The structural capital, the innovation and the performance of the industrial SMES

Nicolás Salvador Beltramino
Departamento y Tecnologías de la Información, Facultad de Ciencias Economicas, Universidad Nacional de Cordoba, Cordoba, Argentina
Domingo García-Perez-de-Lema
Universidad Politecnica de Cartagena, Cartagena, Spain, and
Luis Enrique Valdez-Juárez
Instituto Tecnologico de Sonora, Guaymas, Mexico

Received 24 January 2019
Revised 29 May 2019
30 September 2019
15 December 2019
19 February 2020
Accepted 10 March 2020

Abstract

Purpose – The objective of this study is to analyze the influence of the structural capital of SMEs in the capacity of innovation and organizational performance, in the context of an emerging country.
Design/methodology/approach – The sample consisted of 259 industrial SMEs from the province of Córdoba Argentina. The data was analyzed by Partial Least Squares Structural Equation Modeling (PLS–SEM).
Findings – The study provided evidence that acquisition of information and knowledge management, organizational culture and structure, systems and processes have positive and significant effects on the innovation capacity of SMEs. Only the communication and cohesion component did not show positive and significant results on it. It also showed a positive and significant relationship between the capacity for innovation in processes and performance, contributing to the scarce empirical literature in the context of SMEs.
Research limitations/implications – The research exposes some limitations that uncover a path for the development of future lines of research. In the first place, the work focuses on the use of a single source of information, the consultation at the managerial level of the company, without considering other representative variables to measure the capacity for innovation. Second, the study covered only companies in the industrial sector and country. Future studies should focus on other sectors and countries.
Practical implications – The results of the study can have important practical implications for the owners and managers of SMEs. The results offer a vision of the dimensions of structural capital that most influence the innovative capacity of the organization. This is especially useful given that in the context of Argentina there is a low level of knowledge and structural capital is key to being more competitive. The managers of SMEs can thus increase the innovative potential of the company and favor the acquisition of information and knowledge and improve its processes and systems to contribute to the development of innovation capabilities to make SMEs more competitive.
Social implications – The results obtained can be useful for those responsible for making public policy decisions, since in the knowledge of the economy to maintain a developed state and nation, it is necessary to include as one of the main issues on the national agenda the improvement of intellectual capital of its people to promote the competitiveness of companies.
Originality/value – The research contributes to the development of intellectual capital literature focused on the generation of innovation and performance in the perspective of SMEs in emerging countries.

Keywords Innovation, Performance, Structural capital, Acquisition of information and knowledge management, Organizational culture, Communication

Paper type Research paper

1. Introduction

In a knowledge-based economy, intellectual capital is one of the most important and critical resources for an organization to thrive in a competitive environment (Khalique *et al.*, 2011). Therefore, organizations have to efficiently manage collective learning and accumulated

Journal of Intellectual Capital
Vol. 21 No. 6, 2020
pp. 913-945

1469-1930
DOI 10.1108/JIC-01-2019-0020

knowledge (Bontis, 1998; Bontis *et al.*, 2005). Structural capital is part of the intellectual capital and is one of the main components that give greater benefits within a company and that require greater attention by managers (Bontis *et al.*, 2018; Zahra *et al.*, 2018).

Structural capital or also known as organizational capital by literature refers to the mechanisms and structures of the organization that can help employees to achieve optimal intellectual performance and thus achieve better performance (Bontis, 1998; Bontis *et al.*, 2005). This implies that an individual can have the highest intellectual level, but if the organization does not have an efficient structure, systems and processes that allow its contribution to be effective, then the company will not achieve its full potential (Bontis, 1998; Hasan and Cheung, 2018; Santos-Rodrigues and Figueroa-Dorrego, 2011; Torres *et al.*, 2018). The structural capital consists of all those "non-human assets" that are represented by: databases, organization charts, process manuals, strategies, routines and anything whose value to the company are higher than its material value (Bontis *et al.*, 2000). Structural capital then is "what remains in the company when employees go home at night" (Kalkan *et al.*, 2014). Structural capital is directly associated with human capital and can also be defined as the institutionalization of knowledge and experience developed and based on established structures, systems and processes (Kang and Snell, 2009). Therefore, the purpose of structural capital is to coordinate and organize a group of employees and factors in an organization, providing the context that may be appropriate for tools, technologies and procedures (Subramaniam and Youndt, 2005). In addition, structural capital can be used to preserve knowledge based on a successful past implementation with the objective of repeating its use within the organization (Ahmad-Arabiyat and Ibraheem-Hasouneh, 2018).

Following the theoretical lines usually used in the literature on the subject, our work is based on the theory of resources and capabilities or RBV and the theory of intellectual capital. The theory of resources and capabilities (Resource-Based View), outlined by Barney (1991), argues that companies understand themselves in terms of resources and routines consequently they obtain a competitive advantage through their heterogeneous combination of resources, instead of working through the market conditions of products and positioning activities. For its part, the theory of Intellectual Capital, seeks to explain the increase or creation of value by companies produced by intangible assets (Dumay *et al.*, 2013; Murray *et al.*, 2016).

The relationship between the components of intellectual capital and the innovation capacity of companies was analyzed in abundant studies (Santos-Rodrigues *et al.*, 2011; Subramaniam and Venkatraman, 2001; Subramaniam and Youndt, 2005). However, studies that relate innovative capacity and structural capital are less common and focus basically on technological knowledge and organizational routines (Díaz-Diaz *et al.*, 2006), and do not focus in a multidimensional way (Kianto *et al.*, 2017; Užienė and Stankutė, 2015).

The components of the intellectual capital are difficult to separate, and there are studies that have tried to demonstrate the close relationship between its components (Leitner, 2014), analyzed the relationship between human capital and structural capital, and its effects on innovation and performance of Austrian innovative companies, obtaining that both had different impacts. In the case of human capital it had a positive effect on profitability and long-term growth, contrary to expectations, structural capital had a negative effect on profitability and growth, which indicates that the apparent strength can become a weakness in long term. In addition, the study found that human capital and structural capital did not have a joint effect on the performance of companies.

The analysis about the influence of structural capital on innovation is the main objective of this paper; it also indicates the effect of innovation in products and processes on the performance of SMEs. To this end, a study is carried out on a sample of 259 industrial SMEs in the province of Córdoba, Argentina, which have between 10 and 200 workers. The structural capital model takes into account the dimensions: acquisition of information and

knowledge management; organizational culture; communication and cohesion; and structure, systems and processes. The research questions that are tried to answer are: Does structural capital significantly affect innovation in industrial SMEs? What factors of structural capital have the greatest impact on the innovation of industrial SMEs? Does innovation have a significant effect on the profitability of the company? The answer to these questions has important implications, both for the management of the companies and for the academy, since there is a close relationship between the structural capital and the innovation capacity of the companies (Bueno Campos, 2013; Chen *et al.*, 2015; Crema and Verbano, 2016; Santos-Rodrigues *et al.*, 2011). The Argentine case is especially interesting because industrial SMEs are a fundamental part of its business fabric. In the Province of Córdoba, Argentina, together they account for 68% of the total positions filled (OIR, 2017) and together with Santa Fe and Buenos Aires, they account for 72% of the country's industrial activity (Unión Industrial, 2017). Currently the country is undergoing a major restructuring towards a change in the production system, in order to reduce the worrying figures of failure of SMEs since 97% does not reach the fifth year, figures well above those of other countries (Lagunes-Domínguez *et al.*, 2016).

Our research contributes to literature in different ways. First, from a theoretical approach, it is studied in an integral way how structural capital influences innovative activity and performance in SMEs and in the context of an emerging country. A structural capital model is proposed based on the components acquisition and knowledge management, organizational culture, communication and cohesion of groups and structure, processes and systems. This allows obtaining a global vision of the influence of the structural capital of the SME on innovation. Previous studies conducted in different countries and focused on SMEs have only partially addressed some of the components of structural capital (Santos-Rodriguez and Figueroa-Dorrego, 2011; Hogan and Coote, 2014; Ariawan *et al.*, 2016; Agostini and Nosella, 2017; Dedahanov *et al.*, 2017; Allameh, 2018; Alazawi *et al.*, 2018; Kahan, 2019; Alqershi *et al.*, 2019). Additionally, structural capital is studied in the context of an emerging country. This is important because these markets are characterized by having a low level of innovation (Heredia-Pérez *et al.*, 2019), price-sensitive customers (Derbyshire, 2014) and institutions play a very important role in their strategic processes (Stock *et al.*, 2002). It is necessary to study innovation processes in different geographical contexts in the field of SMEs, especially in Latin America where these studies have remained almost unexplored (Hossain and Kauranen, 2016; Heredia-Pérez *et al.*, 2019). Second, from a practical approach, the results obtained in the study contribute to the theory of intellectual capital, showing the strong influence exerted by the hard components of structural capital, such as acquisition and management of knowledge and structures, systems and processes in SME innovation, both in products and in processes. These findings are important and help SMEs to understand the impact that structural capital has on their organization and that can allow them to transform individual knowledge into collective knowledge, and therefore, favor innovation and competitiveness of their company.

The rest of the article is organized as follows. First, in the theoretical framework, a review of the previous literature is presented and the research hypotheses are justified. Second, the methodology is described, considering the characteristics of the sample and the definition of the variables. Then, the analysis and results are presented. Finally, the main conclusions and discussions are exchanged.

2. Theoretical framework and hypothesis

Structural capital, together with human capital and relational capital make the intellectual capital of the organization (Bontis *et al.*, 2000; Chen *et al.*, 2015; Giocasi, 2015; Gogan *et al.*, 2016; Ling, 2013; Nuryaman, 2015; Kiong and Lean, 2009). And structural capital can be

divided in turn into acquisition of information and knowledge management and organizational capital, with the aim of isolating the effect of the technological component, a hard component and a soft component given by the organizational culture (Bueno-Campos, 2013; Salazar *et al.*, 2006).

The effects of different components of intellectual capital on performance and innovation capacity are object of a significant number of studies, as well as on the relationships between human capital, structural capital and relational capital. Among them we can highlight the one conducted by Jardón and Martos (2009), which in a study on SMEs in the wood industry in Argentina, analyzed the relationships of human capital on structural capital and relational capital, and its effects about innovation and the performance of companies, determining a positive relationship between them. In the previous studies, Cohen and Kaimenakis (2007), Hermans and Kauranen (2005), Reed *et al.* (2006) and Tseng and Goo (2005) agree that the relationships between human capital and structural capital positively affect performance and innovation. In general, studies agree that structural capital has a significant influence on the innovation capacity and performance of companies (De Castro *et al.*, 2009; Díaz-Diaz *et al.*, 2006). Although it is true that most of the works do not analyze the effect of structural capital in conjunction with innovation, but only take some aspect that composes it, being the most analyzed organizational culture, there is evidence of the correlation between it and innovation (Santos-Rodrigues *et al.*, 2011). In general, studies agree that structural capital has a significant influence on the innovation capacity and performance of companies (De Castro *et al.*, 2009; Díaz-Diaz *et al.*, 2006).

Structural capital is part of the theoretical framework of intellectual capital (Bontis *et al.*, 2018). This framework has as background the theory of human capital and the RBV (Swart, 2006). In this way, the theory of intellectual capital is linked to the importance of the capacities and knowledge of companies in the economy (Pedro *et al.*, 2018). And it broadens the approach of its predecessors when considering intellectual capital as a resource with strategic importance for the competitiveness of the company (Ciprés, 2006) and the increase in its value creation (Dumay *et al.*, 2013; Murray *et al.*, 2016). In this framework, structural capital is considered as knowledge integrated into information systems and the results and products of the conversion of knowledge and intellectual properties of the company (Asiaei *et al.*, 2018).

The structural capital is composed of two large blocks; on one hand what can be called explicit structural capital, which is encoded in manuals, databases, systems, processes, structure, patents and intellectual property rights. It is an objective, rational and visible knowledge, which can be transferred impersonally; these are the result of innovative ideas, techniques and products of knowledge developed by the joint interaction of the employees of the organization (Díaz-Diaz *et al.*, 2006; Dierkes *et al.*, 2003; Nonaka and Takeuchi, 2000). The other block is represented by the implicit structural capital, which has the characteristic of being subjective, not articulated, it depends mostly on people, their experience, their values, beliefs and perspectives. It is represented by what we call organizational culture (Kakabadse *et al.*, 2001; Nonaka, 1994). Their characteristics required more complex processes for their transmission, not allowing the creation of new knowledge. That is why structural capital as a whole is important for the generation of innovation (Díaz-Diaz *et al.*, 2006). In turn, it suggests that in the face of an improvement in structural capital, a better performance and innovation in the company is produced. While the knowledge and skills required for innovation reside in the individuals. The complexity of many modern innovations, however, required a grouping and integration of multiple threads of this knowledge (Santos-Rodrigues *et al.*, 2011).

Additionally, it is important to contextualize the study of intellectual capital and innovation in the field of emerging markets. These markets are characterized because their levels of innovation are relatively low (Heredia-Pérez *et al.*, 2019), customers are more sensitive to prices and demand greater satisfaction of their demands (Derbyshire, 2014) and institutions play a very important role in its strategic processes (Stock *et al.*, 2002). In this

context, intellectual capital is more important, because tangible resources tend to be lower, and SMEs try to compete through their intangible resources (Jardon and Martos, 2012). Intellectual capital can be a source of competitive advantage in SMEs in emerging economies, however, this effect may not be direct, but the organizational capabilities mediate the dimensions of intellectual capital and the growth of the SME (Jardon and Catalina, 2015).

2.1 Acquisition of information and knowledge management

The acquisition and management of knowledge is a fundamental part of structural capital (Abualoush *et al.*, 2018; Agostini *et al.*, 2017) and its treatment is necessary separately from the rest of the components of structural capital (Bueno-Campos *et al.*, 2008, 2009; Gold *et al.*, 2001). Knowledge management takes place in an increasingly complex and unpredictable environment and is key to the competitiveness of the company (Bueno-Campos *et al.*, 2008, 2009). Knowledge management processes must be present to capture information from the environment, store it, allow its dissemination and transform it into new knowledge for the organization (Gold *et al.*, 2001; Abualoush *et al.*, 2018). The management that the company has about information management allows the mobilization of human capital towards the creation of new knowledge, linking information and communication systems inside and outside the organization, allowing the integration of that knowledge (Gold *et al.*, 2001; De Castro *et al.*, 2009; Salazar *et al.*, 2006). At the same time it helps to eliminate structural, communicational or geographical barriers, allowing the company to generate knowledge about its competitors and the environment and, therefore, generate better business opportunities (Teece, 1998; Abualoush *et al.*, 2018).

Literature has given special interest in the study of the relationship between the acquisition and management of knowledge and innovation. Companies that have mechanisms to explore and obtain knowledge from their external collaborators have a greater capacity for innovation (Diaz-Diaz *et al.*, 2006; Abualoush *et al.*, 2018; Valdez-Juárez *et al.*, 2018). The efforts and knowledge integrated in external networks with clients and / or suppliers allow the development of joint opportunities and can provide new and valuable products or processes (Delgado-Verde *et al.*, 2016). Kleim-Padhilla and Gomes (2016), showed that when companies have agile systems to integrate and distribute knowledge, they can transform individual knowledge into collective knowledge and thus generate greater innovation. Additionally, studies have shown that the codification of knowledge allows, on the one hand, to reinforcing existing knowledge and thus generate greater innovation capabilities and, in turn, protect knowledge by avoiding the expropriation and imitation of competitors (Subramaniam and Youndt, 2005; Diaz-Diaz *et al.*, 2006; Hussain and Terziovski, 2019). The shared knowledge allows, therefore, the creation of new processes and / or products within the organization (Ariawan *et al.*, 2016; Gomez *et al.*, 2020). Based on the above, the following hypotheses are formulated:

H1. An efficient management of information acquisition and knowledge mechanisms generates a positive effect on process innovation.

H2. An efficient management of information acquisition and knowledge mechanisms generates a positive effect on product innovation.

2.2 Organizational culture

Organizational culture impacts the multiple uses of institutionalized and codified knowledge by the organization that is reflected in its policies, procedures, routines, processes, work systems and management structures (Miles and Van Clieaf, 2017; Subramaniam and Youndt, 2005). It has the characteristic of being less flexible, difficult to accumulate and cannot be easily transferred and not consumed and is an essential element for the viability of the

organization (Salazar *et al.*, 2006). Therefore, organizational culture is an indivisible component of structural capital, being a critical element of knowledge management and an essential determinant of company performance (McDowell *et al.*, 2018; Carmeli *et al.*, 2004). Its configuration is fundamental in the management of intellectual capital and an important lever of technological architecture to rationalize individual behavior, but in turn it should contribute to encourage collaboration and distribution of knowledge within the value chain of the organization (Gold *et al.*, 2001). The organizational culture must have a clear, articulated and communicated vision that allows generating a sense of participation and contribution among employees (Davenport and Beers, 1995).

The organizational culture should facilitate the creation and distribution of knowledge to employees and have reward and incentive systems that guarantee the cooperation of employees, providing support for innovation, encouraging the exchange of knowledge, experimentation and questioning (Aramburu *et al.*, 2015; Gold *et al.*, 2001).

Different authors are responsible for describing the values that shape an innovative organizational culture (Allee, 2008; Friedman *et al.*, 2005; Hogan and Coote, 2014; Wiig, 2012) such as trust, transparency, open mindedness, errors considered such as learning opportunities, support for experimentation and exploration of new territories and cooperation and mutual help. Organizational culture is the only form of intellectual capital that the company directly owns and remains within the company even when employees (human and social capital) leave the organization (Delgado-Verde *et al.*, 2013; Subramaniam and Youndt, 2005).

Empirical studies show how this component of structural capital influences the innovation capacity of companies by Wu *et al.* (2008), which identify that culture and behavior willing to innovate, through the mediating effect of the relationship between structural capital and relational capital, generate a high performance of innovation. On the other hand, Delgado-Verde *et al.* (2013), show that when the relations between the members of the organization are closer, this will make their objectives, missions and visions shared and will invest their efforts in obtaining common objectives, generating a positive effect on the innovation process both for the development of new products and for the establishment of new processes. In a later study, Hogan and Coote (2014) argue that values and norms oriented towards an innovative culture generate artifacts of culture which have a significant effect on the innovative capacity of the company and this generates better organizational performance.

In more recent studies such as Kleim-Padilha and Gomes (2016), they argue that a flexible organizational culture that is tolerant of mistakes, that rewards success and recognizes and celebrates failures, creates a sense of support for members that promotes creativity and therefore, positively impacts innovation as employees feel inspired and creative for the development of innovations. Another study conducted by Naranjo-Valencia *et al.* (2016), show how the adhocratic and clan cultures have positive effects on innovation, while a hierarchy culture has a negative effect. Subsequently, Hasan and Cheung (2018), relate the levels of organizational capital to the stages of the product life cycle, determining that high levels of organizational capital are related to the stages of introduction and growth, while low levels with the maturity In synthesis, harmonization of physical and human capital improves the efficiency of innovation in both products and processes because employees are encouraged to take the time to think creatively and experiment, to look for new ways to address problems and explore their ideas, even if the value of the results may not be clear.

Based on the above, the following hypotheses are formulated:

H3. The existence of an innovative organizational culture generates a positive effect on process innovation.

H4. The existence of an innovative organizational culture generates a positive effect on product innovation.

2.3 Communication and group cohesion

There is emphasizing in the empirical studies about the interactions and the degree of cohesion among employees. This fact tends to encourage collaboration by transforming individual knowledge into organizational one, which generates a positive effect on the results of innovation. In a study conducted by O'Dell and Grayson (1998), they argue that networking practices allow employees to organize their own knowledge, facilitating the solution to new or existing problems and generating or sharing knowledge, impacting positively on the innovation and performance. In turn, Smith *et al.* (2005), showed that the improvement of the interactions among the members of the work team, as well as the greater exchange of information and the cohesion of the work teams, generate a positive effect on product innovation. In other studies such as those by Carmeli *et al.* (2011) and Villegas-Gonzalez *et al.* (2017) argue that it is the structural capital that must lay the foundations and conditions for interpersonal relationships to develop efficiently, since it is expected that the organizational systems encourage close relationships between superiors and their subordinates, guaranteeing a mutual trust, greater identification with the objectives of the organization and better cohesion of the work team, which will be reflected in improvements in innovation. On the other hand, Delgado-Verde *et al.* (2013), verified that the values shared by the members of the organization, the trust and the interactions between them increase the creativity of the team, which will lead to better results in innovation. In other similar studies Chen and Wang (2008) on companies incubated in Taiwan, found little significance between the level of team cohesion and the capacity for innovation. To similar conclusions arrived Tödtling *et al.* (2009) in their study of a sample of Austrian SMEs, identified that interactions and the exchange of information have no influence on the innovative activity of companies, which could be favored by the existence of more binding channels of knowledge exchange and cooperation.

Recent studies, Hogan and Coote (2014) show that the way of communicating the innovation culture in the company, not only exemplifies the expected behaviors, but they are inspiring for the generation of new ideas, promoting the innovation process. They also argue that successful innovation requires managers to provide consistent signals to employees about what is important to the organization. In other words, communication rituals provide clear signals and public recognition of employees. Achievements that an organization values and expects that serve to motivate other members of the organization to promote a greater innovative effort. For their part Kleim-Padilha and Gomes (2016), found that the cohesion of multidisciplinary teams, an open communication based on trust and the creation of communication routines between different groups or hierarchical levels, make employees act creatively and innovative when feeling emotionally safe. In a study referred to Italian SMEs Agostini *et al.* (2017), identified that the ability of employees to innovate is supported and complemented by the intimate and informal interactions between them because, it favors the exchange of information and knowledge, which concludes that human intellectual assets have a positive impact on the performance of innovation in SMEs.

Finally, McDowell *et al.* (2018), maintain that the fluid exchange of concomitance that occurs in collaboration networks, both internally and externally, contribute to integrate and synthesize the knowledge generated by employees, contributing to improve the capacity for innovation. In the same direction, Mennens *et al.* (2018), in their study referring to industrial SMEs in the Netherlands, point out that the collaboration of employees in decision-making, as well as the interactions between people with diverse knowledge structures increase the organization's capacity to establish links and associations which generates a significant effect on innovation capabilities. So we see that the empirical studies are not conclusive about this hypothesis, either because of the methodologies used or because some authors consider factors in isolation and others authors instead of doing in a correlational manner, yielding different results. Based on the above, the following hypotheses are formulated:

H5. Good communication and group cohesion generate a positive effect on process innovation.

H6. Good communication and group cohesion generate a positive effect on product innovation.

2.4 Structure, processes and systems

The organizational structure implies a lasting configuration of tasks and activities that facilitate the development of the company's activities through the generation and dissemination of organizational knowledge (Skivington and Daft, 1991; Torres *et al.*, 2018). Most scholars have shown that a more decentralized organization leads to better organizational effectiveness (Dewar and Werbel, 1979; Floyd and Wooldridge, 1992; Heshmati, 2001; Rapert, 1998; Schminke *et al.*, 2000). A decentralized structure fosters communication and increases the satisfaction and motivation of employees (Dedahanov *et al.*, 2017; Delgado-Verde *et al.*, 2013; Dewar and Werbel, 1979), because in less centralized environments, it is encouraged the free flow of lateral and vertical communication, experts on the subject had more say in decision-making than the designated authority (Burns and Stalker, 1961; McDowell *et al.*, 2018) and the ability to respond to the market (Schminke *et al.*, 2000).

Some empirical studies, like that of Jassawalla and Sashittal (1998), analyze elements such as the level of autonomy to perform tasks and the cooperation of employees generates a positive impact on product innovation and performance. In the same sense, Tseng *et al.* (2008), verifies it in a study in service companies of the hotel sector. On the other hand, Tsai (2002), which shows conclusive results on the relationship between the organizational structure and innovation and also argues that a decentralized structure can facilitate the success of management. Studies on the subject reflect that a high centralization inhibits the interactions among the members of the organization, and this reduces the opportunity for individual growth and advancement, and avoids imaginative solutions to the problems. On the contrary, decentralization facilitates the internal management of communication, the adoption of innovation and higher levels of creativity, as suggested by Kleim-Padilha and Gomes (2016) the type of structure can generate different effects on the process of innovation, factors such as size, hierarchy, bureaucracy, centralization, the age of the company or the use of technologies, generate significant innovation performance. In the case of SMEs, they can have a better performance of innovation, especially when development requires flexibility in activities and speed in decision making. In the same line, Naranjo-Valencia *et al.* (2016), maintain that flexible structures and based on teamwork, has a positive effect on innovation, while a hierarchical structure has an effect negative. Continuing in the same direction, Dedahanov *et al.* (2017), maintain that structures with centralization of power hinder the adoption of innovative ideas, while organic structures foster creativity. Another aspect analyzed by Dedahanov *et al.* (2017), was the formalization of the structure which inhibits people from thinking creatively, because they prefer to follow pre-established courses of action and to focus on the work rules. For this reason, less formalized structures encourage openness, stimulate creative behaviors and generate new ideas.

Other studies intend to give greater clarity about the relationship between structure, systems and processes with innovation, such as Kleim-Padilha and Gomes (2016) in which they point out that although each type of innovation has its particularities, since the Innovation in products requires the satisfaction of the needs or to identify the needs of the client, to design the production and innovation in processes is linked to the application of technology to improve efficiency in the development and commercialization of the product, both of them share similar systems and processes. Products tend to adapt to the innovation of the process, being the innovation in products the one of easier observation. In another study

Aramburu *et al.* (2015) argues that structures and processes that allow interaction and knowledge to share the improvement of the ability to define problems or situations and solve problems in a new way and this allows a positive effect on product innovation. On the other hand Chen *et al.* (2015), states that companies that have a dynamic and open information system allows people to accelerate the flow and exchange of information by increasing the efficiency of innovation. Based on the above, the following hypotheses are formulated:

H7. A solid structure, systems and processes generate a positive effect on process innovation.

H8. A solid structure, systems and processes generate a positive effect on product innovation.

2.5 Innovation and performance

Innovation has been considered by literature as a critical element that generates impact on the performance and survival of organizations (Ruiz-Jiménez and Fuentes-Fuentes, 2018). The contribution of innovation to organizational performance has been of interest to many researchers. Tidd and Bessant (2005) conclude that innovative companies double the profitability of non-innovative companies. Koellinger (2008) states that when companies have knowledge of customers and the market, they can design novelty products that are more difficult to imitate and that meet the specific demands and needs of their clients, which can contribute to substantial increases in the performance of the company. Damanpour *et al.* (2009) argues that the main reason for the positive effect of innovation on the performance of the company is that companies innovate to be the first and consequently obtain advantages due to the increase in anticipated demand, generating higher revenues, customer retention, an increase in sales, market share and thereby achieve better performance. Other studies argue that when companies innovate they seek to satisfy the demands and needs of the market, especially those of their clients, for this reason innovation is an important factor to explain efficiency and business success (Alipour and Karimi, 2011).

On the other hand, some researchers have argued that the combination of the intellectual capital management capacity allows organizations to innovate and overcome their rivals in dynamic environments, develop innovations based on new knowledge, taking advantage of opportunities that generate income and competitive advantages and highlights higher than normal (Carmeli *et al.*, 2011). In a recent study Ruiz-Jiménez and Fuentes-Fuentes (2018), they emphasize that process innovations consist of improving production processes, creating greater efficiency, reducing costs, which generates greater benefits for the company. In addition, these innovations can also generate competitive advantages, difficult to imitate for competitors. However, there are studies that do not allow a positive relationship between innovation in products and the performance of companies (Leither, 2014), in a different study determines that there is a direct relationship between innovation in products and performance, used in a moderate way that is variable to human capital, but not structural capital. Based on what said before, the following hypotheses are formulated in the following way:

H9. Innovation in processes generates a positive effect on performance.

H10. Innovation in products generates a positive effect on performance.

In Figure 1, the complete theoretical model of the investigation with the development of its hypotheses is presented.

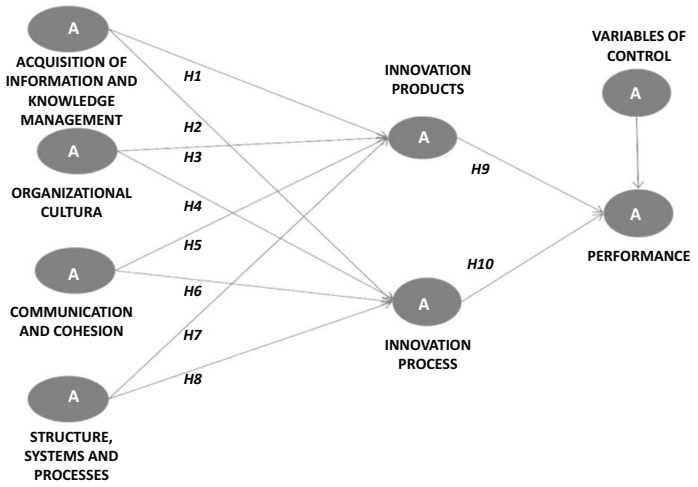

Figure 1.
Theoretical model

Source(s): Self-made

3. Methodology

3.1 Sample design and information collection

The sample used is composed of 259 industrial SMEs that count with between 10 and 200 employees, settled down in the Province of Córdoba, Argentina. Therefore, we have excluded microenterprises, due to the difficulty of obtaining information of quality on the subject analyzed. In most empirical studies on intellectual capital, smaller companies are excluded (Aramburu and Sáenz, 2011; Crema and Verbano, 2016; Leitner, 2005). The general design of the sample was based on the principles of stratified sampling. For this, the different branches of activity and size were considered. The information for the sample was obtained from the Ministry of Industry of Córdoba (Industrial Registry of the Province of Córdoba, 2018). The number of companies is 1,316 (Industrial Registry of the Province of Córdoba, 2018). The sampling technique used is based on Davic *et al.* (2018). A non-probability quota sample was randomly selected. In each type of industry, around 19% of the companies were surveyed. Additionally, the sample size design was determined to ensure that the margin of error for the estimation of the proportion was less than 0.05 points with a confidence level of 95%. In Table 1, the composition of the sample and the population is appreciated.

To collect the information, a questionnaire was designed with structured questions addressed to the manager of the SME. The manager has a more general vision of the activities carried out by the company, so it is the most appropriate to answer questions about the company (Cabrita *et al.*, 2007). In the process of the interview the confidentiality and anonymity of the data was guaranteed (Kariv *et al.*, 2009). Prior to the application of the questionnaire, a pilot test was carried out on a total of eight managers for the reliability of the questionnaire and the necessary adjustments were made. Before proceeding to survey each company, an appointment was made with the manager and the content of the work was explained. Those companies that did not want to participate were replaced by similar companies in terms of sector and size. The questionnaire was applied through personal interviews, between the months of December 2017 and May 2018.

To guarantee the validity and quality of the data, the non-response bias and the variance bias of the common method are analyzed. The responses from the first round of interviews were not significantly different from the last round (*t*-test and chi-square test) (Vitell and

Code	Industrial sector	Population	Quantity sample companies
1	Textiles and clothing	94	17
2	Food and drinks	300	58
3	Dairy products	79	18
4	Animal feed	27	6
5	Metallurgical	196	36
6	Mechanical, electrical and electronic machines and equipment	288	55
7	Graphics and impressions	25	8
8	Chemistry and pharmaceutical	44	6
9	Furniture and wood	46	11
10	Plastics, paper, cardboard, packaging, rubber	101	23
11	Precision and medical products	16	3
12	Software	49	12
13	Nonmetallic Mineral Products	50	6
Total		1,315	259

Source(s): Self-made. Datos del Registro Industrial de la Provincia de Córdoba, 2018

Table 1. Composition of the sample

Nwachukwu, 1997). Due to that the information was obtained from the same source (dependent and independent variables), there is the possibility of a variance bias of the common method (Achidi *et al.*, 2011) .To analyze whether this bias occurs, we use the test of Harman's unique factor (Podsakoff and Organ, 1986) From this test, we verify that all the variables are grouped into seven factors that explain 72% of the total variance. Therefore, the variance bias of the common method is not relevant in our study.

3.2 Variables

The adequate analysis of the variables of a theoretical model is one of the key factors to understand the nature and the direction of the causality between the constructs (Esposito *et al.*, 2010). This analysis determines the most convenient statistical technique to use, for a better understand and evolution the structural model (Henseler *et al.*, 2015). In our study, we use reflective move from the construct to the indicator; (1) The indicators and / or observed variables constitute variable. The variables of this type have the following characteristics: (1) the direction and the influence a reflection or expression of the constructs that is not linked (Jarvis *et al.*, 2003); (2) The reflective variables are characterized because all the indicators of the construct are highly correlated; they are interchangeable, and if an indicator is eliminated it does not alter the content of the construct (Wetzels *et al.*, 2009).

The selection of observable variables for the conceptual model was based on a review of related previous studies that focused their analysis on the interrelations between the elements of intellectual capital and the evaluation of the best possible combination of these components in the prediction of the capacity for innovation and business performance (Costa *et al.*, 2014; Gold *et al.*, 2001; Salazar *et al.*, 2006). The managers of the SMEs were asked to answer the following questions, which were written basis of our theoretical and empirical review; the questions related to the study variables and the answers were recorded on a Likert scale of 7 points (1 "totally disagree" and 7 "totally agree"). The short questions of each of the variables can be seen in Table 2.

Acquisition of information and knowledge management: This construct refers to the extent to which information technology systems facilitates the exchange of knowledge within the organization itself as well as with its immediate environment (Clients, Competitors, Suppliers) maintaining a permanent connection with them (Aramburu *et al.*, 2015; Crema and Verbano,

Variables	Charge factor	Cronbach's alpha	Compound reliability	(AVE)
Acquisition of information and knowledge management		0.850	0.892	0.624
CAPTEC 1 Control your competitors and business partners	0.757			
CAPTEC 2 Collaborate with other people inside and outside	0.789			
CAPTEC 3 Search for new knowledge	0.805			
CAPTEC 4 Generate opportunities together with strategic partners	0.809			
CAPTEC 5 Encode most of the business technology knowledge	0.790			
Organizational culture		0.845	0.889	0.617
CAPCO1 A set of values, beliefs and symbols	0.740			
CAPCO2 Clear and consistent objectives for all members	0.838			
CAPCO4 Ability to develop young talents	0.805			
CAPCO6 Effort of employees and managers to solve problems	0.777			
CAPCO7 Rules of form and categorize knowledge products and processes	0.765			
Communication and cohesion		0.884	0.910	0.627
COYCO1 There is trust between managers and employees	0.748			
COYCO2 Their working conditions are good	0.735			
COYCO3 New ideas are stimulated and rewarded	0.885			
COYCO4 They have autonomy and resources to develop their creativity	0.795			
COYCO5 The working group defends each other by criticism from outside	0.761			
COYCO6 The company favors communications with employees	0.818			
Structure, systems and process		0.884	0.892	0.579
ESIPRO1 The structure facilitates the transfer of new knowledge	0.788			
ESIPRO2 The structure promotes collective behavior	0.789			
ESIPRO3 Process design facilitates knowledge sharing	0.721			
ESIPRO4 Structure facilitates the discovery and creation of knowledge	0.832			
ESIPRO5 There is a system of rewards for sharing knowledge	0.706			
ESIPRO6 There are explicit mechanisms to recognize innovation	0.723			
Product innovation		0.891	0.925	0.754
INPR1 Number of products or services introduced	0.867			
INPR2 Pioneer character of introducing new P or S	0.886			
INPR3 Rapid response in the introduction of P or S	0.901			

Table 2.
Reliability of the item and internal consistency by construct

(*continued*)

Variables	Charge factor	Cronbach's alpha	Compound reliability	(AVE)
INPR4 R&D expenditure for new products or services	0.818			
Process innovation		0.908	0.935	0.784
NPRC1 Number of processes introduced	0.884			
NPRC2 Pioneer character of introducing new process	0.917			
NPRC3 Rapid response in the introduction of new processes	0.881			
NPRC4 R&D expenditure for new processes	0.858			
Performance		0.824	0.884	0.657
REN1 Profitability	0.609			
REN2 Productivity	0.866			
REN3 Customer satisfaction	0.815			
REN4 Employee satisfaction	0.850			

Source(s): Self made

Table 2.

2016; Gold *et al.*, 2001). Acquisition of information and knowledge management includes: (1) Control competitors and business partners; (2) Collaborate with other people inside and outside the organization; (3) Search for new knowledge; (4) Generate new opportunities in conjunction with its strategic partners; (5) Encode most of the company's technological knowledge.

Organizational culture: This variable was measured using models by Salazar *et al.* (2006); Gold *et al.* (2001); and Fernández-Jardón (2012). The questionnaire asks managers to indicate if their SME has, (1) A values set, beliefs and symbols; (2) Objectives Clear and agreements for all members; (3) Ability to develop young talents; (4) Employees and managers strive to solve common problems; (5) Rules clear of training and categorization of products and knowledge processes.

Communication and group cohesion: The criterion established by Salazar (2006) was followed for its measurement. The questionnaire asks the managers to indicate if in their SME: (1) There is trust between managers and employees; (2) Your working conditions are good; (3) Employees are encouraged to participate in the creation of new ideas and are rewarded for their achievements; (4) They have autonomy and resources to develop their creativity through parallel and informal projects; (5) In with the working group they defend each other by criticism from outsiders; (6) The company favors communications with employees.

Structure, processes and systems: In order to carry out its measurement and after a review of the literature, the model adopted the criteria established by Gold *et al.* (2001); Crema and Verbano (2016); Fernández-Jardón (2012). In the questionnaire managers are asked to indicate if in their SME: (1) The structure promotes collective behavior before the individualist; (2) Process design facilitates the exchange of knowledge through functional limits; (3) The structure facilitates the discovery and creation of new knowledge; (4) There is a reward system for those who share knowledge; (5) There are explicit mechanisms for recognizing the innovation made by employees.

Product innovation: For measuring innovative capacity we rely on the discussions provided by Salazar *et al.* (2006). The manager of the SME was consulted if his company, in comparison with its competitors, has stood out for: (1) The number of new products or services introduced per year; (2) We can see the pioneering nature of a company when it

introduces new products or services; (3) The rapid response to the introduction of new products or services; (4) R&D and the expenditure for new products or services.

Processes innovation: To measure this variable, we follow the guidelines of the model presented by Salazar *et al.* (2006). The manager of the SME was consulted if his company, in comparison with its competitors, has stood out for: (1) Number of new processes introduced per year; (2) The pioneering nature of your company when introducing new processes; (3) The rapid response in the introduction of new processes; (4) R&D expenditure for new processes.

Performance: for the measurement of this complex variable must include multiple elements and, therefore, we must use a multidimensional approach to measure financial elements as non-financial (Berrone *et al.*, 2014; Neely *et al.*, 2002; Stam *et al.*, 2014; Thapa, 2015). Part of the literature used to measure the profitability of financial performance and productivity as indicators, since employers are reluctant to provide other accounting information (Raffiee and Coff, 2016). To measure performance there are two approaches. The first measures performance based on data from accounting information. And a subjective approach, based on the perception of the company manager. In the case of SMEs, the subjective approach is more appropriate (Hughes, 2001); given that in SMEs the accounting information has limitations. Accounting measures are based on historical costs, or depend on the accounting system that is governed by legal and fiscal requirements that may not accurately reflect the future of the company (Neely *et al.*, 2002; Fernández-Jardon and Martos, 2016).

SMEs can look for other types of objectives such as the satisfaction of customers, employees and owners, which are not necessarily covered by financial indicators (Bosma *et al.*, 2004). In the questionnaire, managers are asked to indicate the evolution of the following indicators in their company: (1) Profitability; (2) Productivity; (3) Customer satisfaction; (4) Employee satisfaction.

3.2.1 Control variables. The study contemplates control variables in order to strengthen the proposed theoretical model and analyze its behavior. Previous studies show that the size of the organization, the age of the company and the industrial sector to which it belongs can influence on human capital (Camisón and Villar-López, 2014; Damanpour, 1991; Damanpour *et al.*, 2009). The organization size is measured with the number of existing employees in the company. The seniority of the company is measured since the moment in which it was founded. The industrial sector is derived by the type of manufacturing activity developed by the company (Table 1). The descriptive statistics of the control variables are shown in Table 3.

3.3 Justification use PLS SEM method

The main reason for using the PLS–SEM method is that it is a second generation statistical technique, which allows, based on a theoretical justification, confirmation based on empirical results. This is because the theory is a systematic set of relationships that gives an exhaustive explanation of a phenomenon and allows the researcher to distinguish which variables predict each dependent variable. This allows the researcher to recognize the PLS-SEM method as a confirmatory method, guided by the theory. Thus, examining each proposed relationship from a theoretical perspective can ensure that the results are conceptually valid

	Minimum	Maximum	Average	Standard Deviation
Number of years of the company	1	117	28,57	20,615
Number of employees	10	200	33,37	43,050

Table 3.
Control variables

Source(s): Self-made

(Hair *et al.*, 2007). Especially when it is done through reflective constructs (Haenlein and Kaplan, 2004).

The PLS–SEM methodology allows us to do the following: (1) Estimate the measurement of the error, the relationships between the different constructs and control the theoretical model (Esposito *et al.*, 2010; Wang *et al.*, 2015). The use of the PLS–SEM methodology implies a two-phase approach (Sarstedt *et al.*, 2014), the first analysis of the validity and reliability of the model and the second verification of the hypotheses. In addition, internal consistency, convergent validity and discriminant validity are discussed (Hair *et al.*, 2014; Henseler *et al.*, 2015). PLS has been chosen in our research because this technique works with blocks of variables (components) and estimates the parameters of the model by maximizing the explained variance of all dependent variables (latent and observed) (Chin, 1998). In general, this statistical technique is used for exploratory and confirmatory research (Urbach and Ahlemann, 2010; Vinzi *et al.*, 2010). In addition, we have selected this technique for three main reasons: (1) our research aims to explain how and why the independent variable influences the dependent variable, and also aims to generate new observations and / or scenarios based on predictions (Nitzl *et al.*, 2016); (2) in recent years, the use of PLS has increased in the area of social sciences and particularly in the management of the company (Chin and Saunders, 2009).

4. Results

4.1 Measurement model

To evaluate the measurement model with reflective variables, it has been considered to analyze: (1) the individual reliability of the item (loads), (2) the reliability of the scale construct and internal consistency (Cronbach's alpha and composite reliability), (3) convergent validity and (4) discriminant validity.

4.1.1 Individual reliability of the item. To measure the relationships and individual reliability of each element, according to specialists in the field, they consider a standardized load factor greater than 0.700 (Dibbern *et al.*, 2012). Our results were in the range between 0.609 and 0.917, near and above 0.700. In our model, we decided to include the load value of 0.609 for the following reasons: (1) It is significant at a level of 0.001; (2) It is practically considered in the acceptance threshold of 0.700, see Table 2.

4.1.2 Reliability of the construct. As the first reliability analysis we have performed the Cronbach's alpha test, this indicator is considered satisfactory when it is above 0.700 (Hair *et al.*, 2006). Our results are in a range between 0.824 and 0.908, which represents a high reliability of the structures. In a second moment we have performed the composite reliability analysis, recent studies have considered that this test is more adequate than the Cronbach's alpha for PLS, since it does not assume that all indicators receive the same weighting (Chin, 1998; Henseler *et al.*, 2016) and is considered to be the only measure of consistent reliability (Dijkstra and Henseler, 2015). The reliability analysis yielded values in the range of 0.884–0.935, which meets the requirement of values greater than 0.80 for the indicators as proposed by Nunnally (1978) and Vandenberg and Lance (2000), see Table 2.

4.1.3 Convergent validity. The convergent validity analysis implies that a set of indicators represents a single underlying construct and that is demonstrated through its one-dimensionality. For this purpose we have verified the behavior of the average variance extracted (AVE), which indicates the average amount of variance explained by the indicators (Fornell and Larcker, 1981; Henseler *et al.*, 2009). Our AVE values are in the range of 0.579–0.784. These results are above the threshold of 0.500 as proposed by Hair *et al.* (2011).

4.1.4 Discriminant validity. In order to verify the discriminant validity of the reflective constructs in mode A of the model, two tests have been carried out. First, the square root of AVE has been analyzed following the criteria of Fornell and Larcker (1981). The (diagonal)

results of the vertical and horizontal AVE are below the correlation between constructs. The elements in the diagonal (in italics) are the square root of the variance shared between the construct and its measures (AVE), the elements shown outside the diagonal are the correlations between the constructs, therefore, to achieve the Discriminant validity the square root of the AVE of a construct must be greater than the correlation that it has with any other construct (Nitzl *et al.*, 2016). The 7 constructs of the research model meet the parameters to achieve discriminant and convergent validity (See Table 4).

According to Henseler *et al.* (2015), in their recent studies they have proven that the discriminant validity test performed with the Fornell-Larcker criterion presents some deficiencies. In addition, Henseler *et al.* (2015) and Franke and Sarstedt (2019), have expressed that the Fornell-Lacker test is not sensitive enough to detect discriminant validity problems and that this test is appropriate for high sample sizes and with completely heterogeneous load patterns. Therefore, we have performed a second test through the analysis of the Heterotrait-Monotrait Ratio (HTMT), which according to Henseler *et al.* (2015), better detect the lack of discriminant validity of the constructs in the research models. The HTMT represents the average of the heterotrait-heteromethod correlations (correlations between the indicators that measure the same construct) in relation to the average of the monotrait-heteromethod correlations (correlations between the indicators of different constructs that measure different phenomena). A well-adjusted model, heterotrait correlations should be smaller than monotrait correlations, which implies that the HTMT ratio should be below the value at 1 (Nitzl *et al.*, 2016). According to our results, the test does not show anomalies, since the values are below the value, 0.879 as recommended by Gold *et al.* (2001) and Henseler *et al.* (2015), see Table 5.

4.2 Structural model

The statistical technique based on the variance of structural equations was used to validate the hypotheses of our research; we use the SmartPLS Professional software (version 3.2.6) (Henseler *et al.*, 2014). To evaluate the structural model it is necessary to analyze the behavior of the hypothesis results (β coefficient): (1) the algebraic sign, the magnitude and the significance of the path coefficients. To perform these tests, the bootstrapping procedure with 5,000 subsamples recommended by Chin (1998) has been used and we have also analyzed Student's *t*-statistics; (2) the value of the coefficient of determination (R^2); (3) the size of the effect through (f^2); and (4) also the predictive relevance and effect size of the value of (Q^2).

4.2.1 Assessment of path coefficients, algebraic sign, magnitude and significance. Table 6 shows the results of the estimate using the PLS–SEM. The study found empirical support to demonstrate hypotheses H1, H2, H3, H7, H8, H9 and H10, while no support was found for hypotheses H4, H5 and H6. The test result of the hypotheses is demonstrated by the positive algebraic sign of the beta values. The accepted hypotheses show different level of significance given by the *t*-values. In the case of hypotheses H1, H2 and H7, they show positive effects given by their Student *t* values (4,793; 6,280 and 3,491) respectively, since they are above the standard value of 3,092. They also have a high level of significance since all three have values of *p* 0.000. This indicates that the knowledge management technology construct has a strong relationship with both product and process innovation. On the other hand, the structure, systems and processes construct has a significant impact only with innovation in processes. H3 and H8 hypotheses with *t* values (2,938; 2,830) and *p* (0.003; 0.005) respectively, show a moderate effect of organizational culture on process innovation.

In the case of hypothesis H9, a positive and significant impact between innovation in processes and performance expressed by its *t*-value of 3,465 and with a *p*-value of 0.001 could be verified. On the other hand, hypothesis H10 shows a positive and moderate effect of product innovation on the performance of SMEs, with a *t*-value of 2,061 and a *p*-value of 0.039.

Table 4. Discriminant validity of the theoretical model

	Acquisition of information and knowledge management	Organizational culture	Communication and cohesion	Structure, systems and process	Process innovation	Product innovation	Performance
Acquisition of information and knowledge management	*0.790*						
Organizational culture	0.566	*0.786*					
Communication and cohesion	0.476	0.616	*0.792*				
Structure, systems and process	0.578	0.479	0.673	*0.761*			
Process innovation	0.573	0.484	0.422	0.519	*0.885*		
Product innovation	0.553	0.390	0.340	0.448	0.791	*0.869*	
Performance	0.358	0.436	0.466	0.463	0.463	0.440	*0.810*

Source(s): Self-made

Table 5.
Discriminant validity of the theoretical HTMT model

	Acquisition of information and knowledge management	Organizational culture	Communication and cohesion	Structure, systems and process	Process innovation	Product innovation	Performance
Acquisition of information and knowledge management							
Organizational culture	*0.663*						
Communication and cohesion	0.524	*0.704*					
Structure, systems and process	0.674	0.558	*0.765*				
Process innovation	0.648	0.547	0.439	*0.581*			
Product innovation	0.630	0.446	0.356	0.504	0.879		
Performance	0.429	0.516	0.546	0.547	0.531	0.517	N/A

Source(s): Self-made

Hypothesis/Path coefficients	Value β	F^2	t value	p value	Accepted or rejected
H1 Acquisition of information and knowledge management → Process innovation	0.330***	0.139	4.793	0.000	Accepted
H2 Acquisition of information and knowledge management → Product innovation	0.408***	0.101	6.280	0.000	Accepted
H3 Organizational culture → Process innovation	0.190**	(0.007)	2.938	0.003	Accepted
H4 Organizational culture → Product innovation	0.092*	0.031	1.282	0.200	Rejected
H5 Communication and cohesion → Process innovation	−0.021	(0.001)	0.276	0.782	Rejected
H6 Communication and cohesion → Product innovation	−0.045	0.000	0.605	0.545	Rejected
H7 Structure, systems and process → Process innovation	0.251***	0.027	3.491	0.000	Accepted
H8 Structure, systems and process → Product innovation	0.199**	0.048	2.830	0.005	Accepted
H9 Process innovation → Performance	0.311***	0.049	3.465	0.001	Accepted
H10 Product innovation → Performance	0.200**	0.020	2.061	0.039	Accepted

Source(s): Self-made ***$p < 0.001$; **$p < 0.01$; *$p < 0.05$ (based on t (4,999), one-tailed test). t (0.05, 4,999) = 1.645; t (0.01, 4,999) = 2.327; t (0.001, 4,999) = 3.092, $p < 0.05$; ns: not significant based on t (4,999), two-tailed test). t (0.05, 4,999) = 1.960; t (0.01, 4,999) = 2.577; t (0.001, 4,999) = 3.292

Table 6.
Hypothesis test results

Finally, we analyze the effect of the control variables (size of the SME, seniority and industrial sector) on the performance of the SME. Our results indicate that neither size, nor seniority, nor the industrial sectors in which they carry out their activity have an effect on the performance of SMEs, due to the negative sign of their relationship (See Table 6).

In addition to the above, an analysis of the confidence intervals was performed to validate the importance of the Path coefficients (hypothesis). This was carried out using the statistical technique of bootstrapping with 5,000 subsamples, this test analyzes the confidence intervals that have the advantage that they are a completely non-parametric approach and are not based on any type of distribution (Hair *et al.*, 2019).

Our results of the confidence intervals (Percentile CI / Bias corrected CI) shown in Table 7, indicate that none of the hypothesis or structural relationships contain the value of (0) (Henseler *et al.*, 2009), these results they provide greater empirical and significant support to the hypotheses tested in the research model (H1, H2, H3, H7, H8, H9 and H10).

4.2.2 Value of the explained variance. The value of R^2 indicates the amount of variance of a construct that is explained by the predictive variables of the endogenous construct, whose values range from zero to one. According to Chin (1998), values equal to or close to 0.33 have a moderate power of explanation, other authors such as Falk and Miller (1992) and Frank and Nancy (2012) have considered that this indicator should be above 0, 10. In the model under study we obtained R^2 values of: 0.393 and 0.325, for innovation in processes and products respectively. This implies that structural capital accounts for 39.3% of product innovation, and 32.5% of process innovation. While the value of R^2 0.249, explains 24.9% of the effect of innovation on the performance of SMEs.

4.2.3 Valuation of the effect size f^2. We have also analyzed the effect size through (f^2). This test measures the degree to which an exogenous construct helps explain a specific endogenous construct in terms of R^2 (Chin, 1998). The f^2 analysis shows the results key values of the relationships presented in the research model are in a range of 0.007 (small effect) and 0.139 (moderate effect) these parameters are based on what is stated by Cohen (1988), see Table 6.

Hypothesis/Path coefficients	Value β	Percentile (CI) 5.0%	Percentile (CI) 95.0%	Bias corrected (CI) 5.0%	Bias corrected (CI) 95.0%
H1 Acquisition of information and knowledge management → Process innovation	0.330***	0.225	0.451	0.231	0.454
H2 Acquisition of information and knowledge management → Product innovation	0.408***	0.315	0.527	0.320	0.533
H3 Organizational culture → Process innovation	0.190**	0.092	0.144	0.092	0.136
H4 Organizational culture → Product innovation	0.092*	−0.118	0.102	−0.118	0.100
H5 Communication and cohesion → Process innovation	−0.021	0.078	0.290	0.075	0.290
H6 Communication and cohesion → Product innovation	−0.045	−0.025	0.213	−0.024	0.217
H7 Structure, systems and process → Process innovation	0.251***	0.098	0.316	0.100	0.313
H8 Structure, systems and process → Product innovation	0.199**	0.045	0.257	0.045	0.253
H9 Process innovation → Performance	0.311***	0.251	0.547	0.246	0.543
H10 Product innovation → Performance	0.200**	−0.072	0.244	−0.071	0.247

Source(s): Self made

Table 7. Confidence intervals (Percentile / Bias corrected)

4.2.4 Measurement the predictive power or relevance of the model Q^2. To evaluate the predictive power of the structural model we have used the analysis of Q^2 (cross-validated redundancy index). Therefore, a Stone–Geisser test has been performed through the blindfolding procedure in order to obtain the indicator Q^2 allows measuring the predictive power of the endogenous constructs in the model. Our values are 0.286 for process innovation, 0.229 for product innovation and 0.152 for performance, values that are above the value of (0) (Chin, 1998), see Table 8.

4.2.5 Analysis of the adjustment of the global model. To evaluate the global model with reflective-type constructs we have used two determining indicators to test the fit of the model, however these tests are still under development (Henseler *et al.*, 2016). First we analyze the value of the standardized mean square residue (SRMR), value that should be in a range between (<0.08 and 0.1), our value is 0.059 (Henseler *et al.*, 2016; Hu and Bentler, 1999). Second, we have analyzed the value the root mean square error correlation (RMStheta), this indicator is based on the residuals of the external model, which are the differences between the values of the forecasted indicators (Henseler *et al.*, 2016). The values of this indicator should be very

Dimension	R^2	Q^2
Process innovation	0.393	0.286
Products innovation	0.325	0.229
Performance	0.249	0.152

Source(s): Self made

Table 8. R^2 level and predictive relevance

close to zero and less than 0.12, our value of 0.129 is close to these parameters (Henseler *et al.*, 2016). The results of these tests confirm that our global model has a good fit and is aligned with the theory.

5. Discussion

The findings of our study, in the context of the intellectual capital literature, have revealed that structural capital has a strong impact on the creative capacity and innovation of companies, with both key factors driving competitiveness and good performance of companies of different sizes (Caragliu and Nijkamp, 2011; De Castro *et al.*, 2009; Diaz-Diaz *et al.*, 2006). Summarizing the line marked by the theory of resources and capabilities and the theory of intellectual capital, it is clear that structural capital is an engine that drives the resources and capabilities of companies; its most direct effect is seen reflected in the innovation capacity that resides in the individuals, who are given by the collective achievement that requires support in the information systems and in the internal processes that are performed in favor to the achievement of the objectives of the company. (Santos-Rodrigues and Figueroa-Dorrego, 2011; Van de Ven, 1986; Wang *et al.*, 2015).

In the first part of this article, we analyze the previous theoretical and empirical studies that relate to acquisition of information and knowledge management with the innovation capacity of companies, and that although they mostly highlight that there is a positive effect on innovation and performance (Delgado -Verde *et al.*, 2016; Díaz-Diaz *et al.*, 2006; Kleim-Padilha and Gomes, 2016), others could not obtain conclusive results (Zhou and Li, 2012). The most outstanding finding in the present study is that there is a positive and significant relationship of acquisition of information and knowledge management on the innovation of both products and processes, with a slightly higher incidence in product innovation ($\beta = 0.408$***). These results are in line with the main theoretical perspectives on the relationships between structural capital, innovation capacity and performance in SMEs. They also emphasize that the use of acquisition of information and knowledge management, through an efficient management of knowledge supported by internal and external knowledge networks, it can generate new knowledge and learning that are used to create new products, improve the design of existing products, improve their image and the efficiency of the internal processes of the organization (Kleim-Padilha and Gomes, 2016; Santos-Rodrigues *et al.*, 2011; Villegas-Gonzalez *et al.*, 2017).

In the second part, we analyze the relationships between capital and organizational culture and innovation. According to the RBV, companies that have a flexible organizational culture and capital that is tolerant of errors that reward success and recognize and celebrate mistakes, provide support to its members and have clear objectives, promote creativity and therefore generate greater innovation (Naranjo-Valencia *et al.*, 2016). In our study, we could verify the positive and significant effect of this variable on process innovation, which is aligned with previous studies since innovation in processes allows the generation of product innovation (Subramaniam and Youndt, 2005).

In the third part, we analyze the association between communication and group cohesion with innovation. Although in the literature there is a significant relationship between these constructs, in the companies studied, this same effect has not been presented. Some of the factors that negatively inhibit these relationships in countries with underdeveloped economies are mainly due to: (1) fragmented economic stages (crisis and recession), (2) focus on daily routines (processes), (3) focus on the short-term results, (4) the disarticulation of internal and external knowledge, (5) work teams with individual objectives, (6) lack of creative processes to generate new ideas and products, and (7) little investment in research and development of new products (Crema and Verbano, 2016; Nölke *et al.*, 2015; Strobel and Kratzer, 2017). Our study continued with the analysis of the relationship between structure,

systems and processes with innovation, having been able to verify that this variable has a positive and significant effect on innovation. These findings are aligned with other empirical studies on the subject (Dedahanov *et al.*, 2017; Naranjo-Valencia *et al.*, 2016).

Finally, we analyze the relationship between innovation and performance, having verified that there is a positive and significant relationship between process innovation and performance, which is in line with what the literature maintains, the innovation given in processes allows SMEs to become more efficient and to reduce their costs, which generates greater benefits for the company and can also generate competitive advantages that are difficult to imitate for competitors (Ruiz-Jiménez and Fuentes-Fuentes, 2018). The rejection of hypotheses H4, H5 and H6, where we found no significant evidence, coincides with other recent empirical studies and also applied to SMEs. Like the studies of Agostini and Nosella (2017); Popa (2017) and Sekhar *et al.* (2015). Agostini and Nosella (2017)s show how the SMEs analyzed in their work have a low level of development of their capital and organizational culture and therefore their effect on innovation is not significant. Sekhar *et al.* (2015) they point out that the components of structural capital that generate the least effect on innovation are those related to communication, interconnection and internal cohesion. Popa *et al.* (2017), they show that interdepartmental cohesion has a non-significant effect on innovation. In general, these results may be due to the fact that the studies consider the variables in a correlational way instead of isolating the direct effect of these variables, such as the studies carried out by Prajogo *et al.* (2006) or Wu *et al.* (2008). Additionally, two other factors can influence the explanation of these results. The empirical evidence in SMEs about the relationship between intellectual capital and innovation is still fragmented and still most studies investigate the role of different forms of intellectual capital in isolation, which can cause very heterogeneous results (Leitner, 2014). Also, the effect of these rejected relationships may be due to the fact that we are in the context of an emerging market, where this effect may not be direct, but through the mediation of other competitive factors (Jardon and Catalina, 2015).

6. Conclusions

The objective of this work was to investigate the relationships between structural capital, innovation in products and processes and organizational performance. We explicitly deal with the impact of structural capital on innovation capabilities or innovation capital, and its impact on the performance of companies. In addition, he sought to contribute to research by examining the role of different components of structural capital and seeking to explain the interconnection between them and the capacity for innovation in products and processes and the capacities for innovation with performance.

Our findings show that three of the four components of structural capital have positive and significant effects on the innovation capacity of SMEs. Only the communication and cohesion component did not show positive and significant results on it. It was also possible to verify that there is a positive and significant relationship between the capacity for innovation in processes and performance, while a significant relationship together with product innovation could not be verified. Therefore, our study provided evidence that the components of acquisition of information and knowledge management and structure, the systems and processes, which are the tangible components of structural capital, have a positive and significant effect on both types of innovation, products and processes. As the only intangible components, capital and organizational culture have a positive and significant effect on process innovation. In the case of the last component, communication and group cohesion has no effect on innovation in both products and processes.

At the same time, it was found that only innovation in processes has an effect on performance, which is in line with the findings of the literature on the subject (Leitner, 2014).

6.1 Theoretical and managerial implications

The results of our study provide theoretical and management implications. From the theoretical point of view, the results shed more light on the effects that the components of structural capital have on innovation in products and processes of companies, since the vision of the analysis of the components performed in this work has been little addressed for the literature.

Our study has contributed especially to the literature by offering a wide model of structural capital in an emerging country. It analyzes the impact of the four dimensions (information acquisition and knowledge management; organizational culture; communication and cohesion; and structure, systems and processes) on innovation in products and processes in the context of SMEs. Contributing mainly to the theory of intellectual capital, the strong influence exerted by the hard components of structural capital, such as (acquisition of information and knowledge management, systems and processes), on innovation in both products and processes. These two components together explain more than 65% of the effect on process innovation and more than 50% of product innovation. He also added that the organizational culture has effects on process innovation, but not on product innovation. Finally, we could contribute that communication and internal cohesion do not generate effects on innovation. This is especially relevant given the importance of structural capital in the development of the innovative activity of SMEs and particularly in geographical environments such as the analysis of Argentine reality, where there are hardly any studies on this subject (Fernández-Jardón and Martos, 2016).

From the managerial point of view, the results achieved can be useful for the owners and managers of SMEs where that the vision of the dimensions of structural capital presented allows to pay attention to the management of structural capital and its effects on innovation and performance, since there is a low level of knowledge for a large part of them and they are key elements to be more competitive (Chen *et al.*, 2015; Khalique *et al.*, 2011). The results can be useful for SMEs to increase the innovative potential among their employees based on management strategies and practices to help implement the ideas generated by employees, through the development of their communication systems and the work environment (Foss *et al.*, 2013). Managers should encourage their staff to acquire more updated knowledge and information by creating knowledge groups and teams (Maboudi *et al.*, 2015). In turn, the processes and systems must be more elaborate in order to contribute to the development of innovation capacities that lead SMEs to be more competitive. Also, our results can make managers see the need to increase information technological support investment because intellectual property and investment in R&D can improve the performance of the company. And for this it is necessary to improve the structural capital of the company.

The results can also be useful for those responsible for making public policy decisions since in the knowledge of economy to maintain a developed state and nation, it is necessary to place as one of the main issues on the national agenda the improvement of the intellectual capital of its people to favor the competitiveness of companies (Hashim *et al.*, 2015). The government should provide a better public service to facilitate the SME that can obtain the resources that companies need (Alazzawi *et al.*, 2018).

Therefore, it is important that SME managers take strategic measures and actions to improve the management of structural capital, mainly in practices related to organizational culture, communication and cohesion. These actions that are currently manifesting in SMEs are not generating value or competitiveness. In that a way that it is convenient to implement efficient strategies aimed to the development of innovation in products, processes and management systems. These actions can: (1) establish an efficient knowledge management system (Obeidat *et al.*, 2017), (2) to create a department focused on the development of research, for the creation and development of new products, promoting intra-

entrepreneurship and strengthening the creative process, (Block *et al.*, 2017), (3) working on the internal and external strengthening of knowledge through collaborative networks with a focus on the triple helix (Anatolievna *et al.*, 2014; Ranga and Etzkowitz, 2013).

6.2 Limitations and future lines of research

The investigation exposes some limitations that discover a way for the development of future lines of investigation. In the first place, the work focuses on the use of a single source of information, the consultation at the managerial level of the company, without considering other representative variables to measure innovation capacity, such as innovation and development expenses or the number of registered patents, due to the fact that they are SMEs, which in the most of the cases do not have reliable records on the aforementioned indicators. Second, the study covered only companies in the industrial sector, not considering companies in the commercial and service sectors, or in the primary sector. Third, the study was conducted in a part of a province. That is why, in subsequent studies can be considered variables such as R&D expenses and the number of patents registered by the company as indicators to measure the innovation capacity of companies; in addition to making a sample that includes the rest of economic sectors, and other regions to be able to compare the results. A fourth limitation is that for the measurement of the variable Performance, in subsequent studies other indicators can be used, such as those from the Balanced Score Card, which could show more reliable results. Finally, it is necessary to expand the studies related to intellectual capital in emerging countries in order to strengthen an extension of the theoretical framework of intellectual capital that can explain its differentiating characteristics with greater rigor.

References

Abualoush, S., Masa'deh, R., Bataineh, K. and Alrowwad, A. (2018), "The role of knowledge management process and intellectual capital as intermediary variables between knowledge management infrastructure and organization performance", *Interdisciplinary Journal of Information, Knowledge, and Management*, Vol. 13, pp. 279-309.

Achidi Ndofor, H. and Priem, R.L. (2011), "Immigrant entrepreneurs, the ethnic enclave strategy, and venture performance", *Journal of Management*, Vol. 37 No. 3, pp. 790-818.

Agostini, L. and Nosella, A. (2017), "Enhancing radical innovation performance through intellectual capital components", *Journal of Intellectual Capital*, Vol. 18 No. 4, pp. 789-806.

Agostini, L., Nosella, A. and Filippini, R. (2017), "Does intellectual capital allow improving innovation performance? A quantitative analysis in the SME context", *Journal of Intellectual Capital*, Vol. 18 No. 2, pp. 400-418.

Ahmad-Arabiyat, A.-K. and Ibraheem-Hasouneh, A.-B. (2018), *The Impact of Intellectual Capital on Achieving Competitive Advantages within Commercial Banks in Jordan*.

Alazzawi, A.A., Upadhyaya, M., El-Shishini, H.M. and Alkubaisi, M. (2018), "Technological capital and firm financial performance: quantitative investigation on intellectual capital efficiency coefficient", *Academy of Accounting and Financial Studies Journal*, Vol. 22 No. 2, pp. 1-10.

Alipour, F. and Karimi, R. (2011), "Mediation role of innovation and knowledge transfer in the relationship between learning organization and organizational performance", *International Journal of Business and Social Science*, Vol. 2 No. 19, pp. 144-147.

Allamed, S.M. (2018), "Antecedents and consequences of intellectual capital: the role of social capital, knowledge sharing and innovation", *Journal of Intellectual Capital*, Vol. 19 No. 5, pp. 858-874.

Allee, V. (2008), "Value network analysis and value conversion of tangible and intangible assets", *Journal of Intellectual Capital*, Vol. 9 No. 1, pp. 5-24.

Alqershi, N., Bin-Abas, Z. and Mokhtar, M. (2019), "Prospecting for structure capital: proactive strategic innovation and the performance of manufacturing SMEs in Yemen", *International Journal of Entrepreneurship*, Vol. 23 No. 3.

Anatolievna-Molodchik, M., Anatolievna-Shakina, E. and Barajas, A. (2014), "Metrics for the elements of intellectual capital in an economy driven by knowledge", *Journal of Intellectual Capital*, Vol. 15 No. 2, pp. 206-226.

Aramburu, N. and Sáenz, J. (2011), "Structural capital, innovation capability, and size effect: an empirical study", *Journal of Management and Organization*, Vol. 17 No. 3, pp. 307-325.

Aramburu, N., Sáenz, J. and Blanco, C. (2015), "Structural capital, innovation capability, and company performance in technology-based colombian firms", *Cuadernos de Gestión*, Vol. 15 No. 1, pp. 39-60.

Ariawan, A., Audarma, M., Djumahir, S. and Ghozali, J. (2016), "The role of spiritual capital, human capital, structural capital and relational capital of SMEs to improving on performance: study Literature", *South East Asia Journal of Contemporary Business, Economics and Law*, Vol. 11 No. 2, pp. 87-94.

Asiaei, K., Jusoh, R. and Bontis, N. (2018), "Intellectual capital and performance measurement systems in Iran", *Journal of Intellectual Capital*, Vol. 19 No. 2, pp. 294-320.

Barney, J. (1991), "Firm resources and sustained competitive advantage", *Journal of Management*, Vol. 17 No. 1, pp. 99-120.

Berrone, P., Gertel, H., Giuliodori, R., Bernard, L. and Meiners, E. (2014), "Determinants of performance in microenterprises: preliminary evidence from Argentina", *Journal of Small Business Management*, Vol. 52 No. 3, pp. 477-500.

Block, J.H., Fisch, C.O. and van Praag, M. (2017), "The Schumpeterian entrepreneur: a review of the empirical evidence on the antecedents, behaviour and consequences of innovative entrepreneurship", *Industry and Innovation*, Vol. 24 No. 1, pp. 61-95.

Bontis, N. (1998), "Intellectual capital: an exploratory study that develops measures and models", *Management Decision*, Vol. 36 No. 2, pp. 63-76.

Bontis, N., Chua Chong Keow, W. and Richardson, S. (2000), "Intellectual capital and business performance in Malaysian industries", *Journal of Intellectual Capital*, Vol. 1 No. 1, pp. 85-100.

Bontis, N., Wu, S., Wang, W.-Y. and Chang, C. (2005), "Intellectual capital and performance in causal models: evidence from the information technology industry in Taiwan", *Journal of Intellectual Capital*, Vol. 6 No. 2, pp. 222-236.

Bontis, N., Ciambotti, M., Palazzi, F. and Sgro, F. (2018), "Intellectual capital and financial performance in social cooperative enterprises", *Journal of Intellectual Capital*, Vol. 19 No. 4, pp. 712-731.

Bosma, N., van Praag, M., Thurik, R. and de Wit, G. (2004), "The value of human and social capital investments for the business performance of startups", *Small Business Economics*, Vol. 23 No. 3, pp. 227-236.

Bueno-Campos, E. (2013), "El capital intelectual como sistema generador de emprendimiento e innovación", *Mincotur.Gob.Es*, Vol. 1, pp. 15-22.

Bueno Campos, E., Salmador Sánchez, M.P. and Merino Moreno, C. (2008), *Estudios de Economía Aplicada*, Vol. 26 No. 2, pp. 43-63, Asociación Española de Economía Aplicada, ASEPELT.

Bueno Campos, E., Rodriguez Jericó, P. and Salmador Sánchez, M.P. (2009), "Experiencias en medición del capital intelectual en España: El modelo Intelect", *Perspectivas sobre dirección del conocimiento y capital intelectual*, p. 26.

Burns, T. and Stalker, G. (1961), *The Management of Innovation*, Tavistock, London.

Cabrita, M.d.R., de Vaz, J.L. and Bontis, N. (2007), "Modelling the creation of value from intellectual capital: a Portuguese banking perspective", *International Journal of Knowledge and Learning*, Vol. 3 Nos 2/3, p. 266.

Camisón, C. and Villar-López, A. (2014), "Organizational innovation as an enabler of technological innovation capabilities and firm performance", *Journal of Business Research*, Vol. 67 No. 1, pp. 2891-2902.

Caragliu, A. and Nijkamp, P. (2011), "The impact of regional absorptive capacity on spatial knowledge spillovers", *Applied Economics*, Vol. 44 No. 11, pp. 1363-1374.

Carmeli, A. and Tishler, A. (2004), "The relationship between intangible organizational elements and organizational performance", *Strategic Management Journal*, Vol. 25, pp. 1257-1278.

Carmeli, A., Atwater, L. and Levi, A. (2011), "How leadership enhances employees' knowledge sharing: the intervening roles of relational and organizational identification", The *Journal of Technology Transfer*, Vol. 36 No. 3, pp. 257-274.

Chen, J. and Wang, Y. (2008), "Social networks and a new venture's innovative capability: the role of trust within entrepreneurial teams", *R&D Management*, Vol. 38 No. 3, pp. 253-264.

Chen, J., Zhao, X. and Wang, Y. (2015), "A new measurement of intellectual capital and its impact on innovation performance in an open innovation paradigm", *International Journal of Technology Management*, Vol. 67 No. 1, p. 1.

Chin, W.W. (1998), "The partial least squares approach to structural equation modeling", in *Modern Methods for Business Research*, Lawrence Elbaum Asociates, New Jersey, pp. 295-336.

Chin and Saunders (2009), "A critical look at partial east", *MIS Quarterly*, Vol. 33 No. 1, pp. 171-175.

Ciprés, M.S. (2006), *Estudio de la Naturaleza Estratégica del Conocimiento y las Capacidades de Gestión del Conocimiento: Aplicación a Empresas Innovadoras de Base*, pp. 1-396.

Cohen, J. (1998), *Statistical Power Analysis for the Behavioral Sciences*, 2nd ed., Lawrence Erlbaum Associates, Hillsdale, NJ, p. 80.

Cohen, S. and Kaimenakis, N. (2007), "Intellectual capital and corporate performance in knowledge-intensive SMEs", *The Learning Organization*, Vol. 14 No. 3, pp. 241-262.

Costa, R.V., Fernández-Jardon Fernández, C. and Figueroa Dorrego, P. (2014), "Critical elements for product innovation at Portuguese innovative SMEs: an intellectual capital perspective", *Knowledge Management Research and Practice*, Vol. 12 No. 3, pp. 322-338.

Crema, M. and Verbano, C. (2016), "Managing Intellectual capital in Italian manufacturing SMEs", *Creativity and Innovation Management*, Vol. 25 No. 3, pp. 408-421.

Damanpour, F. (1991), "Organizational innovation: a meta-analysis of effects of determinants and moderators", *Academy of Management Journal*, Vol. 34 No. 3, pp. 555-590.

Damanpour, F., Walker, R.M. and Avellaneda, C.N. (2009), "Combinative effects of innovation types and organizational Performance: a longitudinal study of service organizations", *Journal of Management Studies*, Vol. 46 No. 4, pp. 650-675.

Davenport, T. and Beers, M. (1995), "Managing information about processes", *Journal of Management Information Systems*, Vol. 12 No. 1, pp. 57-80.

Davic, C., Lažnjak, J., Smallbone, D. and varc, J. (2018), "Intellectual capital, organisational climate, innovation culture, and SME performance: evidence from Croatia", *Journal of Small Business and Enterprise Development*, Vol. 26 No. 4, pp. 522-544.

De Castro, Salazar, E., Navas López, J. and Lopez Saez, P. (2009), "El papel del capital intelectual en la innovación tecnológica. Un aplicación a las empresas de servicios profesionales de España", *Cuadernos de Economía y Dirección de Empresas*, Vol. 40, pp. 83-110.

Dedahanov, A.T., Rhee, C. and Yoon, J. (2017), "Organizational structure and innovation performance: is employee innovative behavior a missing link?", *Career Development International*, Vol. 22 No. 4, pp. 334-350.

Delgado-Verde, M., Martín-de Castro, G., Navas-Lopez, J.E. and Cruz Gonzalez, J. (2013), "Capital social, capital intelectual e innovación de producto. Evidencia empírica en sectores manufactureros intensivos en tecnología", *Revista Innovar Journal*, Vol. 23 No. 50, pp. 93-110.

Delgado-Verde, M., Martín-de Castro, G. and Amores-Salvadó, J. (2016), "Intellectual capital and radical innovation: exploring the quadratic effects in technology-based manufacturing firms", *Technovation*, Vol. 54, pp. 35-47.

Derbyshire, J. (2014), "The impact of ambidexterity on enterprise performance: evidence from 15 countries and 14 sectors", *Technovation*, Vol. 34 No. 10, pp. 574-581.

Dewar, R. and Werbel, J. (1979), "Universalistic and contingency predictions of employee satisfaction and conflict", *Administrative Science Quarterly*, Vol. 24 No. 3, pp. 426-448.

Díaz-Diaz, N.L., Aguiar Diaz, I. and De Saá Perez, P. (2006), "El conocimiento organizativo tecnológico y la capacidad de innovación: evidencia para la empresa industrial española", *Cuadernos de Economía y Dirección de Empresas*, Vol. 27, pp. 33-59.

Dibbern, J., Chin, W.W. and Heinzl, A. (2012), "Systemic determinants of the information systems outsourcing decision: a comparative study of German and United States firms", *Journal of the Association for Information Systems*, Vol. 13 No. 6, pp. 466-497.

Dierkes, M., Antal, A., Child, J. and Nonaka, I. (2003), *Handbook of Organizational Learning and Knowledge*, Oxford (Ed.).

Dijkstra, T. and Henseler, J. (2015), "Consistent partial least squares path modeling", *MIS Quaterly*, Vol. 33 No. 2, pp. 297-316.

Dumay, J., Rooney, J. and Marini, L. (2013), "An intellectual capital-based differentiation theory of innovation practice", *Journal of Intellectual Capital*, Vol. 14 No. 4, pp. 608-633.

Esposito, V., Chin, W., Henseler, J. and Wang, H. (2010), *Handbook of Partial Least Squares: Concepts, Methods and Applications*.

Falk, R.F. and Miller, N.B. (1992), *A Primer for Soft Modeling*, University of Akron Press, Akron, OH.

Fernández-Jardón, C.M. (2012), "Determinantes de la capacidad de innovación en PYMES regionales", *Revista de Administração Da UFSM*, Vol. 5, pp. 749-765.

Fernández-Jardón, C. and Martos, M. (2016), "Capital intelectual y ventajas competitivas en pymes basadas en recursos naturales de Latinoamérica", *Revista Innovar Journal*, Vol. 26 No. 60, pp. 117-132.

Floyd, S.W. and Wooldridge, B. (1992), "Managing strategic consensus: the foundation of effective implementation", *Academy of Management Perspectives*, Vol. 6 No. 4, pp. 27-39.

Fornell, C. and Larcker, D. (1981), "Evaluating structural equation models with unobservable variables and measurement error", *Journal of Marketing Research*, Vol. 18 No. 1, pp. 39-50.

Foss, N., Lyngsie, J. and Zahra, S. (2013), "The role of external knowledge sources and organizational design in the process of opportunity explotation", *Strategic Management Journal*, Vol. 34, pp. 1453-1471.

Frank, R. and Nancy, B. (2012), *A Primer for Soft Modeling*, in Falk, R.F. and Nancy, B.M. (Eds), University of Akron Press, Akron, OH, xiv 103 pp. A, (1992).

Franke, G. and Sarstedt, M. (2019), "Heuristics versus statistics in discriminant validity testing: a comparison of four procedures", *Internet Research*, Vol. 29 No. 3, pp. 430-447.

Friedman, V.J., Lipshitz, R. and Popper, M. (2005), "The mystification of organizational learning", *Journal of Management Inquiry*, Vol. 14 No. 1, pp. 19-30.

Giocasi, D. (2015), "Repeated measures analysis on determinant factors of enterprise value", *Procedia Economics and Finance*, Vol. 32, pp. 338-344.

Gogan, L., Artene, A. and Sarca, I. (2016), "The impact of intellectual capital on organizational performance", *Procedia - Social and Behavioral Sciences*, Vol. 221, pp. 194-202.

Gold, A.H., Malhotra, A. and Segars, A.H. (2001), "Knowledge management: an organizational capabilities perspective", *Journal of Management Information Systems*, Vol. 18 No. 1, pp. 185-214.

Gomez, C., Cortes, J. and Briones, M. (2020), "Professional learning model (OLM) for small and medium-sized enterprises (SMEs): the manufacturing industry case in Chile and Colombia", *Revista Espacios*, Vol. 41 No. 2, pp. 17-25.

Haenlein, M. and Kaplan, A. (2004), "A beginner's guide to partial least squares analysis a beginner's guide to partial least squares analysis", *Understanding Stadistics*, Vol. 3 No. 4, pp. 283-297.

Hair, J., Money, A., Samouel, P. and Page, M. (2007), "Research methods for business", *Education + Training*, Vol. 9 No. 4, pp. 336-337.

Hair, J., Black, W., Babin, B., Anderson, R. and Tatham, R. (2006), *Multivariate Data Analysis*, Vol. 6, Prentice Hall.

Hair, J.F., Ringle, C.M. and Sarstedt, M. (2011), "PLS-SEM: indeed a silver bullet", *Journal of Marketing Theory and Practice*, Vol. 19 No. 2, pp. 139-152.

Hair, J.F., Sarstedt, M., Hopkins, L. and Kuppelwieser, V.G. (2014), "Partial least squares structural equation modeling (PLS-SEM): an emerging tool in business research", *European Business Review*, Vol. 26 No. 2, pp. 106-121.

Hair, J., Risher, J., Sarstedt, M. and Ringle, C. (2019), "When to use and how to report the results of PLS-SEM", *European Business Review*, Vol. 31 No. 1, pp. 2-24.

Hasan, M. and Cheung, A. (2018), "Organization capital and firm life cycle", *Journal of Corporate Finance*, Vol. 48, pp. 556-578.

Hashim, M., Osman, I. and Alhabshi, S. (2015), "Effect of intellectual capital on organizational performance", *Procedia - Social and Behavioral Sciences*, Vol. 211 No. 1, pp. 207-214.

Henseler, J., Ringle, C.M. and Sinkovics, R. (2009), "The use of partial least squares path modeling in international marketing", *Advances in International Marketing*, Vol. 20, pp. 277-319.

Henseler, J., Dijkstra, T.K., Sarstedt, M., Ringle, C.M., Diamantopoulos, A., Straub, D.W., ... and Calantone, R.J. (2014), "Common beliefs and reality about PLS: comments on rönkkö and evermann (2013)", *Organizational Research Methods*, Vol. 17 No. 2, pp. 182-209.

Henseler, J., Ringle, C.M. and Sarstedt, M. (2015), "A new criterion for assessing discriminant validity in variance-based structural equation modeling", *Journal of the Academy of Marketing Science*, Vol. 43 No. 1, pp. 115-135.

Henseler, J., Hubona, G. and Ray, P.A. (2016), "Using PLS path modeling in new technology research: updated guidelines", *Industrial Management and Data Systems*, Vol. 116 No. 1, pp. 2-20.

Heredia_Pérez, J.A., Geldes, C., Kunc, M.H. and Flores, A. (2019), "New approach to the innovation process in emerging economies: the manufacturing sector case in Chile and Peru", *Technovation*, Vol. 79, January 2018, pp. 35-55.

Hermans, R. and Kauranen, I. (2005), "Value creation potential of intellectual capital in biotechnology - empirical evidence from Finland", *R and D Management*, Vol. 35 No. 2, pp. 171-185.

Heshmati, A. (2001), "On the growth of micro and small firms: evidence from Sweden", *Small Business Economics*, Vol. 17 No. 3, pp. 213-228.

Hogan, S.J. and Coote, L.V. (2014), "Organizational culture, innovation, and performance: a test of Schein's model", *Journal of Business Research*, Vol. 67 No. 8, pp. 1609-1621.

Hossain, M. and Kauranen, I. (2016), "Open innovation in SMEs: a systematic literature review", *Journal of Strategy and Management*, Vol. 9 No. 1, pp. 58-73.

Hu, L. and Bentler, P. (1999), "Cutoff criteria for fit indexes in covariance structure analysis: conventional criteria versus new alternatives", *Structural Equation Modeling: A Multidisciplinary Journal*, Vol. 6 No. 1, pp. 1-55.

Hughes, A. (2001), "Innovation and business performance: small entrepreneurial firms in the UK and the EU", *New Economy*, Vol. 8 No. 3, pp. 157-163.

Hussain, S. and Terziovski, M. (2019), "Appropriation of intellectual property: a multiple cross-case analysis of SME practices in technology-intensive industries", *Journal of Management Policy and Practice*, Vol. 20 No. 2, pp. 121-134.

Jardon, C.M. and Catalina, N. (2015), "Intellectual capital as a source of growth in subsistence small businesses in Latin America", *International Journal of Entrepreneurship and Small Business*, Vol. 26 No. 1, pp. 96-115.

Industrial Registry of the Province of Cordoba, (2018), available at: https://datosgestionabierta.cba.gov.ar/dataset/sistema-de-informacion-industrial-de-cordoba-siic/resource/876012cc-1b43-4b45-a8bb-eccdeaa55ab4.

Jardón, C.F. and Martos, S. (2009), "Intellectual capital and performance in wood industries of Argentina", *Journal of Intellectual Capital*, Vol. 10 No. 4, pp. 600-616.

Jardon, C.M. and Martos, M.S. (2012), "Intellectual capital as competitive advantage in emerging clusters in Latin America", *Journal of Intellectual Capital*, Vol. 13 No. 4, pp. 462-481.

Jarvis, C.B., MacKenzie, S.B. and Podsakoff, P.M. (2003), "A critical review of construct indicators and measurement model misspecification in marketing and consumer research", *Journal of Consumer Research*, Vol. 30 No. 2, pp. 199-218.

Jassawalla, A.R. and Sashittal, H.C. (1998), "An examination of collaboration in high-technology new product development processes", *Journal of Product Innovation Management*, Vol. 15 No. 3, pp. 237-254.

Kahan, Y. (2019), "A time-lag study of the effect of organisational capital on innovation in Australia SMEs", *Journal of Management Info*, Vol. 6 No 1, pp. 39-43.

Kakabadse, N., Kouzmin, A. and Kakabadse, A. (2001), "Fromtacit knowledge to knowledgemanagement: leveraging invisible assets", *Knowledge and Process Management*, Vol. 8 No. 3, pp. 137-154.

Kalkan, A., Bozkurt, Ö.Ç. and Arman, M. (2014), "The impacts of intellectual capital, innovation and organizational strategy on firm performance", *Procedia - Social and Behavioral Sciences*, Vol. 150, pp. 700-707.

Kang, S.-C. and Snell, S.A. (2009), "Intellectual capital architectures and ambidextrous learning: a framework for human resource management", *Journal of Management Studies*, Vol. 46, 1 January, pp. 65-92.

Kariv, D., Menzies, T.V., Brenner, G.A. and Filion, L.J. (2009), "Transnational networking and business performance: ethnic entrepreneurs in Canada", *Entrepreneurship and Regional Development*, Vol. 21 No. 3, pp. 239-264.

Khalique, M., Isa, A., Shaari, N., Abdul, J. and Ageel, A. (2011), "Challenges faced by the small and medium enterprises (SMEs) in Malaysia: an intellectual capital perspective", *International Journal of Current Resarch*, Vol. 3 No. 6, pp. 398-401.

Kianto, A., Sáenz, J. and Aramburu, N. (2017), "Knowledge-based human resource management practices, intellectual capital and innovation", *Journal of Business Research*, Vol. 81, December 2016, pp. 11-20.

Kiong Ting, I. and Lean, H. (2009), "Intellectual capital performance of financial institutions in Malaysia", *Journal of Intellectual Capital*, Vol. 10 No. 4, pp. 588-599.

Kleim-Padilha, C. and Gomes, G. (2016), "Innovation culture and performance in innovation of products and processes: a study in companies of textile industry", *RAI Revista de Administração e Innovação*, Vol. 13 No. 1, pp. 285-294.

Koellinger, P. (2008), "The Relationship between technology , innovation , and firm performance: empirical evidence on e-business in Europe", *Research Management*, Vol. 29.

Lagunes Domínguez, P., Soto Miranda, A. and Zuñiga Alvarado, S. (2016), "Desarrollo de la Capacidad de Absorción Mediante Prácticas de Gestión del Conocimiento en PYMES Alimentarias del Sector Manufacturero", *Strategy, Tecnology and Society*, Vol. 3, pp. 69-94.

Leitner, K.H. (2005), "Managing and reporting intangible assets in research technology organisations", *R and D Management*, Vol. 35 No. 2, pp. 125-136.

Leitner, K. (2014), "Intellectual capital, innovation and performance: empirical evidence from SMEs intellectual capital , innovation and performance: empirical evidence from SMEs", *International Journal of Innovation Management*, Vol. 19 No. 5, pp. 1-38.

Ling, Y. (2013), "The influence of intellectual capital on organizational performance—knowledge management as moderator", *Asia Pacific Journal of Management*, Vol. 30 No. 3, pp. 937-964.

Maboudi, M., Mobaraki, M., Khavandkar, J. and Moghimi-Esfandabad, H. (2015), "The effect of intellectual capital on innovation: a case study of an institute for advanced studies in basic sciences located in the Science and Technology Park of Zanjan", *Journal of Entrepreneurship & Organization Management*, Vol. 4 No. 3, pp. 1-5.

McDowell, W., Peake, W. and Coder, L. (2018), "Building small firm performance through intellectual capital development: exploring innovation as the "black box"", *Journal of Business Research*, Vol. 88, pp. 321-327.

Mennens, K., Van Gils, A., Odekerken-Schröder, G. and Letterie, W. (2018), "Exploring antecedents of service innovation performance in manufacturing SMEs", *International Small Business Journal: Researching Entrepreneurship*, Vol. 36 No. 5, pp. 500-520.

Miles, S.J. and Van Clieaf, M. (2017), "Strategic fit: key to growing enterprise value through organizational capital", *Business Horizons*, Vol. 60 No. 1, pp. 55-65.

Murray, A., Papa, A., Cuozzo, B. and Russo, G. (2016), "Evaluating the innovation of the internet of things", *Business Process Management Journal*, Vol. 22 No. 2, pp. 341-356.

Naranjo-Valencia, J.C., Jiménez-Jiménez, D. and Sanz-Valle, R. (2016), "Studying the links between organizational culture, innovation, and performance in Spanish companies", *Revista Latinoamericana de Psicologia*, Vol. 48 No. 1, pp. 30-41.

Neely, A., Adams, C. and Kennerley, M. (2002), *The Performance Prism: The Scorecard for Measuring and Managing Business Success*, Pearson Education, Bedford, UK, pp. 1-377.

Nitzl, C., Roldan, J. and Cepeda, G. (2016), "Mediation analysis in partial least squares path modeling", *Industrial Management and Data Systems*, Vol. 116 No. 9, pp. 1849-1864.

Nölke, A., ten Brink, T., Claar, S. and May, C. (2015), "Domestic structures, foreign economic policies and global economic order: implications from the rise of large emerging economies", *European Journal of International Relations*, Vol. 21 No. 3, pp. 538-567.

Nonaka, I. (1994), "A dynamic theory of organizational knowledge creation", *Organization Science*, Vol. 5 No. 1, pp. 14-37.

Nonaka, I. and Takeuchi, H. (2000), *La empresa creadora de conocimiento*, Harvard Business Review, July, pp. 1-9.

Nunnally, J. (1978), *Psychometric Methods*, McGraw-Hill, New York.

Nuryaman (2015), "The influence of intellectual capital on the firm's value with the financial performance as intervening variable", *Procedia - Social and Behavioral Sciences*, Vol. 211, September, pp. 292-298.

Obeidat, B.Y., Tarhini, A., Ra'Ed Masa'deh, N.A. and Aqqad, N.O. (2017), "The impact of intellectual capital on innovation via the mediating role of knowledge management: a structural equation modelling approach", *International Journal of Knowledge Management Studies*, Vol. 8 Nos 3/4, p. 273.

OIR. (2017), "Observatorio integral de la región. El 70% del empleo privado fue generado por Pymes", available at: https://www.eldiariocba.com.ar/el-70-del-empleo-privado-fue-generado-por-pymes/ (accessed 24 September 2018).

O'Dell, C. and Grayson, C.J. (1998), "If only we knew what we know: identification and transfer of internal best practices", *California Management Review*, Vol. 40 No. 3, pp. 154-174.

Pedro, E., Leitão, J. and Alves, H. (2018), "Back to the future of intellectual capital research: a systematic literature review", *Management Decision*, Vol. 56 No. 11, pp. 2502-2583.

Podsakoff, P.M. and Organ, D.W. (1986), "Self-reports in organizational research: problems and prospects", *Journal of Management*, Vol. 12 No. 4, pp. 531-544.

Popa, S., Soto-Acosta, P. and Martinez-Conesa, I. (2017), "Antecedents, moderators, and outcomes of innovation climate and open innovation: an empirical study in SMEs", *Technological Forecasting and Social Change*, Vol. 118, pp. 134-142.

Prajogo, D., Prajogo, D.I. and Ahmed, P.K. (2006), "Innovation capacity, and innovation relationships between innovation stimulus, innovation capacity, and innovation performance", *R&D Management*, Vol. 36 No. 5, pp. 499-515.

Raffiee, J. and Coff, R. (2016), "Micro-foundations of firm-specific human capital: when do employees perceive their skills to be firm-specific?", *Academy of Management Journal*, Vol. 59 No. 3, pp. 766-790.

Ranga, M. and Etzkowitz, H. (2013), "Triple helix systems: an analytical framework for innovation policy and practice in the knowledge society", *Industry and Higher Education*, Vol. 27 No. 4, pp. 237-262.

Rapert, M. (1998), "Reconsidering organizational structure: a dual perspective of frameworks and processes", *Journal of Managerial Issues*, Vol. 10 No. 3, pp. 287-302.

Reed, K.K., Lubatkin, M. and Srinivasan, N. (2006), "Proposing and testing an intellectual capital-based view of the firm", *Journal of Management Studies*, Vol. 43 No. 4, pp. 867-893.

Ruiz-Jiménez, M.J. and Fuentes-Fuentes, M. (2018), "Knowledge combination, innovation, organizational performance in technology firms", *Industrial Management and Data Systems*, Vol. 113 No. 4, pp. 523-540.

Salazar, E., De Castro, M.G. and López Sáez, P. (2006), "Capital intelectual. Una propuesta para clasificarlo y medirlo", in *Academia.Revista Latinoamericana de Administración*, Vol. 37, pp. 1-16.

Santos-Rodrigues, H. and Figueroa Dorrego, P. (2011), "El capital estructural y la capacidad innovadora de la empresa", *Investigaciones Europeas de Dirección y Economía de La Empresa*, Vol. 17 No. 3, pp. 69-89.

Santos-Rodriguez, H., Dorrego, P.F. and Jardon, C.M.F. (2011), "The main intellectual capital components that are relevant to the product, process and management firm innovativeness", *International Journal of Transitions and Innovation Systems*, Vol. 1 No. 3, p. 271.

Sarstedt, M., Ringle, C., Henseler, J. and Hair, J.F. (2014), "On the emancipation of PLS-SEM: a commentary on Rigdon (2012)", *Long Range Planning*, Vol. 47, pp. 154-160.

Schminke, M., Ambrose, M. and Cropanzano, R. (2000), "The effect of organizational structure on perceptions of procedural fairness", *Journal of Applied Psychology*, Vol. 85 No. 2, pp. 294-304.

Sekhar, C., Patwardhan, M. and Vyas, V. (2015), "A Delphi-AHP-TOPSIS based framework for the prioritization of intellectual capital indicators: a SMEs perspective", *Procedia - Social and Behavioral Sciences*, Vol. 189, pp. 275-284.

Skivington, J.E. and Daft, R.L. (1991), "A stady of organizational framework and process modalities for the implementation of business level strategic decisions", *Journal of Management Studies*, Vol. 28 No. 1, pp. 45-68.

Smith, K.G., Collins, C.J. and Clark, K.D. (2005), "Existing knowledge, knowledge creation capability, and the rate of new product introduction in high-technology firms", *Academy of Management Journal*, Vol. 48 No. 2, pp. 346-357.

Stam, W., Arzlanian, S. and Elfring, T. (2014), "Social capital of entrepreneurs and small firm performance: a meta-analysis of contextual and methodological moderators", *Journal of Business Venturing*, Vol. 29 No. 1, pp. 152-173.

Stock, G.N., Greis, N.P. and Fischer, W.A. (2002), "Firm size and dynamic technological innovation", *Technovation*, Vol. 22 No. 9, pp. 537-549.

Strobel, N. and Kratzer, J. (2017), "Obstacles to innovation for SMEs: evidence from Germany", *International Journal of Innovation Management*, Vol. 21 No. 03, 1750030.

Subramaniam, M. and Venkatraman, N. (2001), "Determinants of transnational new product development capability: testing the influence of transferring and deploying tacit overseas knowledge", *Strategic Management Journal*, Vol. 22 No. 4, pp. 359-378.

Subramaniam, M. and Youndt, M.A. (2005), "The influence of intellectual capital on the types of innovative capabilities", *Academy of Management Journal*, Vol. 48 No. 3, pp. 450-463.

Swart, J. (2006), "Intellectual capital: disentangling an enigmatic concept", *Journal of Intellectual Capital*, Vol. 7 No. 2, pp. 136-159.

Teece, D. (1998), "Capturing Value from knowledge assets", *California Management Review.* Vol. 40 No. 3, pp. 55-79.

Thapa, A. (2015), "Determinants of microenterprise performance in Nepal", *Small Business Economics*, Vol. 45 No. 3, pp. 581-594.

Tidd, J. and Bessant, J. (2005), *Integrating Technological, Market and Organizational Change. Managing Innovation*.

Tödtling, F., Lehner, P. and Kaufmann, A. (2009), "Do different types of innovation rely on specific kinds of knowledge interactions?", *Technovation*, Vol. 29, pp. 59-71.

Torres, A.I., Ferraz, S.S. and Santos-Rodrigues, H. (2018), "The impact of knowledge management factors in organizational sustainable competitive advantage", *Journal of Intellectual Capital*, Vol. 19 No. 2, pp. 453-472.

Tsai, W. (2002), "Social structure of "coopetition" within a multiunit organization: coordination, competition, and intraorganizational knowledge sharing", *Organization Science*, Vol. 13 No. 2, pp. 179-190.

Tseng, C.-Y. and James Goo, Y.-J. (2005), "Intellectual capital and corporate value in an emerging economy: empirical study of Taiwanese manufacturers", *R&D Management*, Vol. 35 No. 2, pp. 187-201.

Tseng, C.-Y., Kuo, H.-Y. and Chou, S.-S. (2008), "Configuration of innovation and performance in the service industry: evidence from the Taiwanese hotel industry", *Service Industries Journal*, Vol. 28 No. 7, pp. 1015-1028.

Unión Industrial, A. (2017), "Informe UIA, Desarrollo y competitividad de las pymes industriales la experiencia Japonesa y propuestas para su promoción en la Argentina", available at: https://www.uia.org.ar/search/?q= (accessed 24 September 2018).

Urbach, N. and Ahlemann, F. (2010), "Structural equation modeling in information systems research using partial least squares", *Journal of Cleaner Productionurnal of Information Technology Theory and Application*, Vol. 11 No. 2, pp. 5-40.

Užienė, L. and Stankutė, E. (2015), "Factors influencing intellectual capital measurement practices", *Procedia - Social and Behavioral Sciences*, Vol. 213, pp. 351-357.

Valdez-Juárez, L.E., García-Pérez de Lema, D. and Maldonado-Guzmán, G. (2018), "ICT and KM, drivers of innovation and profitability in SMEs", *Journal of Information and Knowledge Management*, Vol. 17 No. 1, pp. 1-34.

Van de Ven, A.H. (1986), "Central problems in the management of innovation", *Management Science*, Vol. 32 No. 5, pp. 590-607.

Vandenberg, R.J. and Lance, C.E. (2000), "A review and synthesis of the measurement invariance literature: suggestions, practices, and recommendations for organizational research", *Organizational Research Methods*, Vol. 3 No. 1, pp. 4-70.

Villegas-Gonzalez, E., Hernandez-Calzada, M. and Salazar-Hernandez, B. (2017), "La medición del capital intelectual y su impacto en el rendimiento financiero en empresas del sector industrial en México", *Contaduría y Administración*, Vol. 62 No. 1, pp. 184-206.

Vinzi, V.E., Chin, W.W., Henseler, J. and Wang, H. (2010), *Handbooks of Partial Least Squares. Methods*, Springer, Berlin.

Vitell, S.J. and Nwachukwu, S.L.S. (1997), "The influence of corporate culture on managerial ethical judgments", *Journal of Business Ethics*, Vol. 16 No. 8, pp. 757-776.

Wang, Y., Chen, Y. and Benitez-Amado, J. (2015), "How information technology influences environmental performance: empirical evidence from China", *International Journal of Information Management*, Vol. 35, pp. 160-170.

Wetzels, M., Odekerken-Schröder, G. and Van Oppen, C. (2009), "Using PLS path modeling for assessing hierarchical construct models: guidelines and empirical illustration", *MIS Quarterly*, Vol. 33 No. 1, pp. 177-195.

Wiig, K. (2012), "Effective societal knowledge management", *Journal of Knowledge Management*, Vol. 11 No. 5, pp. 141-156.

Wu, S.H., Lin, L.Y. and Hsu, M.Y. (2008), "Intellectual capital, dynamic capabilities and innovative performance of organisations", *International Journal of Technology Management*, Vol. 39 Nos 3/4, p. 279.

Zahra, S.A., Zheng, C. and Yu, J. (2018), "Learning advantages of newness: a reconceptualization and contingent framework", *Journal of International Entrepreneurship*, Vol. 16 No. 1, pp. 12-37.

Zhou, K.Z. and Li, C.B. (2012), "How knowledge affects radical innovation: knowledge base, market knowledge acquisition, and internal knowledge sharing", *Strategic Management Journal*, Vol. 33 No. 9, pp. 1090-1102.

Corresponding author
Nicolás Salvador Beltramino can be contacted at: nicolas.beltramino@unc.edu.ar