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## Knowledge management strategies in KIBS companies: A preliminary analysis

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### Structured Abstract

**Purpose** – The aim of this paper is to perform a preliminary analysis concerning the detection and examination of two possible opposite approaches to KM planning which will be referred to as *deliberate* and *emergent* KM strategies. The goal is to enhance our understanding of the variety of features KM strategies possess and, accordingly, to formulate categorisations that are in line with such characteristics.

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**Design/methodology/approach** – The paper discusses the findings of a quantitative survey which involved 68 Italian and Polish KIBS companies of various sizes and sectors. KIBS companies were chosen as the object of analysis due to their highly potential dependency on knowledge and its proper management. It is a preliminary analysis since it aims to provide some insights for a future deeper examination of the collected data, as well as for further collections.

**Research results**–The findings confirm that KIBS companies consider knowledge as their main competitive resource. Nevertheless, the approaches they adopt for managing such asset differ in several aspects: the motivation and the promoters of the adopted KM practices; the obstacles encountered in the introduction of the practices and the time span of the KM planning; the focus devoted to the different KM processes and the specific use of the practices; the familiarity with KM notions and the degree of formalization of knowledge-related activities.

**Originality/value** – The study contributes to the better understanding of KM strategies followed by KIBS companies, different in size and sector. Furthermore, it offers empirical support to the notion of emergent KM strategy.

**Practical implications** – The study allows managers and owners of KIBS companies to better recognise and evaluate the differences that denote the possible knowledge management strategic approaches. They can use this knowledge for the revision of their KM approach and for implementing the one which is more suitable for their organizational settings.

**Limitations** – The major limitation of the study is the relatively small sample of firms. This is, however, just a preliminary phase of the research which is still ongoing. Another limitation is caused by examining only a specific type of companies (KIBS firms). Companies from other sectors could also be investigated, so there is ample room for studies that intend to address this issue.

**Keywords** – Knowledge Management Strategies, KIBS, Survey

**Paper type** – Academic Research Paper

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## 1 Introduction

After more than two decades of research, the field of knowledge management (KM) is still in continuous evolution. Particularly, being no consensus among scholars on a universal or “best” approach to KM that could be successfully applied in all organisations, the research has singled out different typologies of strategies for KM, based on distinctive dimensions that can characterize the specific context of application (e.g. Choi and Lee, 2003; Hansen et al., 1999; Leidner et al., 2006; Maier and Remus, 2002; Schulz and Jobe, 2001; von Krogh et al., 2001). Similarly, while KM is often considered to be a deliberate activity based on formal plans, predefined processes and explicit allocation of resources (Razmerita et al., 2016), other studies (Bolisani et al., 2016; Van den Hoff and Huysman, 2009; Zięba et al., 2016) highlight that, at least in some contexts, informality and occasional problem-driven solutions may prevail. This last point is the focus of the paper whose aim is to illustrate a preliminary analysis concerning the detection and examination of the two possible opposite approaches to KM planning which will be referred to as *deliberate* and *emergent* KM strategies. The goal is to enhance our understanding of the various features of KM strategies and, accordingly, to formulate categorisations that are in line with them. The novelty of the study lies in the fact that it transforms the division of deliberate/emergent KM strategies into an operationalized concept.

The paper examines the distinctive traits of the two KM strategies by means of a survey. In particular, the investigation focuses on aspects like: origin, restraints, promoters, scope, universality, formality or adaptability of KM interventions carried out in the examined companies. KIBS companies were considered due to their high potential dependency on knowledge and its proper management (Mangiarotti, 2012; Palacios-Marques et al., 2011). For reason of limited space, only the main and most significant results are illustrated in the form of tables; other less significant findings are only mentioned.

The structure of the paper is as follows. In the next section, we briefly present the main characteristics of the two considered KM strategies: emergent and deliberate. Section 3 describes research goal and method. The next section illustrates the findings of the empirical investigation, showing particular distinctive traits of KM strategies, and

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section 5 discusses them. Study implications for managers and researchers, as well as limitations and future research avenues are listed in the last section.

## 2 Emergent and deliberate KM strategies

In recent decades, knowledge management has been one of the most significant novel management approaches (Inkinen et al., 2015) and this field is still in continuous evolution. Although KM is often perceived as a deliberate and planned activity (e.g. Coakes et al., 2010; Wong and Aspinwall, 2004), some studies (Bolisani et al., 2016; Sparrow, 2005; Van den Hooff and Huysman, 2009) suggest that not always a KM strategy is or can be completely planned and defined *in advance* but, rather, it may *emerge* and develop progressively from the day-by-day practice. In Bolisani et al. (2016), these two opposite approaches to KM have been defined as *deliberate* (planned) and *emergent*, and characterized in the following way:

*Deliberate or planned KM approach is an approach where practices, tools and methods of managing knowledge are linked to the general strategic orientation of the company, are deliberately designed at a top management level, KM goals are based on a rational analysis of company's needs, objectives and resources, and are later implemented and spread across the company with deliberate efforts and investments.*

*Emergent KM approach is an approach where practices, tools and methods of managing knowledge originate from the daily practices and learning processes of company's employees. In substance, employees develop their own methods of learning, storing, retrieving and sharing knowledge in relation to their actual needs and practical problems to solve. The methods and tools that prove to be effective, useful and/or compatible with the daily business practice are later developed and become established practices, and later can be recognized as "the KM approach" of the company.*

A qualitative study, presented in Bolisani et al. (2015), examined these two opposite approaches in two companies and, as a result, compared their characteristics (illustrated in Table 1), drawn from the case analysis.

The quoted study added other points. First, even though it is not possible to generalize, it can be deduced that the characteristics of each KM strategic approach are compatible with different organisational settings, and especially with the firm's size. The key features of the emergent strategy (i.e. focus on daily practice and local problems, little

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resources to invest in KM, informality of management, voluntarism, no use of pre-defined KM models, etc.) appear to be consistent with small companies. On the contrary, the features of a deliberate KM strategy (namely, strong connection with a company's competitive position and strategy, effort to pre-define formal plans, large resources to invest in KM, formal assignments and procedures, strong role of top management as a promoter of KM plans, etc.) may better fit large corporations.

**Table 1:** A comparison between deliberate vs. emergent KM strategic approach (from: Bolisani et al., 2015)

Characteristics	Emergent KM	Deliberate KM
<b>Origin</b>	Real (practical/working) knowledge needs	Strategic analysis of company's situation. Systematic identification of knowledge gaps/needs
<b>Restrains</b>	Limited resources	Need for a critical mass of users
<b>Promoters</b>	Employees or management	Management only
<b>Planning horizon</b>	Short-term	Long-term
<b>Scope of action</b>	Local problems	Enterprise-wide problems
<b>Role of ICT</b>	ICT as opportunity to implement KM	ICT as a tool that can be used to support KM programmes
<b>Use of KM concepts</b>	Ex-post	Ex-ante
<b>KM strategy</b>	Exploitation & Personalization	Exploration & Codification
<b>KM processes involved</b>	Sharing/creation	Sharing/creation
<b>Familiarity with KM language</b>	Poor to medium	Medium to high
<b>Degree of formality</b>	Low	High
<b>Involvement</b>	Voluntarism	Formal assignment
<b>Universality</b>	Often case-specific	Less case-specific
<b>Architecture</b>	Puzzle-like, fragmented (i.e. building blocks that may be or may be not connected to one another)	Uniform, monolithic (i.e. introduced for the whole organization or significant parts of it)
<b>Adaptability</b>	KM solutions survive if they are flexible and can change over time with company's needs	KM solutions are designed in advance along with the re-structuring of the organisation (when needed)

Second, an emergent approach seems to be more suitable for a personalisation strategy while a deliberate approach for a codification strategy (Hansen et al., 1999), since it is unlikely that an effective coding activity can be carried out without adequate planning and in the absence of clear guidelines. Third, both approaches can be adopted regardless of the particular KM processes that the company intends to support. Fourth, the emergent approach appears to be more flexible, where this flexibility may result from the development of a fragmented system architecture, marked by a possible proliferation of

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solutions that may or may not be of use in the specific case or at a particular time (Bolisani et al., 2015).

### 3 Research goal and method

Taking into account the identified differences between deliberate and emergent KM strategies, it is necessary to examine how popular they are among KIBS companies and whether they indeed serve as distinctive traits of particular approaches. Also, considering that two case studies are not sufficient for generalizations, we have applied the indications coming from the previous work (Bolisani et al., 2015) and designed another piece of study, to deepen our understanding of KM strategies and activities of KIBS firms. The distinctive traits of deliberate and emergent KM strategies presented in Table 1 have laid the ground for developing a questionnaire made up of 22 questions examining the approaches to KM strategy of those companies.

Data for the analysis were drawn from a survey that involved KIBS firms located in Italy (Veneto Region) and Poland (Pomorskie Region) and was conducted between 11.2016 and 01.2017. In total 68 companies, 41 from Poland and 17 from Italy, were investigated. The survey aimed to examine the characteristics of KM approaches followed by KIBS firms with regard to several aspects (e.g. KM practices, or ways of implementing them). Firms operating in different sectors and with different size were investigated (Table 2). The average age of the surveyed companies is 17.25 years: 67% of the companies have from 11 to 30 years. In the next section, a preliminary analysis of data is presented that aims to provide some insights for a subsequent and a deeper examination of the collected data as well as for a further collection.

**Table 2:** Sample composition

Sectors	Size class (n° employees)					Total
	1-9	10-49	51-249	≥ 250	n.a.	
ICT	3	8	4	7	0	22
R&D	0	1	1	1	0	3
Technical	2	1	3	4	1	11
Professional	2	7	3	8	0	20
Marketing/Comm.	5	5	1	1	0	12
Total	12	22	12	21	1	68

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#### 4 Empirical findings

The questionnaire started by asking interviewees how much they agreed with some statements concerning the company's knowledge. We used a 1-to-5 Likert scale to collect responses where 1 meant a strong disagreement and 5 a strong agreement.

As expected, knowledge is largely considered the main competitive resource by the respondent firms that result to put a more than enough attention to its management, even though the presence of employees specifically devoted to such activity is very scarce. This seems to be affected more by the size of the company than by its business sector (Table 3). Indeed, it is worth noting that while larger companies put less emphasis on knowledge as a competitive resource, at the same time, they are those that more frequently allocate employees to its management. The attention put on knowledge by KIBS can be caused by the fact that they in general are characterized by high knowledge intensity (Kock and Strotman, 2008; Tuominen and Toivonen, 2011) and they simply require placing knowledge in the central position of their operations.

**Table 3:** Evaluations about company's knowledge (by size)

	Size class				Total
	1-9	10-49	51-249	≥ 250	
K* is our most important competitive resource	4.42	4.27	4.50	3.81	4.21
K sources have been identified and analysed	3.33	3.27	3.83	3.81	3.56
Ways in which employees must manage K are clearly defined	3.25	3.45	3.08	3.71	3.44
Problems related to management of K are known	3.75	3.68	3.50	3.33	3.56
Solutions to K management problems have been adopted	3.45	3.45	3.83	3.57	3.57
There are people devoted to managing the company's K	2.33	2.73	2.67	3.25	2.82

\*from now on, K stands for knowledge

The engagement of the surveyed companies in managing their knowledge is testified by the fact that in the last five years they have introduced several practices aimed at that activity. In particular, the average number of adopted practices is equal to 6.91 of a maximum of ten. Larger companies have introduced more practices than medium and small ones (Table 4). Practically all companies make use of e-mails for sharing knowledge (64/67), capture and store it in repositories (59/67) and take care of building and maintaining employees' expertise (57/67). Rewarding employees who share knowledge is scarcely used (25/67) except in the case of big organisations (12/21). This

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can be explained in the following way. Probably companies start with simple and relatively inexpensive KM practices (e.g. using e-mails for sharing knowledge or capturing and storing knowledge in repositories) and do not apply so eagerly the ones more difficult to be introduced (e.g. rewarding employees who share knowledge). This last practice, particularly, requires not only some financial/non-financial resources for the rewards, but also an evaluation mechanism. Large enterprises are therefore more probable to implement it, as they tend to have more resources at their disposal and more formalized evaluation schemes.

**Table 4:** Average number of KM-related practices introduced in the last 5 years (by size)

	Size class				Total
	1-9	10-49	51-249	≥ 250	
Average number	6.92	6.64	6.42	7.48	6.91

Concerning why companies have adopted such practices, answers underline that their introduction was more the response to practical cognitive problems encountered in the daily operations (63% of respondents) than the result of a strategic analysis of knowledge gaps made by executives/owners (Table 5).

**Table 5:** Reason for having implemented KM-related practices (by size)

	Size class				Total
	1-9	10-49	51-249	≥ 250	
A perception of problems in managing K from the ground	50%	76%	59%	60%	63%
A deliberate strategic analysis led by owner/executives	50%	24%	42%	40%	37%

While this tendency is common to all the sectors, it seems surprising that half of the micro companies have introduced such practices after a strategic analysis. A possible explanation is that owners and executives are generally so involved in daily activities that they find it hard to distinguish what is operational from what is strategic. Owners of micro firms might also understand strategic analysis in a different way that owners or employees of larger entities – both the scope and time frame of strategic analysis for micro firms can be quite limited in comparison with the one of large firms.

Even though the practices were introduced to face daily issues, key promoters of their implementation were mainly executives and owners (Table 6). This denotes all the size



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classes, but, especially, the micro companies, confirming what emerged from the previous point. Owners/managers of micro firms are able to be engaged in firm's everyday issues that they can easily identify the need to introduce KM and promote its introduction. What is interesting to note is that employees of larger companies have been more involved as promoters than those of small entities. This can result from the delegation of duties and the operationalization of KM introduction at all the company's levels.

Some significant differences emerge across sectors. Specifically, in ICT companies the subdivision of promoters is more balanced, while it is more unbalanced towards executives/owners in the case of technical as well as marketing services. This could be related to the technological background of the different workforces, but it should be verified.

**Table 6:** Key promoters of the introduction of practices (by size)

	Size class				Total
	1-9	10-49	51-249	≥ 250	
Almost exclusively regular employees	0.0%	0.0%	0.0%	14.3%	4.5%
Mainly regular employees, with involvement of executives	8.3%	27.3%	16.7%	9.3%	16.4%
Regular employees and executives or owner in the same	33.3%	22.7%	41.7%	28.6%	29.9%
Mainly executives/owners, with involvement of employees	25.0%	36.4%	41.7%	33.3%	34.3%
Almost exclusively executives/owners	33.3%	13.6%	0.0%	14.3%	14.9%

The survey analysed also the barriers that hindered the introduction of the KM-related practices. According to respondents, almost all the indicated barriers (limited financial and human resources, lack of specialist, insufficient number of people and resistance of employees) have not played a significant role, with the only exception being the lack of time to devote to the management of knowledge that has been considered an obstacle, even if not at high level. The answers do not point out specific situations neither at the sector nor at the dimensional level, except that larger companies do not indicate the lack of time as a barrier, which is quite reasonable – they normally can devote resources to KM easier than a small entity.

The fact that the practices were implemented to solve daily problems is reflected also in the planning horizon for their introduction that only in the 17.6% of the companies was long term. In the 24.7% of the cases it was not set in advance and in the 22% of cases it was short-term (up to one year). Also in this case it seems not to exist a relationship

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between such factors and the size of the company. Perhaps the reason is that KM practices do not require long time frame – they can be implemented relatively quickly and changed, if required. That is, a long planning horizon is not so applicable.

Coming to the why (in strategic terms) such practices were introduced, responses show that most of the companies intended both to exploit the existing and to explore new knowledge. A smaller group was interested especially in the exploitation of the possessed knowledge, while there were very few companies specifically oriented to the exploration of new knowledge (Table 7). The fact there are mainly small and micro companies could be explained by their greater need to locate (external) new knowledge.

**Table 7:** Strategic aim of the introduced practices (by size)

	Size class				Total
	1-9	10-49	51-249	≥ 250	
Almost exclusively to exploit existing K	0	5	2	1	8
Mainly to exploit existing K, and a bit to explore new K	2	5	3	3	13
Both to exploit existing K and to explore new K	8	10	7	15	40
Mainly to explore new K, and a bit to exploit existing K	1	1	0	1	3
Almost exclusively to explore new K	1	1	0	0	2
# respondent companies	11	22	12	21	66

The next two questions aimed at investigating operational goals for the introduction of such practices.

The first question asked if the practices were introduced to diffuse or alternatively to store knowledge. Also, in this case, a balanced approach prevails that aims to carry out both the activities. The remaining companies are more oriented to diffuse knowledge than to store it. The collected responses do not show significant differences between companies of different sectors as well as of different sizes. Perhaps the variety of aims to implement KM practices results from diversified current knowledge needs that can be irrelevant of company's size. This issue requires further exploration.

**Table 8:** Operational aim of the introduced practices (by sector)

	Sector					Total
	ICT	R&D	Tech.	Prof.	Mktg	
Almost exclusively to diffuse/circulate K	3	1	0	3	1	8

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Mainly to diffuse/circulate K, and a bit to document/store K	3	1	2	5	4	15
Both to diffuse/circulate K and to document/store K	13	1	5	7	4	30
Mainly to document/store K, and a bit to diffuse/circulate K	2	0	3	4	0	9
Almost exclusively to document/store K	0	0	1	1	2	4
# companies	21	3	11	20	11	66

The second question was about the KM processes, as they are commonly identified in the literature (Holsapple, 2003), that the introduced practices were intended to support. It was a sort of control question with reference to the previous two. The given responses are congruent with the precedent, and confirm that knowledge transfer/sharing is the most performed KM process, as the literature has always recognised (Ribière and Walter, 2013). They also show that larger companies are more focused on capturing the existing knowledge and transferring it within the organisation than the others: probably their size is a problem for an effective circulation of the possessed knowledge and they require tools to address it (Table 9).

**Table 9:** Knowledge processes supported by the introduced practices (by size)

	Size class				Total
	1-9	10-49	51-249	≥ 250	
Creating/acquiring new K	25.0%	27.3%	16.7%	0.0%	16.9%
Storing/retrieving existing K	8.3%	9.1%	16.7%	26.3%	15.4%
Transferring/sharing K	50.0%	35.4%	41.7%	57.9%	49.2%
Applying available K	16.7%	18.2%	25.0%	15.8%	18.5%

Another group of questions aimed to investigate some features of the introduced practices, i.e. level of formalisation, voluntarism in their use, level of integration with other practices, breadth of use, or flexibility. The results are presented in Table 10. It is interesting to note that larger firms differentiate from the rest of the sample in some aspects, i.e.: the use of the practice by employees is less voluntary; the KM-related practices are more integrated with the others and are less flexible. All these aspects can be explained by the fact that big companies are in general more structured and formal, and this occurs also in the case of KM practices. As expected, flexibility is the highest in case of micro companies.

**Table 10:** Characteristics of the introduced practices (by size)

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	Size class				Total
	1-9	10-49	51-249	≥ 250	
Their level of formalization is very high	3.08	2.91	2.83	3.05	2.99
Their use by employees is voluntary	2.75	2.83	2.75	2.43	2.69
They are closely integrated with the other practices	3.08	3.32	2.75	3.55	3.21
They are used throughout the whole company	3.58	3.45	3.42	3.62	3.51
They are flexible	4.25	3.64	3.08	2.95	3.44

The last two questions were intended to see if and how much the investigated companies were familiar with the notions and applications of KM, and if they were able to provide a definition of KM. The responses to the first question indicate that the concepts and applications of KM are still relatively little known (2.94/5). This limited awareness is diffused inside all size classes. Actually larger companies are those that are the most aware of KM, but also their level of knowledge is not particularly high (3.33). The responses to the second question confirm what emerged from those to the first (Table 11). At the sectoral level, ICT companies are an exception (66.7% of them were able to give a definition), but this can be ascribed to the fact that the term KM inside the sector is often associated with particular software packages.

**Table 11:** Companies able to provide a definition of KM (by size)

	Size class				Total
	1-9	10-49	51-249	≥ 250	
Yes	41.7%	45.5%	45.5%	61.9%	50.0%
No	58.5%	54.5%	54.5%	38.1%	50.0%

## 5 Discussion

What emerged from this preliminary analysis of the survey confirms that the investigated companies are aware of the competitive relevance of their knowledge and of the related problems. Responses also show that firms are adopting solutions and tools to face such problems, but that, in most cases, such solutions do not stem from a deliberate and planned strategic analysis about cognitive gaps, but are the prompt response to specific and localised operational issues. This finds a sort of confirmation in the time frame of KM practices implementation – the planning horizon is rarely long and in many cases not set in advance at all.

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This clearly means that the notion of emergent KM strategic approach can be used for describing the behaviour of some of the investigated companies and, hence, that such notion finds empirical confirmation.

However, as it stands at present, the study does not allow to totally confirm the conjectures made by Bolisani et al. (2015) about the characteristics that distinguish an emergent approach from a deliberate one (see Table 1).

This is evident in the next table where the sampled companies were subdivided on the basis of reason for implementing the practices they indicated, i.e. a) a perception of problems coming from the ground and daily practice; and b) a deliberate strategic analysis. The assumption was made that companies answering a) are following an emergent strategy and those indicating b) - a deliberate strategy (Table 11). It should be noted that the table includes only the characteristics where the two classes show some significant differences.

As it can be seen, some findings are in line with the indications of Table 1, while others contrast them, still some are not conclusive.

**Table 12:** Emergent vs. deliberate KM strategic approach

	Strategic approach	
	Emergent	Deliberate
# of companies	42	24
% of small companies ( $\leq 50$ employees)	53.6%	45.8%
Solutions to K management problems have been adopted	3.49	3.75
There are people devoted to managing the company's K	2.76	3.00
Capturing and storing K in repositories or written documents	83%	100%
Rewarding employees who share K	29%	54%
Using Communities of Practices to share K	43%	63%
Average number of introduced practice	6.67	7.54
Promoters of the introduction (mainly) were managers and executives	47%	55%
Barriers: limited financial resources	2.60	2.38
Barriers: limited human resources	3.02	2.58
Barriers: lack of specialists	2.95	2.17
Barriers: insufficient number of people	2.31	1.63
Barriers: lack of time to devote to the management of K	3.64	3.08
Barriers: resistance of employees	2.75	2.25
Planning horizon: short term (1 year)	19%	29%
The practices were introduced almost exclusively to exploit existing K	14%	8%
The practices were introduced to exploit existing K, and a bit to explore new K	26%	8%

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The practices were introduced both to exploit existing K and to explore new K	55%	71%
The practices were introduced to exclusively to diffuse/circulate K	17%	4%
The use of introduced practices by employees is voluntary	2.83	2.33
The introduced practices are closely integrated with the other company's practices	3.05	3.52
The introduced practices are used throughout the whole company	3.38	3.79
The introduced practices are flexible	3.36	3.58
In our company concepts and applications of KM are known	2.88	2.96

As regard the first ones, the survey confirms that: the emergent approach is more common among smaller companies; it implies a relatively limited involvement of executives/owners; it is characterised by a shorter planning horizon; it is more aimed at resolving local problems and less at integrating the different KM-related practices; it is more focused on exploiting the existing knowledge; and it is more based on voluntarism. Furthermore, the survey shows that companies that pursue a deliberate approach have introduced a larger number of practices, especially because they make a higher use of rewarding employees who share knowledge and of Communities of practices. Concerning the barriers to the introduction of the KM-related practices, the companies that follow a deliberate strategy do not consider them as relevant, but this could derive from the fact that on average they are bigger than those that pursue an emergent strategy.

As regards results that contrast with the assumptions of the previous study, they deserve to be underlined that the level of familiarity with the KM concepts and applications is practically the same in the two groups, and that the level of flexibility of the introduced practices is higher in the cases of deliberate strategy.

Lastly, other factors seem not to be in relation with a particular approach; they are: the role played by ICT, the kind of KM processes supported by the practices, and the level of formalisation of the introduced practices.

## 6 Conclusions

The main result of the study is that it contributes to improve our understanding about how KIBS companies manage their knowledge. It also provides an empirical foundation to the concept of emergent KM strategic approach. Additionally, the paper lays the grounds for further examination on the distinction between deliberate and emergent KM strategic approaches.



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Even though the analysis does not allow to more precisely characterise the specific traits of the two approaches, it gives some indication on how to proceed with the study. In particular, the big variety of the picture that emerges from the survey suggests that a potential research avenue would be to examine empirical data by means of cluster analysis: this, indeed, would help in a better identification (if possible) of typical KM strategic approaches. Another direction of study would be to examine the effectiveness of particular KM strategies and their contribution to the company's growth and success.

From the managerial point of view, the study offers to managers of KIBS companies (but not only) some food for thought about how they are handling their cognitive assets. In particular, it makes them aware of the differences that denote various KM strategic approaches and allows them to locate their approach in the context of other firms.

The major limitation of the study is the number of collected questionnaires as well as that fact that data were not analysed by means of specific statistical methods. However, this limitation is going to be overcome by collection of further questionnaires that is in progress and a more detailed analysis (i.e. cluster analysis).

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