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Knowledge and Intellectual Capital Management Processes: Grounding Knowledge and Understanding of Organisational Learning

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Abstract: The process of knowledge and intellectual capital management aims to improve organisational performance and efficiency. Knowledge is a distinct capability that contributes to the improvement of this efficiency. Learning is an integral part of the knowledge system and can be identified by deconstructing available organisational knowledge. This paper offers an interpretative perspective of knowledge and intellectual capital development; it also examines previously fractured contextual approaches to organisational management research, which often fail to include learning as a significant factor for both absorbing and recognising the knowledge capabilities of a firm. Based on the results from a study conducted across 140 companies as well as selected case studies, this paper investigates learning mechanisms and their role in building a firm's knowledge capabilities. This paper argues that learning is an integral part of the knowledge process in which learning acts as an endogenous factor for the development, absorption and utilisation of knowledge. The search continues for an appropriate epistemological framework in the area of management research under which organisational learning theories can be analysed while simultaneously remaining relevant and useful to the pragmatics of organisational knowledge development.

Keywords: knowledge management, dynamic capabilities, organisational learning, intellectual capital, absorptive capacity, prior knowledge, situated learning, knowledge interchanges
Category: A.1

1 Introduction

A systematic development of a firm's capability requires the continuous synthesis of knowledge and its components. The generation and acquisition of knowledge are now regarded as key processes that facilitate the formation of knowledge and intellectual capital. For example, the knowledge process in a biotechnology firm accumulates over several years of searching before biotechnological innovations can be marketed. Similarly, a firm intending to globalise its business will have to extend its knowledge base and learn about the special conditions entailed by a particular technological context. In both cases, knowledge and learning are partly situated contextually and are partly driven by strategic intent.

No firm can afford to invest in developing every single knowledge requirement. Knowledge interchange with other firms is therefore necessary and is a source of a firm's externally situated capabilities. This knowledge, however, is context-specific and its assimilation requires individual and organisational interactions through learning; a firm's ability to internalise such knowledge determines its capacity to generate future knowledge. A firm may choose specific strategies to renew its internal knowledge capacity or decide to tap into externally situated knowledge-bases. In both circumstances, learning is a key process that allows a firm's knowledge to be developed and extended to its business routines [Zollo and Winter, 2000].

Different firms display varying levels of capabilities in assimilating experience and knowledge competencies. Such a capability is generally classified as a firm's absorptive capacity, that is, a firm's ability to value, assimilate, and apply new knowledge. A firm's absorptive capacity also depends on its prior knowledge [Cohen and Levinthal, 1990]. The learning process assists the internalisation of both new and externally situated knowledge competencies and improves the thought and behavioural quality of individuals and organisations. A firm's knowledge-base would as such require a learning process that depends on direction rather than passive experiences. In this way, organisational action can be improved through specific knowledge applications and deployments.

Learning is an interactive process of action and reflection [Klob, 1984]. It also involves acquiring skills, developing technological expertise, knowing the hows and whys of processes, and understanding the information and knowledge needed to develop a firm's competencies. Knowledge can only grow and develop when there is effective action [Barton-Jones, 1999, Liyanage and Jones, 2002]. Organisational learning is therefore considered a process of improving organisational action through better knowledge and understanding [Garvin, 2000]. Like knowledge, learning can also be treated as part of a firm's absorptive capacity; learning provides a firm with a broad set of skills that enables it to deal with both explicit and tacit components of internally and externally situated knowledge. Linking learning and knowledge is therefore important as these two components unite to provide requisite organisational competencies and business routines, which are based on various types of interaction, knowledge requirements, and the ability of an organisation to implement required changes.

2 How Does a Firm Learn?

The ability to internalise knowledge and learn provides a firm with varying capabilities. The role of learning in the knowledge process can be analysed from two perspectives. Several researchers have examined learning from a situated organisational learning perspective. This perspective views knowledge as embedded in individuals, connections between individuals and social groups, and artifacts [Winter, 2000, Edmondson, 2002]. Knowledge can also be situated within certain social and organisational contexts and embedded in certain practices [Lave and Wagner, 1991]. Learning untangles such knowledge and provides a common knowledge base. However, the value of such knowledge depends on each firm's absorptive capacity that will determine the similarities between the routines and knowledge-bases of firms [Lane and Lubatkin, 1998]. Thus, learning is a conduit that transmits knowledge from internal and external resources. The situated organisational learning perspective argues that learning is an ongoing activity carried out by individuals. Knowledge created by this learning process is embedded in both the minds of individual actors and the actors' environment, which becomes structured as a result of this activity [Nidumolu et al., 2001]. The situated organisational learning perspective lends support to the continuous transformation of knowledge. From a knowledge absorption viewpoint, other important aspects of learning are the negotiations, interactions, and collaborations that take place, and which are facilitated by knowledge interchanges [Millar et al., 1997]. Such interchanges allow the mixing and aligning of contextually situated knowledge with a firm's internal structures of knowledge. Knowledge interchanges can be achieved through contextually appropriate interaction and activity. [Glynn et al., 1994] argued that organizational learning is neither strictly micro nor macro in nature; instead, it involves a complex interplay between individuals, work-units, and the overall business processes of an organisation.

Learning processes, like knowledge, require management and guided development. They also involve a process of knowledge absorption within individuals and organizations. Such an absorptive capacity determines a firm's level of knowledge and learning integration. Excessive learning will not necessarily result in a corresponding increase in knowledge capital. The connection between knowledge and learning therefore requires deeper explorations. Several intervening processes between learning and knowledge creation and absorption have been identified [Boden, 1990 and Ruggles, 1997]. They include: the identification of the stock and structure of knowledge available to the organization, so knowledge gaps can be made known and remedied; the decontextualisation of knowledge into explicit forms so as to enable its communication and transmission; the synthesis and assimilation of knowledge interchanges by a multitude of users; the facilitation of knowledge generation and production; and the synthesis, adaptation, and transformation of knowledge to generate novel and creative uses. Some of these processes support continuous learning whereas others involve incremental learning through the accumulation of various amounts of knowledge. The changes to the rate and direction of knowledge are therefore influenced by such learning processes.

Learning is induced by changing the various components of knowledge. In this way, knowledge typologies can be varied according to information and data (explicit forms), thereby allowing a variety of learning possibilities. Learning also allows the translation of tacit knowledge or experiential knowledge into related business routines. For example, an apprentice working with a master craftsman learns by observing (with or without interaction) and imitative behaviour through trial and error. Learning can therefore be seen as the progressive unlocking of the tacit components of knowledge and the internalisation of such knowledge.

Firms may also learn through deliberate mechanisms of collaboration, partnerships, and alliances. These processes involve continuous interactions. [Lundvall, 1992] classified learning as a predominantly interactive process. He argued that learning was therefore socially embedded and could not be understood without accounting for its institutional and cultural contexts.

Irrespective of the situated or interactive components of knowledge, learning allows the transition from generalised capability building to specific capability building. The interchange of knowledge operates by transmitting contextually situated knowledge into a firm's internal structures of knowledge. As such, the connection between a firm's prior knowledge, its absorptive capacity, and the relationship between new and prior knowledge are important determinants of a firm's capabilities of internalising knowledge.

3 Analysis and Results

Our survey of 140 firms and selected case studies have revealed a wide variety of learning practices which are not closely integrated with the knowledge management practices of the organizations examined. The overall responsiveness to learning is poor: learning is generally considered an individual need rather than an organisational knowledge requirement. Individuals were hired for particular tasks and they were expected to perform the task at a given knowledge level. In our analysis, we examined the following aspects: (a) learning strategies; (b) knowledge strategies that incorporate learning; (c) management attitudes towards learning; (d) organisational support for learning; and (e) processes of knowledge articulation.

Firms tend to observe and imitate the business routines of other firms. In this way, a firm's products, processes, and services are benchmarked. We identified the following patterns of learning in most organisations:

a) Learning in response to compulsory skills and knowledge gains at no cost to the organisation [Learning by Experience and Engagement]
b) Learning as a result of a particular strategy, for example, a knowledge or innovation strategy, which comes at a cost to an organisation [Directed Learning]
c) Learning as a result of dynamic capability building at a cost to an organization [High-level Cognitive Learning]
d) Learning as a result of task sharing and team building at no cost to an organization [Interactive Learning].

Most firms surveyed (77%) strongly disagreed that firms were able to learn from knowledge situated in other firms and found that such knowledge transfers only occurred within specific needs, for example, the implementation of ERP software among network members. However, intra-organisational learning often takes place with the maturity of a particular knowledge and as a result of technology transfers [Crossan and Inkpen, 1994]. Learning was strong among the business units of some firms, especially in cases where knowledge was passed on from one project to another, and also in instances where collective action was needed for specific knowledge applications. Much directed learning was undertaken in response to dealing with certain exigencies in a firm. Nearly 71 percent of the managers interviewed strongly believed that learning and knowledge management were two separate activities. Although managers emphasised the development of knowledge systems, learning was generally relegated to the domain of individuals. The managers also strongly supported effective decision-making and responses that required inter-organisational events. This would link participants with their practical objectives and satisfy their discursive relevance criteria. Learning is essentially grounded in a social context, where the need to know is based on an employee's fear of obsolescence and future requirements. The ability to learn is self-motivated. The social grounding of learning entails different knowledge perspectives and heterogeneous knowledge inputs. Most employees interviewed undertook higher cognitive learning, which had some relevance to the organization, but was not entirely in line with the core business of the firm.

A significant percent of managers (83%) strongly agreed that learning reflects an individual need to acquire desired skills and better performances. The relationship between knowledge and learning in an organisation depends on individual acts. This is an ongoing process that requires an organisation to mediate between different skills and learning needs. Most managers support learning as a form of developing organisational capabilities and hold the view that organisational learning expands the ability of individuals to critically examine the issues related to decision-making and action. In fact, 67 percent of the managers surveyed considered learning a mechanism capable of consolidating a firm's prior knowledge-base and aiding in the assimilation of new knowledge.

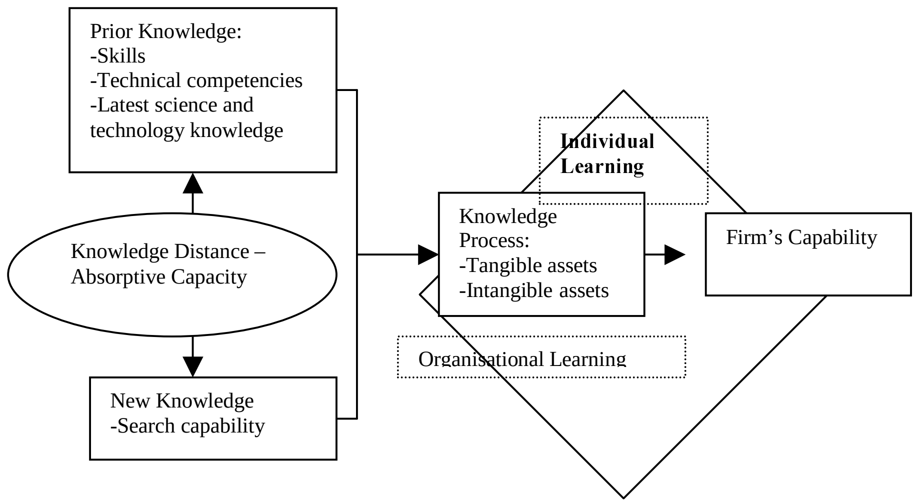

Figure 1: The Connection between Prior Knowledge, New Knowledge and Learning Capability

Managers were also aware of the different processes available to a firm for knowledge acquisition and absorption, which could assist a firm in expanding its capabilities in several directions. The assimilation of new knowledge, its integration with prior knowledge, and the deployment of a firm's knowledge resources are central factors affecting all firms engaged in business. Most managers have consciously adopted knowledge strategies to capture information. However, they invariably fail to utilise learning as a process of assimilating available knowledge and consider learning to be an avoidable cost. The attempt to identify an organisation's available knowledge and its role in assimilating new knowledge has been recently explored through the concepts of a firm's absorptive capacity and prior knowledge [Zahra and George, 2002]. The phenomenal impact of knowledge resources have been studied from variety of perspectives, including: new product development processes [Daft and Lewin, 1993]; organising business information [Sanchez and Heene, 1996]; the strategic management of resources [Lane and Lubatkin, 1998]; managing the value chain [Cockburn, Henderson and Stern, 2000]; organising innovative competencies [Christensen, Suarez and Utterback, 1998]; and learning capabilities [Winter, 2000]. There is however limited research into the intervening processes between learning and knowledge.

In the process of acquiring new knowledge and absorbing such knowledge to renew prior knowledge, firms display varying degrees of agility towards developing learning capabilities. All firms engage in some form of learning. To what degree should an organisation engage in learning capability development and what role should it play in institutionalising such a process? Learning is an essential process in the conversion of knowledge into intellectual capital [see for example, Meyers, 1993, Argyris and Schon, 1996 and Senge, 1993]. Our research indicates that different firms respond differently to developing knowledge capabilities; most do not fully realise that learning builds different types of capabilities that allow the consolidation of certain business routines. Our research also suggests that those firms who are able to institutionalise learning processes tend to draw on the knowledge-base of individuals by empowering them to make decisions. Learning has increased the culture of knowledge-sharing, which is, in turn, important for selecting and developing knowledge-based competencies. There is, however, certainly a tension between knowledge and the learning process. The tension between knowledge application and segmented theoretical interpretations of learning provides a method of achieving organisational reclusivity.

4 Grounded Theory and Approach

The researcher's perspective contextually ties the process of knowledge construction such that the understanding of organisational research resides in the researcher's ability to understand the theoretical paradigm rather than the research itself. We have drawn our conclusions from observations of a large sample of firms operating in Australia, Singapore, and Hong Kong. However, interpretation produces analytically isolated results. The exact coupling processes of learning and knowledge is difficult to isolate given the complex web of interactions both within and outside the firm's boundaries.

Understanding the connection between learning and knowledge requires an understanding of the subject-object reality of the research experience, as the researcher identifies his or her subject based on a particular theoretical/research paradigm. Organisational learning theories offer limited analytical approach as they tend to situate knowledge outside a firm's knowledge-base. Because of the various typologies of knowledge, for example, the tacit and explicit dimensions of knowledge, the subjective multi-contextual object of study needs to be analysed through discursive lenses and with the consent and understanding of participants.

It is often the case that current theories of learning are collated to fit with the framework of researchers; little if any consideration is given as to how organizations define their own reality or how that reality influences the shaping of knowledge and the development of learning.

Theories of learning have so far focused on learning as an exogenous process to knowledge development, absorption, and utilisation. This view, however, is inadequate for explaining the way that people actually generate new knowledge and contributes to prior and future knowledge developments. The delineation of areas of study in organisational research into the categories of knowledge and learning has marginalised the actual role played by individual learning and reflection. In fact, all organizations implementing knowledge management systems have to carefully consider the discursive rules that delineate knowledge from learning.. Because of its pervasive role, learning needs to be analysed independently but also in conjunction with the contingent variables related to knowledge development, assimilation, and absorption. This paper argues that isolating knowledge from contingent reality imposes artificial boundaries on the complex processes of knowledge and learning simply to fit the convenience of interpretative approaches. The recognition of influential variables that lead to a greater and more informative link between learning and knowledge processes is required. Certainly, learning theory must be integrated with knowledge and organisational theories.

Learning also allows the integration of human creativity with new intellectual formation [Amabile, 1996]. Several learning processes in organizations have been identified, as seen in [Malecki, 1997]. These processes can be subdivided into the following:

Direct learning:

- Learning by doing;
- Learning by using;
- Learning by operation; changing; system performance feedback; training; hiring; searching.

Learning by Interaction:

- Learning by trying;
- Learning by interacting;
- Learning by selling;

Learning by Transfer:

- Learning from inter-industry spillovers;
- Learning by imitation; and
- Learning by failing.

Our research shows that firms use all these forms of knowledge; however, direct learning is the most commonly practiced form advocated by firms. Near learning refers to the immediate learning environment, which deals with compensating for immediate knowledge and competitive gaps. Most of such learning processes attempt to understand current systems and the operating of such systems. Learning by interaction is largely grounded in personal networks. Learning by transfer occurs as knowledge is transformed into intellectual capital and assimilated into various outcomes. Sources of learning for a firm include: clients or customers; other firms within the firm's group; fairs and exhibitions; suppliers; competitors; professional conferences and journals; universities and higher education institutions; computer-based information networks; consultancy firms; government and non-profit institutions; and patent disclosures [OECD, 2000]. Yet there are some distinctions that can be made about learning that depend on the different means by which information can be transmitted, for example, codified or tacit knowledge. Formation of networks or industry clusters are helpful for integrating learning through the transfer of both codified and tacit knowledge within organisations.

5 Conclusions

In organisational management studies, learning has been treated as an intervening process. However it is still often treated as exogenous to the processes of a firm's knowledge creation, assimilation, and utilisation. Our research suggests otherwise. We regard learning as endogenous to knowledge processes and argue that it forms an integral part of knowledge development, knowledge absorption, and interchanges. In the formation of knowledge and intellectual capital, learning plays a critical role, especially in filling out the knowledge gaps of individuals, teams, and systems. Learning also facilitates much-needed behavioral changes that allow the appreciation of intellectual capital components residing in individuals.

A new perspective is required for linking knowledge and learning theories as a cohesive set of inputs to the creation of an oganisation's knowledge capital. The separation of the two may have its own dynamics. However, such segregation limits an understanding of knowledge as a valuable resource for a firm's growth and development. Learning invariably needs to be treated as an endogenous factor in the formation of a firm's absorptive capacity, which, in turn, leads to the assimilation of new knowledge with prior knowledge. A firm's absorptive capacity can be expressed in terms of its learning capability, which is able to advance the knowledge capital of a firm. Learning should therefore be treated equally or similarly to knowledge management while a firm is engaged in building its specific dynamic capabilities. Given the significance of knowledge resources to an organisation's competencies, it is important to view learning as an endogenous factor to knowledge that deals with the internally and externally-situated knowledge capabilities of a firm. Learning also deepens specific business routines that allow managers to decide on the level of learning required to absorb certain types of knowledge or business activities into a firm's development. Theories of learning should not only examine internal and external interchanges of knowledge resources, but also the dynamic role they play in building a firm's business capabilities.

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