Knowledge management and strategic orientation: leveraging innovativeness and performance

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Abstract

Purpose – *The aim of this study is to investigate whether knowledge management (KM) contributes to the development of strategic orientation and to enhance innovativeness, and whether these three factors contribute to improve business performance.*

Design/methodology/approach – *A sample of 241 Brazilian companies was surveyed, using Web-based questionnaires with 54 questions, using ten-point scales to measure the degree of agreement on each item of each construct. Structural equation modeling techniques were applied for model assessment and analysis of the relationships among constructs. Exploratory factor analysis, confirmatory factor analysis, and path analysis using the technique of structural equation modeling were applied to the data.*

Findings – *Effective KM contributes positively to strategic orientation. Although there is no significant direct effect of KM on innovativeness, the relationship is significant when mediated by strategic orientation. Similarly, effective KM has no direct effect on business performance, but this relationship becomes statistically significant when mediated by strategic orientation and innovativeness.*

Research limitations/implications – *The findings indicate that KM permeates all relationships among the constructs, corroborating the argument that knowledge is an essential organizational resource that leverages all value-creating activities. The results indicate that both KM and innovativeness produce significant impacts on performance when they are aligned with a strategic orientation that enables the organization to anticipate and respond to changing market conditions.*

Originality/value – *There is a substantial body of research on several types of relationships involving KM, strategic orientation, innovativeness and performance. This study offers an original contribution by analyzing all of those constructs simultaneously, using established scales so that comparative studies are possible.*

Keywords *Knowledge management, Strategic orientation, Innovativeness, Innovation, Business performance, Brazil, Corporate strategy, Business improvement*

Paper type *Research paper*

1. Introduction

As organizations strive to improve innovative capabilities and competitiveness in today's rapidly changing economic environment, their attention is increasingly focused on how they manage their intangible assets. The view of knowledge as a resource that can be used to leverage other organizational resources suggests that knowledge management (KM) practices are important drivers of innovativeness and business performance. Strategic orientation also plays a major role, since strategy not only influences and directs the conduct of routine business operations, but also provides a foundation for long-term success (Sinkovics and Roath, 2004).

Assuming that both KM and strategic orientation are built on practices that allow firms to apply knowledge effectively to develop competitive advantages, they are theoretically correlated with patterns of innovative behavior and superior performance. However, the effects of KM practices, innovativeness and strategic orientation on business performance may not be direct, given the potentially complex interactions among these variables toward

the achievement of strategic goals, in addition to other internal or external factors that may come into play.

An indirect relationship between strategic orientation and performance has been conceptualized by Han *et al.* (1998). Sinkovics and Roath (2004) found both direct and indirect relationships between strategy and performance within an inter-organizational context. Efforts to identify the impacts of KM on innovativeness and firm performance are discussed by Almashari *et al.* (2002), Bogner and Bansal (2007) and Decarolis and Deeds (1999). Studies on the relationship between market orientation and innovativeness have produced contradictory results, as reported by Baker and Sinkula (1999) and Deshpandé and Farley (2004). The correlation between market orientation and business performance has been amply debated. A survey of 36 studies indicated that 23 of them found a positive correlation, while the others found weak or non-significant correlations (Jaworski *et al.*, 2000). Finally, innovativeness is intuitively related to business performance, and several studies have confirmed that relation, such as Calantone *et al.* (2002).

As the previous examples illustrate, there is a substantial body of research on several types of relationships involving KM, strategic orientation, innovativeness and performance, but there are hardly any studies that analyze all of them simultaneously. The relationships among the four constructs are examined in this paper, using data from a survey of 241 Brazilian companies. The purpose is to investigate whether KM contributes to the development of strategic orientation and to enhance innovativeness, and whether these three factors contribute, directly or indirectly, to improve business performance. In the following sections, the extant literature is reviewed and used to develop the key constructs and outline a conceptual model of the proposed relationships. This is followed by the presentation of research hypotheses, discussion of research methodology, findings, and the theoretical and managerial implications of the research.

2. Knowledge management

The view of knowledge as a strategic resource is rooted mainly on the resource-based view of the firm (RBV), beginning with the seminal work of Penrose (1959) and including Barney (1991), Grant (1996), Peteraf (1993) and Wernerfelt (1984). According to the RBV, an organizational resource may include any specific tangible or intangible asset that is semi-permanently connected with the firm, and a strategy is needed to leverage its unique resources (Wernerfelt, 1984). The original concepts of the RBV have led to arguments for developing a knowledge-based theory of the firm (Grant, 1996). Organizations are seen as increasingly dependent on knowledge resources, which have particular characteristics and demand a strategic focus on aspects such as the development of competencies, organizational learning and management of tacit and explicit knowledge (Curado and Bontis, 2006).

However, the idea of ''managing'' knowledge remains a matter of contention, even after two decades of development of KM theory and practice. Unlike explicit, disembodied information, knowledge in itself is not manageable in a strict sense. Hence the term ''knowledge management'' can be alternatively interpreted as ''knowledge-based management'', that is, a managerial philosophy that is focused on knowledge as a strategic resource. Even though knowledge cannot be managed as a conventional asset, it is possible to manage intellectual assets, organizational capabilities and processes with a focus on knowledge development and learning (Dalkir, 2011).

The KM literature has identified and described several key processes related to organizational knowledge development, including: knowledge capture, transfer and use (DeLong, 1997); acquisition, collaboration, integration and experimentation (Leonard-Barton, 1995); creation, transfer, assembly, integration and exploitation (Teece, 1998); creation, transfer and use (Skyrme and Amidon, 1996; Spender, 1996). The key aspects are synthesized by Gold *et al.* (2001) from the perspective of the firm's KM process capabilities. They put forward a knowledge infrastructure consisting of technology, structure, and culture, along with a four-dimension knowledge process architecture of

acquisition, conversion, application, and protection. Their knowledge process constructs include 12 variables to measure the effectiveness of knowledge acquisition and ten variables each for the processes of knowledge conversion, use and protection. A variant of this model, with significant adaptations, is applied in a study of the mediating role of knowledge management in the relationships among organizational culture, structure, strategy, and organizational effectiveness by Zheng (2006) and Zheng *et al.* (2010).

In line with the extant literature, it is assumed for the purposes of the present research that effective knowledge management can be measured by surveying the perception of managers regarding its relevant aspects, and the same applies to strategic orientation, innovativeness and organizational effectiveness. It is proposed that effective KM exists when an organization has developed mensurable processes to:

- create and capture the knowledge that will be applied to achieve organizational objectives;
- share, convert, organize and disseminate knowledge among people in the organization; and
- apply the knowledge to create value for the company and its customers.

Effective KM is accomplished as these three types of processes are cyclically performed within the organization. The variables and scales to measure this construct are adapted from the model developed by Gold *et al.* (2001).

3. Innovativeness

The concept of innovation refers to the creation of new value to a company, its stakeholders and customers. An idea or invention only becomes an innovation when its economic potential is effectively realized. While an invention is essentially a technical solution, the innovation process encompasses a wide range of scientific, technological, organizational, financial and marketing activities to realize its potential. Therefore, innovation is the process of converting knowledge into value through the implementation of new or improved products, processes and systems.

The term innovativeness is often used to indicate the degree of novelty of a given innovation (Garcia and Calantone, 2002), or the degree to which an individual adoption unit (people or organization) is relatively early in adopting something new, compared to others in the social system (Hurt *et al.*, 1977). From an organizational perspective, innovativeness refers to a firm's capacity to introduce new processes, products, or ideas in the organization (Hult *et al.*, 2004). Hence firm innovativeness is a ''willingness to change'', that is, openness to new ideas as an aspect of a firm's culture (Hurley and Hult, 1998). According to Lynch *et al.* (2010), organizational innovativeness is composed of a capacity and ability to innovate, whereby the necessary skills, knowledge, and capabilities are readily available to take advantage of market opportunities ahead of the competition.

The key element of innovativeness is an organizational culture that encourages the introduction of new processes, products, and ideas (Hult *et al.*, 2004; Hurley and Hult, 1998), and such propensity to innovate is arguably associated with organizational effectiveness and performance (Tajeddini, 2011). However, as Lynch *et al.* (2010) point out, inconsistencies in the conceptualization and measurement of organizational innovativeness have led to conflicting and non-comparable results from past research. According to Wang and Ahmed (2004), this happens mainly because unidimensional conceptualizations neglect multiple facets pertinent to the domain. Moreover, conflicting results arise from the widespread use of constructs that bundle together antecedent aspects, or ''inputs'' for innovation, with the internal components of firm-level innovativeness and with ''output'' measures related to innovation results. In fact, Wang and Ahmed (2004) use such a mix of input and output measures in their conceptualization of innovativeness as a set of behavioural, product, process, market and strategic components.

Another method to quantify innovativeness is a simpler, yet more focused, five-item scale to measure opinion about receptivity to new ideas and innovation, used by Capon *et al.* (1992), Deshpandé *et al.* (1993), Deshpandé and Farley (2004), Hurley and Hult (1998) and Tajeddini (2011). A similar scale was used to measure innovativeness in the present study. The underlying assumption is that a firm can be characterized as innovative when it exhibits behaviors that foster the creation, experimentation and implementation of new ideas.

4. Strategic orientation

Strategic orientation is defined by Gatignon and Xuereb (1997) as the specific approach a firm implements to create the proper behaviors for superior and continuous performance. This concept reflects managers' perceptions of the competitive environment and their reactions to environmental conditions. As Slater *et al.* (2006) point out, strategic orientation defines the broad strategy outline, which will be completed with the details of strategy content and implementation. The proper fit among the firm's strategic orientation, and its physical, human, and organizational resources will determine its ability to achieve superior performance (Miles and Snow, 1984). Several aspects of strategic orientation have been identified in the literature, such as market orientation, entrepreneurial orientation, customer orientation, cost orientation, innovation orientation, competitor orientation, learning orientation, employee orientation and interaction orientation (Grawe *et al.*, 2009).

Scholars also postulate a direct effect between strategic orientation and performance, suggesting that a market-oriented philosophy is at the core of a firm's intention to confront and react to events in the market environment (Aaker, 2009; Day, 1999). The creation of a market-oriented organizational culture and behavior, focused on gathering information regarding customers' needs, competitor capabilities, and market agents could be a significant factor in achieving superior performance (Kohli and Jaworski, 1990; Slater and Narver, 1994).

Aaker (2009) posits that strategic management presupposes a market-oriented view – toward customers, competitors and the market environment – in order to support flexible strategies that are sensitive to rapid changes in customer behavior, in contrast with the rigidity of long-range planning. Accordingly, Day (1999) affirms that a market-driven organization combines an externally-oriented culture, a capability for distinctive market sensing and anticipatory strategic thinking, and a configuration that enables the organization to anticipate and respond to changing market conditions. These three elements are supported by a shared knowledge base to collect and disseminate its market insights. A direct relation between market and strategic orientation is proposed by Deshpandé (1999), in three levels: cultural, with values and beliefs that are primarily customer-oriented; strategic, with an orientation toward the creation of superior value; and tactical, comprising a set of interfunctional processes and activities that are also oriented to value creation and customer satisfaction.

In this study, the strategic orientation construct is composed by variables that reflect market orientation characteristics. This choice is aligned with arguments and compelling evidence that market-oriented companies possess inherent characteristics that drive their competitive capabilities to build enhanced performance (Narver and Slater, 1990; Han *et al.*, 1998), and that such strategic orientation provides a superior ability to compete (Zhou *et al.*, 2005). Market orientation also provides a strong ''positional advantage'' albeit within the context of other capabilities, namely entrepreneurship, innovativeness, and organizational learning, as demonstrated by Hult and Ketchen (2001). The argument is reinforced by evidence suggesting that the influence of entrepreneurial proclivity on performance is positive when mediated by market orientation, but negative or nonsignificant when not mediated by market orientation (Matsuno *et al.*, 2002).

5. Business performance

The performance evaluation methods found in the literature may be divided into two broad groups: one that uses objective financial criteria, and other that uses non-financial, mostly

qualitative criteria. In addition, some studies use a mix of objective and subjective criteria. The measures may include: market share, sales of new products and services, return rates on investment, in addition to the evaluation of internal factors such as process enhancements and reduction of response times to changes in the market.

Business performance or organizational outcomes have been analyzed together with one or more of the other constructs included in this study by several authors, such as Almashari *et al.* (2002), Bogner and Bansal (2007), Decarolis and Deeds (1999), Rapp *et al.* (2008) and Zheng (2006), among many others. For this study, performance was defined as a measure of the achievement of organizational objectives (Daft, 2009). It was operationalized by three self-reported, relative business performance indicators: market share, percentage of new product sales to total sales and return on investment (ROI), following Matsuno *et al.* (2002). These performance variables were measured relative to those of the organization's relevant competition, because strategic orientation is presumed to result in competitive advantage. In order to obtain an internal perspective, two additional indicators were used: agility of internal processes and response time to market changes, as proposed by Gold *et al.* (2001).

6. Method

6.1 Research hypotheses

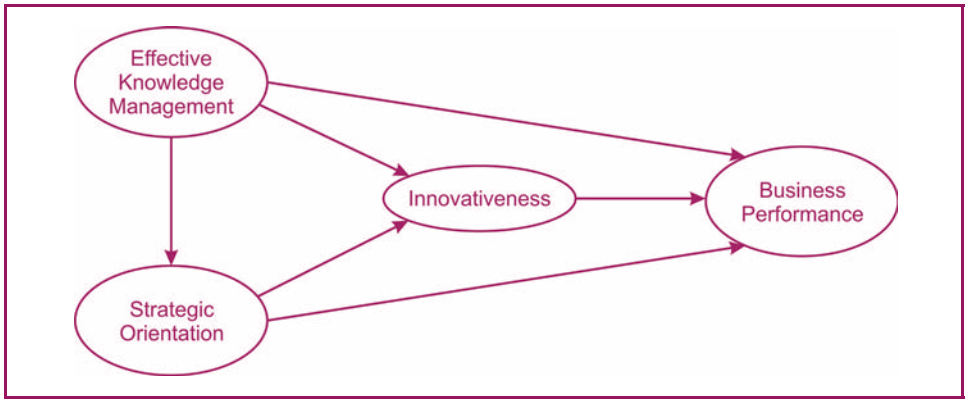
The study was designed to analyze the relationships among the constructs ''effective knowledge management'', ''strategic orientation'', ''innovativeness'' and ''business performance'', following the conceptual model presented in Figure 1. Six null hypotheses were formulated:

- *H01.* Effective KM does not contribute positively to strategic orientation.
- *H02.* Effective KM does not contribute positively to innovativeness.
- *H03.* Effective KM does not contribute positively to business performance.
- *H04.* Strategic orientation does not contribute positively to innovativeness.
- *H05.* Strategic orientation does not contribute positively to business performance.
- *H06.* Innovativeness does not contribute positively to business performance.

6.2 Sample and procedure

The sample was drawn from a list of 6,509 Brazilian companies with more than 200 employees. The list was obtained from the Brazilian Institute of Geography and Statistics (IBGE). The data were collected with the aid of a web-based survey software. The targeted respondents were managers of corporate areas such as marketing, R&D, finance and human resources. The survey returned 241 valid responses. The majority (81.3 percent) of respondents were firms with 200 to 1,000 employees, mostly in the range of 200 to 500

Figure 1 Conceptual model



employees (61 percent). Manufacturing companies were 67.6 percent and service sector companies 32.4 percent. More than half of the respondents (57.7 percent) were from commercial/marketing departments, 26.7 percent from administrative and financial areas, 11.5 percent R&D, and 4.1 percent from the area of human resources management.

6.3 Measurements

The questionnaire comprised 54 questions, using ten-point rating scales anchored by ''strongly disagree'' and ''strongly agree'' to measure the degree of agreement on each item. In order to measure the constructs, established scales were used, with some adaptations in format and wording. The suitability of the final version of the questionnaires was pre-tested to make sure that all the questions were clearly understood and relevant for respondents.

The variables and scales to measure effective knowledge management were adapted from the model developed by Gold *et al.* (2001), which includes 12 variables to measure the effectiveness of knowledge acquisition and ten variables each for the processes of knowledge conversion, use and protection. For this study, the ''protection'' construct was not included, since the focus of the research was not on barriers to dissemination, but on the effects of knowledge flows – related to capture, organization, sharing, use and application – on the other constructs. After the adaptation and pre-testing, the scale designed to measure the ''effective knowledge management'' construct included 11 questions on the knowledge acquisition process, ten questions related to knowledge conversion and sharing, and nine questions on knowledge application.

For the innovativeness construct, this study adopted a five-item scale that has been widely used after its introduction by Capon *et al.* (1992), with some variations. See, for example, Deshpandé *et al.* (1993), Deshpandé and Farley (2004), Hurley and Hult (1998) and Tajeddini (2011). The scale is focused on the ''openness to innovation'' aspects, where cultural values and beliefs of innovativeness are formed and acted on to achieve strong long-term performance, as noted by Hult and Ketchen (2001).

As noted previously, the strategic orientation construct that was chosen for this study is composed by variables that reflect market orientation characteristics. The choice of the established MKTOR scale (Narver and Slater, 1990) follows arguments that such strategic orientation is associated with competitiveness (Zhou *et al.*, 2005) and superior performance (Narver and Slater, 1990; Han *et al.*, 1998). The scale comprises six items for customer orientation, four related to competitor orientation and four related to inter-functional coordination, totaling 14 questions.

Performance was measured via five self-reported items. The first three are: percentage of new product sales to total sales, market share, and return on investment (ROI), as applied in the studies by Matsuno *et al.* (2002) and Tajeddini *et al.* (2006), among many others. Two additional indicators were used: agility of internal processes and reduction in response time to market changes, as proposed by Gold *et al.* (2001) in their measures of organizational effectiveness.

6.4 Data analysis

The resulting data were analyzed with SPSS®16.0 and AMOS®4.0 software for statistical analysis. Structural equation modeling techniques were applied for model assessment and analysis of the relationships among constructs. Exploratory factor analysis (EFA), confirmatory factor analysis (CFA), and path analysis using the technique of Structural Equation Modeling (SEM) were applied to the data. The bootstrapping technique was used in the CFA and path analysis to offset the effects of non-normality. In the EFA step, Bartlett's sphericity test and the Kaiser-Meyer-Olkin Index (KMO) indicated adequacy of the sample. Principal components analysis (PCA) was used, with Varimax rotation and Kaiser normalization. The cumulative variance explained by the factors exceeded the 60 percent threshold suggested by the literature. Re-specification of the model was necessary to achieve better indices of adjustment. This required the exclusion of three variables of the KM construct; three variables of market orientation, two variables of the innovativeness construct, and two variables of the performance construct.

The sample size (241 cases) is above the minimum of 200 cases as the recommended rule of thumb, although by a small margin. The fit of the model presented $\chi^2 = 608.719$ (CMIN) relative to 310 degrees of freedom (DF). The value of CMIN/DF equals 1.964, well below the maximum recommended limit of 5; this index is also supported by the bootstrap test of Bollen-Stine, that indicated $p = 0.129$, preventing rejection at the 0.05 significance level of the hypothesis that the model is not representative of data behavior (Kline, 2005).

The indices are summarized in Table I. The values of the fit indices IFI=0.933, TLI = 0.917 and CFI = 0.932 were all above 0.90 as recommended by the literature, confirming the stable behavior of the model. Since the values of IFI, TLI and CFI take into account the sample size, unlike GFI, AGFI, NFI and RFI, it is reasonable to expect a significantly better behavior for those indicators that consider the sample size in its calculations. The RMSEA = 0.063 reached a value slightly greater than maximum 0.05 recommended in the literature as a good fit, but well below the acceptable maximum of 0.08, which is indicative of good quality of adjustment from the representative sample used in modeling (Kline, 2005). The RMR = 0.204 was considered satisfactory.

6.5 Hypothesis testing

The null hypothesis H01 ''Knowledge management does not contribute positively to strategic orientation'' was rejected at $p < 0.05$. This result confirms the arguments that KM processes such as capture, dissemination and application of knowledge provide support for strategy formulation and strategic choices. It should be noted that empirical studies on the relationship between these two constructs are scarce, even though several authors link market orientation to organizational learning and the effective application of knowledge, such as Baker and Sinkula (1999), Hurley and Hult (1998) and Lin *et al.* (2008).

Hypothesis *H02* ''Knowledge management does not contribute positively to innovativeness'', with a factor load of 0.475, was not statistically significant ($p = 0.181$) and the hypothesis could not be rejected. This result is similar the findings of Darroch (2003), who argues that a strategy to use knowledge is as important as having knowledge to be innovative. It contradicts empirical evidence from Bogner and Bansal (2007), Lemon and Sahota (2004) and Antonelli (1999). This divergence may be related to differences in measurements, cultural aspects or idiosyncrasies of the sample.

Hypothesis *H03* ''Knowledge management does not contribute positively to business performance'' cannot be rejected due to the fact that the direct effect of KM on organizational results presented no statistical significance. Again, the empirical study by

Table I Fit indices on final model

Index	*Result*
Absolute fit indices	
χ^2 – Chi-square	608.720
Degrees of freedom – gl	310
χ^2/gl	1.964
Root mean square residual (RMR)	0.204
Goodness-of-fit index (GFI)	0.856
Hoelter 0.05	139
Hoelter 0.01	147
Relative fit indices	
Normed Fit Index (NFI)	0.873
Incremental Fit Index (IFI)	0.933
Tucker-Lewis Index (TLI)	0.919
Non centrality-based indices	
Root mean square error of approximation	0.063
Comparative Fit Index (CFI)	0.932

Darroch (2003) also rejected the hypothesis that KM affects organizational outcomes, and highlighted the difficulty in measuring the results of knowledge.

Hypothesis *H04* ''Strategic orientation does not contribute positively to innovativeness'' presents a small impact load and was not statistically significant ($p = 0.158$), so it cannot be rejected. This result is consistent with other studies such as Han *et al.* (1998) that found a positive relationship between these market orientation and innovativeness, but without statistical significance.

Hypothesis *H05* ''Strategic orientation does not contribute positively to business performance'' also could not be rejected, with a positive result at a low level of significance ($p = 0.069$). This is similar to the findings of other studies, such as Langerak (2002).

Finally, hypothesis *H06* ''Innovativeness does not contribute positively to business performance'' showed a moderate to low effect, but not statistically significant ($p = 0.217$). This result is not supported by other empirical studies such as Tajeddini *et al.* (2006). Despite the lack of statistical significance, it is logical to assume that the ability to innovate is crucial for business survival.

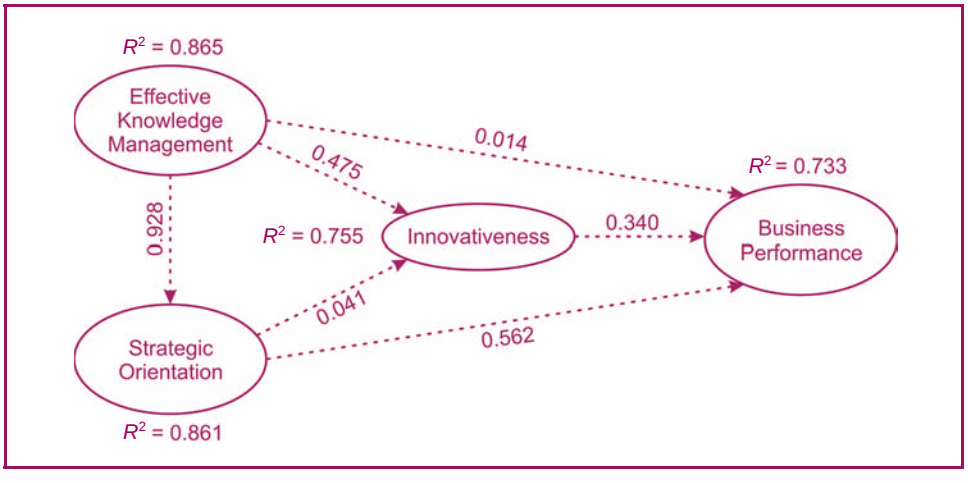
The structural model analysis enabled to explain 73 percent of the variance observed in the performance construct, 75 percent of the innovativeness construct and 86 percent of the strategic orientation construct. Most of the direct effects among the constructs are not statistically significant, but once the mediation of other constructs is accounted for, the total effects may reach significant levels. A summary of direct, indirect and total effects of the path analysis is shown in Table II and Figure 2. These results allowed further investigation of the research hypotheses, as described in the following.

Table II Direct, indirect and total effects

Relationship	*Direct effects*	*Indirect effects*	*Total effects*
Knowledge Management = > Strategic Orientation	0.928**	–	0.928*
Knowledge Management = > Innovativeness	0.475***	0.381***	0.855**
Knowledge Management = > Business Performance	−0.014***	0.812*	0.798**
Strategic Orientation = > Innovativeness	0.410***	–	0.410***
Strategic Orientation = > Business Performance	0.562***	0.139***	0.701*
Innovativeness = > Business Performance	0.340***	–	0.340***

Notes: *sig. at $p < 0,05$; **sig. at $p < 0,01$; ***not significant

Figure 2 Model coefficients and variance



6.6 Direct, indirect and total effects

Following hypothesis testing, the direct, indirect and total effects among the constructs were analyzed for further exploration of the model. As indicated in Table II, although most direct effects among the constructs are not statistically significant, the total effects, which include mediation of other constructs, are statistically significant, which emphasizes the complexity of these relationships. Moreover, the total effects justify the explanatory power (R^2) among constructs.

Although effective KM did not show a statistically significant direct effect on innovativeness when analyzed individually, the total effect (0.855) of this relationship has good magnitude and is significant due to its mediation by strategic orientation. In this case, strategic orientation is the direction given to knowledge, namely, customer focus and competitor components of market orientation. The result is consistent with the findings of other studies, such as Darroch (2003) and Chen *et al.* (2010). Another study by Uhlaner *et al.* (2007) suggests that, in the case of SMEs, KM acquisition or input strategies may be the most important aspect of the innovation process influencing firm performance.

Similarly, effective KM showed no significant direct effect on business performance, but this relationship reaches a total effect of 0.798 and becomes statistically significant when mediated by strategic orientation and innovativeness, and its indirect effect showed a strong loading (0.812). As Darroch (2003) points out, knowledge needs a strategic direction (here defined as the components of market orientation) and a sense of application (defined here as innovativeness) in order to generate results for the company, which corroborates these findings. Market orientation showed a total effect (0.701) of good magnitude and statistically significant results on business performance when mediated by innovativeness. This result is consistent with the findings of Baker and Sinkula (1999) and Han *et al.* (1998).

7. Discussion and conclusions

This article provides several implications to the areas of knowledge management and organizational innovativeness. First, this study examines a broad set of relationships that connect KM to business performance, thereby contributing to a better understanding of the mediating role of several aspects of organizational culture. Even though the direct effects of effective KM on innovativeness did not appear significant in this analysis, the indirect effects are significant and suggest that mediating factors play an important role. It is possible to infer that effective KM has a positive contribution to innovativeness when mediated by strategic orientation. Strategy provides meaning to the application of captured, shared and disseminated knowledge to the development of firm intelligence and its consequent translation into improved processes and products. That is, in order to be effective, knowledge management needs a purpose and alignment between the development of organizational intelligence and the implementation of strategic objectives.

In addition, it was possible to verify that effective knowledge management has a positive impact on business performance only when mediated by strategic orientation and innovativeness, but the direct effects were not significant. This suggests the existence of complex interactions involving the various constructs. Slater *et al.* (2006) point out that the strength of relationships between predictor variables and performance varies by strategic type. In addition to variations in the actual implementation of strategic orientations, firms face a wide variety of internal and external conditions that will affect the achievement of strategic goals and their performance. Along the same lines, Nazdrol *et al.* (2011) contend that the idea of a direct relationship between strategic orientation and firm performance is too simplistic.

Furthermore, it is not possible to evaluate directly the results of knowledge application, since it is an embedded organizational resource that leverages other resources and capabilities. The relationships between strategy, knowledge management and innovativeness suggest the existence of synergistic effects. If innovativeness is conceptualized as an organizational culture that encourages innovation, and also that it is closely related to the processes of

capturing, sharing and disseminating knowledge to achieve strategic objectives, self-reinforcing relationships among the constructs are to be expected (Darroch, 2005).

The evidence suggests that the effectiveness of KM is directly related to its systematic alignment with strategic objectives, as opposed to the mere adoption of isolated KM initiatives in the firm. In other words, KM necessarily implies ''the deliberate and systematic coordination of an organization's people, technology, processes and organizational structure'' in order to achieve its objectives (Dalkir, 2011, p. 4).

The lack of significant evidence to confirm that innovativeness contributes to business results in this study contradicts other studies that have confirmed that relation (Calantone *et al.*, 2002), as well as the intuitive supposition that innovativeness is positively related to firm performance. This divergence may be related to methodological differences, such as the lack of mediating constructs, which could bridge the propensity to innovate with the firm's actual ability to produce competitive innovations and obtain tangible results, since both KM and innovativeness are conceptualized here mainly as cultural and behavioral aspects of the organization.

The findings suggest that KM permeates all relationships among the constructs, corroborating the argument that knowledge is an essential organizational resource that leverages all value-creating activities. Thus effective KM can be understood as a set of processes that are embedded in organizational culture and contribute to strategic orientation and innovativeness. The presence of such processes indicates that KM practices are, to a large extent, integrated to the work routines of many companies and can be viewed as part of their culture. On the other hand, the results of this study also suggest that both KM and innovativeness fail to produce significant impacts on performance unless they are deliberately aligned with strategic objectives, and consequently, with the creation of tangible results.

This study also provides several managerial implications for firms to use knowledge as a resource to improve their innovative capabilities and competitiveness. They are related to the importance of effective knowledge management, its implementation and its relation to corporate strategy. Significant impacts on business performance can be achieved by managing the processes that facilitate the capture of knowledge, its flows within the company and its application in products, services or in the improvement of operational efficiency. Accordingly, the systematic coordination of those processes implies not only the allocation of resources for the necessary technological infrastructure to support knowledge sharing and collaboration, but also a focus on human resources management, since people need a favorable context to fully exercise their abilities in the creation and application of knowledge.

The implementation of effective knowledge management practices also depends on deliberate efforts to coordinate the diverse KM processes with the management of organizational resources as a whole, in alignment with a strategic vision. Given the systemic nature and complexity of the impacts of KM on the other variables, they must be integrated and applied in the context of a systemic view of their interactions. As the results indicate, the organizational conditions for innovativeness, KM and strategic orientation can be strong determinants of business success.

Among the limitations of this study, there is a common issue in organizational-level studies, related to self-report data and whether an individual response is representative of firm-level characteristics and situations. In order to mitigate this problem, the survey targeted executives who are familiar with the topic to complete the questionnaire. Future research can benefit from using objective measures for some of the variables that could be independently verified. Although the sample size (241 cases) is above the minimum recommended rule of thumb, the relatively small size and low return rate of the survey are also potential limitations in this study.

Another limitation of the model adopted for this study is the choice of market orientation aspects to investigate the role of strategy in relation to the other constructs. This was done with the purpose of employing a fairly compact set of variables that has been validated by

many studies, with reliable and comparable results. Nevertheless, further research could explore the relationships among these constructs and the many possible variations of strategic orientation, such as market orientation, entrepreneurial orientation, customer orientation, cost orientation, innovation orientation, competitor orientation, learning orientation, employee orientation and interaction orientation (Grawe *et al.*, 2009).

Another aspect to be considered is that the empirical findings are based on data from Brazil. Although the country shares many characteristics with other emerging economies in terms of technology development, managerial practices and market conditions, this may limit the generalizability of our findings. In order to minimize methodological differences, the model was designed to replicate widely used constructs, while accounting for some local idiosyncrasies. Further research should corroborate the validity of these findings in other developing and developed markets.

The managerial implications may also be further explored by studies that relate KM techniques and practices with their respective processes. In addition, taking into account the implication of the necessary alignment between effective knowledge management, innovativeness and business strategy, other studies should evaluate more pointedly the relationships between these aspects. It is also clear that more case-based research is needed for a better understanding of the differences among firms. As Börjesson and Elmquist (2011) point out, there is very little in-depth research on how organizational capabilities for innovation are developed in practice. More generally, the area of knowledge management opens up many research opportunities regarding its relations with other business practices and organizational characteristics, which will contribute to the scientific advancement of the field as well as to the development of more effective managerial practices.

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