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Towards an Organisational Perspective to Promote Knowledge Strategy

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Abstract

This paper presents empirical research of an organisational perspective for promotion of knowledge strategy. Using this perspective as a guide, it presents an exploratory case study that examines how an organisation can be analysed for better promoting knowledge strategy. The chosen case is a firm daily involved with the design and development of new products and technologies. This research contributes to the wider knowledge management project, foregrounding intelligence and strategy as interactive concepts.

INTRODUCTION

The purpose of this paper is to explore knowledge strategy in organisations. It is proposed to analyse organisations from a cognitive perspective that incorporates a knowledge-based view of the firm. By taking this perspective it will be possible to investigate how knowledge strategy could be applied. It is argued that knowledge strategy is related to organisational intelligence, which contributes to a knowledge management practice.

Intelligence is the principal factor that links both knowledge and strategy within organisations. Practical intelligence can be defined as 'a purposive adaptation in a real-world context'. Understanding the proposed organisational perspective will help managers to appreciate their strengths and weaknesses in promoting their knowledge-strategic choices. 'Knowledge strategy' denotes the application of a knowledge process to an existing or new knowledge domain for promoting strategic goals (Nonaka *et al.*, 2001).

This paper reports on the results of an exploratory case study concerned with knowledge strategy within an organisation. The exploratory case study was addressing the following principal research question: *"How can an organisation be analysed in a cognitive context in order to promote knowledge strategy?"* The exploratory case study was developed in a corporation located in Porto Alegre, capital of Rio Grande do Sul, one of the most important industrialised states in Brazil. The corporation is involved in the design and production of assembly, test and handling systems for companies manufacturing products such as automobile parts, household appliances and electrical components.

In this paper we present concepts drawn from literature concerned with ways of promoting knowledge in organisations. These concepts are briefly explored seeking to clarify the proposed organisational perspective. Finally, the research method and the preliminary results of the exploratory case study are discussed after the relevant data have been analysed within the proposed theoretical perspective.

THE KNOWLEDGE-BASED VIEW OF THE FIRM

Knowledge has been credited as one of the most important sources of competitive advantage and sustained performance based on worker's intelligence (Spender and Grant, 1996), as well as an important source of superior performance in turbulent environments (Prahalad and Hamell, 1990; Nonaka and Takeuchi, 1995). Strategy and knowledge have been studied in an emerging research field: the knowledge-based view of the firm (Spender,

1996) that is a confluence of a number of studies on resource-based theory of the firm and theoretical epistemology (Grant, 1997).

The resource-based theory of the firm is a more recent alternative to the traditional strategic competitive advantage theory (Porter, 1985), the objective of which is to find a market's strategic position according to generic strategy based on either cost or differentiation. Stated differently, competitive advantage focuses on the external side of the firm (Barney, 1991). The internal side has been focused on by the resource-based theory of the firm, which emphasises internal resources as the strategic position that enables the achievement of sustainable competitive advantage (Barney, 1991; Prahalad and Hamel, 1990; Leonard-Barton, 1992). Strategic resources and capabilities are considered valuable, rare, inimitable and lacking substitutes (Barney, 1991); their effective valuation by the firm will deliver distinctive products and services.

Epistemology provides a theoretical basis on which to structure the knowledge-based view of the firm before researching the concept of knowledge itself. Distinct epistemologies, such as the cognitive theory, the autopoietic theory and the connectionistic theory may be conducive to the practice and research of knowledge management (Venzin *et al.*, 1998). Cognitive theory, the epistemological assumption underpinning this research, seeks an explanation of knowledge anchored in philosophy, psychology, linguistics, anthropology, neuroscience and artificial intelligence.

The knowledge-based view of the firm considers as a general hypothesis that (Grant, 1997):

1. Knowledge is a differential productive resource.
2. Different types of knowledge vary in their transferability.
3. Individuals are the main agents of knowledge.
4. Most knowledge is subject to economies of scale and scope.

WHAT IS ORGANISATIONAL KNOWLEDGE STRATEGY?

Firstly we need to clarify the concept of 'strategy' as referred to in this research. Strategy is concisely explained by Mintzberg (1987:17) as "…a perspective shared by the members of an organisation, through their intention and/ or by their actions."

Strategic plans are necessary to animate and orient people. But, however malleable a plan might be, it cannot anticipate the rapid change of environments. Organisational strategy will be recognised in personnel's day-to-day actions. Improvisation can be understood as a 'just-in-time' strategy (Weick, 1987). "…Just-in-time strategies are distinguished by less investment in front-end loading (try to anticipate everything that will happen or that you will need) and more investment in general knowledge, a large skill repertoire, the ability to do a quick study, trust in intuitions, and sophistication in cutting losses (Weick, 1987:229)."

Knowledge strategy

Knowledge strategy refers to the employment of knowledge processes in an existing or new knowledge domain in order to achieve strategic goals (Nonaka *et al.*, 2001). Basically organisations 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). Several steps are essential to the promotion of knowledge strategy.

Firstly, a knowledge diagnostic can be anchored in the frame of the traditional SWOT matrix – forces and weaknesses (*what organisations can do*) and opportunities and threats (*what organisations must do*). This strategic analysis will show the balance between what the company knows and must know as a tangible strategic gap (Zack, 1999). Secondly, essential assumptions (Quinn, 1999) must be assumed for underpinning success in strategic focus on knowledge:

1. Concentrating dedicated efforts on the specific capacities that the customers genuinely care about.
2. Innovating constantly to be ahead of competitors or at least competitive.
3. Developing conscious flexibility to deal with changing competitor-pressures and to take advantage of opportunities.

4. Increasing resources by using the capabilities and investments of others. Finally, processes will be required in order to stream knowledge.

Two core knowledge processes can condense different basic strategies: knowledge creation process and knowledge transfer process (Nonaka *et al.*, 2001).

Implementing knowledge strategies

The incremental development of a strategy occurs in a spiral movement that requires the team to move constantly between formulation and implementation until they find a committed direction (Gladstein and Quinn, 1985). When the strategic objective is concerned with organisational knowledge, we can apply the same spiral movement representing a team that will move back and forth between general knowledge and specific knowledge (see Figure 1). During a knowledge development period, personnel will inevitably cross a blurred line representing a cognitive boundary between strategic knowledge formulation and strategic knowledge implementation.

In addition, Nonaka and Takeuchi (1995) proposed a spiral of knowledge creation with four widely acknowledged stages: socialisation, combination, externalisation and internalisation. Their spiral represents the process of transferring individual knowledge creation to the pool of collective knowledge representing everyone's efforts in both the specific and general knowledge domains delineated in Figure 1.
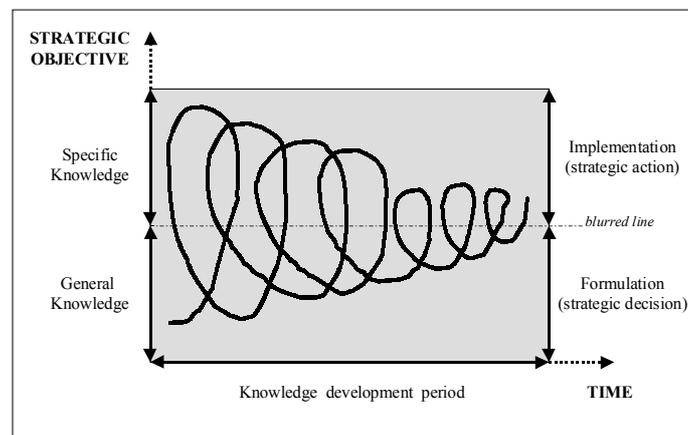

Figure 1: Implementing Knowledge Strategies – Based on Gladstein, D. and Quinn, J.B. (1985:212)

In researching organisational knowledge strategy from cognitive perspective, a 'collective mind' theory must be applied to the analysis of organisational operations. Managers will be able to influence only the 'zone of acceptance' that is the overlap between the individual's mind and organisation's mind (Simon, 1958). An organisational knowledge strategy can only exist if a collective mind acknowledges a common strategic objective. In addition, since knowledge is intrinsic to individuals, the best thing that managers can do is to provide conditions encouraging individualistic research. They also need to develop a deep comprehension of organisational behaviour as an interaction of cognitive processes. An organisational strategic choice emerging from an interaction of cognitive processes is a clear expression of organisational intelligence.

AN ORGANISATIONAL PERSPECTIVE TO PROMOTE KNOWLEDGE STRATEGY

In this section we propose an organisational perspective, which recognises the knowledge-based view of the firm (see Figure 2). Firstly, we need to define what kind of knowledge we are concerned with. We divide organisational knowledge into two categories: one based on formal structures and another based on cognitive structures. Knowledge in formal structures is found, for instance, in strategic planning, rules, patterns, performance systems or managerial models. Knowledge in cognitive structures is found in learning processes, decision making processes, leadership features, personnel flexibility and informal

communication systems. In this study, we are concerned with the organisational cognitive structures that support collective actions intrinsic to creating and transferring knowledge.

Anthropology and sociology describe cognitive constructions as 'organised knowledge'. This is constituted (Sackman, 1991) by the existing knowledge stored in people's minds, the mental modes used to explore it and the ideas and theories they employ collectively to support their interpretation of what the organisation represents. This paper is specifically concerned with this third characteristic of organised knowledge.
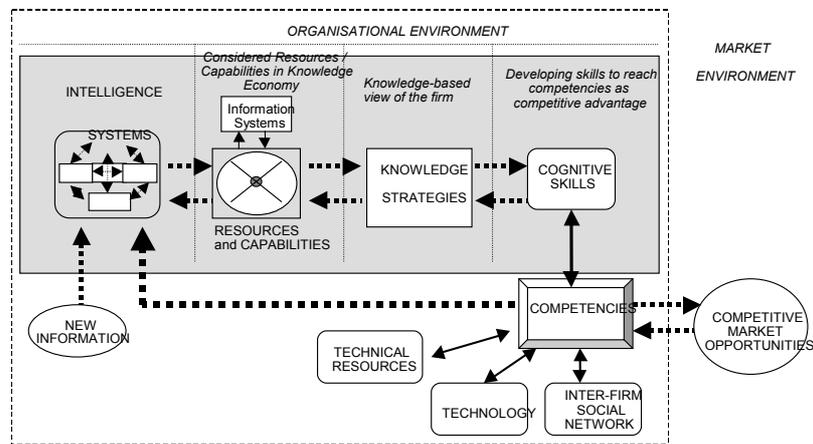

Figure 2: The proposed organisational perspective to promote knowledge strategy

Intelligence systems

Every organisation has intelligence as a socio-technical system. The important question is not how intelligently an organisation has performed its activities, but rather how a firm can provide conditions that will facilitate the expression of its intelligence in both cognitive structures and formal structures. The best course for managers is to define a context wherein intelligence can be better promoted.

Important concepts have contributed to representations of Organisational Intelligence, including:

- The organisation's brain metaphor (Morgan, 1996) that permits it to be imagined as organic, self-organised, flexible and creative.

- Collective intelligent system (Pór, 1995), promoting a dynamic and living "ecosystem" for individual and collective learning, that comprises a communication subsystem, a co-ordination subsystem, a memory/ knowledge management subsystem and a learning subsystem.

- Professional intellect of organisations, proposed in the classic article of Quinn *et al.* (1996) through the division of professional intellect into four levels: (1) cognitive knowledge (know-what), (2) advanced skills (know-how), (3) system understanding and trained intuition (know-why) and (4) self-motivated creativity (care-why).

- Organisational intellect for creativity and innovation process (Leonard, 1995) that must be a composition of the whole brain, not only of the left (analytical, logical boarding) but also the right side (intuitive boarding, non-linear).

Given that, we propose four cognitive systems interacting as part of the organisational cognitive perspective for promoting knowledge strategy:

- The organic system at the root of the personnel-management problem that leaders must deal with (Gratton, 2000).

- The analytic system as the basis of the current structured knowledge and the practical process of accessing it.

- The intuitive system that relates to intuition and experience during the strategic application (Agor, 1996).

- The co-ordination system, facilitating harmonious interaction between people in an interconnected knowledge network.

These cognitive systems are explained in Gonçalo *et al.* (2002), and will be developed in this paper as part of the description of the exploratory case study.

Organisational resources and capabilities

An organisational capability can be defined as "…a high-level routine (or collection of routines) that, together with its implementing input flows, confers upon an organisation's management a set of decision options for producing significant outputs of a particular type" (Winter, 2000:982). The organisational capabilities assumed to support the specified cognitive skills in this research-in-progress are learning and problem-solving (Simon, 1958), strategic decision-making (Eisenhardt, 1999), knowledge process (Nonaka *et al.*, 2000) and self-organising as semi-autonomous organic systems (Spender, 1996).

THE RESEARCH-IN-PROGRESS

The significance of the research project

As knowledge strategy is a complex concept, we initially propose to focus on organisations involved with innovation management that actively seek new knowledge in the context of new projects. We assume that personnel with creative and innovative skills will represent such organisations.

It has been our experience to this point in time that managers, when asked about their firm's knowledge strategy, have frequently seemed a trifle bemused. Of course, every modern firm has its strategies at the corporate level, normally divided into business, production, financial, information or even marketing strategies. Therefore, since we are dealing with companies involved with innovation management, knowledge being one of their principal assets, we acknowledge that there is a lack of understanding in the business world of the knowledge strategy concept.

We must initially provide managers with a substantive theory that facilitates their pragmatic understanding of what knowledge strategy is, and also demonstrates how to design and implement knowledge strategies appropriate to their objectives. In order to develop the most appropriate substantive theory, our first challenge will be to investigate knowledge strategies in day-to-day activities. These activities are empirically observed in projects that were concerned with innovation management.

Towards the end of this research we intend to build an understanding of how knowledge strategy has improved innovation management. We will have investigated companies involved with research and development (R&D), in particular their groups responsible for innovative projects.

Illustrating with an exploratory case study

The focus of our study has been an organisation involved with innovation management that could be encouraged to investigate how knowledge is developed in the context of its innovative projects. The chosen organisation was Muri–Assembly Systems, in Porto Alegre, Brazil (http://www.muri.com.br).

The firm designs and produces Assembly and Test Systems. Their products are developed for manufacturing companies, designed on an engineer-to-order basis ranging from single test equipment to a complete fully automated assembly line. They concentrate their resources on three fundamental strategies: business focus, dependability and speed to market. They have successfully faced the enormous difficulties provoked by Brazil's changeable economy, adjusting to the appropriate strategic focus. From 1986, when two engineers founded the company, up until the present, they have faced many changes with strategic thinking. Both engineers had taken masters degrees in management, one in production strategy and the other in marketing strategy.

In 1994 occurred the biggest strategic change, outsourcing their mechanical engineering in order to focus exclusively on the final building of products. The organisation shifted its

concerns to electronic components and automation systems, with a new R&D strategy. Since then, they have been concentrating on the creation of innovative solutions and the management of their product's final building with optimum performance.

In 1993, the company had 31 employees and at the end of 2001, 80 employees including 25 with concluded or concluding graduate degrees and 4 undertaking postgraduate courses or starting their undergraduate courses. The rate of financial outcome by personnel had put them among the most productive companies in their sector (Valle, 2001).

To investigate knowledge strategy, given our assumption that a firm's knowledge will not be structured or defined, requires evidence gleaned from our close observation in day-to-day actions. In this exploratory study, we addressed the following principal research question:

> How can an organisation be analysed in a cognitive context in order to promote knowledge strategy?

The two sub-questions applied to support the principal research question were:

> Which cognitive features best promote knowledge creation and knowledge transfer within an organisation?

> What would motivate personnel to become involved in the process of creating and transferring knowledge within an organisation?

Exploratory research approach

The research methodology adopted here is that of a case study, conducted from an interpretative philosophical perspective. To benefit from the data richness offered by the firm in this exploratory research can be summarised in the following conducted activities:

- Interviews – Interviews were the basis for the research, providing the data for open coding and as leads for further investigation. To explain the purpose of the research, two meetings 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 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 exploratory research period.

- Document analysis – Two master degrees by research had been carried out previously. One, a survey applied at the end of 2001, was concerned with organisational climate (Valle, 2001). The other was concerned with new managerial theory in production environment (Fraga, 2000), a case study applied in 2000. We analysed documents in relation to these studies as well as documentation for two awards that the firm won in 2001: one in social responsibility and other in marketing strategic planning, both in small categories.

Some results from the exploratory case study

The first sub-question was: "Which cognitive features best promote knowledge creation and knowledge transfer within an organisation?" The research sought evidence concerning the proposed intelligence systems, such as:

- Analytic system – the structured and explicit knowledge, based on data and information from each project.

- Intuitive system – the unstructured and tacit knowledge, based on specific characteristics of each person.

- Organic system – based on how people are valued and managed.

- Co-ordination system – based on leaders' awareness of the whole range of organisational activities and organisational leadership features.

Table 1 summarises specific evidence of the company's strengths and opportunities for improvement in each observed category. In the following, we present a brief analysis and some principal evidence emphasising the observed categories shown in Table 1.

INTELLIGENCE SYSTEMS	Observed Principal Categories	E V I D E N C E	
		Observed as Internal Strength	Observed as Internal Opportunity for Improvement
Analytic System	•Stimulating to access and to inform structured knowledge	•Internal sharing network of information about the evolution of each project	•Data base of new ideas including success and failure of implementing them or new business opportunities
	•Organisational memory – from individual experience to a structured collective memory	•Flexibility between project and building activities permanently combining different "thoughtful minds"	•To structure the whole set of information of each project beyond the existing project memory to the acquired knowledge
Intuitive System	•Using unstructured knowledge – individual skills for relating data and information	•Strong informal interchange of information helps people to have new insights from what it had happened	•To access information from the structured memory for acquiring new insights
Co-ordination System	•Encouraging organisational conversation for sharing information	•Solving-problems in real-time calling everybody involved informally	No evidence was observed
	•Knowledge chain view	•Business systemic view and starting the formally process view	•To specify the required knowledge for each part of the process chain
Organic System	•People's understanding of the business' goals	•Project structure engages everyone to give their best to attain expected results	No evidence was observed
	•People's trust in the organisation	•Autonomy of each project team with its leader making their own decisions	No evidence was observed
	•People's perspectives on organisational future	•High level of employee's satisfaction in working for the company	No evidence was observed

Table 1: Preliminary analysis of the organisational cognition as a combination of intelligence systems

The company is recognised for its flexibility and transparency. Customers usually follow the development of their products personally or by Internet, maintaining a strong relationship with the company. During the observation period, internal problem-solving meetings were held, and we observed that if necessary the customer involved was called at the same time for participation by phone so that everybody could be consulted. *Flexibility* is the keyword. The firm intends to expand its managerial model to enhance flexibility.

> *…We're developing a new concept of production engineering the results of which we expect will be recognised as our brand…. In fact, what we are creating is a new managerial model… a new idea of combining different products with innovation, efficiency and good performance.*

People are motivated to acquire insights through the job itself. A new project triggers a new set of related information. One of the participants illustrates how they develop new ideas:

> *…Normally a new idea comes at night. Sometimes, when I am on the same problem, I have to stop working. It is like an automatic system, the solution comes when I go to sleep. Normally it works. And, on the other hand, it is also correct. Sometimes, I had thought that I had found a fantastic solution and, suddenly, I have realised that it would not work.*

Leaders, who motivate people to assume responsibility, need to have a systemic view. They promote an environment where the more knowledge you acquire, the greater your responsibility to share it with others.

All participants agreed that they could make mistakes without being criticised since they were seeking to solve the problem and sharing their errors. They frequently refer to the fact that the best feedback is from the client. The clients have expressed surprise about the fact that everyone contributes to decision-making. Flexibility needs quick decisions and this requires autonomy.

> *…Recently we had a problem of undelivered components – the machine's electronic part. Our people asked, 'Why don't we change the technology?' We had discussed the problem in the firm, with our client, with the client of our client, and we made a snap decision. We trusted that our people would be able to acquire information and develop the product in time. When they assured us that it was possible we took the risk. We had success but if we hadn't, the wrong decision would have been shared by everyone.*

There is no formal structured hierarchy in the company. There are leaders and 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 favourite statement and many interviewees referred to this fact during the conversation. That the informal culture is valued all the time is evinced in the number of meetings generated to solve problems, as mentioned in Table 1.

The second sub-question was: "What would motivate personnel to become involved in the process of creating and transferring knowledge within an organisation?" We will answer this question referring to features shown in Table 1, and we will also illustrate our interpretation with particular information from the document analysis performed as part of this research.

We have observed that the company has a strong organic system motivating personnel to be dedicated to their jobs. They are proud of working in the company's projects and have a strong relationship with the activities. As mentioned by Fraga (2000), this is probably a result of the level of self-supervision of activities, since there is not in this company the figure of a supervisor for assuring the results of work. It seems that the personnel's motivation and satisfaction is based on a kind of "…equilibrium between their required abilities and the company's challenging proposed activities…" (Fraga, 2000:144).

The company's leaders encourage conversation between personnel promoting a sharing environment. This leadership skill represents the strongest feature for innovation management from the co-ordination system that we have observed in the investigated company. When leaders act with an understanding that nobody knows everything but everybody knows something, the personnel's commitment to transferring or creating knowledge becomes itself part of a natural organisational behaviour. It seems that this is one of the important reasons for a high level of personnel's satisfaction as mentioned in Valle (2001) (see Table 2).

Some research questions (answered by 66 personnel)	Percentage responding either 'strongly agree' and 'agree'	Observations
I am proud of being one of the company's employees	95.4 %	Evidence of identification with the company
The work environment promotes relationships between persons based on trust and co-operation	89.4 %	High level of trust and co-operation under very strong pressure for reaching objectives
The structure and work organisation facilitate day-to-day co-operation between persons	78.8 %	The recent increase in organisational personnel was mentioned as a concern for the relationship
There is an effective co-operation between persons in my work environment	87.9 %	High level of co-operative perception between persons
In this company, personnel are stimulated to make decisions	68.2 %	Regarding autonomy as a very difficult feature to implement in organisations, this is a high level of perception among the interviewees
This company demonstrates a rapid decision-making process	81.8 %	This perception is coherent with the directors' implementation of a fast decision-making process
I recognise innovative actions in the company's activities	93.9 %	This perception contributes to representing the work process involved with innovative skills.

Table 2: Results from the Organisational Climate Research based on Valle (2001)

Overall, the discussion about the sub-questions supported the research topic: "How can an organisation be analysed in a cognitive context in order to develop knowledge strategy?" The exploratory case study demonstrated how the company promotes the access of new knowledge, with a strong informal exchange of information, creating an internal network among people's minds. The sharing environment is based on co-operation and trust in the organisation and is observed in the company's day-to-day activities. The personnel's autonomy could only be reached with a strong emphasis on their organic system, which is recognised particularly in personnel's pride in being part of the company's projects.

The interviewees express how the company supports and motivates them to study and learn. Concerning organisational strategy for innovation, they mention their activities involved with innovation rather than those involve with creativity. The creativity they talk about is the new managerial production method combining different elements in an innovation process. To combine them with flexibility, quick decision-making and reliability depends on the firm's creative managerial method.

The focus was our search for evidence that there was a common concept, a collective understanding of how to promote knowledge strategy. The research showed that although knowledge strategy exists in any organisation involved with innovation, awareness of it is limited and the concept is seen as purely theoretical or unreasonable.

CONCLUSIONS

This paper proposes an empirical organisational perspective based on a model derived from a review of literature, which was applied in an exploratory case study. The literature reviewed is mainly concerned with how to promote organisational knowledge strategies representing organisations as cognitive systems.

The exploratory case study demonstrated that the organisational perspective has assisted the research, yielding important information. Given that the research was interpretative (Klein and Myers, 1999), we expected new research categories to emerge. A strong emphasis on informal knowledge transfer surprised us, since knowledge sharing is not an easy environment to create. The chosen company could offer rich data to explore and study.

Knowledge strategies will be further explored in a follow up case studies of a creative and innovative organisational environment. New questions and objectives emerged, to be applied in the case studies that will be conducted during the years 2002 and 2003. These studies will seek: (1) to define the firm's capability gap in order to develop their cognitive skills; (2) to examine knowledge strategy as a managerial function; and (3) to investigate organisational and managerial process in innovation management.

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