

# KM STRATEGY AND INSTRUMENTS ALIGNMENT: HELPING SMEs TO CHOOSE

Angel Meroño<sup>a</sup>  
Carolina López<sup>b</sup>  
Ramón Sabater<sup>c</sup>

<sup>a,b,c</sup>Departamento de Organización de Empresas y Finanzas,  
University of Murcia, Spain

<sup>a</sup> angelmer@um.es

<sup>b</sup> carlopez@um.es

<sup>c</sup> rsabater@um.es

## Session A-5

### Abstract

The aim of the present study is to analyse the relationship between Knowledge Management (KM) strategy and business strategy so that organisations could obtain higher performance. After reviewing the main KM instruments and orientations, as well as literature about strategy at business level, a preliminary theoretical framework is empirically analysed through case study research. Evidence from 4 Spanish SMEs shows that there are factors, such as firm size, age, and industry, that moderate the link between KM-business strategic alignment and corporate performance. Thus, SMEs should consider these factors in order to take profit of their KM efforts.

**Keywords:** knowledge management instruments, knowledge management strategy, business strategy, performance.

# KM strategy and instruments alignment: helping SMEs to choose

Angel Meroño<sup>a</sup>,  
Carolina López<sup>a</sup>, and  
Ramón Sabater<sup>a</sup>

<sup>a</sup> Departamento de Organización de Empresas y Finanzas  
Universidad de Murcia, Spain  
{angelmer, carlopez, rsabater}@um.es

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### Suggested track:

A Managing organizational knowledge and competence

## 1 Introduction

After many years of research, the literature of Strategic Management has been unable to explain differential firm performance or to find where the success of an organisation comes from. Among the many contributions in this field, two views have received significant attention and support. First, at the beginning of eighties, Porter (1980) proposed an approach according to which the source of competitive advantage is external and relates to the industry structure where the firm operates. This first view suggests that higher returns are primarily dependent on a firm's membership in an industry with favourable structural characteristics, such as, significant barriers to entry or high relative bargaining power. Later on, a second theory -the resource-based view of the firm- arose, arguing that the differential performance is fundamentally due to

firms' heterogeneous internal resources. A recent extension of the resource-based theory is the knowledge-based view, which states that the sources of competitive advantage are not all the firm's internal resources, but just the intangible or knowledge-related assets of the organisation and its capability to integrate knowledge (Grant, 1996). Knowledge, particularly tacit knowledge, can be argued to be a source of advantage because it is unique, imperfectly mobile, imperfectly imitable and non-substitutable (Ambrosini and Bowman, 2001). Nowadays, knowledge is the fundamental basis of competition (Zack, 1999).

Thus, the importance of knowledge has been highlighted in the last decade by both academics and practitioners. However, the result has been an incomprehensible and confusing body of knowledge. On the one hand, from academic perspective, diversity of intellectual antecedents of Knowledge Management field as Economics, Sociology, Psychology and Philosophy (Prusak, 2001) has led to a set of contributions featured by a lack of integration. Knowledge Management (KM) has been prominently studied from very different fields:

- Technological: computing field focuses on instruments to manage knowledge as a special kind of information
- Human Resources: psycho-sociology area tries to develop human capital and set a framework to share skills and knowledge in organisations
- Business: taking into account strategy, work processes, value creation, etc.

On the other hand, from practice perspective, many companies everywhere are paying attention to knowledge and are beginning to actively manage their knowledge and intellectual capital –exploring what it is and how to create, transfer, and use it more effectively (Davenport et al. 1998). However, due to excessive focus on information technology department and lack of strong, supportive leadership, many KM projects fail. Recent research has reported that many knowledge management systems have been unsuccessful (Schultze and Boland, 2000), with Storey and Barnett (2000) reporting failure rates of over 80%.

In spite of all advances in these perspectives, many managers do not still know what to do in order to manage organisation's knowledge. This uncertainty is due to three reasons. First, technology is overstressed and there is little focus on strategy. Collaborative technologies play a central role in knowledge management programs

(Marvick, 2001; Alavi and Leidner, 1999; Skyrme, 1998). The role of information technology (IT) is to extend human capacity of knowledge creation through the speed, memory extension and communication facilities of technology (Baroni and Tavares, 2002). Although, IT potential benefits in KM contexts are clear, a framework enabling knowledge sharing is needed. IT can be conceived as a kind of infrastructure to knowledge management (Chou, 2003), a knowledge platform (Tiwana, 2002), an enabler of knowledge management (Choi and Lee, 2003; Gold and Segars, 2001), but not an aim in itself. The second reason is that most of research has been centred in large companies and little in SMEs. Nevertheless, small businesses are likely to be knowledge generator, their organic structure and culture may foster knowledge innovations. However, their structural features and resources scarcity may impede to obtain sustainable competitive advantage from that innovation (Levy et al., 2001). So, it can be expected that successful knowledge management initiatives could become the SME innovation capacity into a sustainable higher performance. Finally, there is still a lack of empirical studies in KM literature. Due to those theoretical and practical inefficiencies, literature in this field has been unable to give enough guidance to develop KM projects.

The aim of this research is to assist SMEs in their KM initiatives in a way that fits with their characteristics. Firm's strategy plays a central role (Zack, 1999), but also certain contingency variables should be considered. A firm's KM approach consists of following a KM strategy based on the use of the right KM instruments. Our research model has been developed through following steps. First, most common instruments used in KM are reviewed. Then, a theoretical assignment of these instruments to most important KM strategies has been made (Section 2). Next, alignment between KM strategy and business strategy is proposed to have a positive influence on corporate performance (Section 3). Then, this preliminary theoretical framework is empirically analysed through case study research (Section 4). Research findings are shown (Section 5). Finally, conclusions are summarised and future research lines presented (Section 6).

## **2 Knowledge Management Instruments and Strategies**

**Knowledge Management Instruments.** KM tools are technologies which enhance and enable knowledge generation, codification and transfer (Ruggles, 1997). However, this is a narrow definition of what organisations can do for managing their knowledge.

Literature and practice in this field are beginning to notice the importance of soft or human initiatives, other than technological, for KM. In the present paper, we take into account a broader, mixed concept, by considering KM practices as aids, with technological support or not, which reinforce benefits of the whole or part of KM processes. Most common instruments in companies' KM efforts are classified according to the role of technology: principal or complementary.

Main technological instruments are:

*Decision support technologies:* they are tools such as data mining, simulators, artificial intelligence, or the integration of all of them in an OLAP (online analytical processing). By making the right information available at the right time to the right decisions makers in the right manner, data warehousing and decision support technologies empower employees to become knowledge workers with the ability to make the right decisions and solve problems, creating strategic leverage for the organisation (Shams and Farishta, 2001). The firm's knowledge workers can use these tools to uncover strategic business opportunities, monitor product performance, investigate potential problem areas in current business operations, understand changing customer requirements, and manage customer relationships in real-time (Heinrichs y Lim, 2003).

*Groupware:* it is a general term that has been applied to a variety of computer-based systems designed to allow people to communicate with each other, to co-operate on projects (Gunnlaugsdottir, 2003) and to help individuals exchange information and vote, whether they work together in the same room at the same time or work across the Internet from different places and at different times (Hilmer and Dennis, 2001). The most common features of groupware solutions are electronic mail and messaging; on-line calendars or diaries of employees; project management, TQM and environmental management with all their manuals, documents and best practices (document repositories); mapping of employee knowledge areas and expertise (expert directories or yellow pages); desktop video conferencing; on-line catalogues of library material, books, journal articles, etc.; and workflow tools (Gunnlaugsdottir, 2003).

Non-technological instruments are:

*Spontaneous knowledge transfer initiatives:* organisations make efforts to build spaces where employees usually talk each other and knowledge flows informally. For instance,

Gray (2001) defines 'talk rooms' as social spaces which R&D staff are expected to visit as a normal part of their workday. Meetings are not held here, and there are no organized discussions. The expectation is that the researchers will go to these talk rooms and chat about their current work with whomever they find, and that these more or less random conversations will create value for the firm. They encourage unpredictable creative blending and exchange (Gray and Chan, 2000).

*Mentoring:* it is perceived as assisting in the transfer of knowledge, organisational learning and cross-departmental communication (Singh et al. 2002) from mentor to protégé. Mentoring is beneficial for mentors, protégés and the whole organisation, although informal mentoring is likely to bring longer-term advantages to the organisation (Singh et al. 2002).

*Teams and Communities of Practice:* a team is a small number of people with complementary skills who are committed to a common purpose, set of performance goals, and approach for which they hold themselves mutually accountable (Katzenbach and Smith, 1993). Through a team structure, diverse knowledge and expertise of individuals at various locations in an organisation can be assembled, integrated and applied to the task at hand (Alavi and Tiwana, 2002). By drawing on the combined knowledge and expertise of individuals with different functional knowledge, skills, perspectives, and backgrounds, they provide ideal conditions for generating new and useful products and processes (Bain et al. 2001). Teams enhance an organisation's ability to innovate (Alavi and Tiwana, 2002) and facilitate creativity (Bain et al. 2001). Another kind of group, especially used in KM context, is 'communities of practice' (CoP). These communities are formed by members regularly engage in sharing and learning, based on their common interests (Lesser and Storck, 2001). CoP membership is voluntary, while people in teams are assigned by superior managers. Teams are formed to focus on a specific objective, whereas the purpose of CoP is to develop member's capabilities and to build and exchange knowledge. Besides, CoP last as long as their members want them to last (Wenger and Snyder, 2000).

**Knowledge Management Strategies.** The choice of the KM practices above mentioned should depend on the firm's strategic orientation to KM. A knowledge strategy describes the overall approach an organisation intends to take to align its knowledge resources and capabilities to the intellectual requirements of its strategy (Zack, 1999:135), thus reducing the knowledge gap that exists between what a

company must know to perform its strategy and what it does know. According to Krogh et al. (2001), the term knowledge strategy denotes the employment of knowledge processes to an existing or new knowledge domain in order to achieve strategic goals. Both definitions take account of the need for KM to be connected to the firm's strategy. Currently, literature advocates the convenience of explicitly managing knowledge with a clear and definite attitude. For instance, Zack (1999) states that business organisations are realising that to remain competitive they must explicitly manage their intellectual resources and capabilities. A firm must take a global and consistent vision when managing its knowledge and selecting KM tools to be implemented. The whole organisation must share a common KM orientation.

A better understanding of the concept and implications of KM strategies can be achieved through a review of most important contributions. An essential element is the balance firms should observe between exploration and exploitation (March, 1991), i.e. between the creation, discovery or acquiring of knowledge and its refinement, reuse or generally speaking a focus on efficiency in knowledge resource management. Bierly and Chakrabarti (1996) label firms according to the way they manage knowledge. They conclude that more aggressive knowledge strategies, featured by more innovative firms, cause higher financial performance. In a similar way, Zack (1999) proposed two orientations: conservative vs. aggressive. Concern for exploration is more frequent in the latter.

Partially based on exploitation and exploration concepts, Hansen et al. (1999) typology of knowledge strategies has become the most supported and referenced one. Their classification distinguishes between personalisation and codification of knowledge. The codification strategy focuses on codifying knowledge using a 'people-to-document' approach: knowledge is extracted from the person who developed it, made independent of that person, and reused for various purposes. Codification firms invest heavily in IT. This strategy allows many people to search for and retrieve codified knowledge without having to contact the person who originally developed it, since knowledge is stored in documents, manuals, databases, electronic repositories, and so on. That opens up the possibility of achieving scale in knowledge reuse and thus of growing the business. On the contrary, the personalisation strategy focuses on dialogue between individuals, not knowledge objects in a database. Knowledge is transferred in brainstorming sessions and one-on-one conversations. It is a person-to-person approach where knowledge is shared not only face-to-face, but also over the

telephone, by e-mail and via videoconferences, thus building networks of people. Hansen et al. (1999)'s distinction of codification and personalisation strategies is similar to exploration vs. exploitation typology proposed by March (1991). Both classification are corresponding in that codification is related to exploitation, whereas personalisation refers to exploration of knowledge (Table 1).

Many authors have described different KM strategic intentions. Basically, there are two alternatives: systems orientation and human orientation (Choi and Lee, 2002). System strategy emphasises codified knowledge in knowledge management processes, focuses on codifying and storing knowledge via information technology and attempts are made to share knowledge formally. On the contrary, human orientation emphasises dialogue through social networks and person-to-person contacts, focuses on acquiring knowledge via experienced and skilled people and attempts are made to share knowledge informally (Choi and Lee, 2002). In Table 1, different KM strategy typologies are classified in relation to system and human orientations. The most important are explained next.

**Table 1.** Knowledge Management Strategies

<b>AUTHOR</b>	<b>SYSTEM-ORIENTED</b>	<b>HUMAN-ORIENTED</b>
<b>March (1991)</b>	Exploitation	Exploration
<b>Bohn (1994)</b>	Pure procedure	Pure expertise
<b>Bierly and Chakrabarti (1996)</b>	Exploiters	Innovators, Explorers
<b>Jordan and Jones (1997)</b>	Explicit-oriented	Tacit-oriented
<b>Hansen et al. (1999)</b>	Codification	Personalisation
<b>Zack (1999)</b>	Conservative	Aggressive
<b>Swan et al. (2000)</b>	Cognitive model	Community model
<b>Earl (2001)</b>	Technocratic	Organisational, Spatial
<b>Schulz and Jobe (2001)</b>	Codification	Tacitness
<b>Choi and Lee (2003)</b>	Systems-oriented	Dynamic, Human-oriented

Connecting the KM practices previously described to the codification and personalisation knowledge strategies, each approach focuses on different tools (Table 2). Decision support technologies fit on codification orientation because they are not intended to connect people, but to solve problems by making codified knowledge available to decision makers. Codification strategy is also characterised by the use of some groupware tools such as document repositories (manuals, TQM documents, lessons learned, best practices, or shared databases), knowledge maps, workflow tools, and on-line catalogues of library material, books or journal articles. Other



groupware instruments, such as video conferencing, yellow pages, email, and discussion forums, make interactions possible, thus being personalisation-oriented practices. Besides, investments in spontaneous knowledge transfer initiatives, mentoring programs and teams aim to build people networks and to enhance knowledge sharing in a face-to-face approach, thus managing organisational knowledge through personalisation strategy.

**Table 2.** KM Instruments and Strategies

<b>CODIFICATION STRATEGY</b>	<b>PERSONALISATION STRATEGY</b>
Decision Support Systems	Groupware
Groupware	Video conferencing
Document repositories	Yellow pages
Knowledge maps	Discussion forums
Workflow	Spontaneous knowledge transferring
On-line catalogues	Mentoring
Best practices Databases	Teams/Communities of Practice

The main benefits of codification and personalisation strategies are tested in Hansen and Haas (2001): while sharing of codified knowledge improves task efficiency, sharing of personalised knowledge improves task quality and signals competence to clients. However, they are not the only advantages codification and personalisation strategies have. Through codification, access to and spread of knowledge is quicker and wider, mainly due to the fact that it does not depend on people's agenda neither on experts' motivations to share their knowledge and expertise. Besides, the use of IT for cataloguing knowledge allows new users to be offered with a pool of related knowledge, based on search patterns built from other people's behaviours. Finally, codification creates intellectual capital, by converting individual knowledge into structural capital.

On the other hand, codification advantages are personalisation weaknesses and vice versa. Personalisation strategy makes knowledge cataloguing easier because just experts identification is enough. Moreover, knowledge is flexible and better adapts to users' needs. Personalisation is also superior to codification in that new knowledge may be generated through human interaction. To sum up, personalisation is especially useful when it is not possible predetermine information seekers' needs or when making knowledge explicit is hard or awkward, thus keeping organisational knowledge tacit in order to prevent flows of knowledge to competitors (Schulz and Jobe, 2001).

These benefits have some implications concerning the most appropriate business strategy for each knowledge management strategy and vice versa. Next section deals with this issue.

### **3 Strategic Alignment: Knowledge and Business**

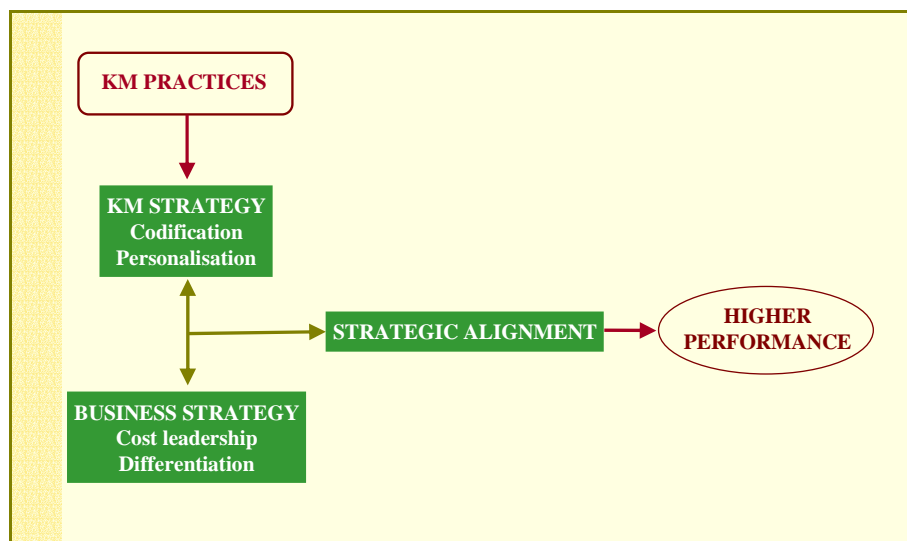
After reviewing the main tools and instruments for managing organisational knowledge, technologically supported or not, this research tries to provide recommendations so that firms could adopt the most appropriate instruments in alignment with their idiosyncrasy. Certain agreement exists on the importance of the business strategy. In Hansen et al.'s (1999) opinion, a company's KM strategy should reflect its competitive strategy. Besides, Zack (1999) asserts that competing successfully on knowledge requires either aligning strategy to what the organization knows, or developing the knowledge and capabilities needed to support a desired strategy.

As there are many typologies for classifying KM strategies, there are also different business strategy categories in literature. However, one has been academically accepted and received the highest attention. Porter's (1980) generic strategies distinguish between overall cost leadership, differentiation and focus. Overall cost leadership, although not neglecting quality, service, and other areas, emphasizes low cost relative to competitors (Dess and Davis, 1984), requires aggressive construction of efficient-scale facilities and vigorous pursuit of cost reductions from experience (Govindarajan, 1988). Speed and efficiency are the keynotes in cost leadership. In differentiation strategy, a firm seeks to be unique in its industry along dimensions that are widely valued by buyers, thus permitting the firm to command higher than average prices. The firm selects one or more attributes that many customers in an industry perceive as important, and uniquely positions itself to meet those needs, thus being rewarded for its uniqueness with a premium price (Govindarajan, 1988). In focus strategy, firm concentrates on a particular market segment.

For research purposes, in order to connect knowledge strategies with business strategies, Porter's (1980) strategy framework will be used since it is academically well accepted and internally consistent (Dess and Davis, 1984). Following the personalisation vs. codification typology, each knowledge strategy is most appropriate depending on how the firm creates value for customers, how that value supports an economic model and how the organisation manages people. The codification KM

strategy (reuse model or person-to-document approach) fits better companies that are creating standardised products, whose business strategy is based on mature products and when their employees rely on explicit knowledge to do their work (Hansen et al. 1999). That is, companies who take a codification approach for managing knowledge should follow the cost leadership strategy at business level. Otherwise, they suffer from inefficiency and provide low performance results. On the other hand, firms that follows a customized product approach, whose strategy is based on product innovation and when people use tacit knowledge most often to solve problems, the personalisation KM strategy works better. Namely, firms who aim at achieving a differentiation business strategy should manage their knowledge through personalisation, if they want to be effective and enjoy higher performance.

According to the above discussion, the preliminary theoretical framework we will analyse empirically is shown in Fig. 1.



**Fig. 1.** Preliminary Theoretical Framework

#### **4 Methodology**

Our purpose is to analyse empirically the preliminary model shown in Fig. 1. Methodology used in this study is based on case study research due to three reasons:

1. This method may offer insights that might not be achieved with other approaches (Rowley, 2002).

2. Rather than making statistical generalisations, our intention is to deeply understand each firm individually, collecting evidence from different sources and analysing the preliminary theoretical framework within each individual case.
3. Case studies can be a useful tool for the preliminary, exploratory stage of a research project (Eisenhardt, 1989; Yin, 1994; Rowley, 2002).

Case studies as a research method or strategy have traditionally been viewed as lacking rigour and objectivity when compared with other social research methods (Rowley, 2002). For that reason, special attention to research design and implementation stages is paid. First, a multiple case study, instead of a single one, has been chosen in order to increase research quality and robustness (Yin, 1994). The four companies studied are Spanish SMEs operating in different industries. They were selected among a greater number of companies who took part in a multinational research project. The Strategi Project, funded by European Social Fund, ended in December 2003 and aimed at enhancing and implementing KM programs in 36 firms in Spain, Portugal and Austria<sup>1</sup>. Selected companies may be featured as innovators as their mere participation in an external initiative, concerning the audit and implementation of new concepts, confirms.

Before collecting data, a case study protocol was prepared, containing the instrument, procedures and general rules that should be followed in collecting and analysing evidence from cases. This protocol is essential when using a multiple case study since it is a major tactic in increasing the reliability of case study research and is intended to guide the investigator in carrying out the case study (Yin, 1994). Then, a team of researchers collected the evidence from different sources: semi structured interviews and questionnaires addressed to management team, observation, archival data and documents provided by firms. Finally, the analysis results were shown in a draft report that key informants (people who were interviewed and answered questionnaires) reviewed. This tactic allows construct validity to increase.

**Selected Companies.** Cases selection for this research seeks to attain theoretical replication criterion. By comparing different cases that produce contrasting results but for predictable reasons, external validity improves, as well as research quality does. As the main objective in this study is to learn about the consequences of knowledge-

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<sup>1</sup> For further information about Strategi Project, see Sabater et al. (2003).

business strategic alignment, researchers have chosen two firms where that adjustment exists and two others where alignment is not (Table 3).

**Table 3.** Selected Companies

		BUSINESS STRATEGY	
		DIFFERENTIATION	COST
KM STRATEGY	PERSONALISATION	<b>Company A</b>	<b>Company C</b>
	CODIFICATION	<b>Company D</b>	<b>Company B</b>

Knowledge-business alignment exists when a differentiation strategy is followed with a personalisation KM approach (Company A) or when business strategy focuses on cost reduction and KM codification is pursued (Company B). Misalignment takes place when cost leadership coexists with a personalisation strategy (Company C) or a differentiation approach in the business perspective and codification strategy in the knowledge perspective (Company D). In order to isolate national culture effect, all selected companies are Spanish, specifically located in the Region of Murcia, in the southeast of Spain.

The main characteristics of the four companies are detailed next and summarised in Table 4.

*Company A:* It was founded in 1985 by a group of professional experts at developing software. In 2001, the average number of employees was thirty and the total volume of sales was 2 millions of euros, attaining a 60.000 € after tax profit. These data makes the firm to be viewed as a small-sized company. It is a service company whose main activity is to design, build and implement software that solves other businesses' problems. It also provides IT consultancy services and e-business projects. Thus, Company A operates in the IT industry, featured by high innovativeness. Its target market is any company, especially those placed in its geographical area of influence.

*Company B:* It is a public company created in 1982 by the Murcia Town Council. It is the local water provider. Company B is a medium-sized firm since in 2001, the average number of employees was 215 and the total volume of sales was 37.5 millions of euros. It manages the whole water process: to make the water drinkable, to provide

citizens with it, and, finally, to treat and purify water after its use. Thus, Company B works in a traditional industry.

*Company C:* It was founded recently, in 1999. It is a manufacturing based company located in Spain promoted by a Swiss pharmaceutical group, which holds the majority (54.48%) of Company C's capital. After just two-year running, in 2001, the average number of employees was thirty and the total volume of sales was 68 millions of euros. Currently, Company C provides jobs for more than 100 highly skilled employees, which carry out optimized production processes of antibiotics by implementation of new proprietary process technologies. These data makes the firm to be viewed as a medium-sized company. Thus, Company A operates in the biochemistry industry, featured by high innovativeness.

*Company D:* It is a service company born in late 1992. In 2001, the average number of employees was 150 and the total volume of sales was 16 millions of euros, attaining a 186.000-euro after tax profit. These data makes the firm to be viewed as a medium-sized company. Its main activity can be divided in two: gardening services and the garden centre. As a gardening service provider, Company D builds and maintains green spaces, especially for local councils, as well as offering forestall services. In the garden centre, Company D deals with the production, marketing and distribution of plants for wholesalers, retailers and final customers. Thus, Company A operates in a traditional industry.

**Table 4.** Companies' Characteristics

	COMPANY A	COMPANY B	COMPANY C	COMPANY D
<b>SIZE (sales; employees)</b>	SMALL (2.000.000 €; 30)	MEDIUM (37.544.000 €; 215)	MEDIUM (68.000.000 €; 30-100)	MEDIUM (16.000.000 €; 150)
<b>AGE</b>	18	21	4	11
<b>INDUSTRY</b>	NEW ECONOMY Software	TRADITIONAL Water provider	NEW ECONOMY Biochemistry	TRADITIONAL Gardening

**Measures.** In order to analyse the preliminary theoretical framework, interviews and questionnaires have been planned to collect evidence for case study research about KM instruments and strategies, business strategy and performance. For measuring existence and use of the KM tools (decision support technologies, groupware, spontaneous knowledge transfer initiatives, mentoring and communities of practice) in organisations, some scales have been developed, based on literature review. Firms

have been categorised by the KM strategy they follow (codification vs. personalisation) according to what and how different KM instruments are used by companies (Table 5). Besides, this study has tried to measure firms' strategy at business level, using a multi-item scale containing 21 competitive variables considered the basic elements of strategies based on Dess and Davis (1984), Segev (1992) and Kotha and Vadlamani (1995). After eliminating those items where certain discrepancy was observed from the different previous scales, 11 items were considered for diagnosing business strategy (Table 6). Finally, corporate performance was measured from a financial and non-financial perspective. Companies were asked to compare themselves with key competitors in 13 output and resources items (Table 7) based on Choi and Lee (2003), Grant (1991), Barney (1991) and Amit and Schoemaker (1993) works.

## 5 Results

Evidence about different constructs in the preliminary framework has been gathered and both within and cross-cases analysis performed. Next, the main findings about KM strategies, business strategy and performance in the four companies are shown in Table 5, Table 6 and Table 7, respectively. Then, results are compared and summarised in Table 8.

**Company A.** Employees are trained in the company by other colleagues (especially in seminars) or through mentoring programs. Besides, the organisation acquires intentionally knowledge externally from their providers, competitors, customers and other external agents. Knowledge is also shared within the organisation in a spontaneous manner when employees take a break in the common room or when department's projects and activities are discussed. The existence and use of those KM instruments in Company A shows a *personalisation approach* for managing knowledge. The firm concerns itself with building networks of people working together and continuously sharing knowledge. Employees are connected physically and virtually throughout the organisation so that they can learn, acquire and share knowledge and information useful for performing their tasks and activities effectively and efficiently. Company A is a firm who develops software for regional costumers and its products are greatly based on personalisation. Besides, it is located in just one place, so there are not geographical barriers to knowledge sharing. Codifying generated knowledge in complex information systems is not worth the effort since Company A is small, has only one establishment and success depends on adoption to their customers' needs.

**Table 5.** KM Strategies

KM INSTRUMENTS	COMPANY A		COMPANY B		COMPANY C		COMPANY D	
	EXISTENCE	STRATEGY	EXISTENCE	STRATEGY	EXISTENCE	STRATEGY	EXISTENCE	STRATEGY
<b>External sources of knowledge</b>	Personal	Personalisation	No	--	Personal	Personalisation	Personal	Personalisation
<b>Spontaneous knowledge transfer initiatives</b>	Yes	Personalisation	No	--	Yes	Personalisation	No	--
<b>Best practices personal transfer</b>	Yes	Personalisation	No	--	Yes	Personalisation	No	--
<b>Mentoring</b>	Yes	Personalisation	No	--	Yes	Personalisation	No	--
<b>Teams</b>	Yes	Personalisation	Yes	Personalisation	Yes	Personalisation	Yes	Personalisation
<b>Best practices database</b>	No	--	Yes	Codification	No	--	Yes	Codification
<b>Decision support technologies</b>	No	--	Yes	Codification	No	--	Yes	Codification
<b>Groupware</b>								
Documents repositories	Yes	Codification	Yes	Codification	Yes	Codification	Yes	Codification
Experts directories/Yellow pages	Yes	Personalisation	No	--	No	--	No	--
Knowledge maps	No	--	No	--	No	--	No	--
Shared databases	Yes	Codification	Yes	Codification	Yes	Codification	Yes	Codification
Workflow	No	--	Yes	Codification	No	--	No	--
Discussion forum/Distribution lists	No	--	No	--	Yes	Personalisation	No	--
Video-conference	Yes	Personalisation	Yes	Personalisation	Yes	Personalisation	No	--
	<b>PERSONALISATION</b>		<b>CODIFICATION</b>		<b>PERSONALISATION</b>		<b>CODIFICATION</b>	



**Table 6. Business Strategies**

<b>COST LEADERSHIP</b>				
<b>ITEMS</b>	<b>COMPANY A</b>	<b>COMPANY B</b>	<b>COMPANY C</b>	<b>COMPANY D</b>
Competitive pricing	2	1	6	4
Concern for cost reduction	5	5	7	7
Operating efficiency	5	5	6	7
Manufacturing process innovation	6	6	6	1
Experienced personnel	5	6	7	7
MEAN	<b>4,6</b>	<b>4,6</b>	<b>6,4</b>	<b>5,2</b>

<b>DIFFERENTIATION</b>				
<b>ITEMS</b>	<b>COMPANY A</b>	<b>COMPANY B</b>	<b>COMPANY C</b>	<b>COMPANY D</b>
Specialise in geographical segments	6	1	7	6
New product development	6	4	6	7
Influencing distribution channels	1	1	5	7
Customer service capability	7	7	5	6
Innovation in marketing techniques and methods	5	5	3	7
Brand identification	6	5	3	7
MEAN	<b>5,2</b>	<b>3,8</b>	<b>4,8</b>	<b>6,7</b>

**Table 7. Company Performance**

<b>ITEMS</b>	<b>COMPANY A</b>	<b>COMPANY B</b>	<b>COMPANY C</b>	<b>COMPANY D</b>
Indebtedness capability	6	7	1	4
Profit making capability	6	4	5	5
Economies of scale	6	4	4	4
Location	6	3	3	4
Technological resources	6	6	5	3
Plant flexibility	6	4	5	3
Equipment flexibility	4	5	5	4
Employees' experience	6	6	2	5
Employees' adaptability	6	3	6	6
Employees' commitment and royalty	7	5	7	7
Patents	6	6	1	6
Innovation resources	6	6	3	3
Firm reputation	6	6	2	7
MEAN	5,9	5,0	3,7	4,7
PERFORMANCE	<b>HIGHER</b>	<b>HIGHER</b>	<b>LOWER</b>	<b>HIGHER</b>

**Table 8. Main Findings from Case Study Research**

	<b>COMPANY A</b>	<b>COMPANY B</b>	<b>COMPANY C</b>	<b>COMPANY D</b>
<b>KM Strategy</b>	Personalisation	Codification	Personalisation	Codification
<b>Business Strategy</b>	Differentiation	Cost Leadership	Cost Leadership	Differentiation
<b>Strategic Alignment</b>	Yes	Yes	No	No
<b>Performance</b>	Higher	Higher	Lower	Higher
<b>Preliminary Theoretical Framework Support</b>	Yes	Yes	Yes	No

At business level, Company A follows a *differentiation strategy* as shown in Table 6. As the firm focuses on personalisation approach for managing knowledge and follows a differentiation business orientation, there is a *strategic alignment* between KM and organisational direction as explained in the literature review. According to our preliminary model, there should be a positive relationship between knowledge-business strategic adjustment and organisational performance. When asked to compare itself with key competitors in 13 corporate performance measures, Company A states to have a quite *higher performance* than competition, especially from employees commitment and loyalty (Table 7). Consequently, evidence from Company A supports our preliminary theoretical framework (Table 8).

**Company B.** The organisation gives especial attention to using technological instruments for KM, except for working in teams. In fact, Company B is the firm who makes use of IT the most. Clearly, the existence and use of those technological KM instruments in Company B show a *codification approach* for managing knowledge (Table 5). The firm concerns itself with building repositories of codified knowledge, information and documents as means for sharing knowledge. Employees can enter into the repository and get their problems solved, without having to connect to colleagues.

At business level, Company B follows a *cost-leadership strategy* (Table 6). The organisation is a mature firm working in a mature industry, its interests chiefly relate to efficiency, it has technocratic staff whose purpose is to standardise production processes. All this leads to cost-leadership strategy based on the use of ITs. This matches with an adequate codification knowledge strategy. Thus, there is a *strategic alignment* between KM and organisational direction. According to our preliminary model, Company B should have a higher performance level than competition due to the existence of the knowledge-business strategic adjustment. However, Company B operates in monopoly situation since it is a public firm. Because it has no competitors, its corporate performance has been measured in comparison with its results in previous years, instead of its competitors' current performance levels. After measuring its corporate performance, we found that Company B attains *higher performance* than in the past, chiefly in financial capacity and technological resources (Table 7). Consequently, findings from Company B support our initial model (Table 8).

**Company C.** The firm gives especial attention to working in project teams or communities of practice. Occasionally, external auditors and labour consulting companies take part in some groups. The company confesses to being dependent on external information and acquiring knowledge externally from their providers, competitors, customers and other external agents. There are not many technological tools for KM in Company C, just procedure manuals, document repository, shared databases and distribution lists. The existence and use of those KM instruments in Company B, together with scarce investment in IT, show a *personalisation approach* for managing knowledge (Table 5). The firm concerns itself with building networks of people working together and continuously sharing knowledge. Employees are connected physically and virtually throughout the organisation so that they could learn, acquire and share knowledge and information useful for performing their tasks and activities effectively and efficiently.

At business level, Company C follows a *cost-leadership strategy* (Table 6). As the firm focuses on personalisation approach for managing knowledge and follows a cost-leadership business orientation, there is *not a strategic alignment* between KM and organisational direction. As explained in Section 3, companies who are interested in managing knowledge through personalisation should follow a differentiation business strategy to be effective and corporations concerned with being cost leaders should manage their knowledge through codification. According to our preliminary model, Company C will have a lower performance level than competition due to inexistence of the knowledge-business strategic adjustment. After measuring its corporate performance, we found that Company C achieves *lower performance* than competition, chiefly in financial capacity, patents and organisational reputation (Table 7). Therefore, results from Company C support the preliminary framework (Table 8).

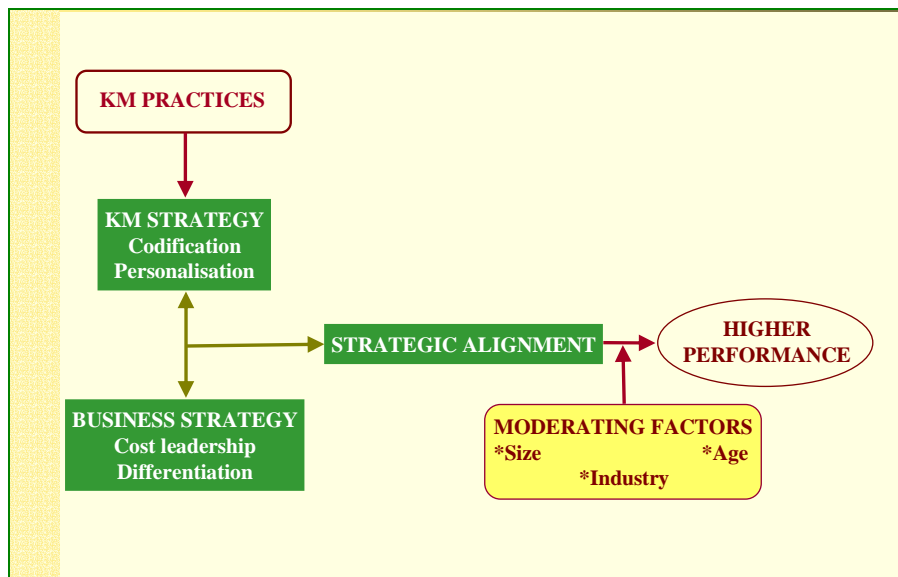
Nevertheless, strategic imbalance is due to special features of Company C, particularly firm age. This organisation works in a capital-intensive and knowledge-intensive industry where Company C competes basing on specialisation and lower costs. Since it is a young firm, organisational systems and knowledge sharing procedures have not been suitably developed yet. That's why Company C has a personalisation, instead of codification, approach for managing knowledge. However, it is to be hoped that employees qualifications, market demands and cost strategy result in a KM approach more favourable to codification, thus improving corporate performance.

**Company D.** The firm gives especial attention to working in teams, some of which meet every single day. Occasionally, external companies, such as the advertising agency, take part in some groups. The organisation frequently acquires knowledge from external agents, mainly from other businesses, institutions and consulting service providers. Besides, knowledge is spontaneously shared within the organisation when employees take a break in the plant nursery. There are some especial tools for KM in Company D, such as a database containing best practices, procedure manuals, data warehouses and data mining tools, document repository, and shared databases. The existence and use of those KM instruments in Company C show a *codification approach* for managing knowledge (Table 5). The firm concerns itself with building repositories of codified knowledge, information and documents as means for sharing knowledge. Employees can enter into the repository and get their problems solved, without having to talk to other colleagues.

At business level, Company D follows a *differentiation strategy* (Table 6). As Company D focuses on codification approach for managing knowledge and follows a differentiation business orientation, there is *not a strategic alignment* between KM and organisational direction. As explained in Section 3, companies who are interested in managing knowledge through codification should follow a cost-leadership business strategy to be effective, while corporations concerned with differentiation can obtain more profits by managing their knowledge through personalisation. According to our preliminary model, Company D should have a lower performance level than competitors due to inexistence of the knowledge-business strategic adjustment. Conversely, after measuring its corporate performance, Company D achieves *higher performance* than competitors, predominantly in employees' loyalty and commitment and in organisational reputation (Table 7). Therefore, evidence from Company D *does not* support our preliminary model (Table 8).

## **6 Discussion**

After analysing findings from case study research, it may be drawn the conclusion that probably there are some factors that may influence on the choice of KM strategy, thus moderating the relationship between KM-business strategic alignment and corporate performance. Some variables, such as firm size, age and industry, may modify the effect of strategic adjustment on organisational results, giving rise to the Inductive Theoretical Model (Fig.2).



**Fig. 2.** Inductive Theoretical Model

The impact of these factors on the selection of the KM strategy in a organisation is summarised in Table 9.

**Size.** From seventies, when contingency theory arose, organisation's size has received high importance due to its influences on decision making. Size also has significant implications in KM and business strategy. According to that theory, the bigger a company is the more coordination problems it has and the more bureaucratic it becomes in order to solve the lack of coordination (Bueno, 1993; Robbin, 1994). From a KM perspective, larger companies tend to manage knowledge through codification, whereas smaller firms are likely to follow a personalisation KM strategy. Thus, the bigger the company is the more likely codification KM strategy is. In the previous empirical case study, it can be observed that Company A, who manages its knowledge through personalisation, is the smallest organisation in the research. On the other hand, the biggest firm, Company B, follows a codification strategy.

Also, firm size has an impact on spatial distribution. Usually, larger organisations are more likely geographically dispersed. In terms of KM, companies with more than one location tend to codify their organisational knowledge. Conversely, when there are not geographical barriers to knowledge sharing because the firm is located in just one place, knowledge personalisation may be preferred.

**Age.** As time goes by, organisations can accumulate knowledge and learn from experience and practice. Besides, in mature companies, many situations, tasks and activities become repetitive and procedures and habits may be formalised. On the contrary, young firms have not had enough time to learn and store knowledge in documents and files, focusing on personalisation KM strategy rather than on a codification approach. According to the empirical analysis performed, Company C is the youngest firm and manages its knowledge through personalisation, whereas the oldest organisation, Company B, follows a codification KM strategy.

**Industry.** Firms operating in New Economy industries are more knowledge-intensive. That is, they need to be flexible in order to provide products and services in a changing environment. In this context, knowledge must be generated and shared continuously and organisations have to enhance their employees to be creative. So, knowledge-intensive firms should follow a personalisation KM approach. Conversely, companies who works in traditional industries, are less knowledge-intensive

**Table 9.** Contingency factors and KM strategy

	<b>CODIFICATION</b>	<b>PERSONALISATION</b>
<b>SIZE</b>	Large	Small
<b>AGE</b>	Mature	Young
<b>INDUSTRY</b>	Traditional	New Economy Knowledge-intensive

## 7 Conclusions

After reviewing the main tools and instruments for managing organisational knowledge, technologically supported or not, this research tries to provide recommendations so that SMEs could adopt the most appropriate KM strategy in alignment with their idiosyncrasy. From literature review, the present paper develops a preliminary theoretical framework which states that the success of knowledge management initiatives demand consistency between KM actions and tools with the firm's business strategy; otherwise, the company will suffer, obtaining lower corporate performance.

A multiple case study research has been carried out. Working on the evidence collected from 4 Spanish SMEs operating in different industries, we have analysed the preliminary theoretical framework. Findings show that codification knowledge strategy is positively related to the use of IT. Also, empirical study finds that KM use is still scarce in Murcia. On the other hand, analysis confirms that KM approach and business strategy are tightly related and that there are factors, such as firm size, age, and industry, influencing alignment between KM strategy and business strategy. Empirical research has led to a more complete framework, the inductive theoretical model, according to which there are some moderating variables affecting the relationship between KM-business strategic alignment and corporate performance.

In the future, investigators should empirically study the validity of the preliminary theoretical framework using another methodology, instead of case study research. Also, the inductive theoretical model we have built here from empirical evidence should be tested.

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