The effect of knowledge-centered culture and social interaction on organizational innovation: the mediating effect of knowledge management

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Abstract

The effect of organizational resources in technological innovation has been widely studied. However, the effect of these resources in organizational innovation is a subject that still requires greater scrutiny. Relying on the resource-based view of the firm, we hypothesize that the knowledge-centered culture and the social interaction are factors (resources) that affect the organizational innovation, but that this effect is mediated by the knowledge management. Using a transversal study with a sample of Mexican public hospitals through its high and medium level managers perception we found support for the hypotheses. Results of the research confirm the importance of a knowledge-centered culture, social interaction, and knowledge management as predictors of organizational innovation. This study also buttresses the critical role of knowledge management as a mediating variable in the influence of a variety of factors on the development of organizational capabilities.

Keywords: Organizational innovation, knowledge management, organizational resources.

JEL code: M10.

Introduction

From the economic as well as from the administrative point of view, the importance of organizational innovation was acknowledged more than a century ago. In 1890, Marshall introduced organizational activity as the fourth factor of production, thus evidencing the importance of organizational innovation. Since then, however, that concept has been relegated to a position of little atten-
tion theoretically and has scarcely been addressed in the organizational research literature.

Through the years, organizations have looked for new ways to reinvent themselves with the purpose of generating their own development and growth. Hence, it has been necessary to place emphasis on the importance of organizational innovation, as this may be a necessary precondition for technological innovation (Lam, 2005). Several studies have addressed an array of factors that may affect technological innovation (Daft, 1978; Cheng & Mohd, 2010). However, few studies have researched the factors that affect innovation of the organizational type.

A firm’s innovation capacity, including the organizational kind, is largely determined by its internal resources and capabilities (Griffy-Brown & Chun, 2007). Factors such as knowledge, social interaction, and knowledge-centered culture are organizational resources. When managed and reconfigured strategically, these resources allow the development of capabilities that generate value for the organization and facilitate the introduction of new knowledge and/or the combination of existing items of knowledge (Fijalkowska, 2008). Given that organizations need to manage their new knowledge in order to reap benefits from it, knowledge management becomes an important internal capacity for firms to possess.

A review of the relevant literature suggests that knowledge management could increase (Constantinescu, 2009, Fong & Kwok, 2009), or even mediate innovation (Nonaka, 1991; Milam, 2001; Wang & Ahmed, 2003; Broos & Cronjé, 2009; Liao & Wu, 2010). Because innovation depends on several resources and capabilities (Griffy-Brown & Chun, 2007; Constantinescu, 2009; Conner, 1991; Fijalkowska, 2008), it is possible that knowledge management could alter the effect of social interaction and knowledge-centered culture on innovation in general and organizational innovation in particular.

Based on the discussion above, the purpose of this study is to give answers to three interrelated questions. First: what is the effect of social interaction and knowledge-centered culture on organizational innovation and knowledge management? Second: to what extent does knowledge management influence organizational innovation? Third: to what degree does knowledge management mediate the relationship that social interaction and knowledge-centered culture have with organizational innovation? In order to answer these questions we build on the resource-based view of the firm (Barney, 1991).

The current research contributes to the current body of knowledge on organizational innovation in several ways. Among its most important contributions, this study indicates that knowledge management is an important mediating variable in the relationship between social interaction and organizational innovation. It also demonstrates that knowledge management mediates the association between knowledge-centered culture and organizational innovation.

The organization of the rest of this paper is as follows. First, we review the pertinent literature with the purpose of documenting previous research into the proposed relationships. Next, we draw a series of hypotheses followed by a discussion
of the research method that was employed to test them. After, we present the statistical results. This paper ends with a discussion of the findings and their implications for future investigations.

**Literature review and hypotheses**

A central tenet of the resource-based view of the firm is that a firm’s growth, efficacy, efficiency, and competitive advantage emanate from its valuable, rare, and difficult to imitate and substitute resources (Penrose, 1959; Wernerfelt, 1984) and capabilities (Barney, 1991; Grant, 1991; Teece, Pisano & Shuen, 1997; Eisenhardt & Martin, 2000). Organizational capabilities are a platform upon which an organization can develop new capabilities that can increase its value (Conner & Prahalad, 1996; Eisenhardt & Martin, 2000).

In their quest for advantages that cannot be easily duplicable by competitors, organizations take actions that run counter to their own normal internal processes with the objective of generating valuable innovations (Bharathi, 2007; Utterback, 1994; Pinto, Fernández, Martínez & Kauffmann, 2006; Pasquini & Mendes, 2009; Griffy-Brown & Chun, 2007). Innovations that improve advanced technologies that boost product innovation are no longer enough for firms to gain competitive advantage. Thus, management professionals and scientists have begun to define innovation in broader terms (Kinkel, Lay & Wengel, 2004), mainly in regard to organizational processes and structures; in other words, as including organizational innovation.

One problem with the concept of organizational innovation is that, to date, there is no general definition of it. However, it is possible to differentiate it from technical innovation. On the one hand, technical innovation refers to products, services, and technological processes of production. On the other hand, organizational innovation encompasses organizational structure and administrative processes that are indirectly related to the basic productive activities of an organization and directly related to its management (Damanpour, 1991). Organizational innovation is defined as the generation and implementation of changes in business practices that improve a firm’s technical innovation capacity (ISI, 2006).

As do other forms of innovation, organizational innovation depends on a variety of organizational resources. Formal organizational structure, formal planning, control mechanisms, systems coordination, social interaction, and knowledge-centered culture are among the several resources that can affect innovation (Janz & Prasarnphranich, 2003; Chen & Huang, 2007). It is worth noting that even though several studies have addressed the relationship between knowledge-centered culture and innovation, and between social interaction and the latter, no such studies have examined the impact of these resources on organizational innovation.
The effect of knowledge-centered culture on organizational innovation and knowledge management

Knowledge-centered culture has an influence on individuals’ behavior, work teams, organizational units, and the entire organization (King, 2007). This is a factor that underlies a firm’s management and innovative capacity because it gives workers, teams, and work groups responsibility in the management of the methods of work, independence in the determination of the actions necessary to achieve goals, freedom to experiment and take reasonable risks, and stimulation to learn. Several studies indicate that knowledge-centered culture facilitates and catalyzes the flow of knowledge between individuals and units within organizations (Janz & Prasarnphanich, 2003).

The knowledge is considered a strategic resource (Teece, Pisano & Shuen, 1997), and it could exist in the relations between individuals or groups within the organization, it can be shared and can be developed as a result of the joint work and efficient collaboration; if the knowledge is structured it can be concentrated on specific systems of the organization (DeLong & Fahey, 2000) through mechanisms of planning, as well as relations of support and recognition of the members of the organization.

To manage the capacity for innovation as well as the knowledge required of the understanding and the integration of organizational factors (Davenport & Prusak, 1998; Fong & Kwok, 2009); therefore, it is possible to assume that the knowledge-centered culture leads to the achievement of goals of innovation and knowledge management (Janz & Prasarnphanich, 2003).

A synthesis of these arguments suggests the following hypotheses.

Hypothesis 1. Knowledge-centered culture has a positive effect on organizational innovation.

Hypothesis 2. Knowledge-centered culture has a positive effect on knowledge management.

The effect of social interaction on organizational innovation and knowledge management

Individuals are social beings that build together a common understanding of what surrounds them. Individuals learn from the social interaction that takes place in organizations, and more concretely in their work places (Gherardi, Nicolini & Odella, 1998; Brown & Duguid, 1991). The learning generated from social interaction is important because it can generate organizational innovations.

Social interaction refers to the manner in which organizational members interact among themselves in terms of trust, communication, and coordination (Chen & Huang, 2007). An effective social interaction is a prerequisite for the constant evo-
olution of knowledge because it permits the articulation, development, and effective management of knowledge (Oswick, Anthony, Keenoy & Mangham, 2000).

Social interaction stimulates a frank and open interchange of ideas between hierarchical levels that creates a context of communication. Communication, in turn, leads to an improvement in the management and exchange of knowledge that can boost organizational innovation. A consideration of the above discussion suggests the following hypotheses.

Hypothesis 3. Social interaction has a positive effect on organizational innovation.

Hypothesis 4. Social interaction has a positive effect on knowledge management.

The effect of knowledge management on organizational innovation

Knowledge management is one of the variables that can influence an organization’s capacity to innovate (Colina, Petit & Gutiérrez, 2006). Knowledge management fosters an organization’s potential to innovate because it makes the usage of its knowledge more efficient (Díaz, Contreras & Rivero, 2009).

Knowledge management, as it is currently understood, was first conceptualized in the beginning of the 1990s. Knowledge management refers to the process by which an organization’s knowledge is acquired, codified, shared, transferred, developed, applied, and protected effectively (Alavi & Leidner, 2001).

The aim of knowledge management is to provide methodologies and guidelines that can boost the effective administration of everything an organization knows (Benavides & Quintana, 2003) through a process of values, information and experience (Davenport & Prusak, 1998).

Effective knowledge management makes an organization’s knowledge self-generating, and thus a source of ideas that can alter and/or improve an organization’s practices or structure. If this is true, then knowledge management could have a positive influence on organizational innovation. The following hypothesis makes explicit this prediction.

Hypothesis 5. Knowledge management has a positive influence on organizational innovation.

The mediating effect of knowledge management

From the theoretical perspective of the resource-based view, a firm’s capabilities that involve the generation of new resources, or the combination of existing ones, foster its efficiency and effectiveness. Knowledge management, hence, is a critical organizational capacity because it can augment a firm’s knowledge. An organization’s knowledge is based largely on experience and is a creation of the human mind.
(Walle, 2001). As such, organizational knowledge is determined by other resources such as knowledge-centered culture and social interaction.

Knowledge management can increase (Constantinescu, 2009, Fong & Kwok, 2009) and even mediate among the factors that anteced a firm’s capacity to innovate (Nonaka, 1991; Milam, 2001; Wang & Ahmed, 2003; Broos & Cronjé, 2009; Liao & Wu, 2010). Knowledge management mediates the relationships that exist among different levels of knowledge (individual and organizational). Knowledge management determines the tacit norms that regulate the manner in which knowledge is to be distributed within the organization and among its members. Knowledge management also brings about the creation and adoption of new knowledge because it enables the organization to interpret data and information with the objective of creating, legitimating, and distributing knowledge within itself (Delong & Fahey, 2000).

Knowledge management determines the conditions under which organizational members communicate and interact and affects the way knowledge is created, shared, and utilized. These actions permit the administration of the flow of knowledge and its dispersion among people, which can eventually produce innovation. Knowledge management helps to define the abilities necessary for the registry, storage, and conservation of knowledge in a way that allows other employees to retrieve it as a requisite for the creation, interchange and application of it. Knowledge management is a process that includes new ideas and the combination of knowledge for the establishment of new processes that can generate innovations (Chen & Huang, 2007; Wensley, Cegarra-Navarro, Cepeda-Carrión & Leal, 2011; Danaee & Selseleh, 2010; Palacios-Marqués, Peris-Ortiz & Rueda-Armengot, 2012).

From a process point of view, knowledge management performs the role of a mediating variable on the effects that knowledge-centered culture and social interaction have on organizational innovation. Formally, we propose the following hypothesis.

**Hypothesis 6.** Knowledge management mediates the effects of a knowledge-centered culture and social interaction on organizational innovation.

**Research method**

**Data and sample**

In order to examine the above-stated hypotheses, we needed data from organizations that to a considerable degree require organizational innovations to deal with a high product or service demand and that face important social pressures. We col-

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(1) The mediator function of a third variable, which represents the generative mechanism through which the focal independent variable is able to influence the dependent variable of interest (Baron & Kenny, 1986).
lected data from public hospitals because this type of organization has to deal with such problematic circumstances. The sampling method was chosen for convenience. However, we chose specific hospitals taking into consideration their representativeness of the set of public hospitals in the city of Toluca, México. We sampled eight hospitals. Five out of the eight hospitals provide general medical services to all kinds of patients regardless of their social status or affiliation to a social security institution. One hospital provides specialty services to the same group of people (i.e., all kinds of patients). Two out of the eight hospitals provide specialty services only to those patients who are affiliated to a particular state-managed institution.

The unit of analysis of organizational innovation is high and medium level managers. Managers at these levels have the highest influence on the development of a knowledge-centered culture and the social interaction that is deemed as appropriate to make employees receptive and committed to the organization’s knowledge principles (Kangas, 2009). Organizational innovation is a challenge for high level managers, as these persons are responsible for the processes and persons that are involved in innovations (García, 2009).

Participation by the hospitals in the sample was voluntary, and hence there was no control over the sample's composition. A total of 203 questionnaires were responded to by high and medium level managers from the medical, paramedical and administrative areas. After the elimination of fourteen questionnaires that were incorrectly filled in, the total number of usable responses were 189. This represents a response rate of 93 percent.

Data were collected by means of a written and self-administered questionnaire survey. Once the research project was approved by the State of Mexico Institute of Health (ISEM by its acronym in Spanish) and the Direction of Research and Education in Health of the Institute of Social Security of the State of Mexico and Municipalities (ISSEMyM by its acronym in Spanish), the questionnaire was submitted to the hospitals’ bioethics and research committees for its approval. After the questionnaire’s approval, the directors of the hospitals sent a memo to their management personnel informing them of the purpose of the research study and inviting them to participate in it. In order to collect the data, several group sessions were conducted at each hospital from April through August of 2011. The responses’ confidentiality and anonymity were assured at all times.

The data collection questionnaire consisted of two sections. The first section contained questions asking participants for some demographic information. A second section contained a series of items that measured this study's variables. The items that measured organizational innovation were built based on the conceptual definition of the variable. The items that measured knowledge management, knowledge-centered culture, and social interaction were taken from existing scales. These scales were translated from American English to Mexican Spanish by means of a back translation procedure and of an adaptation process (Muñiz & Hambleton, 1996); this was carried out based on the context (health sector), adjusted to the new peculiarities of the population (hospitals).
After translation, the questionnaire was presented to a panel of experts in order to improve the accuracy of the measures. The experts’ suggestions and comments were incorporated in a second version of the questionnaire. Finally, a pilot test was conducted in a hospital not included in the final sample. Thirty-three high and medium level managers responded the pilot questionnaire. Seventy-five items were integrated in the final version of the data collection instrument.

**Operational definition of the measures**

Organizational innovation (dependent variable) consists of activities that involve administrative elements that affect an organization’s social system (Daft, 1978; Damanpour, 1991). Two dimensions comprise this variable: innovative organizational practices that impact job satisfaction, and innovative organizational practices that impact cost control. On the whole, these dimensions refer to the introduction of new methods to organize the routines and procedures to manage the organization’s different tasks. They also refer to new ways to delegate responsibilities and decision power among employees as well as new ways of organizational structuring (OCDE & EUROSTAT, 2005). Twenty-six items measured organizational innovation. Fourteen out of 26 items assessed innovative practices with impact on job satisfaction. Twelve out of 26 items assessed innovative practices that affect costs controls.

Knowledge-centered culture (independent variable) was operationalized in terms of five dimensions: warmth, reward, support, personal autonomy, and autonomy in planning. Warmth, reward, and support refer to the existence of some characteristics in the work environment that facilitate and foment the processes of knowledge generation and application. Personal autonomy and autonomy in planning are regarded as facilitators of the flow of knowledge among individuals and departments (Janz & Prasarnphanich, 2003). Twenty-three items measured the degree to which the culture was knowledge-oriented. Five out of 23 items measured warmth. Four out of 25 items measured reward. Five out of 23 items measured support. Four out of 23 items measured personal autonomy. Five out of 23 items measured autonomy in planning.

Social interaction (independent variable) refers to the manner in which the members of an organization interact among themselves in terms of trust, communication, and coordination, with the purpose of improving and developing knowledge (Chen & Huang, 2007; Oswick, Anthony, Keenoy & Mangham, 2000) and thus innovations. Social interaction was operationalized by means of two dimensions: trust, and communication and coordination. Trust refers to the employees’ certainty that their coworkers possess the abilities and skills that are necessary to do their jobs, to make proper decisions, and to behave in the best interest of the organization. Communication and coordination refer to the employees’ discussion of ideas with their superiors, to their willingness to discuss ideas in the job places, to the planned designation of tasks, work procedures, and the programming of activities. Eight items were used to measure social interaction. Four items measured each of this variable’s dimensions.
Knowledge management (mediating variable) refers to the facilitation and management of activities related to an organization’s knowledge. This variable refers also to the collection of ideas, the extraction of employees’ knowledge, and the conversion of it into explicit knowledge that the organization can codify and transfer in order to improve the potential of value creation through the efficient usage of knowledge (Ordoñez de Pablos, 2001; Díaz, Contreras & Rivero, 2009). The operationalization of this variable is three-dimensional: knowledge sharing, knowledge organization, and knowledge creation and application (OCDE & EUROSTAT, 2005; Chen & Huang, 2007; Wensley et al., 2011; Danaee & Selseleh, 2010).

Knowledge sharing (or knowledge socialization) refers to the flow and dispersion of knowledge among individuals. Knowledge organization encompasses the storage, registry, and conservation of knowledge in such a way that other individuals can retrieve it as a prerequisite to knowledge exchange. Knowledge creation and application is a process that includes new ideas, the comprehension of new paradigms, and the combination of isolated principles for the establishment of new processes. In these processes, customers and employees interact and work together for the achievement of an organization’s objectives (Wensley et al., 2011; Danaee & Selseleh, 2010; Chen & Huang, 2007). Eighteen items measured knowledge management. Six out of eighteen items measured knowledge sharing. Eight out of eighteen items measured knowledge organization. Four out of eighteen items measured the knowledge creation and application dimension.

All of the questionnaire items were measured in a Likert-type scale of six options. The options were verbally anchored in 1 (very high or completely agree) and 6 (very low or completely disagree).

Estimation procedure

An exploratory factor analysis with varimax rotation was performed separately on each of the variables before proceeding to the testing of hypotheses. No dimensionality problems were found in any of the variables. Because the data were gathered in the same questionnaire and at the same time, a common method bias could exist in the data. In order to rule out this possibility, a common factor test (Konrad & Linnehan, 1995) was performed. Results of this test revealed that the study variables load into different factors, and thus, the observed variance could be attributed to the study constructs rather than to the measurement method (Podsakoff & Organ, 1986).

Structural equation modeling techniques (SEM) were deemed as appropriate to test the study variables. In order to do this, the proposed relationships were mapped in a commercial SEM program.

The parceling technique was used to model the proposed structural equations.Parceling is appropriate when the study sample is relatively small (Little, Cunningham, Shahar & Widaman, 2002). This technique was also justified in this study.
because each of the study variables presents a second order factorial structure. An aggregated level of indicators calculated as the average of its items was created for each dimension of the four study variables.

Results

Table 1 shows bivariate correlations among the study variables. Most of the correlations range from low to moderate (0.156 to 0.627). This situation contrasts with the correlations among each of the variables’ dimensions, which ranged from moderate to high. Prima facie, this suggests some convergent validity to the employed measures.

Table 2 shows that all factor loadings are significant and consistent with the standardized coefficients of their dimensions. In addition, this table shows the variance explained by the observed measures with respect to their constructs. All the variables have high $R^2$ values, thus suggesting an acceptable level of reliability.

Table 3 indicates an acceptable level of convergent validity among the study variables. This table indicates that given that the correlations among the variables are less than the respective extracted variance, there is discriminant validity among the variables of knowledge management, knowledge-centered culture, and social interaction.

After the measurement model was deemed as satisfactory, the next stage in the analysis was to test the degree of fit between the proposed theoretical model and the data. The global goodness of fit $\chi^2$ shows a value of 80.714. This suggests that the observed data matrix and the estimated data matrix differ. Nevertheless, given that the $\chi^2$ statistics is sensitive to the sample size; it was complemented with a variety or alternative goodness of fit measures that overcome such sensitivity. The RMSEA statistic indicates that the obtained differences are acceptable because it shows a value of 0.057, which is between the critical values of 0.05 and 0.08. The model's NFI, CFI, and IFI have values of 0.936, 0.974, and 0.975 respectively. Because the closer these values are to 1 the better the goodness of fit between the observed and the estimated models (Hair, Anderson, Tatham & Black, 2008), it was considered that the proposed theoretical model fits the data properly.
Table 1. Descriptive statistics and correlations (n = 189)

<table>
<thead>
<tr>
<th>Variable / Dimension</th>
<th>Mean</th>
<th>Standard Deviation</th>
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<td>1. Job satisfaction</td>
<td>2.72</td>
<td>1.22</td>
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<td>2. Costs control</td>
<td>2.76</td>
<td>1.09</td>
<td>.731**</td>
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<td><strong>Variable: Knowledge management</strong></td>
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<td>3. Knowledge sharing</td>
<td>3.13</td>
<td>0.80</td>
<td>.175*</td>
<td>.180*</td>
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<td>4. Knowledge organization</td>
<td>3.05</td>
<td>0.77</td>
<td>.251**</td>
<td>.203**</td>
<td>.693**</td>
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<td>5. Knowledge creation and application</td>
<td>2.70</td>
<td>0.83</td>
<td>.284**</td>
<td>.256**</td>
<td>.571**</td>
<td>.713**</td>
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<td>6. Warmth</td>
<td>3.33</td>
<td>0.91</td>
<td>.168*</td>
<td>.128</td>
<td>.492**</td>
<td>.591**</td>
<td>.365**</td>
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<td>7. Reward</td>
<td>3.82</td>
<td>0.98</td>
<td>.121</td>
<td>.123</td>
<td>.504**</td>
<td>.536**</td>
<td>.364**</td>
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<td>8. Support</td>
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<td>.164*</td>
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<td>.627**</td>
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<td>9. Personal autonomy</td>
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<td>.123</td>
<td>.193*</td>
<td>.477**</td>
<td>.565**</td>
<td>.385**</td>
<td>.558**</td>
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<td>10. Autonomy in planning</td>
<td>3.03</td>
<td>0.82</td>
<td>.117</td>
<td>.141</td>
<td>.381**</td>
<td>.307**</td>
<td>.461**</td>
<td>.302**</td>
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<td>.621**</td>
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<td>11. Trust</td>
<td>2.93</td>
<td>0.82</td>
<td>.168*</td>
<td>.168*</td>
<td>.494**</td>
<td>.524**</td>
<td>.446**</td>
<td>.466**</td>
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<td>.484**</td>
<td>.374**</td>
<td>.325**</td>
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<td>12. Communication and coordination</td>
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<td>0.85</td>
<td>.156*</td>
<td>.113</td>
<td>.460**</td>
<td>.552**</td>
<td>.530**</td>
<td>.373**</td>
<td>.317**</td>
<td>.445**</td>
<td>.400**</td>
<td>.388**</td>
<td>.664**</td>
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</table>

Nota: ** Correlation is significant at the level of 0.01 (2-way), * Correlation is significant at the level of 0.05 (2-way).
Table 2. Factor loadings and $R^2$

<table>
<thead>
<tr>
<th>Latent-variable and dimension</th>
<th>Unstandardized coefficients</th>
<th>Standardized coefficients</th>
<th>Standard error</th>
<th>P significance</th>
<th>$R^2$</th>
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</thead>
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<td><strong>Organizational innovation</strong></td>
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<tr>
<td>Job satisfaction</td>
<td>1.000</td>
<td>.952</td>
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<td>***</td>
<td>0.827</td>
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<tr>
<td>Costs control</td>
<td>.726</td>
<td>.769</td>
<td>.165</td>
<td>***</td>
<td>0.647</td>
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<td>Knowledge sharing</td>
<td>.842</td>
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<td>Knowledge organization</td>
<td>1.000</td>
<td>.927</td>
<td></td>
<td>***</td>
<td>0.862</td>
</tr>
<tr>
<td>Knowledge creation and application</td>
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<td>.762</td>
<td>.068</td>
<td>***</td>
<td>0.580</td>
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<tr>
<td><strong>Knowledge-centered-culture</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Warmth</td>
<td>.976</td>
<td>.745</td>
<td>.092</td>
<td>***</td>
<td>0.555</td>
</tr>
<tr>
<td>Support</td>
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<td>.831</td>
<td>.068</td>
<td>***</td>
<td>0.689</td>
</tr>
<tr>
<td>Reward</td>
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<td>.703</td>
<td>.100</td>
<td>***</td>
<td>0.494</td>
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<tr>
<td>Personal autonomy</td>
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<td>.783</td>
<td></td>
<td>***</td>
<td>0.614</td>
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<tr>
<td>Autonomy in planning</td>
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<td>.724</td>
<td>.084</td>
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<td>0.524</td>
</tr>
<tr>
<td><strong>Social interaction</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Communication and coordination</td>
<td>1.000</td>
<td>.829</td>
<td></td>
<td>***</td>
<td>0.686</td>
</tr>
<tr>
<td>Trust</td>
<td>.937</td>
<td>.801</td>
<td>.097</td>
<td>***</td>
<td>0.642</td>
</tr>
</tbody>
</table>

***($p < 0.001$)

Table 3. Validity (convergent and discriminant) and goodness of fit measures

<table>
<thead>
<tr>
<th>Latent-variable and dimension</th>
<th>Convergent validity*</th>
<th>Discriminant-validity*</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Organizational innovation</td>
<td>Knowledge management</td>
</tr>
<tr>
<td><strong>Organizational innovation</strong></td>
<td>0.85</td>
<td>(0.74)</td>
</tr>
<tr>
<td>Job satisfaction</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Costs control</td>
<td></td>
<td></td>
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<tr>
<td><strong>Knowledge management</strong></td>
<td>0.86</td>
<td>0.090</td>
</tr>
<tr>
<td>Knowledge sharing</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Knowledge creation and application</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Knowledge organization</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Knowledge-centered-culture</strong></td>
<td>0.87</td>
<td>0.055</td>
</tr>
<tr>
<td>Warmth</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Support</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reward</td>
<td></td>
<td></td>
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<tr>
<td>Autonomy in planning</td>
<td></td>
<td></td>
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<tr>
<td>Personal autonomy</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Social interaction</strong></td>
<td>0.80</td>
<td>0.047</td>
</tr>
<tr>
<td>Trust</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Communication and coordination</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Degrees of freedom**: 50

|x^2| 80.714 |
x^2/GL | 1.614 |
|RMSEA | 0.057 |
|NFI | 0.936 |
|CFI | 0.974 |
|IFI | 0.975 |
|GFI | 0.935 |

*a Convergent validity is calculated with the formula: (Sum of standardized weights)^2 / (Sum of standardized weights)^2 + (Sum of indicator measurement error).

b The values shown within parenthesis on the diagonal are each construct extracted variances (Hair, Anderson, Tatham & Black, 2008). The other values in the upper side of the table are squared correlations among the constructs.
Figure 1 shows results of the structural model employed to test the proposed study hypotheses. All the factor loadings, except the relationships between knowledge-centered culture and social interaction with organizational innovation, were statistically significant \((p < 0.001)\) and higher than 0.30.

Figure 1 shows that the structural path between knowledge-centered culture and knowledge management is positive and significant \((\gamma = 0.54; \ p < 0.001)\). This result supports Hypothesis 2. Figure 1 also shows that social interaction has a positive and significant effect on knowledge management \((\gamma = 0.39; \ p < 0.001)\), a result that supports Hypothesis 4. However, because knowledge-centered culture and social interaction do not have significant relationships with organizational innovation, Hypotheses 1 and 3 were not supported.

As shown in Figure 1, the structural path between knowledge management and organizational innovation is positive and significant \((\beta = 0.299; \ p < 0.001)\). This finding suggests that knowledge management has a positive effect on organizational innovation, and thus it supports Hypothesis 5.

Hypothesis 6 predicts that knowledge management mediates the influence of knowledge-centered culture and social interaction on organizational innovation. As
shown in Table 4, knowledge-centered culture and social interaction, through their effects on knowledge management, have a positive influence on organizational innovation. Because the direct effects of knowledge-centered culture and social interaction are non-significant, this evidence supports Hypothesis 6.

Table 4. Indirect effects

<table>
<thead>
<tr>
<th></th>
<th>Social interaction</th>
<th>Knowledge-centered culture</th>
<th>Knowledge management</th>
<th>Organizational innovation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Organizational innovation</td>
<td>.117</td>
<td>.162</td>
<td>.000</td>
<td>.000</td>
</tr>
</tbody>
</table>

Given that this study’s data are cross-sectional, it is inappropriate to infer causality among the study variables, in addition, the interpretation of causality in the real world is not guaranteed (Kline, 2005). However, this research’s findings results suggest some speculations about the subjacent dynamics that can influence organizational innovation in organizations.

Discussion

A considerable amount of research has paid attention to the antecedents of technological innovation. However, few studies have addressed organizational innovation. This type of innovation is important because it can affect an organization’s technological innovation. Overall, this study’s empirical analysis shows the importance of some resources that influence organizational innovation.

Several academics have long suggested that a knowledge-centered culture influences knowledge management (Janz & Prasarnphanich, 2003; King, 2007). Other researchers argue that social interaction affects the manner in which a firm’s knowledge is managed (Chen & Huang, 2007). This study’s results support both perspectives (Hypotheses 2 and 4 are supported). However, they also indicate that the direct influence of knowledge-centered culture on knowledge management is stronger than that of social interaction.

The theoretical perspectives behind this study’s Hypotheses 1 and 3 suggest that knowledge-centered culture has an influence on employees’ behaviors, work teams, and the entire organization as a whole (King, 2007). They also suggest that individuals are social beings whose interactions help them to comprehend their surroundings. Because such perspectives lead one to speculate that knowledge-centered culture and social interaction can influence organizational innovation, it is important to consider some factors that could explain this study’s lack of support for Hypotheses 1 and 3.
One reason for the lack of support for Hypotheses 1 and 3 could be that the organizations, which are part of emergent economies (like that of Mexico), face institutional limitations associated with a myriad of restrictive factors that affect their strategies and structures. Complex value systems, corruption, nepotism, and the recalcitrant bureaucracies common in Latin American countries are among such limitations (Nicholls-Nixon, Davila, Sanchez & Rivera, 2011; Vassolo, De Castro, & Gomez-Mejia; 2011). These limitations have an influence on the type of resources that organizations can utilize and generate to improve their results (Khanna & Palepu, 2010). Based on this argument, it is possible to speculate that knowledge-centered culture and social interaction do not have strong direct effects on organizational innovations in the context of such limitations.

With respect to Hypothesis 5, and from the perspective of the resource-based view of the firm, organizational capabilities that generate new knowledge or boost existing knowledge improve a firm’s value. Given this, knowledge management is a capability that can influence, or even determine, a firm’s level of innovation (Nonaka, 1991; Wang & Ahmed, 2003; Broos & Cronjé, 2009; Liao & Wu, 2010; Palacios-Marqués, Peris-Ortiz & Rueda-Armengot, 2012); and by extension, innovation of the organizational type. The results of the current investigation converge with prior findings, as they suggest that because knowledge management guides the management of what an organization knows, it permits the conversion of knowledge into organizational innovations. Organizational innovation requires new knowledge to develop and implement changes in an organization’s practices.

Results of this investigation support the notion that knowledge management is a variable that can mediate the relationships between organizational resources and capabilities. Knowledge management is a determinant of the circumstances through which an organization’s participants communicate, interact, and affect the way knowledge is created, shared, and utilized. Thus, knowledge management permits the management of the flow of knowledge, its dissemination among individuals, and innovation.

This study’s findings support the importance of a knowledge-centered culture, social interaction, and knowledge management as predictors of organizational innovation. In line with resource-based predictions about the importance of an organization’s strategic resources, this study’s findings suggest that organizational innovation allows the optimization of administrative costs and the improvement of job satisfaction (OCDE & EUROSTAT, 2005). It also boosts the generation of technological innovations (Lam, 2005). Organizational innovation, hence, can improve an organization’s efficiency and effectiveness.

Although in general terms this study renders support to the resource-based view of the firm, it also contributes to the current knowledge on organizational innovation. This study suggests that knowledge-centered culture, social interaction, and knowledge management have an influence on organizational innovation. In addition, this study suggests the existence of a mediating variable in the relationships that knowledge-centered culture and social interaction have with organizational innovation. That variable is knowledge management.
Conclusion

The objective of this study was to determine the influence of some factors on organizational innovation in Mexican organizations. This research builds on the resource-based view of the firm; as such, it predicts and explains the existence of mediating variables between organizational resources and the development of capabilities that can improve an organization’s efficiency and effectiveness, and by extension, its growth and competitiveness. Results of the research confirm the importance of a knowledge-centered culture, social interaction, and knowledge management as predictors of organizational innovation. This study also buttresses the critical role of knowledge management as a mediating variable in the influence of a variety of factors on the development of organizational capabilities.

Results of this study suggest opportunities for future research on the topic of organizational innovation. To what extent do a country’s institutional limitations and related restrictive factors affect the generation of organizational innovations? To what degree do such limitations and restrictions affect a knowledge-centered culture, social interaction, and knowledge management? These are among the questions that future research may address in order to move forward the research on the topic.

Limitations of the research

One limitation of this study is the sample size. Because this study’s sample is relatively small, results and conclusions should be taken with care. Another limitation is the parceling technique that was employed to test the structural model. Parceling reduces the variance of the observed measures thus biasing statistical estimates. A third limitation of the study is its cross-sectional design. This is important to consider because a longitudinal study would be more effective to uncover the fascinating complexities of organizational innovation that unfold over time.

References


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