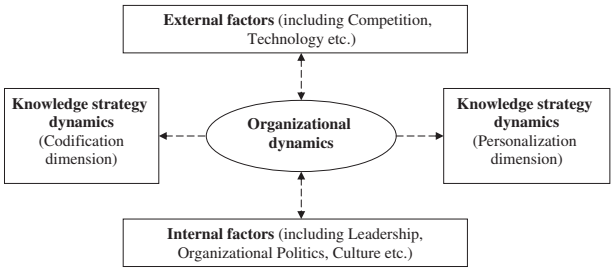

Figure 2 Heuristic tool on organizational and knowledge strategies dynamics.

flexible orientation that is customized to changing contexts, comprising an interaction of factors.

With regard to future empirical work, our analysis suggests two promising directions. We believe that it would be beneficial for further case studies to be undertaken across a more diverse range of organizations, geographically and sectorally, as a basis for further explicating the relationship between the changing contexts of business and the strategic management of knowledge. Such research would pay closer attention to the multiple and fragmented quality of the realities (e.g., of internal divisions in departments and teams) that comprise organizations. In terms of theoretical development, such research might explore how the factors assessed to be important for the shaping of knowledge strategies are practically enacted (Smircich & Stubbart, 1985) through diverse discourses (e.g., about 'knowledge networks' or 'production efficiency') that are forged within ongoing struggles over the allocation of symbolic and material resources. This focus is consistent with the broadening of approach commended by Deetz (1996), with regard to better understanding the 'black box' of path-dependency on an effective mix of codification and personalization elements.

To conclude, evidence derived from four in-depth case studies has demonstrated the importance of appreciating the evolving contexts in which knowledge strategies develop. Our analysis has illuminated the relevance of continuously reviewing how elements of codification and personalization are combined. To this end, it is, we submit, practical as well as credible to mobilize what Deetz (1996) calls a 'dialogic' approach when attending to the contextual and dynamic formation of knowledge strategies.

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