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# Analysis of the Seven Dimensions of Knowledge Management in Organizations

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## Abstract

This study aims to identify critical elements in Knowledge Management in companies in the second and third sectors of the economy of the region of Campos Gerais, Paraná, Brazil. This is a cross-sectional survey. The sample consisted of 191 workers. To collect the data, a social scale developed by Terra (1999) was used. It was found that the critical elements are, in order of relevance: human resource management; organizational structure; organizational culture and values; information and communication systems; learning through the environment; strategic factors; the role of senior management, and the measurement of results. It is concluded that for most organizations to reach the condition of a learning organization several critical elements need to be overcome.

**Keywords:** knowledge; acquisition of knowledge; knowledge construction; organizational learning.

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## Introduction

The main competitive advantage of a company is its human capital and the tacit knowledge of its employees. Tacit knowledge is knowledge that is difficult to imitate, copy or even disseminate in organizations because it is built up over relatively long periods of time and it is difficult to consider it in tangible terms because it belongs to different people (Terra, 1999).

Knowledge Management first came to prominence in the early 1970s, along with automatic processes in which computer systems were called data processors, and it is a technique that is increasingly used (Cruz, 2007). This technique is connected with the ability of companies to utilize and combine multiple sources and types of organizational knowledge to develop specific skills and innovative capacity that can be transformed into new products, processes, and leadership management systems (Nonaka and Takeuchi, 1997).

Knowledge Management is a complex tool, able to produce potentially significant results (profit) using existing knowledge and intellectual capital (Bukowitz and Williams, 2002). It uses an integrated set of interventions focused on opportunities for shaping the available knowledge base (Probst, Raub and Romhardt, 2002), with visible results over a relatively long period.

In the literature on Knowledge Management there are different models, most of which focus on processes (Davenport; 1994; Garvin, 1995; Lehtimaki, 1991; Ostrff and Smith, 1992) because processes are considered to be facilitators in the development of management practices.

Despite constraints, it is very likely that companies that properly focus their efforts on certain key skills and areas of knowledge, without concentrating their efforts on a few individuals or organizational areas, tend to achieve superior results (Terra, 2005).

Increased competitiveness and advancing technology mean that knowledge now has an increasingly short renewal cycle (Ponchirolli and Fialho, 2005). Indeed, companies tend to differentiate themselves by what they know and the way they can use this knowledge (Honarpour, Jusoh and Nor, 2012). The dimensions, prospects and implications of Knowledge Management for organizations are presented in summary form in Table 1:

For Knowledge Management to be efficient and effective, some principles should be considered (Davenport and Prusak, 2003):

a) Knowledge originates and resides in people's heads;
b) Knowledge-sharing requires trust;
c) Technology enables new behaviors related to knowledge;
d) Knowledge sharing should be encouraged and rewarded;
e) Support of the leadership and resources are essential factors;
f) Initiatives related to knowledge should begin with a pilot program;
g) Quantitative and qualitative measurements are necessary to evaluate the initiative;
h) Knowledge is creative and should be encouraged to develop in unexpected ways.

For Terra (2005), organizational efforts should be coordinated systematically at several levels - operational and strategic with informal and formal rules. These points must be aligned with the actions that are essential to the innovation

| DIMENSIONS | PERSPECTIVES | IMPLICATIONS FOR KNOWLEDGE MANAGEMENT (KM) |
|---|---|---|
| State of mind | Knowledge is the state of awareness and of customer care | KM involves the development of learning and the care of individuals through the provision of information |
| Object | Knowledge is an object to be stored | The key to KM is to build and manage stocks of knowledge |
| Process | Knowledge is a process of applying expertise | The focus of KM is directed towards the flow and the processes of creation, sharing and distribution of knowledge |
| Access to information | Knowledge is a condition that allows access to information | The focus of KM is organized access and content retrieval |
| Capacity | Knowledge is the power to influence action | KM refers to the construction of core competencies and to meeting strategic know-how |

Table 1. Differences between perspectives on knowledge. Data adapted from Spiller (2006, p. 77).

process. This process requires the combination of different skills, technology and the knowledge of various economic sectors. Terra (1999) identifies seven dimensions that guide managerial practices (Figure 1):

As shown in Figure 1:

a) Dimension 1 – Strategic factors and the role of senior management: The fundamental role of senior management is to define knowledge areas to be explored by the company and to establish visions for driving innovative projects. In this environment, leadership, organization and management of the workforce are key to any competitive strategy because they are advantages and assets that are difficult to imitate. A company's ability to create effective conversion processes between individual, collective, tacit and explicit knowledge, that result in new products and processes, is equally as important as developing innovative projects by clarifying business strategy and goal setting;

b) Dimension 2 – Cultural and organizational values: Organizational culture and values make all the difference and they cannot be relegated to the background. Organizational culture can be understood as the norms and values that help to interpret events and evaluate what is appropriate and inappropriate. These standards and values may also be seen as control systems that are capable of achieving great effectiveness, since they lead to a high degree of conformity, while at the same time giving a heightened sense of independence. Organizational culture is essential for strategic development through expressive elements in its demarcation, such as creative cultural environments, the workplace, and the freedom of employees in relation to norms, values and the implementation of new ideas. Senior management must develop an organizational culture through an environment that is conducive to sharing;

c) Dimension 3 - Organizational structure: A strictly bureaucratic organization is becoming increasingly inadequate to meet the contemporary challenges imposed on businesses. Organic or post-entrepreneurial types of companies are now breaking the bureaucratic paradigm and they are more dynamic and more knowledge intensive. The post-entrepreneurial type of structure tends to: center more on people; emanates authority from expertise or relationships; is geared towards creativity, searching for both innovation and efficiency; and pays according to the contribution or the value added by the person or the team, regardless of their formal position. The implementation of this type of organizational structure is in process of development where companies are more innovative and seek to leverage creativity, knowledge and the learning capacity of the various hierarchical levels that exist;

d) Dimension 4 – Administration of human resources: Human resources must be directly related to the acquisition,

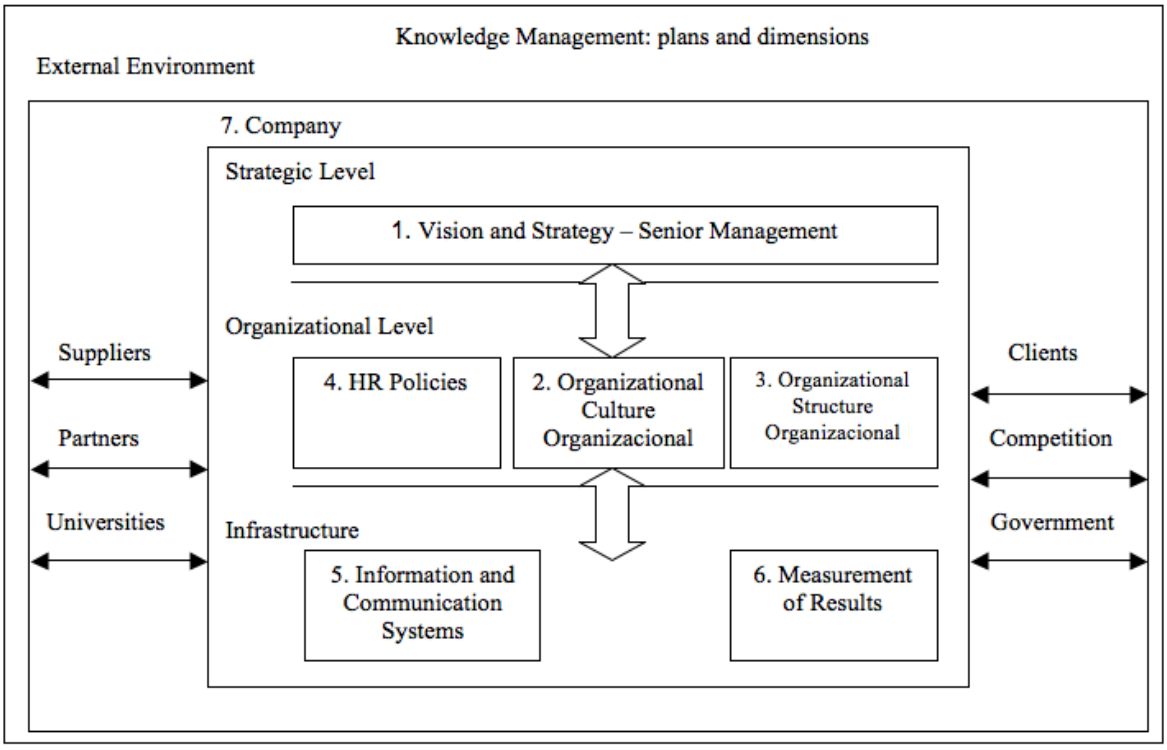


Figure 1. Knowledge Management: plans and dimensions. Data adapted from Terra (1999).

generation, dissemination and storage of external and internal knowledge of the company because they clearly influence the management of learning, innovation and knowledge through recruitment and selection, training, career and reward systems. The following three activities contribute to the development and creation of knowledge:

- Improving the ability of organizations to attract and retain people with the skills, behaviors and competencies that they themselves add to their stock and knowledge flows (value). This occurs when companies adopt rigorous and highly selective processes and seek to increase diversity in the backgrounds of the staff that are hired;

- Encouraging behaviors aligned with the requirements of individual and collective processes of learning, as well as those behaviors that will safeguard the strategic and long-term interests of the business for strengthening its competencies. In this sense, attention should be paid to career plans and training that broaden experience as well as contacts and interactions with other people both inside and outside the company;

- Adopting remuneration schemes, which are increasingly associated with the acquisition of individual skills, performance of teams, and the company as a whole, both in the short and the long term.

e) Dimension 5 – Information systems: The information systems (IS) of an organization directly influence the generation, storage and dissemination of knowledge. Every company needs to have good IS for its employees to have access to all necessary information to facilitate the performance of its activities. The IS should be available in a precise way, in the necessary time and space to facilitate the use of the information. Moreover, Terra (2005) warns that IS can only be useful if the data, information and knowledge bases that feed them are reliable, relevant and updated. The best IS and communication tools still rely primarily on individual inputs;
f) Dimension 6 – Measurement of results: Organizational outcomes should be measured in order to obtain the level of contribution of tangible and intangible assets. From the measurement of results, the organization can develop valuation methodologies for the strategic, tactical and operational levels, assisting in the creation of organizational knowledge. The measurement of Intellectual capital should not be confused with Knowledge Management. Nevertheless, it is possible that as companies engage in these processes of accounting for intellectual capital, they will start to question work processes, culture, communication strategies, the use of IS, and human resource management policies, leading them to develop practices that are more geared to learning, stimulating creativity, innovation and the generation of organizational knowledge;

g) Dimension 7 – Learning through the environment: Learning through the environment is based on the external environment as a way to increase learning. This need is being increasingly extended beyond the boundaries of companies, i.e. customers, suppliers, other companies (competitors or not), research institutes, universities, among others. The question of learning through the environment is directly linked to all the other dimensions of the Knowledge Management Model proposed by Terra (2005). The clear importance of the inclusion and absorption of new prospects for advancement in knowledge cannot be overemphasized. Companies that learn to encourage their employees to acquire and exploit new prospects facilitate and promote work in multi-functional, multi-regional and multi-company teams.

Implicit in each of these dimensions is the recognition that human capital, formed by the values and norms of individuals and organizations, as well as the competencies, skills and attitudes of every employee, is the mainspring of knowledge generation and value creation in organizations. This means knowing the need to promote values that are appropriate to innovation and knowledge sharing; to stimulate motivation; establishing personal contacts; the analysis of different perspectives; openness to effective communication, and the development of personal and professional skills.

Taking these dimensions as a starting point, Terra (1999) classifies three types of companies: companies that learn; traditional companies; and small outdated companies. In the first group are companies that have a higher level of engagement with the practices of Knowledge Management and that achieve the best results in the market. The second type includes companies who do not have much involvement with Knowledge Management. They do not achieve such impressive results, with the result that they have a much smaller external market penetration and have little chance of attracting foreign capital. The third type includes companies that practically despise the practices of Knowledge Management. They are predominantly based on national capital, have a lower recent gain of market share and are almost always third (or less) in terms of market position. Normally, they do not perform any activity aimed at the international market.
In this scenario, and based on the model proposed by Terra (1999), this study aims to identify critical elements in Knowledge Management in companies in the second and third sectors of the economy of the region of Campos Gerais, Paraná, Brazil.

## Method

This study is a survey, using an exploratory cross-sectional approach of an applied nature, with a predominantly quantitative approach. The study was developed in a population sample of workers in the second and third sectors of the economy.

The survey was conducted in companies located in the Campos Gerais region. This region is geographically located in the center-east of the state of Paraná, Brazil. It is composed of 24 municipalities, with a population of approximately 1,100,000 and has a highly diversified economy (Dicionário Histórico e Geográfico dos Campos Gerais, 2013). There are 20,652 establishments in the region employing 195,944 workers (Ipardes, 2010).

The sample size was calculated assuming an infinite population with a confidence interval of 95.5% and a margin of error of 3%. It was estimated that 9% of all workers in the Campos Gerais region already partially or fully used Knowledge Management. The sample calculation totaled 182 individuals. Considering the possibility of withdrawal or exclusion of individuals, this calculation of the number of participants was increased by 10%, making a total sample of 200 individuals.

Inclusion and exclusion criteria were established for the individuals participating in the study. The inclusion criteria were: adherence to the Terms of Consent (TC); contracted workers of both sexes using Knowledge Management either partially or fully. The exclusion criteria were: non-compliance with the protocol for completing the data collection instrument; incorrect or incomplete completion of the collection instrument. Subject to these criteria, the sample consisted of 191 workers.

For the data collection, a social scale consisting of 41 questions was used with answers similar to the five-point Likert system, prepared by Terra (1999). The instrument was validated and its reliability was verified. Data analysis was performed using the Statistical Package for the Social Sciences (SPSS) version 13.0, for Windows. Calculations of mean and standard deviations were performed.

The results, based on the classification proposed by Terra (1999), were classified according to their level of agreement, noting the following intervals:

a) Average equal or higher than 3.5 (high level of agreement);
b) Average between 3.1 and 3.4 (average level of agreement);
c) Average between 2.6 and 3.0 (low level of agreement);
d) Average equal to or less than 2.5 (very low level of agreement).

**Results**

The general characteristics of the sample with respect to age, gender, sector of activity and the length of time of worked are presented in Table 2.

The results of the questionnaire, by sector and the overall average, are shown in Table 3.

Regarding the answers to the questions of the questionnaire, concerning the entire sample, it was found that:

a) All the questions had at least one response corresponding to the minimum (1 - strongly disagree) and to the maximum (5 - totally agree);
b) The standard deviation of all responses was quite similar, ranging mainly between 1.0 and 1.2. The smallest standard deviation was 0.9 in questions 22 and 29. The largest standard deviation was 1.4 in question 34;
c) The mean values varied by sector, from a minimum value of 2.4 (revealing large disagreement) and a maximum value of 3.8 (showing great agreement).

Regarding the level of agreement, considering the classification proposed by Terra (1999), that ranges from a very low level of agreement to a high level of agreement, by sector and on average, the following results were found:

| Variables | N |
|---|---|
| Age (average in years) | 44.4 |
| Gender | |
| Female (n) | 47 |
| Male (n) | 144 |
| Sector | |
| Industry (n) | 79 |
| Service provision (n) | 55 |
| Commercial (n) | 30 |
| Public (n) | 27 |
| Period of time working (Average in years) | 17.7 |

Table 2 – General characteristics of sample (n=191).

| Item | Indicator | Level of agreement | | | | |
|---|---|---|---|---|---|---|
| | | I | C | SP | P | Average |
| | Strategic factors and the role of senior management | 3.3 | 3.2 | 3.3 | 3.0 | 3.2 |
| 1.1 | Is there is high level of consensus on what are the core competencies of the company, i.e. what are the company's strengths in terms of skills and competencies? | 3.3 | 3.4 | 3.3 | 2.9 | 3.3 |
| 1.2 | Is the macro strategy of the company communicated widely at all organizational levels? | 3.2 | 2.9 | 3.3 | 3.1 | 3.1 |
| 1.3 | Do senior management frequently establish challenging goals and a sense of urgency for a change in reality towards a set vision? | 3.3 | 3.3 | 3.4 | 3.1 | 3.3 |
| | Cultural and organizational values | 3.1 | 3.0 | 3.2 | 2.9 | 3.1 |
| 2.4 | Are the mission and values of the company promoted consistently by symbolic acts and actions? | 3.4 | 3.3 | 3.3 | 3.3 | 3.3 |
| 2.5 | Is there is a high sense of trust between the company and employees? Is there, in general, a great pride in working for the company? | 3.4 | 3.3 | 3.4 | 3.0 | 3.3 |
| 2.6 | Are people not just focused on the short term? | 3.3 | 3.2 | 3.4 | 3.0 | 3.3 |
| 2.7 | Is experimentation encouraged? Is there freedom to try, and fail? | 3.0 | 3.3 | 3.3 | 2.8 | 3.1 |
| 2.8 | Is there is a great intellectual honesty in the company, i.e. people are honest and make it clear what they know and also what they don't know? | 3.0 | 2.8 | 3.3 | 2.7 | 3.0 |
| 2.9 | Are people concerned about the entire organization and not just their own area of work? Do they work towards general improvement? | 2.9 | 3.1 | 3.0 | 2.7 | 2.9 |
| 2.10 | Is it recognized that time is an important resource for the process of innovation? | 3.3 | 3.1 | 3.4 | 3.1 | 3.3 |
| 2.11 | Are new ideas valued? Is there permission to discuss "silly" ideas? | 3.0 | 2.6 | 3.1 | 2.9 | 3.0 |
| 2.12 | Are major achievements celebrated? | 3.3 | 2.7 | 3.5 | 3.3 | 3.3 |
| 2.13 | Are jokes and humour tolerated? | 2.8 | 2.9 | 3.1 | 2.8 | 2.9 |
| 2.14 | Are informal meetings held frequently outside the workplace, for conducting brainstorming? | 3.0 | 2.6 | 3.0 | 2.7 | 2.9 |
| 2.15 | Are layouts conducive to the informal exchange of information (use of open spaces and meeting rooms)? Are there few symbols of status and hierarchy? | 2.9 | 2.5 | 3.0 | 3.0 | 2.9 |
| | Organizational structure | 3.0 | 2.8 | 2.9 | 2.8 | 2.9 |
| 3.16 | Is there is a constant use of multidisciplinary and formal teams overlapping with a traditional formal and hierarchical structure? | 3.1 | 2.5 | 2.8 | 2.8 | 2.9 |
| 3.17 | Is there is a constant use of temporary or ad hoc teams with great autonomy and completely dedicated to innovative projects? | 3.1 | 2.9 | 2.8 | 2.8 | 2.9 |
| 3.18 | Do small rearrangements occur frequently and naturally in order to adapt to the demands of the competitive environment? | 3.1 | 3.1 | 3.2 | 2.9 | 3.1 |
| 3.19 | Are decisions made at the lowest level possible? Is the decision- making process nimble, and bureaucracy minimal? | 2.7 | 2.5 | 2.9 | 2.6 | 2.7 |
| | Human resources administration | 3.1 | 3.2 | 2.9 | 2.8 | 2.7 |
| 4.20 | Is the selection process very rigorous? | 3.0 | 3.1 | 2.9 | 2.9 | 3.0 |
| 4.21 | Is there is a search for diversity (personalities, experiences, cultures, formal education, etc.) and an increased creativity via recruitment? | 3.0 | 3.8 | 2.9 | 2.6 | 3.1 |

| | | | | | | |
|---|---|---|---|---|---|---|
| 4.22 | Does career planning seek to equip employees with different perspectives and experiences? | 3.2 | 3.7 | 2.9 | 2.9 | 3.1 |
| 4.23 | In general, is the scope of responsibilities in jobs fairly comprehensive? | 3.2 | 3.5 | 2.9 | 2.9 | 3.1 |
| 4.24 | Is there a large investment in, and encouragement of, training and professional and personal development of employees? Is there the opportunity for training that leads to self-knowledge? | 3.2 | 3.0 | 3.0 | 3.0 | 3.1 |
| 4.25 | Is learning encouraged by the expansion of contacts and interactions with others inside and outside the company? | 3.2 | 3.3 | 3.2 | 2.6 | 3.1 |
| 4.26 | Is training linked to the needs of the immediate area of work of the employee and/or the strategic needs of the company? | 3.3 | 3.0 | 3.2 | 2.9 | 3.2 |
| 4.27 | Is there a low staff turnover (number of people who resign or are dismissed) in the company compared to other companies in the same industry? | 2.9 | 3.3 | 2.9 | 3.1 | 3.0 |
| 4.28 | Are salaries mainly associated with the acquisition of skills rather than the position held? | 2.9 | 3.3 | 2.8 | 2.8 | 2.9 |
| 4.29 | Are there schemes of awards and recognition for outstanding contributions and results? | 3.0 | 3.0 | 2.8 | 2.6 | 2.9 |
| 4.30 | Are there payment schemes linked to team performance (not just individual performance)? Are the credits shared? | 2.8 | 2.5 | 2.4 | 2.6 | 2.6 |
| 4.31 | Are there profit sharing schemes involving most employees? | 3.4 | 2.9 | 2.7 | 2.5 | 3.0 |
| 4.32 | Are there shareholding schemes involving most employees? | 2.6 | 2.9 | 2.6 | 2.4 | 2.6 |
| | Information and communication systems | 3.2 | 3.1 | 3.1 | 2.8 | 3.1 |
| 5.33 | Is communication efficient in all directions (from top to bottom, bottom to top, and between distinct areas)? | 3.2 | 3.4 | 3.2 | 2.9 | 3.2 |
| 5.34 | Is information shared? Is there ample access for all employees to data and knowledge about the organization? | 3.2 | 3.0 | 3.1 | 2.7 | 3.0 |
| 5.35 | Are there great discipline, efficiency and incentive for the documentation of knowledge and know-how in the company? | 3.3 | 2.9 | 3.1 | 2.7 | 3.1 |
| | Results measurement | 3.3 | 2.9 | 3.4 | 3.0 | 3.2 |
| 6.36 | Is there great concern about measuring results from various perspectives (financial, operational, strategic, knowledge acquisition)? | 3.4 | 3.4 | 3.5 | 3.1 | 3.4 |
| 6.37 | Are results widely disseminated internally? | 3.2 | 2.4 | 3.3 | 2.8 | 3.1 |
| | Learning through the enviroment | 3.1 | 3.0 | 3.3 | 2.9 | 3.1 |
| 7.38 | Does the company learn a lot from its customers? Are there various formal and informal mechanisms well established for this purpose? | 3.4 | 3.5 | 3.3 | 3.0 | 3.3 |
| 7.39 | Is the company skilful at managing partnerships with other companies? | 3.3 | 3.1 | 3.5 | 2.9 | 3.3 |
| 7.40 | Is the company skilful at managing partnerships with universities and research institutes (hiring external researchers)? | 2.8 | 2.5 | 3.1 | 2.9 | 2.8 |
| 7.41 | The decision to form business alliances is often related to strategic decisions and important learning. Do company employees realize that specific earning objective very clearly? | 3.0 | 2.8 | 3.2 | 2.7 | 3.0 |
| | TOTAL (average) | 3.1 | 3.0 | 3.1 | 2.9 | 2.6 |

Legend: I = Industry; C = Commercial; SP = Service Provision; P = Public.
Table 3 – Indicators of Knowledge Management.

| Average | Number of questions | | | | |
|---|---|---|---|---|---|
| | I | C | SP | P | General |
| Average between 3.5 and 3.8 (high level of agreement) | 0 | 4 | 3 | 0 | 0 |
| Average between 3.1 and 3.4 ( average level of agreement) | 24 | 16 | 21 | 7 | 23 |
| Average between 2.6 and 3.0 ( low level of agreement) | 17 | 15 | 16 | 32 | 18 |
| Average between 1.7 and 2.5 ( very low level of agreement) | 0 | 6 | 1 | 2 | 0 |

Table 4 - Number of questions and level of agreement.

**Discussion**

When evaluating the results by Dimensions, Dimension 1 (strategic factors and the role of senior management) and Dimension 6 (measuring results) were those that showed the highest levels of agreement (average 3.2), even though this is still considered to be a medium level of agreement.

Respondents perceived that the role of senior management is a strategic factor and is responsible for the implementation of strategies directed at the organization's competitiveness. Because of this key role, the other strategic factors are influenced by the upper echelons of the company, in accordance with Furlanetto (2007).

In the organizational context, measuring results has become indispensable. When quantifiable data is available this is an easy task; the problem is how to measure intangibles like knowledge. Despite the difficulty in quantifying the return on investments in the generation, dissemination and reuse of knowledge, the perception of benefits encourages organizations to make new investments in a cyclic process. According to the data that was collected in the present study it seems that the quantification of results within companies is relevant, but there are still gaps in disclosing such information. Dimension 2 (organizational culture and values), Dimension 5 (information systems and communication) and Dimension 7 (learning through the environment) had the second highest averages, which were very close to the first, 3.1.

Fiates (2008) argues that organizational culture is critical for the deployment of Knowledge Management. At the same time, culture depends on the people that compose it, and what can be perceived from the results of the present study is that even with an average level of agreement there are still many points to be improved. According to Furnaletto (2007), it is not possible to succeed with the implementation of a Knowledge Management project unless it is developed in a cultural environment that is conducive to its implementation.

As regards the issue of communication, Terra (1999) points out that this is one area that organizations need to improve significantly. This is corroborated by the studies of Coutinho (2008); although the organizations surveyed in both the latter and the present studies have a fairly decent average, they still have a long way to go before communication with their stakeholders enables individual knowledge to also constitute collective knowledge - at the same time; collective knowledge can also be individual. When analyzing information systems, the data in the present study did not differ significantly from studies such as Martins (2007), Szewczyk (2009), and Dall'Igna (2010).

In relation to the issues of 'learning through the environment' and 'the formation of alliances with other companies', it is clear that these issues were not given great importance in the data collected in the present study. The very low importance given to relationships with universities and research institutes corroborates Terra's (1999) conclusion. Goodrich and Aiman-Smith (2007) emphasize the importance of learning through interaction with the most important customer in the value chain, as well as learning obtained with stakeholders, and through the circumstances of use of a product and service.

Dimension 3 (organizational structure) averaged 2.9, considered to be a low level of agreement. It is worth mentioning that the vast majority of respondents felt that the decision-making processes in their companies are slow, centralized and bureaucratic. This, together with the communication problems mentioned above, seems to be perhaps a clear indication that organizations are still predominantly structured and organized under a bureaucratic-hierarchical paradigm, similar to the observation of Terra (1999). Studies such as Ferrari (2006), show that the modeling of an organizational structure influences the possibility of creating and using knowledge.

Dimension 4 (human resource management) showed the lowest level of agreement (average 2.7) with the actions of Knowledge Management. This is one of the most impor-

tant dimensions because results depend on the people who make up an organization. A study by Girardi (2009) points out that human resources are responsible for catalyzing the results of Knowledge Management. Organizations are making their selection processes tighter and at the same time seeking diversity in their workforce. The policies and practices relating to salaries in the sample of the present study appear to be very outdated. Profit sharing plans and all other reward systems, which are associated in the literature with teamwork, stimulation, innovation and commitment to the long term (and therefore the generation of knowledge), are, in general, uncommon in the organizations represented in the sample of the present study, which corroborates the study by Terra (1999).

It was noted that there were higher levels of agreement for the Dimensions 'senior management' and 'measurement of results' in relation to the other Dimensions. It was also observed that the 'organizational culture' Dimension was strategic in the generation and dissemination of knowledge' and the 'information systems' Dimension was essential for the implementation of both Knowledge Management and 'learning through the environment' projects.

Based on the sectors of the economy, and using the data found, cluster analysis was performed, which was mathematically derived from the profile of the responses to the questionnaire, i.e. from issues related to Knowledge Management. The description of the groups was based on Terra (1999).

The first group, named 'Companies that Learn', was characterized by having, in general, a greater level of agreement regarding the 41 phrases related to Knowledge Management. When analyzing organizations in the Campos Gerais region, it is possible to say that the largest number of companies in the sectors of industry and services are concentrated within this group; these are the areas of activity in the region that most closely resemble learning organizations. As regards these two sectors there are several studies on industry, Souza (2003), Onofre (2008), Medeiros (2008) and Altissimo (2009), and in relation to service delivery there are studies by Martins (2007), Del Tio (2006), Oliveira (2007), Quintans (2008) and Pimentel (2008).

The second group, named 'Traditional Companies', had a response profile with a lower level of agreement with respect to phrases about Knowledge Management, where commerce is involved. Related to this sector of the economy are studies such as Horta (2006), Coutinho (2008), Pavoni (2009) and Ramos (2009).

The third group, named 'Small Outdated Companies', includes organizations with a high level of disagreement with the practices associated with Knowledge Management. These were characterized as organizations opposed to the other groups, as they are public sector organizations that have a different reality from those organizations that seek to make a financial profit. Studies by Paixão (2004), Ferrari (2006), Gomes (2006), Reis (2007), Bambirra (2009), and Amorim and Tomaél (2011), among others, aim to understand Knowledge Management in the public sector, as well as its benefits and problems.

It is noteworthy that the comparison of the profile of the organizations among the three groups indicated a strong similarity to the analysis for the total sample.

Although a significant proportion of the companies approach the business model that is a 'learning organization', which is the ideal model from the perspective of innovation proposed by Terra (1999), effectively they are not yet at that stage of development, which determines the limitations in the possibilities of gain and the benefits that Knowledge Management can provide. For organizations to reach this stage, several critical elements need to be overcome. Turning knowledge into value has been, and still remains, a major challenge.

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