

# Innovation Capabilities and Performance: Are they truly linked in SMEs?

## Abstract

**Purpose** – In an environment where business uncertainty is the norm, developing innovation capability in an organisation is increasingly important. This paper investigates the effects that innovation capabilities have on the business performance of SMEs within the context of a regional developing and emerging economy of Mexico, in this case, Aguascalientes.

**Design/methodology/approach** – The approach of this study is quantitative. Four research hypotheses were formulated and tested using Structural Equation Modelling (SEM). Data was collected through a questionnaire survey responded by 308 SMEs located in the Aguascalientes state of Mexico.

**Findings** – The results obtained show that innovation in products, processes, marketing and management have a positive and significant effect on the business performance of Mexican SMEs.

**Originality/value** – The paper complements the limited body of knowledge currently existent in the SMEs innovation literature, particularly when compared to that of large organisations. Similar works in other settings have provided mixed results in regards to the effects that innovation capabilities have on the business performance of SMEs. Thus, this paper offers a refined understanding and validation of the relationship between innovation capabilities and business performance, especially within the context of SMEs, and insights into some of the innovation aspects that managers may consider when formulating the strategies of their organisations. Finally, it enables such relationship to be understood within a particular situation, contributing in this manner to expand the body of knowledge in the innovation field.

**Keywords:** Innovation capabilities, Mexico, business performance, SMEs.

## 1. Introduction

In the last two decades, innovation has become a topic commonly explored by researchers, scholars of business sciences, politicians as well as private and public business people (Purcarea *et al.*, 2013). Similarly, it is common to find in the literature that innovation is regarded as an individual and collective learning process that facilitates the solution of problems (Cohen & Caner, 2016; Alegrea & Chiva, 2008). As a result, innovation is defined in the literature as the creation or improvement of products, processes, management systems or new ways of selling new products or existing ones (Gerwin & Barrowman, 2002).

There is enough theoretical and empirical evidence in the current literature that proves that innovation has a strong, positive and significant influence on different business factors such as productivity (Ramstaad, 2009) and the performance of processes (Carmeli *et al.*, 2010). Also,

innovation is regularly associated to organisational learning (Purcarea *et al.*, 2013; Jiménez-Jiménez & Sanz-Valle, 2011), business performance (García-Morales *et al.*, 2011; Badawy, 2009), knowledge management in organisations (Purcarea *et al.*, 2013; Liao & Wu, 2010), as well as economic and financial performance (Evangelista & Vezzani, 2010; Bowen, Rostami & Steel, 2010; Badawy, 2009). In this regard, innovation is considered in the current literature of business and management sciences as one of the most efficient and effective business strategies for the creation of new products, the establishment of new or improved production processes, modifications in management systems and marketing that facilitate the acquisition of more and better competitive advantages as well as the increase in the level of business performance (Badawy, 2009; Wang & Ahmed, 2004). As a result, innovations in products, processes, commercialisation and management systems are the innovation strategies most constantly discussed in the literature as they allow organisations to obtain a better business performance (Badawy, 2009; Wang & Ahmed, 2004).

However, despite all the benefits associated with innovation, evidence suggests that the focus of empirical research in SMEs can be considered more limited than that conducted in large enterprises (Börjesson *et al.*, 2014; Rosli & Sidek, 2013; Hilmi *et al.*, 2010; Rhee *et al.*, 2010; Prajogo & Ahmed, 2006). In the case of innovation research in SMEs, different aspects of this activity have been recently explored. For example, Gu *et al.* (2016) investigated the effect of internal and external sources on innovation, whereas Gao and Hafsi (2015) examined the effect of SME business owners' characteristics on their firms' research and development spending in a transition economy. Similarly, Maldonado-Guzmán *et al.* (2017) explored the impacts that financial, human and environmental barriers have on innovation activities. Bala Subrahmanya (2015) established the factors that distinguish innovative SMEs from those, which are not while Battistella *et al.* (2015) proposed a methodology for the implementation of technology roadmapping in SMEs. Other recent researches of innovation within the context of SMEs include the studies undertaken by Maldonado-Guzmán *et al.* (2016), Fernández-Mesa *et al.* (2013), Terziovski (2010), Lee *et al.* (2010) and Zeng *et al.* (2010), among others.

In terms of research regarding innovative capabilities in both large organisations and SMEs, there is some empirical evidence that has asserted the positive and significant relationship between innovation capabilities and business performance (Keskin, 2006; Mansury & Love, 2008; Grawe *et al.*, 2009; Bowen *et al.*, 2010; Badawy, 2009; Sdiri *et al.*, 2010; Hilmi *et al.*, 2010; Rhee *et al.*, 2010; Cheng *et al.*, 2010; Gunday *et al.*, 2011; Jiménez-Jiménez & Sanz-Valle, 2011; Tajeddi & Trueman, 2012; Al-Ansari *et al.*, 2013; López & Sánchez, 2013; Hilman & Kaliappen, 2015; Kafetzopoulos & Psomas, 2015). However, it is also true that some empirical studies have provided evidence of a negative relationship between these two constructs (Capon, Farley & Hoenig, 1990; Chandler & Hanks, 1994; Subramanian & Nilakanta, 1996). This highlights the need to conduct further empirical research in this area, and specifically within the context of SMEs (Kafetzopoulos & Psomas, 2015), to expand the relatively limited body of innovation knowledge in this type of organisations. This fact is supported by von Koskull and Strandvik (2014), who suggest that there is a need to analyse in more detail what is really happening with the innovation capabilities of SMEs. Therefore, the main contribution of this research is the analysis and discussion of the existing relationship between innovation capabilities and the business performance of SMEs, particularly in an specific region of a country with an emerging economy as it is the case of the Aguascalientes state of Mexico, and as suggested by von Koskull and Fougere (2011), Perks *et al.* (2012), Hilman and Kaliappen (2015) as well as Kafetzopoulos and Psomas (2015).

Through the particular research focus on organisations operating in the Aguascalientes region of Mexico, the present study enables the relationship between innovation capabilities and the business performance of SMEs to be understood within a particular context. The political, geographical and economic characteristics of Aguascalientes and its current status as a fast developing region, makes the study of such relationship different to all those formerly investigated. This provides a justification for the opportunity of investigating whether there is a relationship between innovation capabilities and the business performance of SMEs among organisations operating in the Aguascalientes region of Mexico. This characteristic provides further novelty to the present study and strengthens its contribution to the innovation field.

The rest of the paper is structured as follows; the second section discusses the theoretical base of the study and formulates the research hypotheses tested through this work. The third section presents the methodology followed to conduct this research, including the design of the data collection instrument as well as its validation and distribution. The fourth section analyses the obtained results. Finally, the fifth section discusses the results and presents the conclusions, limitations of the research and future research agenda derived from this work.

## **2. Literature Review and Hypotheses Formulation**

Several researchers, scholars and professionals of business and management sciences such as Wiggins & Ruefli (2005), Kunc & Bhandari (2011) and Singh *et al.* (2013) have considered important to analyse and develop, in a more detailed form, the different capabilities that enterprises have in order to improve their performance in turbulent economic and business environments. For this reason, Teece *et al.* (1997) concluded that the capabilities of enterprises allow a better integration and adaptation of organisations to their external environment. Similarly, Eisenhardt & Martin (2000) consider that capabilities can be regarded as an essential factor to obtain better results in products innovation.

In particular, Wang & Ahmed (2004) identified three types of essential organisational capabilities: the capability of adaptation, the capability of absorption and the capability of innovation. Olsson, Wadell *et al.* (2010) concluded that the capability of innovation is the most important for enterprises since it allows them to reply effectively and efficiently to both the needs of the market and the fluctuations of the business environment. Therefore, the capability that the enterprises have to generate and manage innovation activities is acknowledged in the current literature not only as one of the best business strategies but also the main core to obtain better results (Hilman & Kaliappen, 2015). Thus, innovation can be considered as a fundamental capability for every organisation, especially SMEs, which require an efficient and effective use of their existing resources as well as the different abilities of all their staff to add more value to their products (Yang *et al.*, 2006; Saenz *et al.*, 2009). Hence, in this view, innovation is considered in the current literature as the capability that is most commonly used by enterprises to obtain more and better competitive advantages, a higher business performance (Hilman & Kaliappen, 2015; Badawy, 2009), maximize the productivity of their resources (Nandakumar *et al.*, 2011), and utilise more efficiently the resources employed in the innovation of their products, processes, management systems and new ways of commercialisation (Wang & Ahmed, 2004; Forsman, 2009).

In the academic business and management sciences literature it is easy to distinguish different innovation capabilities that both researchers and scholars have classified in different ways (Jiménez-Jiménez & Sanz-Valle, 2011; Kim, Kumar & Kumar, 2012). Therefore, some studies

have only paid attention to the analysis of a specific innovation capability, for example, the innovation of processes (Abrunhosa & Moura E Sá, 2008), the innovation of products (Prajogo & Sohal, 2004), the innovation of products and processes (Feng, Terziovski & Samson, 2008; Martínez-Costa & Martínez-Lorente, 2008) and the innovation of marketing and management systems (Wang & Ahmed, 2004; Evangelista & Vezzani, 2010; Gunday *et al.*, 2011; Chang *et al.*, 2012). In this case, Avermaete *et al.* (2003) concluded that innovation in products, processes, marketing and management systems are the main innovation capabilities and activities of any organisation. Furthermore, Damanpour (1991) had already distinguished two essential kinds of innovation: *technical innovation* and *managerial innovation*, where technical innovation included the development, modification or improvement of new products and processes (Avermaete *et al.*, 2003). On the other hand, managerial innovation refers to the implementation of new ideas to significantly improve the commercialisation of products or services and the structure or management systems of the organisation (Damanpour, 1991; Weerawardena, 2003).

Correspondingly, technical innovation includes products and processes innovation whereas managerial innovation encompasses marketing and management innovation as an essential part of the structure of an organisation itself (Jiménez-Jiménez & Sanz-Valle, 2011; Avermaete *et al.*, 2003). This is not a surprise in the literature as the OECD (2005) had already published a guide to more clearly define the innovation activities and capabilities by classifying them in four different capabilities: innovation in products, processes, marketing and management systems. This classification has been accepted and used by many scholars and researchers in order to measure the capability of innovation in organisations, including SMEs (OECD, 2005; Gunday *et al.*, 2011; Avermaete *et al.*, 2003). Products innovation is commonly associated in the literature with the creation of new products or the improvement of existing ones in enterprises (Chang *et al.*, 2012). It generally includes a series of processes that allow the use of modern technologies to adequate products to the changing needs and preferences of clients and consumers decrease the life cycle of products and increase the level of business performance (Gunday *et al.*, 2011). Therefore, products innovation can be understood in the current literature as a continuous and inter-functional process that involves and integrates a considerable amount of competences and activities both inside and outside the organisation itself, which creates a higher level of business performance (Kafetzopoulos & Psomas, 2015).

Likewise, product innovation is regarded by researchers and scholars as a risk and an extensive effort that can create better results and higher levels of business performance in enterprises in projects that imply a decrease in the life cycle of products (Cormican & O'Sullivan, 2004). As a result, it is possible to state that products innovation is a dimension or innovation capability of enterprises that usually has positive and significant effects at the level of business performance in enterprises, especially SMEs (Nassimbeni, 2001; Tomlinson, 2010; Jiménez-Jiménez & Sanz-Valle, 2011). Hence, based on the discussion presented above, it is possible to establish the following research hypothesis:

***H1: The higher level of innovation in products, the higher level of business performance***

Innovation in processes is considered as a reengineering method that readjusts the internal operations of enterprises. This involves aspects of technical designs, research and development activities, a method to create new products or services as well as new or improved management and commercialisation actions (Cumming, 1998). Consequently, innovation in processes makes an emphasis in the creation or improvement of the necessary techniques, knowledge, processes,

systems, procedures and skills in the transformation of new processes for the creation of products or services and to produce a higher level of business performance (Wang *et al.*, 2005; Oke *et al.*, 2007; Zhuang *et al.*, 1999).

Furthermore, innovation in processes also makes an emphasis in the re-innovation or reinvention of an organisation's processes (Rothwell & Gardiner, 1998), or the improvement of existing processes by increasing their performance flexibility (OECD, 2005). Thus, it is possible to state that innovation in processes involves all the functional and operational aspects of enterprises and creates a significant decrease in the complexity and cost of production processes. This provides an increase in quality and delivery methods of products, a better market position, more and better competitive advantages (O'Sullivan & Dooley, 2009; Gunday *et al.*, 2011), as well as a higher level of business performance (Hilmi *et al.*, 2010; Ar & Baki, 2011; Gunday *et al.*, 2011; Rosli & Sidek, 2013). Hence, based on the discussion presented above, it is possible to establish the following research hypothesis:

***H2: The higher level of innovation in processes, the higher level of business performance***

Innovation in marketing is considered in the current literature of business and management sciences not only as the implementation of new or improved commercialisation and marketing methods of existing products or processes but also as the modification or improvement in the design of products, the container, packaging, price or advertising of products (OECD, 2005). Consequently, innovation in marketing is usually defined as the ability that enterprises have to advertise and sell the existing products and services in organisations adjusting them to the preferences and needs of clients, customers, level of competition, costs, benefits and level of business performance of enterprises (Yam *et al.*, 2011). In this context, innovation in marketing allows enterprises, especially SMEs, to know and understand better the preferences and needs of their clients and consumers, explore new markets and improve their market position in order to significantly increase their level of sales (Gunday *et al.*, 2011). Consequently, innovation in marketing is a dimension or capability of innovation that allows enterprises to increase the level of business performance of enterprises (Yam *et al.*, 2004; Yam *et al.*, 2011). Hence, based on the discussion presented above, it is possible to establish the following research hypothesis:

***H3: The higher level of innovation in marketing, the higher level of business performance***

Managerial innovation is generally considered as the implementation of new or improved management methods and practices in the organisation of work as well as the internal and external relations of enterprises (OECD, 2005). As a result, managerial innovation allows enterprises to significantly increase their level of business performance by decreasing transaction and administrative costs, improve the satisfaction of employees and business workers, increase their level of productivity, create internal knowledge, acquire external knowledge and decrease the cost of managing suppliers (Kafetzopoulos & Psomas, 2015).

Similarly, managerial innovation often involves a series of changes in administrative processes and the organisational structure of enterprises, especially SMEs, that is directly related to the working and management activities created inside companies (Kafetzopoulos & Psomas, 2015). Consequently, changes in organisational structure, procedures and management systems do not only facilitate the creation and development of new products and processes (Chang *et al.*, 2012), but also allow a significant increase in the level of business performance (Yam *et al.*,

2011; Gunday *et al.*, 2011; Forsman, 2011; Yam *et al.*, 2004). Hence, based on the discussion presented above, it is possible to establish the following research hypothesis:

***H4: The higher level of managerial innovation, the higher level of business performance***

### **3. Methodology**

In order to respond to the hypotheses raised in this research, and because two essential factors were analysed, such as innovation capabilities and business performance, a ‘business panel’ was carried out in the first instance, with the participation of several managers and businessmen and managers from companies in Aguascalientes (Mexico), representatives of different government agencies that are closely related to the SMEs, representatives of financial institutions and academic researchers, with the objective of analysing in greater detail the effects caused by the innovation capabilities in the business performance of SMEs.

The results obtained from the business panel allowed us to have a more detailed knowledge of the variables investigated, and facilitated the design of the questionnaire required to respond to the hypotheses proposed in this paper. Also, before sending the surveys to the managers of the SMEs, a pilot test was conducted applying the survey to 10 managers to determine the possible problems in the design of the instrument, making only a few small adjustments in the wording of a couple of questions.

The second instance, an empirical investigation was conducted by using as a reference framework the business directory of the ‘Sistema de Información Empresarial de México 2016’ (Business Information System of Mexico) from the Mexico’s state of Aguascalientes. This business directory had 1,334 registered companies by January 2016. The enterprises considered for this study were only SMEs (i.e. those that had between 5 and 250 workers). Thus, the design of the sample contained 308 enterprises, which were selected randomly with a sampling error of  $\pm 4.5\%$  and a reliability level of 95%. The data collection was obtained with a questionnaire created for managers and/or owners of SMEs. The questionnaire was administrated through personal interview to the managers of the 308 enterprises from January to April 2016 to each one of the 308 SMEs that were selected.

Similarly, in order to measure the innovation capabilities of SMEs, managers and/or owners were asked to indicate whether they had carried out innovation activities in products, processes, marketing and/or management systems in the previous two years. For this reason, innovation in products was measured by means of a four-item scale, whereas innovation of processes with a five-item scale, innovation in marketing with a nine-item scale and innovation in management with a five-item scale. All of the items of the innovation capabilities were adapted from the questionnaires previously designed by the OECD (2005). Business performance was measured by means of right traditional indicators created from the perception of managers of SMEs about their competitive position regarding market percentage, profitability and productivity (AECA, 2005). All the items of the scales used were measured with a five-point Likert scale where 1 = totally disagree and 5 = totally agree as its limits.

Moreover, a Factorial Confirmatory Analysis (FCA) was carried out in order to evaluate the reliability and validity of the scales used by using the method of maximum likelihood with the software EQS 6.1 (Brown, 2006; Byrne, 2006). The reliability of the scales was evaluated by means of a Cronbach’s Alpha and the Composite Reliability Index (CRI) proposed by Bagozzi

and Yi (1988). The results obtained are shown in Table 1, and they indicate that the model had a good adjustment of data ( $S-BX^2 = 846.896$ ;  $df = 424$ ;  $p = 0.000$ ;  $NFI = 0.910$ ;  $NNFI = 0.948$ ;  $CFI = 0.952$ ;  $RMSEA = 0.057$ ), and the values of both Cronbach's Alpha and the CRI were above 0.7 (Hair *et al.*, 1995), which provided evidence of reliability and justified the internal reliability of the scales.

**Insert Table 1 in here**

As evidence of the convergent validity, the results of the FCA indicated that all items of the related factors were significant ( $p < 0.01$ ). The size of all the standardised factorial loads were above 0.60 (Bagozzi & Yi, 1988) and the Extracted Variance Index (EVI) of each pair of constructs of the theoretical model had a value above 0.50 as it has been established by Fornell and Larcker (1981). These values indicated that the theoretical model had a good adjustment of data.

**Insert Table 2 in here**

Regarding the evidence of the discriminant validity, the measurement is provided by two tests that can be seen in greater detail in Table 2. Firstly, with an interval of 95% of reliability, none of the individual elements of the latent factors of the matrix of correlation had a value of 1.0 (Anderson & Gerbing, 1988). Secondly, the Extracted Variance Index (EVI) between each pair of constructs was higher than their corresponding square correlation (Fornell & Larcker, 1981). Therefore, based on these criteria, it was concluded that the different measurements provided enough evidence of reliability as well as convergent and discriminant validity.

#### **4. Results**

A structural equation model (SEM) was developed and used in order to answer the hypotheses formulated in this empirical study by using the software EQS 6.1 (Brown, 2006; Byrne, 2006). Moreover, nomological validity was analysed through a Chi-square test, which was used on the comparison of the results obtained between the theoretical model and the measurement model; the results were not significant between the Chi-square tests of the two models. Therefore, the results obtained allowed an explanation of the relationships observed between the constructs of the latent variables of the two models compared (Anderson & Gerbing, 1988; Hatcher, 1994). The results obtained from the SEM can be seen more clearly in Table 3.

**Insert Table 3 in here**

As it can be seen in Table 3, regarding the first hypothesis formulated in this empirical research (i.e.  $H_1$ ), the results obtained,  $\beta = 0.192$   $p < 0.05$ , indicate that innovation in products has significant positive effects on the level of business performance of Mexican SMEs operating in the Aguascalientes state. Regarding the second hypothesis established (i.e.  $H_2$ ), the results obtained,  $\beta = 0.134$   $p < 0.05$ , suggest that innovation in processes also has a significant positive impact on the level of business performance. In the third hypothesis (i.e.  $H_3$ ), the results obtained,  $\beta = 0.228$   $p < 0.01$ , indicate that innovation in marketing has a stronger significant positive effect on the level of business performance when compared with innovation in products and processes. Finally, regarding the fourth hypothesis established (i.e.  $H_4$ ), the results obtained,  $\beta = 0.242$   $p < 0.01$ , showed that innovation in management has a significant positive influence on the level of business performance within the context of Mexican SMEs located in the state of Aguascalientes.

To summarise, based on the results obtained it is possible to state that the innovation in products, processes, marketing and management systems are good indicators to determine the level of business performance of SMEs. This implies that if SMEs adopt and implement innovation activities their level of business performance will be higher. In other words, the growth and development of innovation capabilities will facilitate the acquisition of economic and financial resources that SMEs need for the development of innovation activities.

## **5. Discussion, Concluding Remarks, Limitations and Future Research**

This paper explores the prevalence relationship between innovation capabilities and the business performance of SMEs within the context of a Mexican state with an emerging economy, in this case, Aguascalientes. The results signify the idyllic positive effects that innovation capabilities have on the business performance of SMEs.

In general, the results of this study provide enough empirical evidence that shows that innovation capabilities in products, processes, marketing and management systems create different benefits for SMEs. Among these benefits, and one of the most important ones, can be the increase in the level of business performance. For this reason, the results of this study are in line with those of Keskin (2006), Mansury and Love (2008), Grawe *et al.* (2009), Bowen *et al.* (2010), Badawy (2009), Sdiri *et al.* (2010), Hilmi *et al.* (2010), Rhee *et al.* (2010), Cheng *et al.* (2010), Gunday *et al.* (2011), Jiménez-Jiménez and Sanz-Valle (2011), Tajeddi and Trueman (2012), Al-Ansari *et al.* (2013), López and Sánchez (2013), Hilman and Kaliappen (2015), and Kafetzopoulos and Psomas (2015). Similarly to the results of this study, these researches have established a positive and significant relationship between innovation capabilities and business performance. This study has therefore served as further validation of the results obtained from these researches as there is also an opposite research stream (i.e. Capon *et al.*, 1990; Chandler & Hanks, 1994; Subramanian & Nilakanta, 1996), which contradicts this conclusion.

Therefore, if managers and/or owners of SMEs want to significantly improve their level of business performance, then they will have to make the modifications or improvements to their products or services that are demanded by their clients and final consumers by synchronising the organisational culture of innovation with the general strategies of SMEs. This could create not only a higher level of growth and development in SMEs but also improve the level of business performance. Thus, this research contributes to the business and management sciences literature with a refined understanding and validations of the relationship between innovation capabilities and business performance in the context of SMEs. Additionally, the paper can stimulate scholars to further study such relationship, leading to a better understanding of the dynamics of

developing innovative capabilities and their effect of the financial performance of SMEs. Finally, this study also informs and thus may also encourage researchers of developing economies to explore this linkage in their countries and provide supporting empirical evidence to increase the generability of the findings.

The results obtained from this study have various practical implications for both SMEs and the managers of these organisations. For example, by understanding the effect that innovation capabilities have on the business performance of SMEs, managers can more effectively and efficiently formulate and deploy appropriate strategies not only to develop their innovation capabilities but also to take advantage of these and use them as a vehicle for the financial growth of their organisations and enhancement of their competitiveness. To do this, managers must get involved in the promotion, development and deployment of innovation activities and initiatives related to the products, processes and marketing processes of their companies as a platform for better company performance. Managers can also develop innovation activities and use different support programmes offered by government offices and business chambers to increase innovation capacity. As indicated by the results obtained from this study, this will ensure not only the survival of the organisation but also its growth. This will consequently contribute to the growth of the local and regional economy as sources of employment and commercial activity will be created. Additionally, the results obtained from this study will also allowed managers to take more informed and effective decisions regarding the integration of innovation activities as part of the overall strategy of their organisations.

In terms of research limitations, this empirical research has some limitations that need to be taken into consideration when conducting similar studies in the future. The first limitation is related to the characteristics of the studied organisations. Enterprises selected were only those SMEs that had between 5 and 250 workers, so in future studies it will be important to consider enterprises with less than five workers as they represent a large section of Mexican SMEs and an important proportion in other countries with developing economies. This will contribute in confirming the results obtained in this research. A second limitation is that the questionnaire was distributed only in SMEs of the Aguascalientes state (Mexico), with a high concentration of this type of enterprises in the capital city of this state. Future investigations can therefore consider other states of Mexico, or other developing countries, to analyse whether the results obtained are similar and perform comparative studies.

A third limitation is the scales used to measure both the innovation capabilities and the business performance. In this case, only four dimensions were used for the measurement of innovation capabilities (i.e. innovation in products, processes, marketing and management systems), with a total of 25 items, and only one dimension, with 8 items, to measure the level of business performance. In future investigations it will be necessary to use other scales to confirm the results obtained. The fourth limitation is the fact that only qualitative variables were considered for the measurement of innovation capabilities and the level of business performance. Hence, future research could use quantitative variables such as investment in research and development to confirm if there are significant differences in the results obtained. A fifth limitation is that the questionnaire was distributed only among managers and/or owners of SMEs in Aguascalientes (Mexico). This created the assumption that these people had knowledge of innovation capabilities and the level of business performance that exists in the organisation. Future researches can administrate the same questionnaire to employees, clients and suppliers of SMEs to validate and expand the results obtained.

Lastly, it is suggested to go beyond the results obtained in this paper to investigate how the findings of this study connect to other dimensions of the overall performance of SMEs. For instance, what would be the effect of this established relationship between innovation capabilities and business performance within the overall context of the innovation value chain as proposed by Roper, Du and Love (2008)? Seeking an answer to this research question can be considered one of the future streams of research derived and proposed from the investigation presented in this paper.

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Table 1. Internal consistency and convergent validity of the theoretical model

Variable	Indicator	Loading Factorial	Robust t-Value	Cronbach's Alpha	CRI	EVI
Product Innovation	IPR1	0.899***	1.000 <sup>a</sup>	0.959	0.960	0.858
	IPR2	0.920***	30.744			
	IPR3	0.943***	28.550			
	IPR4	0.943***	30.852			
Process Innovation	IPC1	0.862***	1.000 <sup>a</sup>	0.946	0.947	0.782
	IPC2	0.884***	31.479			
	IPC3	0.846***	24.235			
	IPC4	0.909***	31.473			
	IPC5	0.919***	33.097			
Marketing Innovation	IME1	0.879***	1.000 <sup>a</sup>	0.969	0.970	0.784
	IME2	0.924***	33.912			
	IME3	0.865***	23.523			
	IME4	0.897***	27.512			
	IME5	0.855***	23.336			
	IME6	0.881***	31.231			
	IME7	0.877***	26.470			
	IME8	0.891***	29.213			
	IME9	0.897***	29.543			
Management Innovation	IGE1	0.930***	1.000 <sup>a</sup>	0.959	0.960	0.826
	IGE2	0.914***	59.458			
	IGE3	0.907***	49.245			
	IGE4	0.887***	40.338			
	IGE5	0.905***	44.319			
Business Performance	REN1	0.853***	1.000 <sup>a</sup>	0.955	0.956	0.729
	REN2	0.870***	38.594			
	REN3	0.869***	36.258			
	REN4	0.859***	30.958			
	REN5	0.886***	30.805			
	REN6	0.835***	21.671			
	REN7	0.850***	29.832			
	REN8	0.806***	22.402			
$S-BX^2$ (df = 424) = 846.896; $p < 0.000$ ; NFI = 0.910; NNFI = 0.948; CFI = 0.952; RMSEA = 0.057						

<sup>a</sup> = Parameters limited to this value in the identification process.

\*\*\* =  $p < 0.01$

**Table 2. Discriminant validation of the measurement of the theoretical model**

Variables	1	2	3	4	5
<b>1. Innovation in Products</b>	<b>0.858</b>	0.181	0.176	0.173	0.090
<b>2. Innovation in processes</b>	0.266-0.586	<b>0.782</b>	0.047	0.232	0.089
<b>3. Innovation in Marketing</b>	0.239-0.599	0.093-0.384	<b>0.784</b>	0.341	0.185
<b>4. Innovation in Management</b>	0.242-0.590	0.316-0.648	0.392-0.776	<b>0.826</b>	0.200
<b>5. Business Performance</b>	0.158-0.442	0.156-0.440	0.268-0.592	0.287-0.607	<b>0.729</b>

The diagonal represents the Extracted Variance Index (EVI), while above of the diagonal the variance is shown (square correlation). Below of the diagonal, the estimation of the correlation of the factors with confidence interval of 95% is shown.

**Table 3. SEM results**

Hypothesis	Structural Relationship	Standardised Coefficient	Robust t value
<b>H1:</b> The higher level of innovation in products, the higher level of business performance.	I. Products → Performance	0.192**	2.419
<b>H2:</b> The higher level of innovation in processes, the higher level of business performance.	I. Processes → performance	0.134**	2.004
<b>H3:</b> The higher level of innovation in marketing, the higher level of business performance.	I. Marketing → Performance	0.228***	3.542
<b>H4:</b> The higher level of managerial innovation, the higher level of business performance.	I. Management → performance	0.242***	3.328
S-BX <sup>2</sup> (df = 424) = 847.069; p < 0.000; NFI = 0.910; NNFI = 0.948; CFI = 0.952; RMSEA = 0.057			

\*\* = P < 0.05; \*\*\* = P < 0.01























