



The influence of organizational commitment and learning orientation on innovation in SMEs

La influencia del compromiso organizacional y orientación al aprendizaje sobre la innovación en las PYMES

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Abstract

Innovation is a strategic capacity for organizations as they face new and greater challenges, such as processing a vast amount of information and knowledge, as well as responding quickly to increasingly uncertain changing environments. The objective of this is to evaluate, in an empirical way, a model that presents three causal relationships between theoretical constructs in a group of 250 small and medium-sized enterprises (SMEs) in the state of Aguascalientes. The first one refers to whether organizational commitment has a positive and significant influence on the levels of learning orientation; the second is verifying if the organizational commitment has a positive and significant influence on the levels of innovation; and finally, inquiring if the learning orientation has a positive and significant impact on the level of innovation. The proposed model—which presents good adjustments—is validated through structural analysis using the confirmatory modeling strategy. Results are presented and they indicate that organizational commitment does have a positive and significant impact on the levels of learning orientation in the organization. Furthermore, learning orientation influences in a positive and significant way SMEs' innovation in Aguascalientes. However, organizational commitment fails to show a significant positive influence on the innovation of SMEs in Aguascalientes.

JEL Classification: M16, M12, M10.

Keywords: Organizational commitment, Innovation, SMEs, Learning orientation.

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Resumen

La innovación es una capacidad estratégica para las organizaciones debido a que enfrentan nuevos y mayores desafíos, tales como el procesamiento de una gran cantidad de información y conocimiento como responder de forma rápida a un entorno cambiante cada vez más incierto. El objetivo de este estudio es evaluar empíricamente un modelo que presenta tres relaciones causales entre construcciones teóricas en un grupo de 250 pequeñas y medianas empresas (PYMES) del Estado de Aguascalientes. La primera es si el compromiso organizacional tiene una influencia positiva y significativa en los niveles de orientación al aprendizaje; en segundo término, se verifica si el compromiso organizacional tiene una influencia positiva y significativa en los niveles de innovación; y por último si la orientación al aprendizaje impacta de forma positiva y significativa en el nivel de innovación. El modelo propuesto se valida, y presenta buenos niveles de ajuste, a través del análisis estructural usando la estrategia de modelaje confirmatorio. Se presentan resultados que señalan que el compromiso organizacional sí impacta de manera positiva y significativa en los niveles de orientación al aprendizaje en la organización. Se concluye también que la orientación hacia el aprendizaje influye de forma positiva y significativa en la innovación de las PYMES de Aguascalientes. Sin embargo, el compromiso organizacional no muestra influencia positiva significativa en la innovación de las PYMES de Aguascalientes.

Códigos JEL: M16, M12, M10.

Palabras clave: Compromiso organizacional, Innovación, PYMES, Orientación al aprendizaje.

Introduction

On a global level, organizations use innovativeness to face the existent competitive environment. An organization's long-term success is linked to its ability to keep pace with changes in consumer preferences, technical updates and competitors' performance (Chandrashekar, Mehta, Chandrashekar, & Grewal, 1999) to which the organization's ability to learn and innovate is a key piece for survival.

Nevertheless, for innovation to happen, it is necessary either individual or group activity (Collins & Moschler, 2008). Consequently, firms should extend ways to learn more about their customers, stakeholders, competitors, and marketplace if they are to survive higher levels of innovativeness.

Within this world of constant changes, SMEs struggle to successfully implement practices that are more commonly used by their larger competitors. Large organizations are better equipped for innovation thanks to financial and technological resources, extensive and specialized teams, and sophisticated equipment. Apart from anything else, research has demonstrated that SME's have advantages in terms of behavioral practices such as entrepreneurial dynamism, flexibility, efficiency, proximity to market, and motivation (Hewitt-Dundas, 2006).

In Mexico, SMEs account for 99.8% of all business units. They are responsible for the generation of 34.7% of the national GDP and 73.8% of all employment resources (Economía, 2013²). In Aguascalientes, mirroring the national dimension, the largest percentage of

² Mexican Ministry of Economy

companies (98.9%) are micro and small enterprises, 0.9% medium-sized enterprises, and only 0.2% are large enterprises. In terms of their economic activities, 49% correspond to secondary activities, including manufacturing and construction, 5% to primary activities, 15% belong in the commercial sector, and the remainder in the services sector, according data from the State Coordination of Planning and Projects³, 2011.

The government of Aguascalientes has sought to strengthen the operation, productivity and competitiveness of micro, small and medium enterprises. Among the actions that stand out to human capital is the certification with national recognition that endorse labor skills of the workforce, skilled labor development, and advancement in a society able to innovate and transfer technology (CEPLAP, 2011). The current State Development Plan 2016-2022 (CEPLAP, 2017) has also considered the establishment of comprehensive training policies for work. One of the challenges is to expand innovation ecosystems in strategic areas by promoting the generation, transfer and dissemination of knowledge. However, it identifies the backwardness in the organizational development of SMEs, thus it is proposed as a challenge for the upcoming years to strengthen human talent and capacity for innovation management (CEPLAP, 2011).

A study conducted in 219 companies in different business sectors in Aguascalientes assessed the evolution of practices implemented for human capital management. The results indicated that a high percentage of human capital managers carry out administrative management activities. Aguascalientes companies are required to improve their management practices so that the company evolves to the competitive business environment with an orientation towards learning, retention and motivation of the workers (Liquidano, 2006).

Furthermore, a published literature review on the subject of innovation in organizations and empirical studies confirmed the positive impact of innovation on the organization's performance on SMEs (Madrid-Guijarro, Garcia, & Van Auken, 2009; Martínez Serna, Vega Martínez, & Vega Martínez, 2016; McDermott & Prajogo, 2012), but there are still some undefined angles and perspectives on the factors that favor the success of innovative processes.

For instance, given the importance of SMEs in emergent countries economy, it is critical to measure the influence of the organization's internal strengths on the learning-innovation mechanism, particularly on those responsible for SMEs management. In this regard, organizational commitment plays an important role in the positive interaction between learning and innovation as it explains the relationship of the employee with the organization. Employees' commitment is positively related to performance and it contributes assertively to the organization's product and service quality (de Araújo & Lopes, 2014; Maia & Bastos, 2015), meaning that possibly committed employees are more likely to engage and participate in innovation initiatives.

The objective of this research is to empirically evaluate, through a model, three relations between the fundamental constructs of this study: organizational commitment, learning orientation, and innovation. The first evaluation aims at proving if organizational commitment influences in a positive and meaningful way the learning orientation of SMEs in Aguascalientes; the second is to evaluate whether organizational commitment influences the levels of innovation in a positive and significant way; and finally, evaluating if learning orientation influences the level of innovation in a positive and significant manner.

The main contribution of this study is to provide empirical evidence of two theoretical constructs in the context of SMEs, which have been demonstrated from the perspective of strategic management in international contexts that positively influence the levels of innovation

³ Spanish: Coordinación Estatal de Planeación y Proyectos, CEPLAP

of companies. A second contribution is the use of the methodology of structural equations that allows the proposition of relations through a model that integrates the influence of variables that intervene in the theoretical proposal.

The paper is presented as follows: a theoretical framework that reviews, in the first place, the concept of organizational commitment, followed by learning orientation, and ends with innovation. Subsequently, the study puts forward a set of hypotheses that examine the relations between the study variables. After testing the hypotheses by using data collected from 250 SMEs in Aguascalientes, the study presents the results and discusses managerial implications, main limitations, and future lines of research.

Theoretical framework

Organizational commitment

Currently, organizations must confront an increasingly high competitive pressure. To survive and increase institutions' competitiveness, one of the management concepts developed is *organizational commitment*. Organizational commitment impacts business performance in many forms as it comes as an aid for predicting personnel behavior (Herscovitch & Meyer, 2002). For instance, committed personnel make a bigger effort for achieving company targets and have more positive relationships within the organization. Additionally, organizational commitment has been negatively related to turnover intention (Jun-Cheng, Wen-Quan, Zhao-Yi, & Jun, 2015; Newman, Thanacoody, & Wendy, 2011), supporting employees' intention to remain in the company through organization learning efforts.

Organizational commitment has captured researchers' attention after Allen & Meyer's (1990) three-component model structure. First, the affective commitment that refers to the emotional attachment of the employee to the organization; second, the continuance commitment reflects the employees need for the job due to financial concerns; and third, the normative commitment that shows employees' perceived obligation to stay in the organization.

Although organizational commitment has been studied extensively, local research—such as cultural values and practices—adds up to the overall research that strongly influences this variable (Meyer *et al.*, 2012) and empirical research is still limited in emerging economies.

Organizational commitment has been defined in several ways. A general definition by Erdem & Ucar (2013) suggests that organizational commitment explains the psychological relationship of the employee with the organization. Taking a somewhat different perspective, Nava & Lokman (2001, p.14) explain that organizational commitment is characterized as employees' acceptance of organizational goals and their willingness to make an effort on behalf of the organization. According to Meyer & Allen (1991, p. 67) organizational commitment is “a psychological state that characterizes the employee-employer relationship with the organization and has implications in deciding to continue or to stop working for the company”.

Empirical research evidence from SMEs in Mexico by De Clerq & Rius (2007) shows that employees' commitment and effort are crucial for small and medium-sized firms because individuals' work attitudes and behavior may have an important effect on the firms' long-term success and viability.

Learning orientation

Within an organization's strengths, its capability to acquire, share, and use new knowledge, stands out as one of the key elements to increase competitiveness and survival. Despite the importance of organizational learning, creating an environment that promotes it is an extremely difficult and demanding task. In this sense, Hult, Hurley, & Knight (2004) propose that learning orientation occurs primarily at the culture level of the firm and is likely to be mediated by factors that impact directly on business performance.

Empirical research by Sinkula, Baker, & Noordewier (1997) discloses that organizational structures and groupings could constrain cross-functional teamwork and limit communication across functional boundaries. Moreover, the organization leaders must get personally involved in order to facilitate learning orientation (Slater & Narver, 1994).

There are two terms in the literature, commonly used by researchers, on this topic: *learning organization* and *learning orientation*. In this respect, Calantone, Cavusgil, & Zhao (2002) propose that a learning organization is that which has a learning orientation, whereas learning orientation involves organizational activities carried out to adding and using knowledge to enhance competitiveness.

Huber (1991) proposes a broader definition of learning orientation as the development of new knowledge or insights that have the potential to influence behavior through its values and beliefs within. For Sinkula *et al.* (1997), the learning orientation concept also involves a set of organizational values that influence either the organization degree or the propensity to create and use knowledge, and questions the existent mental models.

Innovation

As market places become more dynamic, the critical role of innovation becomes stronger within organizations as a response to existing market challenges agitated by fierce competition, technological shifts, and never-ending changes on customer demand and lifestyle. Innovation represents the core's renewal process in any organization to survive and grow. Innovation in SMEs is determined by mainly two reasons: it markedly increases SMEs competitiveness and stimulates great innovation potential to act as the initiator, catalyst, and medium for wider technical change within their industrial sector.

Most researchers agree that small and medium enterprises do have advantages in terms of innovation creation. To this regard, Roper (1997) explains that small firms' characteristics facilitate innovation; their closeness to the market allows them to appreciate a market opportunity before larger firms and to develop a suitable technological response. Moreover, their organizational and functional flexibility permit the rapid adaptation of new technologies developed elsewhere.

The innovation concept has been studied from different perspectives and disciplines (Damanpour & Schneider, 2009). Crossan & Apaydin (2010, p. 1155) defined innovation as the production or adoption, assimilation, and exploitation of value-added novelty in economic and social spheres; renewal and enlargement of products, services, and markets; development of new methods of production; and establishment of new management systems. It is both a process and an outcome. Innovation has also been defined as a multi-stage process whereby organizations transform ideas into new/improved products, service, or processes, in order to advance, compete and differentiate themselves successfully in their marketplace (Baregheh, Rowley, & Sambrook, 2009).

Innovation and learning are related in Du Plessis' definition (2007, p. 21): Innovation as the creation of new knowledge and ideas to facilitate new business outcomes, aimed at improving internal business processes and structures and to create market-driven products and services. Innovation encompasses both radical and incremental innovation.

According to Baregheh *et al.* (2009) definitions can be classified using three bases: the first basis would be the innovative nature, whether they bring forward something new, or improve an existing aspect of the organization; the second is connected with the innovation type (product, service, process or technology); and the third basis would be the innovation means, which refer to the resources used to drive and support innovation, like a balance of technology, ideas, inventions, creativity, and market.

Relation between variables and hypothesis

Organizational Commitment and Learning Orientation

Being able to learn is indispensable for an organization to succeed. Nevertheless, organizations can only maintain continuity through their employees' commitment and, consequently, they can build an organizational memory and then transform information into problem solving and innovation into learning (M. Atak, 2009). Therefore, the relation between commitment and learning within the organization becomes relevant. There are some perspective differences in the relation between these variables that can be found in literature reviews. On the one hand, most researchers have proposed that learning orientation is an antecedent for organizational commitment. In this regard, Balay (2012) and Veisi (2010) explain, specifically, that the learning orientation's dimensions of *team learning* and *shared systems* are positive predictors of organizational commitment based on identification. On the other hand, a different research view proposes that organizational commitment is a positive predictor for learning orientation and also necessary for successful implementation of organizational learning initiatives (Massingham & Diment, 2009). In this sense, Senge (1990) points out that capturing real commitment among employees is indeed a challenge and of most importance to build a learning organization. Researchers in this field have provided evidence of both perspectives on the relation between organizational commitment and learning orientation. The influence of learning orientation on organizational commitment is empirically demonstrated in the research done by D'Amato & Herzfeldt (2008); Erdem & Ucar (2013) and Yafang (2014).

Recent studies by Balay (2012) reveal a positive relation between learning organization perception and affective commitment with faculty members, where those working in private universities have a higher level of learning organization perceptions than their public university counterparts. Yafang (2014) appraises the relation between learning organizations, internal marketing, and organizational commitment in hospitals and finds that internal marketing was a mediator between creating a learning organization and organizational commitment.

A structural analysis of all learning orientation's dimensions on organizational commitment done by Erdem & Ucar (2013) shows that shared vision, team learning, and personal mastery predicted organizational commitment in employees. D'Amato & Herzfeldt (2008) observe that learning orientation predicted the intention to remain in the same organization for most age generations, and that organizational commitment mediated this relationship.

Then again, the impact of organizational commitment on learning has also been demonstrated. Metin Atak (2011) argues that organizational commitment has a function to

decrease absenteeism and employee turnover, and this function prevents interruption of the period required for continuous learning. Atak (2011) proves his argument empirically and concludes that organizational commitment affects learning and remarks that organizations on the information age need to obtain employees with high organizational commitment and take measures to increase commitments of employees to become learning organizations.

In addition, Lim (2010) confirms that organizational commitment, except for continuance commitment, is moderately and positively related to learning organization culture and job satisfaction in a study with private companies from a large Korean conglomerate.

Recently, Mehrabi, Jadidi, Haery, & Alemzadeh (2013) measured the impact of organizational commitment on a communications company and concluded that there are significant relationships between organizational commitment and organizational learning. Also, significant relationships were found among different levels of organizational learning with organizational commitment and learning in individual, group, and organizational levels.

Based on the previously exhibited empirical evidence of the relation between organizational commitment and learning orientation, we can propose our first hypothesis:

H1: Organizational commitment is positively related to learning orientation.

Organizational commitment and innovation

The relation between organizational commitment and innovation has been studied by several researchers in different contexts (García Cruz & Real Fernández, 2013; Nava & Lokman, 2001; Zhou, Hong, & Liu, 2013).

There are different perspectives about the effect of organizational commitment on innovation. On one side, Welbourne, Johnson, & Erez (1998) sustain that committed employees are highly motivated to remain in their current positions and view performing well as the means to an end. Thus, highly committed employees might be more motivated to engage in innovation-related behaviors because creativity is often a key criterion for pay raises and promotions. However, (Mowday, Porter, & Steers, 2013; Staw, 1980) propose that those employees with no intention to leave might want to maintain the status quo and prevent changes from happening. In this regard, Staw (1980) argues that new employees would possibly bring different points of view to the organization, favoring innovation initiatives.

Ng & Feldman (2010) measure the effects of each dimension (affective commitment, continuance commitment and normative commitment) and conclude that affective commitment has a positive relation with innovation-related behaviors.

The empirical evidence shown in the relation between organization commitment and innovation, allows us to formulate our second hypothesis:

H2: Organizational commitment is positively related with innovation.

Learning orientation and innovation

With regard to the relationship between learning orientation and innovation, Hurley & Hult (1998) suggest that learning orientation is one of innovativeness dimensions, which represent organizational cultural characteristics. As the innovation process requires new information and knowledge, the commitment and attitude to learn more rapidly than competitors may be a sustainable competitive advantage in changing environments (Slater & Narver, 1995). Hence, learning orientation of organizations appears as an area of interest.

Empirical research on the impact of learning orientation on innovation by Calantone *et al.* (2002) suggests that innovation itself is a broad process of learning that enables the implementation of new ideas, products, or processes. Innovation also reflects an appreciation for and desire to assimilate new ideas.

Recent studies from Sheng & Chien (2016) about the impact of organizational learning orientation on radical and incremental innovation in high-tech firms, confirms the relation between both variables and suggest that, for the high-tech industry and entrepreneurial ventures, superior capability in a particular area leads to exploitative learning and cultivate incremental innovation.

Empirical testing done by Calisir, Altin Gumussoy, & Guzelsoy (2013) on the impact of learning orientation, measured by commitment to learning, shared vision and open-mindedness, on the product innovation performance. The findings revealed that open-mindedness was the sole predictor of product innovation efficacy as well as efficiency. Using the same scale for learning orientation, Chiou & Chen (2012) find that that three in four dimensions of learning orientation, open-mindedness, shared vision and intra-organizational knowledge-sharing, except commitment to learning, have a positive effect on innovation capital.

It can be seen from these arguments that learning orientation and innovation have a positive relation; therefore, we can propose the third hypothesis:

H3. Learning orientation is positively related to innovation

Methods

Data Collection

The study was carried out in SMEs within the industrial, commercial and services sectors of Aguascalientes. The population was taken from the National Institute of Statistic and Geography's Directory of Economic Units⁴, which are classified according to the Mexican Official Journal. Organizations selected were SMEs that included micro and small companies employing between 6 and 49 people, and medium-sized companies of between 50 and 250 employees. A quantitative, transversal study was designed and a questionnaire was applied to senior-level executives and SMEs owners of the most representative sectors of Aguascalientes.

A total of 250 SMEs accepted to participate in the study. The final sample constituted 84% of the most representative industries including textile and clothing, furniture, agroindustry, metal-mechanic and construction. 16% belong in the commerce and services sectors, and 12% in other industries. Furthermore, 52% of companies from the sample had been in business for between 1 and 10 years; 40% had been operating for between 11 and 30 years, and the rest had done so for over 30 years. These were family-owned businesses in 68% of the cases.

After a review of scientific literature on the subject, five-point Likert scales for the measurement of the three fundamental constructs of the proposed model were included. The organizational commitment construct incorporated three dimensions, learning orientation included three dimensions, and the innovation construct considered also three dimensions, totaling 42 items.

⁴ Spanish: Instituto Nacional de Geografía (INEGI); Directorio Estadístico Nacional de Unidades Económicas (DENUE)

The sampling was non-probabilistic and selected for the convenience of the researcher led by criteria proposed by different specialists. In this type of sampling there is no previously structured formula to determine the sample size, so an analysis of the literature of empirical studies related to the subject was carried out to determine the size of the sample used. Moreover, in the use of the analysis of structural equations, goodness-of-fit statistics deteriorates rapidly with the increase of the sample size. Sample sizes of over 100 subjects are usually required, and sizes larger than 200 subjects guarantee an appropriate sample (Hair *et al.*, 1999).

The questionnaires were applied from September to December 2015 and statistically processed with SPSS 19.0 statistics software. Structural equations analysis was done through the AMOS 23 (Analysis of Moment Structures) estimation program (Arbuckle, 1997). Structural equation models are a family of multivariate statistical models that estimate the effect and relations between multiple variables and also generate information on the direct and indirect effects between factors. The great advantage is that the theoretical specification of the model allows proposing causal structures between variables that in turn enable a simultaneous examination of a series of relations of dependency. It is particularly useful when a dependent variable becomes independent in later relations. These are also denominated *confirmatory models* since the fundamental interest is to confirm the proposed relations using the explanatory theory as reference. Another difference in this type of analysis is the ability to estimate and evaluate the relationship between unobservable constructs, generally called latent variables (Ruíz *et al.*, 2010).

The coverage of the study is limited to the non-probabilistic sampling used, for the convenience of the researcher, which does not allow a generalization of the data and its results only surround the sample it represents.

Measures

The final instrument was formed by a handful of scales taken from the literature review and were previously used by other researchers, yielding good results (as recommended in Churchill Jr., 1979). Nevertheless, the corresponding CFA was executed to verify the reliability and validity of the selected measurements.

After extensive review of the empirical studies that included the research variables, three measurement scales were used based on their high results on goodness-of-fit, reliability and validity. The scale developed by Allen & Meyer (1990) on organizational commitment has been used by several researchers (AECA, 1995; Avila, Serna, & Guzmán, 2009; Máynez Guaderrama, 2015; Otto, Adriazola, Candia, & Palacios, 2014). Allen & Meyer (1990) propose three dimensions: 1) affective commitment, which establishes an emotional connection with the organization; 2) the continuance commitment, meaning the interest in avoiding the loss of investment in labor productivity; and 3) normative commitment, which is the relationship based on the sense of obligation or duty.

Learning orientation was measured with three-dimension scale: 1) Learning commitment means the level at which an organization values and promotes learning 2) Shared vision has to do with extending the emphasis on learning amongst the different departments; and 3) Open-mindedness, which refers to evaluating established routines as well as the acceptance of new ideas, questioning the old way of doing things, and renewing knowledge (Sinkula *et al.*, 1997). The scale has been used by a fair number of researchers within the emerging economies context (Calisir *et al.*, 2013; Chiou & Chen, 2012).

Innovation was measured with a three-dimensional scale: 1) Product/service innovation, which concerns the introduction or modification of new or improved products. 2) Process innovation that refers to introducing new or improved processes in the company. 3) System innovation, related to the introduction of changes in the administrative or marketing structure of the company. The scale was used in previous research by AECA (1995); Gálvez Albarracín & García Pèrez de Lema (2012); Martínez Serna *et al.* (2016); Naranjo, Sanz, & Jiménez (2008); Van Auken *et al.* (2009) done in Spain and Latin America with consistent and reliable results. The first order factors identified in the proposed model are: affective commitment, continuance commitment, normative commitment, learning commitment, shared vision, open mindedness, product/service innovation, process innovation, and system innovation.

Measurement model

The confirmatory modeling strategy was followed for the development of structural analysis, applying the six steps recommended by the theory for the application of structural equations (Kline, 2005): 1) Specification of the model; in this phase a theoretical revision of the studied phenomenon was made with the purpose of explaining the equations relative to the causal effects of the latent variables and the expressions that relate them with the indicators or observable variables. 2) Model identification begins, where, ideally, the model should be over-identified, and where we must ensure that model parameters can be estimated, meaning it has a positive number of degrees of freedom ($gl > 0$). 3) Evaluation of the quality of the database; according to the theory, the minimum recommended sample size is 200 subjects for any SEM, in addition to verifying the normality and multicollinearity of the data. 4) Estimation of parameters; the estimation involves determining the values of the unknown parameters and their respective measurement error, verifying parsimony adjustment measures, absolute adjustment measures, incremental adjustment measures. 5) Evaluation of the adjustment and interpretation. 6) Re-specification of the model; the use of adjustment methods. Below are the reliability and validity of each measure scale.

As many researchers that choose SEM analysis, the two-step recommendation from Anderson & Gerbing (1988) was followed. First, a CFA was carried out to verify goodness-of-fit, reliability and validity of each variable's measurement scale. Then, a SEM analysis was used for hypothesis validation and to appraise the structural relations between variables.

The final model was formed with 32 out of the 42 initial items after the CFA adjustment process. Model variables, dimensions and items are specified in Table 1. Measurement scale reliability can be demonstrated through the Cronbach's alpha coefficient. As shown in Table 1, Cronbach's alpha values range between 0.759 and 0.898, as these results comply with Nunnally (1978). Additionally, the Composite Reliability Index (CRI) (Fornell & Larcker, 1981) was included following recommendation on reliability testing for multidimensional scales, CRI results from 0.772 to 0.897 as shown in Table 1 reiterate the reliability of the measurement scales. Finally, the Average Variance Extracted value as used a third test for reliability. According to Fornell & Larcker (1981), the AVE value has to be higher than 0.5 to confirm scale reliability. The results shown in Table 1 demonstrate the reliability of all the measurement scales used in the research model.

To confirm convergent validity, the relation of each item with its corresponding factor was analyzed. The results indicate that every item used in the model was significant ($p < 0.01$). Furthermore, the average of the standardized factor loadings of each factor's item was higher than 0.70 and the items' individual standardized factor loadings were higher than 0.7, in agreement with recommendations from Hair, Black, Babin, Anderson, & Tatham (2006) and Bagozzi & Yi (1988), respectively. Moreover, the AVE was analyzed according to Fornell & Larcker (1981), exceeding the value of 0.5 which indicates that 50% or more of the items' variance is added to the latent variable.

The measurement model's goodness-of-fit was evaluated through a few indices like the Normed Fit Index (NFI), Non-Normed Fit Index (NNFI), Incremental Fit Index (IFI), and the Comparative Fit Index (CFI). These values, according to the literature (Byrne, 2013), should be close to 1 to indicate a good fit. Moreover, the root mean square error of approximation (RMSEA) should fluctuate between 0.05 and 0.08 (Jöreskog & Sörbom, 1981), and the Chi square to df ratio (Chi^2/df) should hold a value below the threshold of 5. The results shown at the bottom of Table 1 show an IFI=0.941 and CFI=0.940; RMSEA=0.052 and $\text{Chi}^2/\text{df}=1.67$; which indicates a good fit. Thus it can be confirmed that all constructs are multidimensional and data-adjusted.

The variance extracted and the confidence interval tests were used to verify the discriminant validity of the measurement scales. The variance extracted test results are shown in Table 2. The table's diagonal is formed with the AVE of each construct and the values below the diagonal are the squared correlation of each pair of constructs. According to Fornell & Larcker (1981) for a measurement scale to have discriminant validity, the squared correlations' value must be lower than their respective AVE. As for the confidence interval test, Anderson & Gerbing (1988) suggest estimating a confidence interval with the factor covariance plus/minus two times the standard error. If the given range or confidence interval does not include the unit, the measurement scale has discriminant validity. Table 2 shows that all squared correlations values placed below the diagonal are lower than the AVEs and that the confidence intervals above the diagonal do not include the unit, and therefore demonstrating that measurement scales used in this research have discriminant validity.

Table 1 Reliability and convergent validity of the measurement scale.

Factor	Item	Factor loading	Loading average	Cronbach α	CRI	AVE
Affective commitment	CA1	0.889	0.762	0.873	0.876	0.591
	CA2	0.873	***			
	CA3	0.737	***			
	CA5	0.667	***			
	CA6	0.643	***			
Continuance commitment	CC1	0.963	0.802	0.759	0.795	0.668
	CC2	0.640	***			
Normative commitment	CON1	0.872	0.723	0.765	0.772	0.537
	CON2	0.724	***			
	CON6	0.572	***			
Learning commitment	COA1	0.739	0.774	0.888	0.884	0.605
	COA2	0.784	***			
	COA3	0.869	***			
	COA4	0.843	***			
	COA6	0.633	***			
Shared vision	VIC1	0.668	0.706	0.829	0.801	0.505
	VIC2	0.596	***			
	VIC4	0.763	***			
	VIC5	0.798	***			
Open mindedness	MEA1	0.709	0.723	0.861	0.869	0.494
	MEA2	0.698	***			
	MEA3	0.814	***			
	MEA4	0.822	***			
	MEA5	0.662	***			
	MEA6	0.631	***			
Innovation Processes	P280b	0.868	0.884	0.877	0.877	0.781
	P280b	0.899	***			
	P280b	0.856	0.842			
Innovation Products/ Services	P280b	0.827	***			
Innovation Systems	P2805b	0.85	0.863	0.898	0.897	0.745
	P2806b	0.846	***			
	P2807b	0.892	***			

Notes: Model fit measures for the general model: Chi2/df = 1.67 (p= 0.000); RMSEA= 0.052; NFI = .864; IFI=0.941; CFI=0.940; Significance values: * = p < 0.1; ** = p < 0.05; ***= p < 0.001

Source: Authors (2016).

Table 2 Discriminant validity of the measurement scale

Constructs	Organizational commitment	Learning orientation	Innovation
Organizational commitment	0.590	(0.208,0.320)	(0.251,0.451)
Learning orientation	0.069	0.547	(0.216,0.364)
Innovation	0.123	0.084	0.745

Source: Authors (2016).

Analysis and results

After confirming reliability and validity of the measurement scales, the structural analysis of relations specified in the conceptual model was carried out for hypothesis testing. Table 3 shows the results of the hypothesis presented in the structural model. The goodness-of-fit indices of the proposed model are: $\chi^2/df=1.67$; $IFI=0.941$; $CFI=0.940$; and $RMSEA=0.052$, therefore the goodness of fit of the proposed model is confirmed.

Table 3 SEM results for hypothesis testing

Structural relation				Standardized factor loading (t)	p	Result
H1	Organizational Commitment	→	Learning orientation	0.554 (4.881)	***	Accepted
H2	Organizational Commitment	→	Innovation	0.121 (1.228)	n.s	Rejected
H3	Learning orientation	→	Innovation	0.308 (2.839)	*	Accepted

Notes: Model fit measures for the general model: $\chi^2/df = 1.716$ ($p = 0.000$); $RMSEA = 0.054$; $IFI = .936$; $TLI = 0.928$; $CFI = 0.936$; Significance values: * = $p < 0.1$; ** = $p < 0.05$; *** = $p < 0.001$
 Source: Authors (2016).

Regarding the first hypothesis proposed, organizational commitment is positively related to learning orientation, as it can be observed in Table 3, with a standardized coefficient of 0.554 and a value of t of 4.881. This allows us to accept the hypothesis with a significance of 0.001 ***.

Discussion and conclusion

According to recent studies from Lim (2010); Atak (2011); Mehrabi *et al.*, (2013), the results of the first relationship proposed in this study confirm organizational commitment as a positive and significant antecedent and play a determining role preceding learning orientation. Therefore, we can suggest that if employees are happy and willing to stay in the organization for a long time, and if they consider the organization's problems as their own, they are more likely to identify themselves with those values that increase the organization propensity to create and use knowledge and to question the existent mental models, all of which constitute learning orientation within an organization.

According to these study results, organizational commitment within the SME's context is significant and explained through the three dimensions proposed by Baker and Sinkula, (1999, 2009). The most important factor was the employee's identification with the organization (affective commitment). The employee's unwillingness to leave due to perceived costs (continuance commitment) and the employee's moral obligation to stay (normative commitment) were somehow less important though statistically confirmed as shown in Figure 1.

The second relationship proposed points out that the organizational commitment constitutes neither a positive nor a significant influence to innovation, this can explain that the employee commitment per se does not make them implement changes.

As for the third relationship proposed, our results also confirm that learning orientation influences directly and significantly in the innovation of the SMEs of Aguascalientes, which is the materialization of the learning creative process. Therefore, management ability to induce positive working environment learning orientation is a mechanism that directly affects a company's ability to challenge old assumptions about the market and about the way a company should be organized to address it. It does, additionally, facilitate discontinuous innovation (Baker and Sinkula, 1999).

The study results indicate that even though learning orientation is formed by three dimensions, shared vision is the dimension that more strongly influences actions that promote learning in the processes of the organization.

Regarding the implications of the study, it was found that, for the promotion of innovation processes in Aguascalientes' SMEs, top executives' strategic management should consider the role human capital plays within the organization. Creating a continuous learning environment in each area of the organization will generate and disseminate the knowledge necessary to break daily routine, while generating changes that originate in employees' own ideas for the development of innovation activities. Among other implications for those in charge of developing SMEs management is the evolution of transforming the role of administrative manager into a role of human talent knowledge manager.

Among the plans proposed by the government of the state of Aguascalientes is an increase of the levels of innovation in SMEs through support in financing, in advancing knowledge in information technologies, in value chain issues, an important reduction of costs, with improvements in logistics, and even in their market strategies. The results of this study suggest that it is necessary to implement coordinated measures of horizontal impact aimed at addressing the human capital factors that will enhance the development of the skilled labor force, which will, in turn, be able to transform those skills into a knowledge society able to learn, innovate and transfer knowledge. These actions support the development of harmonious labor relations with sustainable practices and will ultimately drive innovation.

Limitations and future research lines

It is necessary to point out that the study is using the sample for convenience because it depended on the collaboration of the companies that participated in the study, so the results apply only to the units of analysis on which the study was conducted. It is highly recommended for future research to carry out this study using probabilistic sampling in cases where the total sample can be obtained and the results can be generalized.

In future lines of research, it would be advisable to replicate the study by taking a probabilistic sample that generalizes the results, including the incorporation of different strata into the sample considering the size or sector of the company, as moderating variables to the different relationships examined in this study.

The study is also focused on measuring the model from the perspective of strategy management and from an organizational measurement approach, although it acknowledges human capital as key to the application of business strategies in SMEs by senior management. In this study, the organizational commitment and learning orientation are elements to be applied by the management to generate higher levels of innovation. In later studies, it would be convenient to investigate the state of the art and the implications from a human resources management perspective, and to understand the practices from such perspective as an influence in innovation.

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