

A Cognitive Perspective on Organisational Knowledge Strategy

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Abstract

This article examines knowledge strategy from an empirical cognitive perspective, foregrounding strategic capability and collective intelligence as interrelated concepts. In more general terms, knowledge strategy is focused on a resource-based theory of the firm. This exploratory case study provides illustrative data using the cognitive perspective as a guide. Knowledge strategies were investigated in a chosen case that involved a firm engaged with the design and development of new products and technologies.

Keywords: Knowledge Strategy, Knowledge Management, Exploratory Study.

1. Introduction

Strategy and knowledge have been studied in one emerging research field, the knowledge-based view of the firm (Spender 1996b, Nonaka 1995) that is a confluence of a number of studies on resource-based theory of the firm and epistemology (Grant 1997). The resource-based theory of the firm is an alternative to the traditional strategic competitive advantage theory (Porter 1985) that is focused on the external side of the firm (Barney 1991). The internal side has been focused on the resource-based theory of the firm, which gives emphasis to internal resources as its strategic position enabling the achievement of sustainable competitive advantage over time (Barney 1991, Prahalad and Hamel 1990, Leonard-Barton 1992).

Epistemology provides fundamental assumptions on which to structure the knowledge-based view of the firm before researching into the concept of knowledge itself. Distinct epistemologies may be conducive to the practice of and research into knowledge management (Venzin et al. 1998). These include the cognitive theory, the autopoietic theory and connectionistic theory. The purpose of this article is to explore knowledge strategy in organisations from a cognitive perspective. By analysing an organisation within the proposed cognitive perspective, what knowledge strategy is applied and how it is applied can be investigated. Knowledge strategy corresponds to the application of a knowledge process to an existing or new knowledge domain in order to achieve strategic goals (Nonaka et al. 2001).

The cognitive perspective is underpinned by an appreciation of organisational intelligence as the principal factor that links both knowledge and strategy within organisations. We propose that managers can better realise their understanding of strategic choices assuming a cognitive perspective that is expressed in everyday actions related to organisational activities. This paper reports on the results of an exploratory case study in knowledge strategy within an organisation. The exploratory case study was developed within a particular corporation that is involved in the design and production of assembly, test and handling systems.

2. Strategic Focus on Knowledge

Organisations are socially complex ‘organisms’ and it is well known that organisational actions happen as the results of dynamic interactions between social and formal systems. The concept of organisational knowledge involving facts and values (Spender 1998) can, therefore, be explored in both logical constructions (formal and structured systems) and cognitive constructions (informal and unstructured systems) (see Figure.1).

Cognitive perspective on organisational culture focuses on ideas, concepts, beliefs, values or norms, while anthropology and sociology also describe it as ‘organised knowledge’ (Sackman, 1991). This ‘organised knowledge’ is constituted by:

- the existing knowledge stored in people’s minds,
- the mental modes used to explore it and
- the ideas or theories employed collectively to support their interpretations about what organisation represents (Spender 1998).

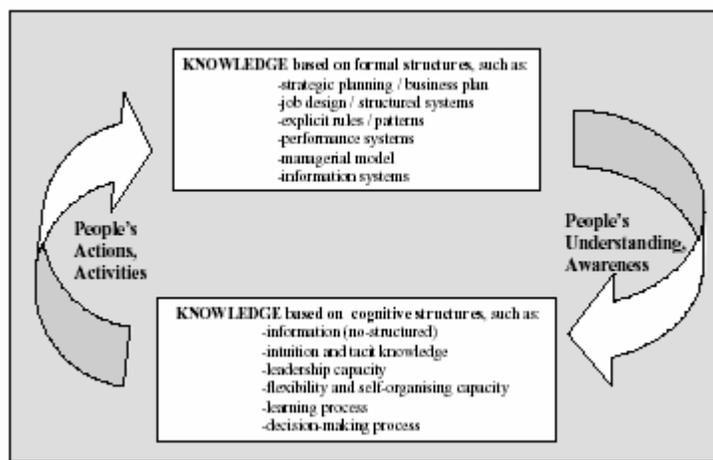


Figure 1: Organisational knowledge life cycle.

In this study, we are concerned with the ideas or theories employed collectively in order to enable knowledge in organisations. In particular, the collective meanings and actions supported by a cognitive perspective, which consciously create those organisational strategic choices which result in the creation and transfer of knowledge.

2.1 Knowledge Strategies based on formal structures

Different formal structures of knowledge strategies can evidently exist in organisations that seek to integrate knowledge into the creation of their products and services. Knowledge, considered as an organisational advantage, can be exploited in different forms, combined with others, transferred and disseminated among people or other organisations. Basically, organisational knowledge strategies attempt to derive the best business value from their existing knowledge based assets or try to create new competitive knowledge-related assets where required (Wiig 1997).

To stream knowledge from any selected strategic choice, formal processes will be required. Two core knowledge processes can condense different ones: knowledge creation process and knowledge transfer process (Nonaka et al. 2001). Inherent in these two essential processes, different knowledge strategies can be found which organisations will decide to pursue (see Table 1).

Know Basic Strategies	Role of Knowledge as a Competitive Advantage	Concepts with Equivalent Meanings
Knowledge Creation Processes	Knowledge is imperative to the long-term performance and survival of the firm, in order to achieve innovation and exploit future business opportunities.	“Knowledge Strategy as Business Strategy” (Wigg 1997), “Probing Strategy” (Nonaka et al. 2001)
	Firm emphasises specific intellectual assets such as patents, technologies, operational and management practices or customer relations.	“Intellectual Asset Management Strategy” (Wiig 1997)
	Firm emphasises to create new explicit or tacit knowledge, organisational learning, basic and applied research.	“Knowledge Creatio Strategy” (Widd 1997; Nonaka and Takeuchi 1995), “Expanding Strategy” (Nonaka et al. 2001)
Knowledge Transfer Processes	Existing or new appropriated knowledge is codified and stored in databases, to be accessed and used by anyone. By transferring knowledge to other workplaces, it will be possible to reuse it, promoting new performances that will create competitive advantage with fast research, best practices or rapid decision-making.	“Codification Strategy” (Wiig 1997), “Transfer Strategy” (Hansen et al. 1999), “Knowledge Transfers from Individual Competence to Internal Structure” (Sveiby 2001), “Leveraging Strategy” and “Appropriating Strategy” (Nonaka et al. 2001)
	Knowledge is closely joined to the person who developed it and it is shared through person-to-person contacts, and information technology helps mainly to interconnect persons to communicate knowledge, not to store it.	“Personal Strategy” (Wiig 1997), “Personalisation Strategy” (Hansen et al. 1999), or “Knowledge Transfers between Individuals” (Sveiby 2001)

Table 1: Knowledge strategies as formal structures

By recognising the role of knowledge as a competitive advantage in order to reach strategic goals, knowledge strategies will involve the application of knowledge processes to an existing or new knowledge domain (Nonaka et al. 2001).

2.2 Knowledge strategies articulated from a cognitive perspective

This work explores managerial responsibility in relation to knowledge strategy. Managers should enable rather than control knowledge creation and knowledge transfer to encourage the knowledge domains to work as vibrant, energetic, creative social arenas (Nonaka et al. 2001). To create or reinvent knowledge mostly depends on how managers enable activities (Krogh et al. 2000) rather than control and co-ordinate activities.

Underpinning success in strategic focus on knowledge, essential principles must be followed, such as (Quinn 1999):

- concentrating whole efforts in the specific capacities that the customers genuinely care about;

- innovating constantly to be ahead of competitors or at least competitive;
- developing conscious flexibility to deal with changing competitor-pressures and to take advantage of opportunities and
- increasing their resources by using the capabilities and investments of others.
- To enable knowledge as strategic focus, managers must deal with basic principles of capabilities-based competition (Stalk et al. 1992, Prahalad and Hammel 1990) where they must examine the connection between firm's capability and firm's essential business process.

Strategic capabilities are collective and cross-functional in the organisation. In other words, they will be everywhere rather than within a specific firm's groups or circumstances. Also, the intelligence of any collective is distributed everywhere, where nobody knows everything but everybody knows something (Lévy 2000).

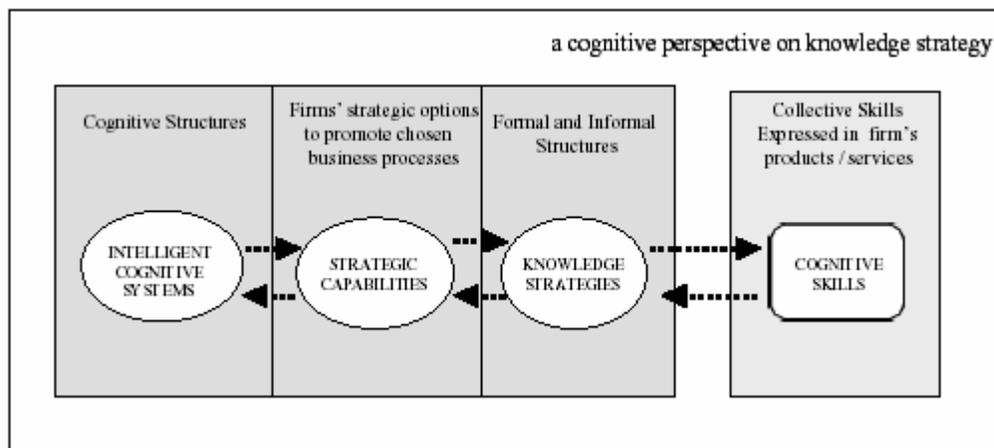


Figure 2: Organisational knowledge strategy articulated on a cognitive perspective

We propose that in order to understand deeply how an organisational knowledge strategy can be shaped, managers will need to establish connections between the firm's strategic capability and collective intelligence, arriving at what we call a cognitive perspective (Fig.2). This perspective was also analysed in another way in Gonçalo et al. (2002).

3. Organisational Intelligence: being aware on knowledge strategic choices

The next question to address is whether there is actually a collective intelligence or only a collection of individual intelligences within organisations. Every organisation has a collective intelligence, since it has been alive as a social-technical system. Any living system has intelligence. The further vital question is not how intelligently an organisation has performed its activities, but rather how an organisation can provide conditions that will facilitate the expression of its intelligence on its activities.

What organisations expect from people is practical intelligence that, in a generic but useful conception, can be acknowledged as the achievement of relevant goals by dealing with each specific circumstance efficiently and attaining increasingly effective outcomes. Intelligence is the principal factor that links both knowledge and strategy within organisations. Cognition becomes apparent along with the awareness of strategic choice (Spender 1998). The proposed cognitive perspective on knowledge strategy (Fig.2) suggests a conceptual structure focused on practical approach, given that its target is to promote collective

skills expressed on products or services. We propose that the awareness of knowledge strategic choices is an expression of intelligence applying the proposed cognitive perspective in an organisation.

The concept of collective intelligence must be better explored by organisations. The practicalities of organisational theory will be better understood in conjunction with a theory of intelligence which embraces the interaction between knowledge, memory and learning, creating a triangle of interdependency and inter-definition among these three concepts (Spender 1996a).

Collective intelligence is a process that values individual intelligence, stimulating the differences and the singularities (Lévy 2000). It is expressed depending on the effective mobilisation of its valued skills and on the active co-ordination of people's intelligence. Collective group or collective mind is articulated, theoretically, on the overlap between the individual's mind and the organisation's mind, the 'zone of acceptance' (Simon 1958). Collective mind can be practically expressed as a pattern of aware interrelations of actions in a social system; it exists potentially as a capacity on the activity stream and it can be articulated on the way of approaching between activities (Weick and Roberts 1993).

Important concepts have contributed to representations of organisational intelligence, including:

- organisation's brain metaphor (Morgan 1986),
 - collective intelligent systems (Pór 1995),
 - professional intellect of organisation (Quinn et al. 1996), and
 - organisational intellect for creativity and innovation process (Leonard 1995).
- Given that, we propose an organisational intelligence representation comprising four intelligent cognitive systems: organic, analytic, intuitive and co-ordinative, as part of the cognitive perspective of knowledge strategy (Fig.3).

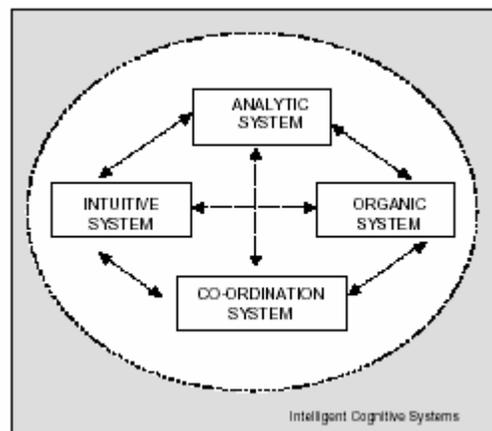


Figure 3: The vital representation of intelligent cognitive systems

3.1 The Organic System

The organic system is the root of the human resource's management problems, since it corresponds to dealing with human beings and the nature of their modus operandi. In general, people endeavour to 'operate in time', enjoy the 'search for meaning' in their lives, and they 'need to trust' somebody (Gratton 2000).

To achieve the aim of ‘people operate in time’ means that leaders must deal: first, with employees’ perspectives on their future; second, with what the future may bring; and third, with the description about the required planning as a bridge between the present and the future. ‘People search for meaning’ represents people’s clarity about the business’s goals, their beliefs about what the business is and what they have to do to support its goals. ‘People need to trust’ is a crucial social element to organisations.

3.2 The Analytic System

The analytic system is the current structured (explicit) knowledge located somewhere, inside an organisation, and the practical process of accessing it. Explicit knowledge is the rational knowledge (Nonaka and Takeuchi 1995) that can be structured in a theoretical account of a sequential conception (formally articulated). Organisations can possess individual and social categories (Spender 1996a). Individual explicit knowledge is conscious and social explicit knowledge is objective.

To access explicit knowledge, an organisation must be concerned with its memory. Organisational memory resides in the employee’s mind, in the relationships, in repositories such as computer databases, in work processes and product or service offerings. Information system framework representing organisational memory can be a way of maintaining memory incorporated into the underlying activity (Linger et al. 1999).

3.3 The Intuitive System

The intuitive system is related to intuition and experience (tacit knowledge). The concept of intuition is closely akin to tacit knowledge. Tacit or implicit knowledge is identified in the origin of a practical job, in the organisational action, through the original “how to do” (Nonaka and Takeuchi 1995). In organisations, individual and social categories of this type of knowledge are both in existence; individual knowledge is automatic and social knowledge is collective (Spender 1996a).

Intuitive knowledge can be identified during strategic application. Confronted by a variety of information, leaders need to realise, connect and foresee events during their formulation of a strategic pathway. This work is concerned about heuristic intuition that supports the managerial decision making process. The management capabilities and limitations on the decision making process depend on people’s cerebral skills and their patterns in relation to making decision in organisations, based on either an intuitive or analytical comprehension (Agor 1996).

3.4 Co-ordinative System

The co-ordinative system is identified in principal functions: business systemic view (Gratton 2000) and informed leadership features. These combine to bring harmonious action involving people in an interconnected knowledge network. Informed leadership features are the desired characteristics to enable knowledge in organisations that are mainly encouraging organisational conversation and managing care relationships (Krogh et al. 2000). Leaders’ business systemic views require specific qualities, such as: synthetic thinking and knowledge chain view. A knowledge chain view can be based on business process chain (Porter 1985), where each process has its required knowledge, and each item of knowledge has its required resources.

4. Strategic Capability and Knowledge Strategy

Resources can be easily purchased, capabilities can’t. Capabilities must be built; they cannot be easily bought (Teece et al 1997). Organisational capability is the result of long-term evolutionary process and

management has a restricted power to create new capabilities. They involve unique skills of all personnel including top, middle and lower managers. When an organisation is completely dissolved, its capabilities will also vanish but its resources can survive in the hands of new owner (Teece et al 1997, Makadk 2001).

Managers can combine or alter organisational resources into a new arrangement to generate new value-creating strategies called dynamic capabilities, what we consider as strategic capability (See Fig.2). Dynamic Capabilities (Teece et al. 1997, Eisenhardt and Martin 2000) are the firm's ability to integrate, build and reconfigure internal and external competencies to address rapidly changing environments. Regarding cognitive perspectives, strategic capabilities (or dynamic capabilities) include, for example, the skills to create new ideas and integrate them in innovation, strategic decision-making to explore new business or self-organising management in order to resolve customer problems.

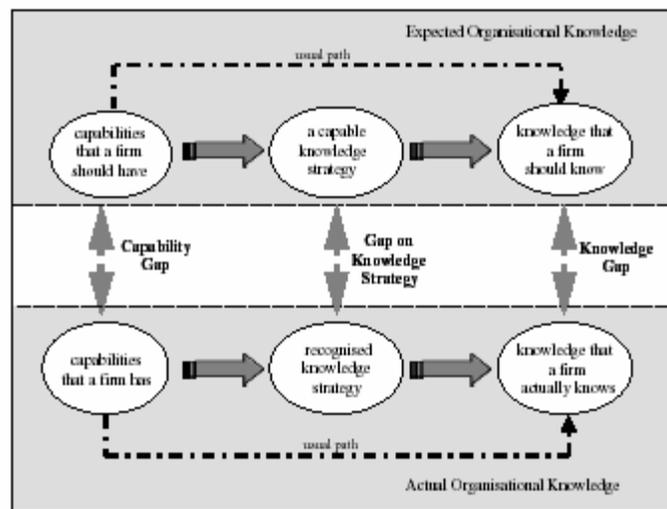


Figure 4: Knowledge strategy: linking capability and knowledge

To create a realistic organisational knowledge strategy, a link between knowledge and capability should be better explored. It seems that organisations have applied a direct connection between capability and knowledge – a usual path (as shown in Fig.4). In the past, organisations must have always had a knowledge strategy, though not necessarily a product of conscious endeavour. However, today a knowledge strategic choice is essential in order to be competitive on knowledge economy.

Knowledge gap and strategic gap (Zack 1999) must be interrelated with capability gap as a powerful diagnostic for managers chose the appropriate knowledge strategic choice (see Fig.4).

5. The Exploratory Case Study

The prime purpose of this project is to contribute to the field of knowledge strategy by presenting a substantive theory that might be helpful to managers enable knowledge in organisations. Specifically, in the exploratory case study, a range of evidence was sought for knowledge strategic actions based on the proposed cognitive perspective (Fig.2). The following principal research question was defined:

- How is knowledge enabled within the organisation from a cognitive perspective?
- The two sub-questions that were applied to explore and structure the research topic were:

- What is the essential strategic capability recognised within the organisation which best supports the efforts to resolve customers' problems?
- How is the essential strategic capability articulated considering organisations as intelligent systems?

The case study was carried out in Muri – Linhas de Montagem, in Porto Alegre, Brazil (website: <http://www.muri.com.br>). The firm was founded fifteen years ago by two engineers, both of whom had taken Masters degrees in Management and subsequently implemented a new strategy for Research and Development. Their company has eighty employees whose average age is twenty-five. The majority has undergraduate degrees, and some are undertaking post-graduate courses or starting their undergraduate courses.

The organisation interviewed was in the design and production of assembly and test systems area. Their products are developed for manufacturing companies, designed in an engineer-to-order basis ranging from single test equipment to a complete fully-automated assembly line. The organisation's activities are involved with innovative and creative skills, which are daily refined in the quest for new concepts and solutions. Each product designed is different from others, since each manufacturing problem has its specific characteristic.

The cognitive perspective, shown in Fig. 2, was applied regarding organisations concerned with collective cognitive skills for research and development (R&D). More specifically, the considered organisation's cognitive skills are:

- To produce creative ideas,
- To solve problems with fast decisions and
- To discover original opportunities for entrepreneurial thinking in the context of exploring innovative ideas.

Essentially organisational resources considered as knowledge infrastructure are both information technological systems and the sharing culture (Krogh et al. 2000). Representing and processing data or information are fundamental to the creative process in organisations. Far from being a tool, technology becomes a survival resource when it shapes the systemic aspects of the core-business (Spender 1996b).

5.1 Research Approach

The research methodology adopted is the case study in an exploratory application. To benefit from the data richness offered by the firm, the research comprised the following conducted activities:

- Interviews - were the basis for the research data collection, providing the data for open coding and leading further investigation. Explaining the purpose of the research, two appointments occurred with the executive director and there was another meeting with all participants. Eight semi-structured individual interviews were conducted with the organisation's leaders, each of about one and a half hour's duration. There was an additional meeting with both owner directors during lunchtime, the topic being their strategic managerial ideas.
- Direct observations - To control potential bias and distortions in the narratives of the participants it was possible to observe people on-the-job as suggested by Yin (1994), during twelve visits in the research period.

- Documents - Two other master degree researches had been carried out previously involving the organisation. One, a survey made three months earlier, was concerned with organisational climate. The other, a case study applied in 2000, was concerned with a new paradigm of managerial method. Beyond that, it was noted that in 2001 the firm won two awards in the small company category: one in social responsibility and other in marketing strategic planning.

5.2 Significant Exploratory Case Study Results

The first sub-question addressed was: “What is the essential strategic capability recognised within the organisation, which best supports the efforts to resolve customers’ problems?”. The research sought an understanding of collective thought within the firm, pertaining in particular to the perception of solving customers’ problems in relation to the delivering of products and/or services.

Strategic capability, being collective and cross-functional, existing in a small part of every person’s job and recognising itself in the products or services, was investigated in relation to examples and meanings of actions. Indeed, strategic capability became increasingly apparent after combining the evidence and observing the organisational behaviour in the context of the daily routine. The organisation was distinguished by its flexibility. Transparency seemed the most important concern of personnel, as well as the opportunity to make decisions as a team. We observed as an essential capability in the firm what we call “self-organising teams dedicated to solving customers’ problems”.

“... There are many customers who say we have considerable freedom to decide... that we make decisions and the firm accepts. Then, I guess... that we really have freedom since people outside the firm realise the fact. In fact, when we’re delivering a machine many persons are involved in the decision-making process, each one contributing according to his expertise. Things must work out... if they aren’t working, we must find a solution...”

In order to foreground the concept, let us take the second sub-question: “How is the essential strategic capability articulated considering organisations as intelligent systems?” The evidence was sought via recognition of each system, and we will discuss below the more significant features related to that “essential capability”.

How people are valued and managed – the organic system – provides an organisational behaviour to create and solve problems via a self-organising approach. All participants agreed that they could make mistakes without being criticised since they were seeking to solve the problem and sharing their mistakes.

In the company we have studied, there is no formal structured hierarchy. There are leaders with their responsibilities. The functions are known, but without the intervention of a formal chief. Autonomy is the keyword. “The best decision is the decision taken” is the executive director’s byword. Many interviewees referred to this fact. We observed that the self-organising approach is valued by the employees. The number of informal meetings generated to solve problems bears witness to this fact.

The leaders’ awareness about the whole range of organisational activities - the co-ordinative system – is crucial to the support of the project structure. The self-organising activities are normally motivated by the sharing information relevant to each project. The problems are solved in real-time via informal meetings of all who are involved. Leaders thus promote an environment wherein the more knowledge you acquire, the greater is your responsibility to share it with others:

“... For us everything is a challenge. Every project is a challenge. If we’re seeking new solutions for a new problem, the creativity is a product of communication between everybody concerned. The decision-making process is supported by a shared idea.”

The structured and explicit knowledge system - the analytic system - is based on data and information on each project. In the case study, everybody involved with a specific project can access its data and information via the internal technological network. The organisational memory largely resides in people’s minds. The unstructured and tacit knowledge system – the intuitive system – contributes to self-organising capability with capitalising on individual creative insights that occur in a culture that promotes a strong informal interchange of information. New products or new technologies are always being researched. People are motivated to acquire their insights by the job itself. A new project triggers a new set of related information.

Flexibility is the keyword. The firm intends to expand its managerial concepts to enhance flexibility. The more flexibility the firm provides to the customer, the greater will be the selforganising capability thus promoted. This flexibility encourages self-organising capability in order to solve customers’ problems as one of firm’s essential strategic trends.

Overall, the discussion about the sub-questions addressed for the research topic - “How is knowledge enabled within the organisation from a cognitive perspective?”, illustrating it in relation to a particular strategic capability. The self-organising capability promotes cognitive skills such as fast-decision making and innovative and creative ideas.

The study demonstrated how the company is enhancing its knowledge, with a strong informal interchange of information, creating an internal network of people’s minds. With this evidence it is possible to distinguish its efforts mostly on strategies related to the knowledge transfer process in ‘Personal Strategy’ (Wiig 1997, Hansen et al. 1999, Sveiby 2001). The organisation intends to support actions closely related to the knowledge creation process, as mentioned ‘Intellectual Asset Management Strategy’ (Wiig 1997), since they seek recognition as a strong brand by potential clients for particular engineering projects.

6. Conclusions

The concept of collective intelligence was explored for the purpose of understanding organisational contexts in which managers intend to facilitate knowledge. We argue that the awareness of knowledge strategic choices is an expression of organisational intelligence. To select a knowledge strategic choice managers will need to realise their organisational perspectives beyond formal structures to a deep recognition of cognitive structures.

This article proposed an empirical cognitive perspective on organisational knowledge strategy based on a review of literature, which was subsequently illustrated in an exploratory case study. The cognitive perspective acknowledges collective intelligence and capability as the foundation for choosing a knowledge strategic choice in order to develop cognitive skills.

The exploratory case study, as an interpretative study, exposes new categories (Klein and Myers, 1999). A particular organisational capability emerged as a strategic advantage and it was described applying the cognitive perspective on knowledge strategy. The self-organising capability could be recognised as a strategic advantage, being relatively easy to create but difficult to maintain with the firm’s expansion. The knowledge strategic choice is based on an informal relationship promoting person-to-person contacts in an information-gathering environment.

Knowledge strategies will be further explored in future case studies that will be conducted within organisations based on innovative and creative skills, during the years 2002 and 2003. New discussions came up to be explored in the future studies: the firm's strategic capability gap, the cognitive perspective as an organisational diagnostic and the comprehension of knowledge strategy as a managerial function.

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