Knowledge management processes and organizational performance: the mediating role of organizational learning

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Abstract

Purpose – *The purpose of this paper is twofold. First, it aims to analyze the individual influence of different knowledge management practises (KMP) on firm performance. Second, it aims to analyze the mediating role of organizational learning (OL) between each KMP and performance.*

Design/methodology/approach – *A telephone-survey was applied in 2018 to the managers of 400 Spanish firms. The data retrieved was analyzed by using multiple regression analysis.*

Findings – *Knowledge generation (KG) and knowledge flow (KF) promote firm performance, while there is not a direct association between knowledge storage and performance. OL mediates the relationship between KG and performance, as well as between KF and performance.*

Research limitations/implications – *First, this research confirms that not all the KMP have a direct effect on firm performance, thus, future research would need to differentiate between different KMP. Second, this paper is pioneering in providing empirical evidence that OL mediates the KMP – performance relationship. Third, the empirical study was performed in a context non-researched yet by the literature considering KMP individually: Spain.*

Practical implications – *First, besides the results managers should focus their efforts in practises related to KG and application. Second, OL mediating suggests that managers should invest in managerial commitment to promote a shared culture, shared vision, open-mind to new ideas and a lot of dialogue.*

Originality/value – *This is the first study that investigates how KMP contribute to firm performance by incorporating the mediating impact of OL. The results will help organizations to identify the KMP improving the performance.*

Keywords *Performance, SMEs, Spain, Knowledge management, Organizational learning, Knowledge management processes*

Paper type *Research paper*

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1. Introduction

Knowledge and learning are essential to organizational success (Pandey and Dutta, 2013; Del Giudice and Maggioni, 2014; Oliva, 2014; Chadwick and Raver, 2015; Aranda *et al.*, 2017) and economic growth (Chen and Dahlman, 2006). For this reason, enterprises seek to convert individual knowledge, which is the combination of information, personal experience and personal understanding, into organizational knowledge. However, this transformation is not easy nor simple (Rechberg and Syed, 2013). Companies, therefore, use a set of knowledge management processes (KMPs), defined as the dynamic activities and practises developed by an organization to process and manipulate its knowledge resources with the aim to produce valuable knowledge (Pinho *et al.*, 2012). Research exploring the impact of different KMPs on the organizational performance of

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privately-owned companies is very limited (Ali *et al.*, 2010; Daud and Yusoff, 2011; Mills and Smith, 2011; Jayasingam *et al.*, 2013; Ahmed *et al.*, 2015; Tubigi and Alshawi, 2015; Migdadi *et al.*, 2017; Durmuş-Özdemir and Abdukhoshimov, 2018; Dzenopoljac *et al.*, 2018) and has produced inconsistent results. Most of these works have focussed on countries that are initiating or at the midpoint of the process of becoming a knowledge economy according to the knowledge economy index developed by the World Bank (Chen and Dahlman, 2006). However, KMPs are socially embedded phenomena that are affected by institutional and cultural contexts (Hussinki *et al.*, 2017) and the different phases in the transition to the knowledge economy determine the competitive environment, hence, it seems necessary to research new contexts. The impact of KMPs on firm performance in privately-owned organizations in countries with well-developed knowledge economies such as European countries, the USA and the East Asian Newly Industrializing Economies, which have different general competitive conditions (Chen and Dahlman, 2006), constitutes, hence, a first research gap.

Moreover, the relationship between KMPs and performance seems to be more complex than a simple direct relationship because knowledge needs to be embedded in the organization to improve performance (Durst and Edvardsson, 2012). This embedding may be achieved through organizational learning (OL), defined as "the capability of an organization to process knowledge and to adjust its behaviour to reflect the new cognitive situation for the purpose of improving its performance" (Wu and Chen, 2014, p. 1148) and considered as a requirement for high levels of performance (Jain and Moreno, 2015). KMPs stimulate learning in organizations (Gupta and Chopra, 2018), OL promotes performance (Jain and Moreno, 2015; Turulja and Bajgoric, 2018), being a learning organization has been shown to mediate the KMPs – performance link among state-owned organizations in Dubai (Ngah *et al.*, 2016) and empirical evidence shows that OL mediates the KMPs – performance link is the telecom sector of Pakistan (Rehman *et al.*, 2015). However, the mediating role of OL on the KMPs – performance relationship in the context of privately owned organizations from countries with well-developed knowledge economies constitutes a second research gap.

To fill these gaps, the first objective of this research is to analyze how three identifiable types of KMPs [knowledge generation (KG), knowledge storage (KS) and knowledge flow (KF)] influence the performance of private firms in a well-developed knowledge economy. The second objective, in line with Ngah *et al.* (2016) and Rehman *et al.* (2015), is to test the mediating role of OL on the relationships between each of these KMPs and firm performance. The proposed research model is tested on a sample of 400 small- and medium-sized enterprises (SMEs) from Spain, a country in the South-West of Europe.

This work makes at least three contributions to the KM literature. Firsly, it analyzes the complexity of the KMP – performance link in SMEs by decomposing KMP into its principal types or dimensions, thus responding to calls for further research on the consequences of different KMPs (Durst and Edvardsson, 2012; Cerchione *et al.*, 2016; Massaro *et al.*, 2016). Secondly, this work meets the demand for a more in-depth examination of the mechanisms through which different types of KMPs influence performance (Cerchione *et al.*, 2016; Migdadi *et al.*, 2017ô Durmuş-Özdemir and Abdukhoshimov, 2018). Specifically, it provides pioneering empirical evidence that OL mediates the relationships between some types of KMPs and organizational performance, thereby complementing and expanding upon papers by Ngah *et al.* (2016) and Rehman *et al.* (2015). Thirdly, this article focusses on Spain, which is considered to have a knowledge-driven economy (Chen and Dahlman, 2006), and thus, represents a hitherto neglected context for research into the influence of different types of KMPs on organizational performance. Hence, this work contributes to international comparisons in the knowledge management (KM) field.

2. Theoretical framework

With the increasing importance of knowledge as a strategic resource for enterprises and economic growth (Chen and Dahlman, 2006), KM has become a popular research topic (Durst and Edvardsson, 2012; Jiménez-Jiménez and Sanz-Valle, 2013; Inkinen, 2016; Massaro *et al.*, 2016; Luengo-Valderrey and Moso-Díez, 2019; Meher and Mishra, 2019). However, KM is a complex and multidimensional construct and there are ambiguities in the literature over terminology, definition and taxonomies of KMPs (Pinho *et al.*, 2012). Despite a lack of consensus over the different KMPs that a company can use to transform its knowledge resources into valuable knowledge, for the purposes of this research the authors adopt three KMPs commonly used in the literature on KM among SMEs (Durst and Edvardsson, 2012; Massaro *et al.*, 2016) as follows:

1. *KG* – encompassing knowledge acquisition and knowledge creation (Dzenopoljac *et al.*, 2018);
2. *KS* – encompassing knowledge classification and saving (Mahdi *et al.*, 2019); and
3. *KF* – including both knowledge transfer (KT) and knowledge application (KA) (Migdadi *et al.*, 2017).

Research studying the impact of different KMPs on business outcomes has paid attention to other variables such as innovation performance (Yusr *et al.*, 2017; Luengo-Valderrey and Moso-Díez, 2019) or job satisfaction (Kianto *et al.*, 2016). We diverge from these studies by focussing on the influence of KMPs on organizational performance because it is considered as the more global measure of an organization's success and achievements (Yeung *et al.*, 2003; Migdadi *et al.*, 2017). Furthermore, we examine this influence in the particular context of privately owned firms because research into the effects of KMPs on the organizational performance of privately-owned organizations is limited (Ali *et al.*, 2010; Daud and Yusoff, 2011; Mills and Smith, 2011; Jayasingam *et al.*, 2013; Ahmed *et al.*, 2015; Tubigi and Alshawi, 2015; Migdadi *et al.*, 2017; Durmuş-Özdemir and Abdukhoshimov, 2018; Dzenopoljac *et al.*, 2018) and has reported inconsistent findings. For instance, while some scholars have found a positive association between knowledge creation (Tubigi and Alshawi, 2015; Migdadi *et al.*, 2017), knowledge acquisition (Ali *et al.*, 2010; Daud and Yusoff, 2011; Mills and Smith, 2011; Ahmed *et al.*, 2015; Tubigi and Alshawi, 2015), KS (Ali *et al.*, 2010; Dzenopoljac *et al.*, 2018), KA (Daud and Yusoff, 2011; Mills and Smith, 2011; Ahmed *et al.*, 2015) and KT (Tubigi and Alshawi, 2015; Dzenopoljac *et al.*, 2018) and firm performance, others have found no significant association between external knowledge acquisition (Migdadi *et al.*, 2017), KS (Migdadi *et al.*, 2017), KT (Durmuş-Özdemir and Abdukhoshimov, 2018) and firm performance. These inconsistencies seem to indicate that not all KMPs are required for superior performance. Moreover, most of these studies have explored companies located in countries where the economies are not yet knowledge-driven, including Jamaica (Mills and Smith, 2011), Jordan (Migdadi *et al.*, 2017), Kuwait (Dzenopoljac *et al.*, 2018), Malaysia (Daud and Yusoff, 2011; Jayasingam *et al.*, 2013), Turkey (Durmuş-Özdemir and Abdukhoshimov, 2018) and Pakistan (Ahmed *et al.*, 2015) (Table 1).

This article first sheds light on the relationship between KMPs and organizational performance by analyzing the effect of different KMPs separately, rather than treating KMPs as a single construct, in the non-researched context of a well-developed knowledge economy: Spain. In particular, we focus on SMEs because they make up the majority of the business landscape (Massaro *et al.*, 2016; Stoian and Gilman, 2017) and manage knowledge in a different fashion than larger organizations (Durst and Edvardsson, 2012; Cerchione *et al.*, 2016; Massaro *et al.*, 2016; Cerchione and Esposito, 2017). Additionally, KM research has been mainly focussed on the needs of large organizations (Durst and Edvardsson, 2012; Cerchione *et al.*, 2016; Massaro *et al.*, 2016); hence, there is a need for more research into KMPs in the context of SMEs (Cerchione and Esposito, 2017;

Table 1 Summary of previous research studies analyzing the impact of different KMPs and organizational performance[a]

Author/s (year)	*KG*	*KS*	*KF*	*Sample*
Ali *et al.* (2010)	Acquisition (+)	Storage (+)	Sharing (n.s.)	Unknown number of SMEs from Pakistan
Daud and Yusoff (2011)	Acquisition (+)	n.a.	Application (+) Conversion (+)	833 SMEs from Malaysia
Mills and Smith (2011)	Acquisition (+)		Application (+) Conversion (n.s)	189 manufacturing and services companies from Jamaica (from all sizes: small, medium an large companies)
Jayasingam *et al.* (2013)	Acquisition (existing) (+) Acquisition (hiring) (n.s.)	n.a.	Utilization (+)	180 knowledge-based organizations from Malaysia (from all sizes: small, medium and large companies)
Ahmed *et al.* (2015)	Acquisition (+)	n.a.	Application (+) Conversion (+)	256 employees from the banking sector in Pakistan
Tubigi and Alshawi (2015)	Creation (+) Acquisition (+)	Archiving (+)	Usage (+) Transfer (+)	Five managers from one airline company
Migdadi *et al.* (2017)	Creation (+) Acquisition (n.s.)	Storage (n.s.)	Sharing (+)	210 manufacturing and service organizations from Jordan (firms' size not reported)
Durmuş-Özdemir and Abdukhoshimov (2018)	Harvesting (+)	n.a.	Transfer (n.s.) Transformation (+)	59 top-level managers of the largest integrated telecommunications company, TTG-Antalya, in Turkey
Dzenopoljac *et al.* (2018)	Generation and development (+)	Storage (+)	Transfer and sharing (+)	139 companies from nine different industry sectors in Kuwait (firms' size not reported)

Notes: [a]This table includes only those works that have researched two or more KMP simultaneously; +: positive influence; −: negative influence; n.s.: not significant effect; n.a.: not analyzed

Mishra, 2019) and specifically into the effects of KM on the organizational performance of SMEs (Cerchione *et al.*, 2016).

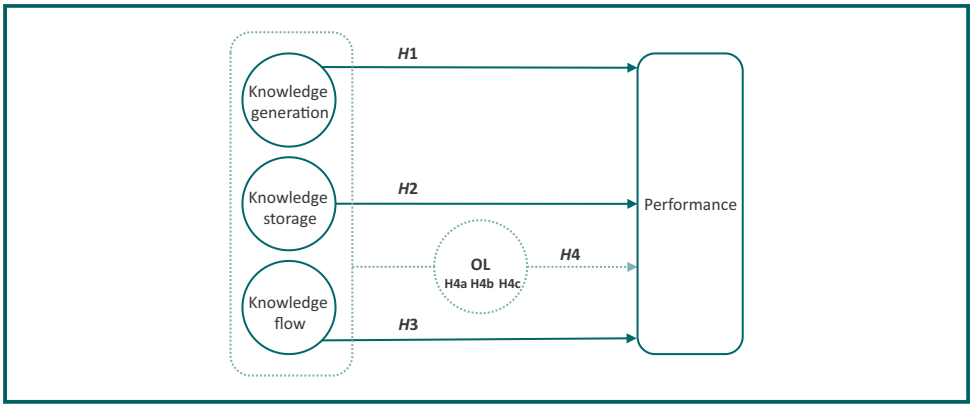
Moreover, a diverse range of studies has pointed to the possibility that the relationship between KMPs and firm performance is more complex than a clear and simple direct relationship, by indicating that such variables as innovation capabilities (Migdadi *et al.*, 2017), innovation (Durmuş-Özdemir and Abdukhoshimov, 2018), learning culture (Cooper *et al.*, 2016) and OL (Rehman *et al.*, 2015) mediate the KMPs – performance link. Therefore, considering that OL "provides a bridge between the cultivation of knowledge and the organization's effectiveness" (Jain and Moreno, 2015, p. 18), this paper aims to help in resolving the inconclusiveness of previous findings. To this end, and in line with the notions that OL and KM are distinct concepts and that KM enables OL more than OL promotes KM (Karkoulian *et al.*, 2013), this work goes one step further than Rehman *et al.* (2015) by exploring the mediating impact of OL on the relationships between different KMPs (namely KG, KS and KF) and performance in privately-owned organizations. The research model, depicted in Figure 1 and explained in detail in the next section, proposes that the three analyzed KMPs boost organizational performance and that the relationship between each of the KMPs and performance is mediated by OL.

3. Research model

3.1 Knowledge generation and organizational performance

In line with Tubigi and Alshawi (2015), KG processes are understood as those aimed at developing new knowledge in the company. This new knowledge includes both tacit knowledge (i.e. personal and based on human experience) and explicit knowledge (Nonaka and Takeuchi, 1995). Knowledge might be created by the enterprise on its own, for instance through research and development (R&D) activities inside the firm (Donate and Sánchez de Pablo, 2015) or it might be obtained from the environment, by acquiring it (Dzenopoljac *et al.*, 2018; Mahdi *et al.*, 2019) or through external networks and collaborative

Figure 1



arrangements (Jiang *et al.*, 2016). Generally, the former is known as internal knowledge creation, while the latter is known as external knowledge acquisition. However, in line with Dzenopoljac *et al.* (2018), this article groups knowledge acquisition and knowledge creation together in KG processes, on the basis that they are different ways to arrive at the same goal of new knowledge (Durst and Edvardsson, 2012). At the same time, this work recognizes that when the knowledge is created by the enterprise on its own, this permits the firm to take advantage through the development of absorptive capacities (Serrano-Bedia *et al.*, 2016). In addition, new knowledge does not mean necessarily new invention or innovation; it could be new only for the firm. Therefore, observation and imitation are as valid as imagination as methods for incorporating new knowledge into the firm (Singh and Gupta, 2014).

The literature attending to the relationship between knowledge acquisition and firm performance has mostly reported a positive association (Ali *et al.*, 2010; Daud and Yusoff, 2011; Mills and Smith, 2011; Ahmed *et al.*, 2015; Tubigi and Alshawi, 2015), with the exception of Migdadi *et al.* (2017), who did not find a relationship between external acquisition and organizational performance and Jayasingam *et al.* (2013), who identified a process named as "acquiring (hiring)" as having no effect on performance. The only two studies that have analyzed the effect of knowledge creation on performance (Tubigi and Alshawi, 2015; Migdadi *et al.*, 2017) have both concluded that the knowledge creation process boosts organizational performance. In addition, Durmuş-Özdemir and Abdukhoshimov (2018) identified a positive influence on the performance of a process related to the creation of new knowledge that they called "harvesting". Finally, Jayasingam *et al.* (2013) found that a similar process of "acquiring (existing employees)" had a positive influence.

Although Egbu *et al.* (2005) reported that SMEs tended to rely more heavily on external knowledge, the concept of KG used in the present article is the sum of knowledge acquisition and knowledge creation. Therefore, consistent with most of the empirical evidence (Tubigi and Alshawi, 2015; Dzenopoljac *et al.*, 2018), we propose as follows:

H1. KG positively influences organizational performance.

3.2 Knowledge storage and organizational performance

KS processes refer to the systems and procedures used for storing and maintaining knowledge within an organization (Ali *et al.*, 2010; Migdadi *et al.*, 2017). These processes include activities to classify knowledge and save knowledge in database systems (Mahdi *et al.*, 2019). This type of KMP could be put in place with the aid of manuals, guidelines,

books, databases, directories, intranets or documents with updated information about clients, suppliers, the environment or the enterprise (Donate and Sánchez de Pablo, 2015).

According to Alegre *et al.* (2013, p. 4), "KS allows the organization to have an "organizational memory" that is internal knowledge accumulated over time". Hence, KS allows firms to re-use knowledge when required, which implies cost and time savings that may contribute to improved performance. Thus, with the sole exception of Migdadi *et al.* (2017), who found the relationship between KS and performance to be non-significant, there is consistent evidence in the literature for the positive impact of KS on organizational performance (Ali *et al.*, 2010; Dzenopoljac *et al.*, 2018) and Tubigi and Alshawi (2015) refer to this practise as "archiving" and they also identify a positive influence. Taking into account the arguments of Alegre and colleagues (2013) and in line with the available empirical evidence for private companies, our second hypothesis is formally stated as follows:

H2. KS positively influences organizational performance.

3.3 Knowledge flow and organizational performance

KF is defined as "the aggregate volume of know-how and information transmitted [...] in a certain period of time" (Yang *et al.*, 2013, p. 23). In line with this definition, the present study includes in the concept of KF both KT and KA because each relates to knowledge sharing and use and KF refers to the use of knowledge (Migdadi *et al.*, 2017). KT is the process of knowledge distribution inside an organization, using such mechanisms as seminars, teaching, storytelling, conversations, blogging, webs, the use of information technologies to improve communication, meetings to spread information about new initiatives, periodical reports and the use of interdisciplinary teams to share knowledge (Tuamsuk *et al.*, 2013; Donate and Sánchez de Pablo, 2015). KA is linked to the use and implementation of knowledge.

KF "is a key process in converting individual knowledge to organizational capabilities" (Giampaoli *et al.*, 2017, p. 358). If knowledge is not applied, KM will not be effective (Tuamsuk *et al.*, 2013). For this reason, the use and transfer of knowledge are the most influential processes of KM to promote firm performance (Tubigi and Alshawi, 2015).

Empirical research mostly reports a positive association between the application of knowledge and performance (Daud and Yusoff, 2011; Ahmed *et al.*, 2015). Similarly, there is a near-consensus over the positive influence of KT on organizational performance (Jayasingam *et al.*, 2013; Tubigi and Alshawi, 2015; Dzenopoljac *et al.*, 2018), although Durmuş-Özdemir and Abdukhoshimov (2018) report this relationship as not significant. Ali *et al.* (2010) found no influence on knowledge sharing on performance, but Migdadi *et al.* (2017) identified that sharing did have a positive effect. The studies of Daud and Yusoff (2011) and Ahmed *et al.* (2015) reported that the process of knowledge conversion had a positive influence on performance, but no such influence was found by Mills and Smith (2011). Therefore, in line with most of the empirical evidence, this paper proposes as follows:

H3. KF positively influences organizational performance.

3.4 Knowledge management practises, organizational performance and organizational learning

KM and OL are complementary but different concepts (Karkoulian *et al.*, 2013) as follows: "KM is aimed at building and applying stocks of knowledge", while "OL is about managing the process of learning in an organization" (Mishra and Bhaskar, 2011). That is KM sees knowledge as a stock, while OL emphasizes the processes through which KFs is used in the company, with KM, therefore, treated as the first step in the OL process (Ngah *et al.*, 2016). This was confirmed by Karkoulian and colleagues (2013), who described KM and OL

as distinct concepts, with KM boosting OL more than OL promotes KM (Karkoulian *et al.*, 2013).

Thus, the knowledge resources and processes – the KMPs – in a firm should be developed through OL to achieve competitive advantages (Jain and Moreno, 2015). As Wu and Chen (2014, p. 1148) state, OL "helps the organization embed organizational knowledge into organizational processes by motivating the creation, transfer and application of knowledge"; that is OL works as a catalyst (Moustaghfir and Schiuma, 2013) because knowledge is realized through learning (Karkoulian *et al.*, 2013). Therefore, KMPs are considered a prerequisite for OL (Liao and Wu, 2010; Ngah *et al.*, 2016) and, when measured as a second-order construct comprising three dimensions (knowledge acquisition, knowledge conversion and KA), have been reported to affect OL positively in knowledge-intensive sectors (Liao and Wu, 2010). Similarly, knowledge creation (Qi and Chau, 2018) and knowledge sharing (Khan *et al.*, 2015; Qi and Chau, 2018) have been reported to boost OL, with OL being understood as "the capability of an organization to process knowledge [...] and to modify its behaviour to reflect the new cognitive situation, with a view to improving its performance" (Jerez-Gómez *et al.*, 2005, p. 716). OL has also been identified as a key element of organizational performance (Lin and Kuo, 2007; Ho, 2008; Martínez-Costa *et al.*, 2019; Kuo, 2011; Noruzy *et al.*, 2013; Jain and Moreno, 2015; Attia and Eldin, 2018; Turulja and Bajgoric, 2018), and has been shown to act as a mediating variable between KM and innovativeness (Srivastava, 2016; Nouri *et al.*, 2017), between KM capabilities and performance (Ngah *et al.*, 2016) and between KMP, measured as a general construct and organizational performance (Rehman *et al.*, 2015). Thus, considering the above argument that learning and knowledge are related concepts and that one cannot exist without the other (Karkoulian *et al.*, 2013) and the further claim that not all KMPs may be necessary for superior performance (Ali *et al.*, 2010; Migdadi *et al.*, 2017; Durmuş-Özdemir and Abdukhoshimov, 2018), this work complements and expands upon Rehman *et al.*'s (2015) study by decomposing KMP into three types, namely, KG, KS and KF. Therefore, we formally hypothesize as follows:

H4a. OL mediates the influence of KG on organizational performance.

H4b. OL mediates the influence of KS on organizational performance.

H4c. OL mediates the influence of KF on organizational performance.

4. Research design

4.1 Sample

Data for this study, which is part of a larger project, was collected using a survey instrument applied to Spanish SMEs. The study's population was compiled from the SABI database (Iberian Balance Sheets Analysis System), which provides detailed data of the financial statements filed in commercial registries and has been used previously (Cegarra-Navarro *et al.*, 2017). The criteria for inclusion were as follows. Firstly, companies affected by special situations such as wind-up, liquidation, insolvency or zero activity, were excluded. Secondly, the study population was restricted to private SMEs, operationalized as non-listed businesses with 10 to 249 employees (Hernández-Linares *et al.*, 2019).

Before launching the survey, five rigorous pre-tests involving personal interviews with executives of companies (not included in the final sample) and academics took place to validate the questionnaire. These pre-tests helped to guarantee that the questions raised were clearly understood and that the results would reflect the natural and spontaneous responses of the participants. A randomly selected list of 5877 Spanish SMEs was contacted to complete a questionnaire by telephone. In particular, the questionnaires were delivered to CEOs. CEOs were targeted because our research model is at the firm level of analysis; and they are "deemed a reliable key informant" (Madison *et al.*, 2018, p. 330)

because they have access to information from a wide range of departments, especially "in the case of small organizations where the view of respondents may, in fact, reflect those of the firm" (Lyon *et al.*, 2000, p. 1058). In addition, the use of similar informants across organizations (CEOs) implies that the level of influence of all informants in their organizations would be constant (Aragón-Correa *et al.*, 2007), which increases the validity of the variable's measurement (Glick, 1985). Finally, 400 questionnaires were fully completed. The response rate (6.8%) is higher than that reported by other studies targeting top management teams in Europe (Hernández-Linares *et al.*, 2019).

4.2 Measures and scale validation

All constructs were measured using established Likert-type scales with a five-point response format anchored by *strongly disagree* (1) and *strongly agree* (5). All, Cronbach's alpha values were acceptable ($\alpha \geq 0.80$), surpassing the threshold of 0.7 (Nunnally, 1978) (Appendix 1), thus, the scales showed internal consistency.

Dependent variable: performance (Cronbach's $\alpha = 0.876$) was measured with a subjective measure to yield "more holistic evaluations and capture more than a single performance element" (Stanley *et al.*, 2019, p. 181). Considering that performance is an inherently multidimensional construct (Cameron, 1978), it was measured using an eight-item scale, with the items taken from Arend (2013) and Wiklund and Shepherd (2003). Specifically, the research team asked respondents to compare their organization to their competitors to assess organizational performance in terms of, for example, sales growth, profit margin or product/service quality (Appendix 1 for more information). In this case, the 5-point responses ranged from *much worse* to *much better* than the respondent organization's main competitors.

Independent variables: *KMPs*. Although other measures have appeared in the literature for assessing KMPs (Ahmed *et al.*, 2015; Chen and Fong, 2015), this study adapted the 30-item scale developed by Donate and Sánchez de Pablo (2015) to the following constructs: KG (acquisition and creation processes), KF (application and transfer processes) and KS.

KG was measured by five items (Cronbach's $\alpha = 0.831$). To the four items adopted from Donate and Sánchez de Pablo (2015) to assess knowledge creation, this work added a new item referring to the acquisition of knowledge from the environment, as knowledge may be generated by the enterprise on its own or obtained from the environment (Mahdi *et al.*, 2019).

KS was measured by adopting the items used by Donate and Sánchez de Pablo (2015) to assess KS processes, although two items were deleted for reasons of internal consistency. The scale was finally comprising of six items (Cronbach's $\alpha = 0.776$).

KF (Cronbach's $\alpha = 0.897$) was measured using seven items for KT and four items for KA (Donate and Sánchez de Pablo, 2015). KT and KA were considered dimensions of a second-order construct called KF.

Although the internal consistency of the measures of knowledge acquisition, KS and KF support the new scale, authors further conducted a confirmatory factor analysis (CFA) on the three types of KMPs using AMOS software. The three types of KMPs (knowledge acquisition, KS and KF) were included in the analysis model (Appendix 2) and the hypothesized model showed an acceptable model fit ($\chi^2 = 778.615(207)$, CFI = 0.850, IFI = 0.851, TLI = 0.833, AGFI = 0.809). Furthermore, all standardized factor loadings exceeded the 0.50 cut-off for practical significance (Hair *et al.*, 2006) and all were significant at the 0.001 level ($t > 2.0$), suggesting convergent validity (Kohli *et al.*, 1998).

Mediating variable: *OL* (Cronbach's $\alpha = 0.862$). This variable was assessed using the four-item scale from Martín-Rojas *et al.* (2013), which is an adaptation of the scales from García-Morales *et al.* (2006) and Aragón-Correa *et al.* (2007).

Control variables: To cater to other potential effects on the dependent variables, four controls were included into the model. Firstly, the authors controlled for firm size using the logarithm of a number of employees (Biscotti *et al.*, 2018) on the basis of research suggesting that smaller firms, despite having less resources, and therefore, a reduced capacity to generate knowledge, might be able to apply knowledge more quickly due to a lack of bureaucracy (Dabic and Kiessling, 2019). Next, we controlled for industry category (Segarra-Ciprés and Bou-Llusar, 2018), on the basis that businesses in different industries may show different organizational characteristics (Wiklund and Shepherd, 2005) and reflecting the empirical evidence showing that industry sector affects KM (Meroño-Cerdan *et al.*, 2007; Wu and Chen, 2014; Dabic and Kiessling, 2019). Accordingly, three industry groups were taken into account: the industrial and service sectors were considered the second and third control variables, respectively, with the construction sector being used as the default. Finally, on the basis that the age of a firm could improve, for instance, organizational slack resources (Cruz and Nordqvist, 2012) and in line with other studies focussed on KM (Donate and Sánchez de Pablo, 2015; Biscotti *et al.*, 2018), this work controlled for *firm age* (measured as the years, as the firm's foundation) to reflect changes in the intensity of the use of KM strategies with age (Meroño-Cerdan *et al.*, 2007).

5. Results and discussion

The means, standard deviations and zero-order correlations are shown in Table 2. All, correlation coefficients were smaller than 0.655. The variance inflation factors were below 2.54 and the condition indexes were below 23.660, suggesting that multicollinearity is not a concern (Belsley *et al.*, 1980; Hair *et al.*, 1998).

The data for this study is based on the perceptions of one respondent per organization. Hence, with the goal of minimising the risk of common method variance, and in line with other research (Arend, 2013), the authors guaranteed the anonymity of the respondents, performed a pretest to ensure minimum ambiguity through the correct wording of questions, and separated the independent and dependent scale items to prevent respondents from intuiting relationships between variables. Besides these procedural mechanisms, the authors checked for potential common method bias by performing Harman's one-factor test (Podsakoff and Organ, 1986), which has been applied by previous studies (Aragón-Correa *et al.*, 2007). All, items of the variables used in the analysis were entered into a factor analysis. Seven factors with eigenvalues greater than one emerged, with the first factor accounting for 31.99% of the variance. The rotated solution, using varimax rotation, revealed similar results. As a single factor did not emerge and no factor accounted for most of the variance, authors considered the single method of data collection as an acceptable risk. In addition, all control variables were obtained from a secondary source (the SABI database).

Table 2 Descriptive statistics and correlations

Variables	*Mean*	*SD*	*1*	*2*	*3*	*4*	*5*	*6*	*7*	*8*
Performance	3.567	0.666								
Firm size[a]	3.021	0.660	−0.015							
Manufacturing	0.23	0.420	−0.011	0.057						
Services	0.67	0.471	−0.027	−0.023	−0.773***					
Firm age	22.607	12.501	−0.153**	0.173***	0.110*	−0.061				
KG	2.627	1.051	0.302**	0.060	0.126**	−0.094*	−0.013			
KS	3.298	0.915	0.299***	0.126**	0.051	−0.034	−0.010	0.424***		
KF	3.249	0.875	0.413***	0.054	0.014	0.060	−0.048	0.443***	0.599***	
OL	3.695	0.895	0.467***	−0.086*	0.025	0.007	−0.153**	0.460***	0.513***	0.655***

Notes: [a]Logarithm of the number of employees; *$p < 0.05$; **$p < 0.01$;; ***$p < 0.001$

Table 3 Results of linear regression analysis: five models[a]

	Dependent variable: performance				*Dependent variable:* OL	
Variables	*Model 1* B (S.E.)	*Model 2(Step 2)* B (S.E.)	*Model 3(Step 3)* B (S.E.)	*Model 4* B (S.E.)	*Model 5* B (S.E.)	*Model 6(Step 1)* B (S.E.)
Firm size[a]	0.013(0.051)	−0.021(0.046)	0.043(0.045)	0.017(0.046)	−0.087(0.068)	−0.170**(0.049)
Manufacturing	−0.090(0.125)	−0.204****(0.113)	−0.168(0.111)	−0.204****(0.110)	0.226(0.167)	−0.003(0.121)
Services	−0.113(0.111)	−0.198****(0.101)	−0.165****(0.099)	−0.194*(0.098)	0.150(0.149)	0.017(0.107)
Firm age	−0.008**(0.003)	−0.007**(0.002)	−0.005****(0.002)	−0.005*(0.002)	−0.11**(0.004)	−0.007**(0.003)
KG		0.088**(0.032)		0.054****(0.033)		0.153***(0.035)
KS		0.034(0.042)		−0.002(0.042)		0.160***(0.0445)
KF		0.250***(0.045)		0.141**(0.042)		0.489***(0.047)
OL			0.344***(0.033)	0.223***(0.046)		
ΔR^2	0.026*	0.191***	0.206	0.028***	0.031*	0.477***
R^2	0.026	0.217	0.232	0.261	0.031	0.508
Adjusted R^2	0.016	0.203	0.223	0.246	0.022	0.500
F	2.654*	15.500***	23.861***	17.242***	3.200*	57.888***

Notes: [a]logarithm of the number of employees; ****$p < 0.1$; *$p < 0.05$; **$p < 0.01$;; ***$p < 0.001$

The proposed theoretical model was tested by hierarchical regression analysis, the results of which are presented in Table 3. In Models 1 to 4, the dependent variable is organizational performance; in Models 5 and 6, the dependent variable is OL (the mediating variable in our research model). In Model 1, the four control variables were included, but only the *firm age* was partially significantly related to organizational performance ($\beta = -0.008$, $p < 0.01$). To test *H1* to *H3*, KMPs were entered in Model 2 and a significant change in R^2 was observed ($\Delta R^2 = 0.191$, $p < 0.001$). KG showed a significant impact on firm performance ($\beta = 0.088$, $p < 0.01$), supporting *H1*, which predicted that KG would positively influence organizational performance. KF also showed a significant and positive association with organizational performance ($\beta = 0.250$, $p < 0.001$), supporting *H3*, which predicted that KF would positively influence organizational performance. However, *H2* was not supported because the association between KS and performance was not found significant ($\beta = 0.034$, *n.s.*).

To test for the mediation effects predicted in *H4a* to *H4c*, the four-step procedure of Baron and Kenny (1986) was used. The first step of this method requires that the independent variables (KG, KS and KF) significantly predict the mediator (OL). The results show (Table 3, Model 6) that all KMPs predicted OL (KG, $\beta = 0.157$, $p < 0.001$; KS, $\beta = 0.160$, $p < 0.001$; and KF, $\beta = 0.489$, $p < 0.001$). The second step requires that the independent variables (KG, KS and KF) significantly predict the dependent variable (organizational performance). The results show (Table 3, Model 2) that KG and KF were significantly associated with performance ($\beta = 0.088$, $p < 0.01$ and $\beta = 0.250$, $p < 0.01$, respectively), but KS practise and performance were not significantly associated. The third step requires that the mediator (OL) significantly predicts the dependent variable (performance). The results (Table 3, Model 3) show that OL was an antecedent of organizational performance ($\beta = 0.344$, $p < 0.001$). The final step requires that the relationship between each type of KMP and organizational performance must disappear or decrease when the mediator (OL) is introduced into the regression equation. The results show (Table 3, Model 4) that the effect of KG on performance became almost insignificant when OL was included, which supports *H4a*. To test the significance of this indirect effect, a Sobel test (Sobel, 1982) was conducted and the results were satisfactory for *H4a* (Sobel test statistic = 4.031; $p < 0.05$). In the case of KF the significance was reduced, partially supporting *H4c*. In this case, the Sobel test was also satisfactory (Sobel test statistic = 7.36; $p < 0.05$). Finally, *H4b* was not supported because it failed in the second step, with KS process showing no significant association with firm performance.

The results show the direct and positive effects of KG and KF on organizational performance. Regarding KG, this result is consistent with previous studies (Dzenopoljac

et al., 2018) reporting a positive association between knowledge acquisition (Ali *et al.*, 2010; Daud and Yusoff, 2011; Mills and Smith, 2011; Ahmed *et al.*, 2015; Tubigi and Alshawi, 2015; Durmuş-Özdemir and Abdukhoshimov, 2018) or knowledge creation (Tubigi and Alshawi, 2015; Migdadi *et al.*, 2017) and organizational performance. This means that when a firm deploys KMPs-oriented towards external knowledge acquisition and/or internal knowledge creation, the new knowledge thereby obtained improves organizational performance. This process supposes a strong commitment to R&D investment, both external and internal, in the KM strategy.

Similarly, firm performance is improved when a firm deploys KMPs-oriented towards the transfer and sharing of knowledge inside the company and/or the improvement of the use of knowledge across organizational processes (Tubigi and Alshawi, 2015). This result is consistent with previous empirical evidence regarding KA (Daud and Yusoff, 2011; Mills and Smith, 2011; Ahmed *et al.*, 2015) and KT (Tubigi and Alshawi, 2015; Dzenopoljac *et al.*, 2018) and corroborates the notions that knowledge is only effective for a company when it is applied (Tuamsuk *et al.*, 2013) and that the use and transfer of knowledge are key processes to boost organizational performance (Tubigi and Alshawi, 2015). In other words, and paying attention to the measure used, we can say that information technologies (e.g. intranet or e-mail) influence information flows and communications, which are directly related to organizational performance. In addition, such processes as distributing internal reports, holding periodical meetings and communicating a firm's objectives and goals are considered performance-improving processes. To promote these processes, the existence of interdisciplinary teams is a very interesting tool to share knowledge and information, and thus, to use KF to improve competitive performance. In short, all the processes that promote KF (into the enterprise, between the enterprise and customers and/or between the enterprise and suppliers) are drivers of improved organizational performance.

When comparing our results with those found in economies that are in a transitioning situation, no differences emerge. Thus, the positive effect found from KG and KF is also confirmed in a knowledge driven economy such as Spain, while the absence of a direct link between KS and performance is in line with the finding of Migdadi *et al.* (2017), although it challenges the applicability of the findings of Ali *et al.* (2010) to Spain, and hence, to other well-developed knowledge economies such as Canada, the USA or other European countries.

In general, the results confirm the value of distinguishing between different types of KMPs to study their impact on organizational performance (Ali *et al.*, 2010), given that not all processes have the same influence (Ali *et al.*, 2010; Jayasingam *et al.*, 2013; Migdadi *et al.*, 2017). Specifically, the results verify that knowledge needs to be properly leveraged to boost firm performance (Gupta and Chopra, 2018) and that the simple stock of knowledge does not affect firm performance.

Finally, the mediation role of OL was partially confirmed. A stronger mediation effect was found for KG, which can be explained by the creation or acquisition of new knowledge by any means only guaranteeing improved performance when it is used to generate OL. Regarding KF processes, only a partial mediation effect was found, which means that the mobilization of knowledge through transfer and application has both a direct effect on performance and an indirect effect through OL. This result is consistent with previous literature, considering that Castaneda *et al.*'s (2018) review concluded that "the characteristic processes of OL are knowledge creation and knowledge acquisition, although other processes are also relevant to this field such as KT" (Castaneda *et al.*, 2018, p. 303). These findings support the call for organizations to provide learning environments and processes (Hong and Kuo, 1999) to maximize the positive impact of KMPs on organizational performance. Finally, although this study did not confirm the mediating effect of KS, this KMP did show a positive and significant effect on OL, which points to this kind of practise having a more subtle effect on the KM strategy of firms. For example, the

development of effective KS processes (such as the existence of manuals, databases and repositories as registries of codified and documented knowledge) that allow different people or departments in the company to access knowledge can be understood as a necessary condition for a KM system to run properly, but not as a sufficient condition for the direct improvement of performance.

6. Conclusion

The present paper addresses two research gaps identified in the literature review by analyzing the complex relationships between different KMPs and the organizational performance of privately owned firms in the non-researched context of well-developed knowledge economies; and the mediating effects of OL in these relationships. The mediation of OL had been previously identified (Ngah *et al.*, 2016; Rehman *et al.*, 2015), but only in studies that considered KMP as a single construct, despite the empirical evidence confirming that not all types of KMPs are essential to superior organizational performance (Ali *et al.*, 2010; Migdadi *et al.*, 2017; Durmuş-Özdemir and Abdukhoshimov, 2018). To address these research gaps, an empirical study of the relationships between KMPs, OL and performance was performed with data obtained from a sample of 400 Spanish SMEs. The empirical study yielded some important results, the implications of which for scholars and managers are explained below.

6.1 Implications for researchers

This study contributes to the literature by discussing and empirically researching the link between different KMPs (KG, KS and KF) and organizational performance, as well as the mediating role of OL in these relationships. Regarding the first gap identified – the link between KMPs and organizational performance of privately owned firms in the non-researched context of well-developed knowledge economies – the findings show that not all types of KMPs analyzed to have a direct effect on performance, confirming the findings of previous studies in other knowledge contexts (Ali *et al.*, 2010; Jayasingam *et al.*, 2013; Migdadi *et al.*, 2017; Durmuş-Özdemir and Abdukhoshimov, 2018). This finding confirms the utility of the examination of different types of KMPs in a single research model, by providing a much richer and more complex picture of the relationships under study. This result also suggests that there are more complex relationships involving different types of KMPs that need further investigation and emphasizes the need for scholars to distinguish between different KMPs when studying their effects on organizational performance or other outcome variables.

The findings of this study also contribute to the academic debate in the KM literature as to whether the effect between KM and organizational performance is direct or mediated by some other variable (Andreeva and Kianto, 2012), an issue that constitutes a second research gap. More precisely, this study concurs with previous literature proposing that KMPs are an important indirect factor in organizational performance (Ngah *et al.*, 2016; Turulja and Bajgoric, 2018), and extends the findings of Ngah *et al.* (2016) and Rehman *et al.* (2015) by reporting, in the context of privately owned firms of Spain, a European country that is considered to have a well-developed knowledge economy (Chen and Dahlman, 2006), the mediating role of OL in the relationship between KG and performance and between KF and organizational performance, but not in the relationship between KS and firm performance. In short, the findings confirm that the relationships between KMPs and performance seem to be more complex than a simple direct relationship and that, to have a stronger effect on organizational performance, KMPs need to play a critical role in forming an effective platform for OL.

In sum, these findings provide greater insight into how organizations can enhance their organizational performance by managing their KMP to become true learning organizations.

This opens an opportunity for scholars to empirically research the linkage between KMPs, OL and organizational performance, thus bridging a gap in the KM and OL literature, which have mostly looked at learning organizations and KM in isolation (Al Saifi, 2019). Moreover, the theoretical arguments on this subject are still under review because studies analyzing the mediating effect of OL on the KMPs – organizational performance relationship are practically absent in the literature, which leaves a research opportunity to explore these relationships under different theoretical lens such as the resource-based theory or knowledge-based view.

Finally, this article presents an analysis of KMPs in the context of Spanish SMEs. The previous literature on KMPs has focussed on economies that have not fully implemented a knowledge economy, and thus, neglected knowledge economies such as the USA and countries in Europe. Although Hussinki *et al.* (2017) stated that KMPs are affected by institutional and cultural contexts, our study did not produce different results to those found in transitioning economies. However, these findings into how Spanish firms manage their KMPs represent a first step to establishing comparisons between regions, which could be addressed in further research. Moreover, given that the study of the effect of KM on SME's performance is one of the least studied areas in the KM of SMEs literature (Cerchione *et al.*, 2016), our work offers relevant results that contribute to shed light to this issue.

6.2 Implications for managers

This study has two major practical implications. Firstly, the results imply that SMEs managers should focus on promoting KG and KF as the types of KMPs that directly contribute to superior performance; KS processes seem to be necessary but not enough. Accordingly, managers should focus their efforts on activities that can offer new knowledge such as R&D activities (internal and external) and also in programmes dedicated to applying and transferring knowledge, including the use of technology (e.g. the internet and intranet) as processes to communicating and sharing with stakeholders the main information about the firm (meetings, reports, interdisciplinary team projects, etc.).

Secondly, the relationships among KMPs, OL and organizational performance may provide a guide as to how companies can achieve competitive advantage by using KMPs to develop OL. Understanding the impact of KMPs and OL on organizational performance can assist the top levels of management to identify the optimal strategies to successfully operate in a turbulent and uncertain environment. In this light, managers should realize processes for converting individual learning into team learning and then team learning into OL (Ngah *et al.*, 2016). These processes include a managerial commitment to promoting a shared culture between employees, a shared vision of goals among all of the stakeholders, an open-minded approach to new ideas in the organization and considerable dialogue to achieve a collective engagement (Turulja and Bajgoric, 2018). When top management recognizes the importance of KMPs, cultivates a favourable learning environment and invests in the learning of employees, it motivates employees and provides them with a sense of direction that facilitates sharing mutual understandings and learning with each other. This process stimulates the learning process by facilitating a sense of empowerment and ownership among employees, which, in turn, helps in improving firm performance or other aspects related to KMPs and OL such as quality management (Collinson, 1999; Vrîncianu *et al.*, 2009), the variety of products and services offered or customer and employee loyalty.

6.3 Limitations of the research and future research possibilities

This study has some limitations that should be acknowledged. Firstly, this study is cross-sectional, which is common in the KM literature (Donate and Sánchez de Pablo, 2015). Thus, despite the results being consistent with theoretical reasoning, they do not allow

scholars to infer causality. In addition, the use of cross-sectional data fails to capture the dynamic interplay between KMPs, OL and firm performance. Hence, a longitudinal design might help to elucidate the findings further by testing, for example, whether the effect of different types of KMPs change over time as the firm evolves along its lifecycle or as the economic situation of the country changes.

Secondly, data on independent (*KMPs*), dependent (*firm performance*) and mediating (*OL*) variables was collected through the same survey. Although this is a common practise in the field (Donate and Sánchez de Pablo, 2015), it has the potential to produce biased data that reflects wishful thinking rather than the factual state. Therefore, tests for common method bias were conducted and did not show any concerns (Harman, 1967; Podsakoff and Organ, 1986; Podsakoff *et al.*, 2003). In addition, all of the control variables (*firm size*, *industry* and *firm age*) were obtained from a secondary database, which also should reduce the potential for common method bias.

Thirdly, while the literature has used different conceptualizations and measures of KMPs (Migdadi *et al.*, 2017), this paper used a classification based on a review of the relationship between KMP and performance. In addition, the particular scale was constructed from Donate and Sánchez de Pablo (2015), who designed their questionnaire based on previous research. Other measures of KMPs could give different results.

Fourth, our findings are limited by the nature of the sample (consisting of SMEs from all industry sectors), and it remains for future studies to determine whether these results will hold for larger companies and whether there are industry-specific effects. Similarly, our study was limited to Spain because using a sample of firms located in a relatively homogeneous geographic, cultural, legal and political space can contribute to minimizing the impact of variables that cannot be controlled (Hofstede, 2003; Aragón-Correa *et al.*, 2007). Although Spain is wholly integrated into the European Union, potential cultural limitations may exist even within the European context. Therefore, scholars are encouraged to replicate the research model in other European countries and in different cultural contexts, which would allow for international comparisons and validate our results.

References

Ahmed, S., Fiaz, M. and Shoaib, M. (2015), "Impact of knowledge management practices on organizational performance: an empirical study of banking sector in Pakistan", *FWU Journal of Social Science*, Vol. 9 No. 2, pp. 147-167.

Al Saifi, S.A. (2019), "Toward a theoretical model of learning organization and knowledge management processes", *International Journal of Knowledge Management*, Vol. 15 No. 2, pp. 55-80.

Alegre, J., Sengupta, K. and Lapiedra, R. (2013), "Knowledge management and innovation performance in a high-tech SMEs industry", *International Small Business Journal: Researching Entrepreneurship*, Vol. 31 No. 4, pp. 454-470.

Ali, I., Akhter, W. and Afzal, H. (2010), "Effects of knowledge management practices on organizational innovativeness and performance: evidence from the SME sector of Pakistan", *Actual Problems of Economics*, Vol. 12 No. 2, pp. 3-7.

Andreeva, T. and Kianto, A. (2012), "Does knowledge management really matter? Linking knowledge management practices, competitiveness and economic performance", *Journal of Knowledge Management*, Vol. 16 No. 4, pp. 617-636.

Aragón-Correa, J.A., García-Morales, V.J. and Cordón-Pozo, E. (2007), "Leadership and organizational learning's role on innovation and performance: lessons from Spain", *Industrial Marketing Management*, Vol. 36 No. 3, pp. 349-359.

Aranda, C., Arellano, J. and Davila, A. (2017), "Organizational learning in target setting", *Academy of Management Journal*, Vol. 60 No. 3, pp. 1189-1211.

Arend, R.J. (2013), "Ethics-focused dynamic capabilities: a small business perspective", *Small Business Economics*, Vol. 41 No. 1, pp. 1-24.

Attia, A. and Eldin, I.E. (2018), "Organizational learning, knowledge management capability and supply chain management practices in the saudi food industry", *Journal of Knowledge Management*, Vol. 22 No. 6, pp. 1217-1242.

Baron, R.M. and Kenny, D.A. (1986), "The moderator mediator variable distinction in social psychological research-conceptual, strategic, and statistical considerations", *Journal of Personality and Social Psychology*, Vol. 51 No. 6, pp. 1173-1182.

Belsley, D.A., Kuh, E. and Welsch, R.E. (1980), *Regression Diagnostics*, John Wiley & Sons, New York, NY.

Biscotti, A.M., D'Amico, E. and Monge, F. (2018), "Do environmental management systems affect the knowledge management process? The impact on the learning evolution and the relevance of organisational context", *Journal of Knowledge Management*, Vol. 22 No. 3, pp. 603-620.

Cameron, K. (1978), "Measuring organizational effectiveness in institutions of higher education", *Administrative Science Quarterly*, Vol. 23 No. 4, pp. 604-632.

Castaneda, D.I., Manrique, L.F. and Cuellar, S. (2018), "Is organizational learning being absorbed by knowledge management? A systematic review", *Journal of Knowledge Management*, Vol. 22 No. 2, pp. 299-325.

Cegarra-Navarro, J.G., Córdoba-Pachón, J.R. and García-Pérez, A. (2017), "Tuning knowledge ecosystems: exploring links between hotels' knowledge structures and online government services provision", *The Journal of Technology Transfer*, Vol. 42 No. 2, pp. 302-319.

Cerchione, R. and Esposito, E. (2017), "Using knowledge management systems: a taxonomy of SME strategies", *International Journal of Information Management*, Vol. 37 No. 1, pp. 1551-1562.

Cerchione, R., Esposito, E. and Spadaro, M. (2016), "A literature review on knowledge management in SMEs", *Knowledge Management Research & Practice*, Vol. 14 No. 2, pp. 169-177.

Chadwick, I.C. and Raver, J.L. (2015), "Motivating organizations to learn: goal orientation and its influence on organizational learning", *Journal of Management*, Vol. 41 No. 3, pp. 957-986.

Chen, D.H.C. and Dahlman, C.J. (2006), "The knowledge economy, the KAM methodology and world bank operations", *The International Bank for Reconstruction and Development*, The World Bank, New York, NY.

Chen, L. and Fong, P.S.W. (2015), "Evaluation of knowledge management performance: an organic approach", *Information & Management*, Vol. 52 No. 4, pp. 431-453.

Collinson, S. (1999), "Knowledge management capabilities for steel makers: a British-Japanese corporate alliance for organizational learning", *Technology Analysis & Strategic Management*, Vol. 11 No. 3, pp. 337-358.

Cooper, A.L., Huscroft, J.R., Overstreet, R.E. and Hazen, B.T. (2016), "Knowledge management for logistics service providers: the role of learning culture", *Industrial Management & Data Systems*, Vol. 116 No. 3, pp. 584-602.

Cruz, C. and Nordqvist, M. (2012), "Entrepreneurial orientation in family firms: a generational perspective", *Small Business Economics*, Vol. 38 No. 1, pp. 33-49.

Dabic, M. and Kiessling, T. (2019), "The performance implications of knowledge management and strategic alignment of MNC subsidiaries", *Journal of Knowledge Management*, Vol. 23 No. 8, pp. 1477-1501.

Daud, S. and Yusoff, W.F.W. (2011), "How intellectual capital mediates the relationship between knowledge management processes and organizational performance?", *African Journal of Business Management*, Vol. 5 No. 7, pp. 2607-2617.

Del Giudice, M. and Maggioni, V. (2014), "Managerial practices and operative directions of knowledge management within inter-firm networks: a global view", *Journal of Knowledge Management*, Vol. 18 No. 5, pp. 841-846.

Donate, M.J. and Sánchez de Pablo, J.D. (2015), "The role of knowledge-oriented leadership in knowledge management practices and innovation", *Journal of Business Research*, Vol. 68 No. 2, pp. 360-370.

Durmuş-Özdemir, E. and Abdukhoshimov, K. (2018), "Exploring the mediating role of innovation in the effect of the knowledge management process on performance", *Technology Analysis & Strategic Management*, Vol. 30 No. 5, pp. 596-608.

Durst, S. and Edvardsson, I.R. (2012), "Knowledge management in SMEs: a literature review", *Journal of Knowledge Management*, Vol. 16 No. 6, pp. 879-903.

Dzenopoljac, V., Alasadi, R., Zaim, H. and Bontis, N. (2018), "Impact of knowledge management processes on business performance: evidences from Kuwait", *Knowledge and Process Management*, Vol. 25 No. 2, pp. 77-87.

Egbu, C.O., Hari, S. and Renukappa, S.H. (2005), "Knowledge management for sustainable competitiveness in small and medium surveying practices", *Structural Survey*, Vol. 23 No. 1, pp. 7-21.

García-Morales, V.J., Lloréns-Montes, F.J. and Verdú-Jover, A.J. (2006), "Antecedents and consequences of organizational innovation and organizational learning in entrepreneurship", *Industrial Management & Data Systems*, Vol. 106 No. 1, pp. 21-42.

Giampaoli, D., Ciambotti, M. and Bontis, N. (2017), "Knowledge management, problem solving and performance in top italian firms", *Journal of Knowledge Management*, Vol. 21 No. 2, pp. 841-846.

Glick, W.H. (1985), "Conceptualizing and measuring organizational and psychological climate: pitfall in multilevel research", *Academy of Management Review*, Vol. 10 No. 3, pp. 601-616.

Gupta, V. and Chopra, M. (2018), "Gauging the impact of knowledge management practices on organizational performance-A balanced scorecard perspective", *VINE Journal of Information and Knowledge Management Systems*, Vol. 48 No. 1, pp. 21-46.

Hair, J.F., Anderson, R.E., Tatham, R.L. and Black, W.C. (1998), *Multivariate Data Analysis*, Prentice Hall, Upper Saddle River, NJ.

Hair, J.F., Black, W.C., Babin, B.J., Anderson, R.E. and Tatham, R.L. (2006), *Multivariate Data Analysis*, 6th edition, Pearson Prentice-Hall: Upper Saddle River, NJ.

Harman, H.H. (1967), *Modern Factor Analysis*, University of Chicago Press, Chicago, IL.

Hernández-Linares, R., Kellermanns, F.W., López-Fernández, M.C. and Sarkar, S. (2019), "The effect of socioemotional wealth on the relationship between entrepreneurial orientation and family business performance", *BRQ Business Research Quarterly*, available at: https://doi.org/10.1016/j.brq.2019.03.002

Ho, L.A. (2008), "What affects organizational performance?", *Industrial Management & Data Systems*, Vol. 108 No. 9, pp. 1234-1254.

Hofstede, G. (2003), "Culture's consequences", *International Differences in Work Related Values*, Sage. Thousand Oaks, CA.

Hong, J.C. and Kuo, C.L. (1999), "Knowledge management in the learning organization", *Leadership & Organization Development Journal*, Vol. 20 No. 4, pp. 207-215.

Hussinki, H., Kianto, A., Vanhala, M. and Ritala, P. (2017), "Assessing the universality of knowledge management practices", *Journal of Knowledge Management*, Vol. 21 No. 6, pp. 1596-1621.

Inkinen, H. (2016), "Review of empirical research on knowledge management practices and firm performance", *Journal of Knowledge Management*, Vol. 20 No. 2, pp. 230-257.

Jain, A.K. and Moreno, A. (2015), "Organizational learning, knowledge management practices and firm¨s performance: an empirical study of a heavy engineering firm in India", *The Learning Organization*, Vol. 22 No. 1, pp. 14-39.

Jayasingam, S., Ansari, M.A., Ramayah, T. and Jantan, M. (2013), "Knowledge management practices and performance: are they truly linked?", *Knowledge Management Research & Practice*, Vol. 11 No. 3, pp. 255-264.

Jerez-Gómez, P., Cespedes-Orente, J. and Valle-Cabrera, R. (2005), "Organizational learning capability: a proposal of measurement", *Journal of Business Research*, Vol. 58, pp. 715-725.

Jiang, X., Yang, Y., Pei, Y.-L. and Wang, G. (2016), "Entrepreneurial orientation, strategic alliances, and firm performance: inside the black box", *Long Range Planning*, Vol. 49 No. 1, pp. 103-116.

Jiménez-Jiménez, D. and Sanz-Valle, R. (2013), "Studying the effect of HRM practices on the knowledge management process", *Personnel Review*, Vol. 42 No. 1, pp. 28-49.

Karkoulian, S., Messara, L.C. and McCarthy, R. (2013), "The intriguing art of knowledge management and its relation to learning organizations", *Journal of Knowledge Management*, Vol. 17 No. 4, pp. 511-526.

Khan, M.O.M., Rahman, S. and Khan, B.K. (2015), "The synergistic effects of knowledge sharing and learning on organisational learning: demonstrating organisational performance", *Journal of Information & Knowledge Management*, Vol. 14 No. 3, pp. 1-13.

Kianto, A., Vanhala, M. and Heilmann, P. (2016), "The impact of knowledge management on job satisfaction", *Journal of Knowledge Management*, Vol. 20 No. 4, pp. 621-636.

Kohli, A.K., Shervani, T.A. and Challagalla, G.N. (1998), "Learning and performance orientation of salespeople: the role of supervisors", *Journal of Marketing Research*, Vol. 35 No. 2, pp. 263-274.

Kuo, T. (2011), "How to improve organizational performance through learning and knowledge?", *International Journal of Manpower*, Vol. 32 Nos 5/6, pp. 581-603.

Liao, S.H. and Wu, C.C. (2010), "System perspective of knowledge management, organizational learning and organizational innovation", *Expert Systems with Applications*, Vol. 37 No. 2, pp. 1096-1103.

Lin, C. and Kuo, T. (2007), "The mediate effect of learning and knowledge on organizational performance", *Industrial Management & Data Systems*, Vol. 107 No. 7, pp. 1066-1083.

Luengo-Valderrey, M.J. and Moso-Díez, M. (2019), "Interaction between knowledge management activities, innovation barriers and innovation performance: spanish high and medium technology firms", *Journal of the Knowledge Economy*, Vol. 10 No. 1, pp. 298-317.

Lyon, D.W., Lumpkin, G.T. and Dess, G.G. (2000), "Enhancing entrepreneurial orientation research: operationalizing and measuring a key strategic decision making process", *Journal of Management*, Vol. 26 No. 5, pp. 1055-1085.

Madison, K., Daspit, J.J., Turner, K. and Kellermanns, F.W. (2018), "Family firm human resource practices: investigating the effects of professionalization and bifurcation bias on performance", *Journal of Business Research*, Vol. 84, pp. 327-336.

Mahdi, O.R., Nassar, I.A. and Almsafir, M.K. (2019), "Knowledge management processes and sustainable competitive advantage: an empirical examination in private universities", *Journal of Business Research*, Vol. 94, pp. 320-334.

Martínez-Costa, M., Jiménez-Jiménez, D. and Rabeh, H.A.D. (2019), "The effect of organisational learning on interorganisational collaborations in innovation: an empirical study in SMEs", *Knowledge Management Research & Practice*, Vol. 17 No. 2, pp. 137-150.

Martín-Rojas, R., García-Morales, V.J. and Bolivar-Ramos, M.T. (2013), "Influence of technological support, skills and competencies, and learning on corporate entrepreneurship in european technology firms", *Tecnhovation*, Vol. 33 No. 12, pp. 417-430.

Massaro, M., Handley, K., Bagnoli, C. and Dumay, J. (2016), "Knowledge management in small and medium enterprises: a structured literature review", *Journal of Knowledge Management*, Vol. 20 No. 2, pp. 258-291.

Meher, J.R. and Mishra, R.K. (2019), "Assessing the influence of knowledge management practices on organizational performance: an ISM approach", *VINE Journal of Information and Knowledge Management Systems*, Vol. 49 No. 3, pp. 440-456.

Meroño-Cerdan, A.L., López-Nicolás, C. and Sabater-Sánchez, R. (2007), "Knowledge management strategy diagnosis from KM instruments use", *Journal of Knowledge Management*, Vol. 11 No. 2, pp. 60-72.

Migdadi, M.M., Zaid, M.K.A., Yousif, M., Almestrarihi, R. and Al-Hyari, K. (2017), "An empirical examination of knowledge management processes and market orientation, innovation capability, and organisational performance: insights from Jordan", *Journal of Information & Knowledge Management*, Vol. 16 No. 1, p. 1750002.

Mills, A.M. and Smith, T.A. (2011), "Knowledge management and organizational performance: a decomposed view", *Journal of Knowledge Management*, Vol. 15 No. 1, pp. 156-171.

Mishra, N. (2019), "Knowledge management practice for effective operations in SMEs", *Production Planning & Control*, Vol. 30 No. 10-12, pp. 795-798.

Mishra, B. and Bhaskar, A.U. (2011), "Knowledge management process in two learning organisations", *Journal of Knowledge Management*, Vol. 15 No. 2, pp. 344-359.

Moustaghfir, K. and Schiuma, G. (2013), "Knowledge, learning and innovation: research and perspectives", *Journal of Knowledge Management*, Vol. 17 No. 4, pp. 495-510.

Ngah, R., Tai, T. and Bontis, N. (2016), "Knowledge management capabilities and organizational performance in roads and transport authority of dubai: the mediating role of learning organization", *Knowledge and Process Management*, Vol. 23 No. 3, pp. 184-193.

Nonaka, I. and Takeuchi, H. (1995), *The Knowledge-Creation Company: How Japanese Companies Create the Dynamics of Innovation*, Oxford University Press, New York, NY.

Noruzy, A., Dalfard, V.M., Azhdari, B., Nazari-Shirkouhi, S. and Rezazadeh, A. (2013), "Relations between transformational leadership, organizational learning, knowledge management, organizational innovation, and organizational performance: an empirical investigation of manufacturing firms", *The International Journal of Advanced Manufacturing Technology*, Vol. 64 Nos 5/8, pp. 1073-1085.

Nouri, B.A., Ghorbani, R. and Soltani, M. (2017), "The effect of knowledge management on organizational innovation with the mediating role of organizational learning (case study: agricultural bank in Iran)", *Journal of Applied Economics and Business Research*, Vol. 7 No. 3, pp. 194-211.

Nunnally, J.C. (1978), *Psychometric Theory*, McGraw-Hill, New York, NY.

Oliva, F.L. (2014), "Knowledge management barriers, practices and maturity model", *Journal of Knowledge Management*, Vol. 18 No. 6, pp. 1053-1074.

Pandey, S.C. and Dutta, A. (2013), "Role of knowledge infrastructure capabilities in knowledge management", *Journal of Knowledge Management*, Vol. 17 No. 3, pp. 435-453.

Pinho, I., Rego, A. and Pina e Cunha, M. (2012), "Improving knowledge management processes: a hybrid positive approach", *Journal of Knowledge Management*, Vol. 16 No. 2, pp. 215-242.

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

Podsakoff, P.M., MacKenzie, S.B., Lee, J.Y. and Podsakoff, N.P. (2003), "Common method biases in behavioral research: a critical review of the literature and recommended remedies", *Journal of Applied Psychology*, Vol. 88 No. 5, pp. 879-903.

Qi, C. and Chau, P.Y.K. (2018), "Will enterprise social networking systems promote knowledge management and organizational learning? An empirical study", *Journal of Organizational Computing and Electronic Commerce*, Vol. 28 No. 1, pp. 31-57.

Rechberg, I. and Syed, J. (2013), "Ethical issues in knowledge management: conflict of knowledge ownership", *Journal of Knowledge Management*, Vol. 17 No. 6, pp. 828-847.

Rehman, W.U., Asghar, N. and Ahmad, K. (2015), "Impact of KM practices on firms' performance: a mediating role of business process capability and organizational learning", *Pakistan Economic and Social Review*, Vol. 53 No. 1, pp. 47-80.

Segarra-Ciprés, M. and Bou-Llusar, J.C. (2018), "External knowledge search for innovation: the role of firms¨ innovation strategy and industry context", *Journal of Knowledge Management*, Vol. 22 No. 2, pp. 280-298.

Serrano-Bedia, A.M., López-Fernández, M.C. and García-Piqueres, G. (2016), "Analysis of the relationship between sources of knowledge and innovation performance in family firms", *Innovation: Management, Policy & Practice*, Vol. 18 No. 4, pp. 489-512.

Singh, R.M. and Gupta, M. (2014), "Knowledge management in teams: empirical integration and development of a scale", *Journal of Knowledge Management*, Vol. 18 No. 4, pp. 777-794.

Sobel, M.E. (1982), "Asymptotic confidence intervals for indirect effects in structural equation models", *Sociological Methodology*, Vol. 13, pp. 290-312.

Srivastava, K.B. (2016), "The mediating effect of organizational learning between knowledge management and innovation in indian organizations", *International Journal of Psychology*, Vol. 1, pp. 776-777.

Stanley, L.J., Hernández-Linares, R., López-Fernández, M.C. and Kellermanns, F.W. (2019), "A typology of family firms: an investigation of entrepreneurial orientation and performance", *Family Business Review*, Vol. 32 No. 2, pp. 174-194.

Stoian, C. and Gilman, M. (2017), "Corporate social responsibility that "pays": a strategic approach to CSR for SMEs", *Journal of Small Business Management*, Vol. 55 No. 1, pp. 5-31.

Tuamsuk, K., Phabu, T. and Vongprasert, C. (2013), "Knowledge management model of community business: thai OTOP champions", *Journal of Knowledge Management*, Vol. 17 No. 3, pp. 363-378.

Tubigi, M. and Alshawi, S. (2015), "The impact of knowledge management processes on organisational performance: the case of the airline industry", *Journal of Enterprise Information Management*, Vol. 28 No. 2, pp. 167-185.

Turulja, L. and Bajgoric, N. (2018), "Knowing means existing: organizational learning dimensions and knowledge management capability", *Business Systems Research Journal*, Vol. 9 No. 1, pp. 1-18.

Vrîncianu, M., Anica, L. and Anica, I. (2009), "Organizational memory: an approach from knowledge management of organizational learning perspectives", *Amfiteatru Economic*, Vol. 11 No. 26, pp. 473-481.

Wiklund, J. and Shepherd, D. (2003), "Knowledge-based resources, entrepreneurial orientation, and the performance of small and medium-sized businesses", *Strategic Management Journal*, Vol. 24 No. 13, pp. 1307-1314.

Wiklund, J. and Shepherd, D. (2005), "Entrepreneurial orientation and small business performance: a configurational approach", *Journal of Business Venturing*, Vol. 20 No. 1, pp. 71-91.

Wu, I.L. and Chen, J.L. (2014), "Knowledge management driven firm performance: the roles of business process capabilities and organizational learning", *Journal of Knowledge Management*, Vol. 18 No. 6, pp. 1141-1164.

Yang, Y., Nomoto, S. and Kurokawa, S. (2013), "Knowledge transfer in corporate venturing activity and impact of control mechanisms", *International Entrepreneurship and Management Journal*, Vol. 9 No. 1, pp. 21-43.

Yeung, A.C.L., Lee, T.S. and Chan, L.Y. (2003), "Senior management perspectives and ISO 9000 effectiveness: an empirical research", *International Journal of Production Research*, Vol. 41 No. 3, pp. 545-569.

Yusr, M.M., Mokhtar, S.S.M., Othman, A.R. and Sulaiman, Y. (2017), "Does interaction between TQM practices and knowledge management processes enhance the innovation performance?", *International Journal of Quality & Reliability Management*, Vol. 34 No. 7, pp. 955-974.

Appendix 1

Table A1 Constructs, items and Cronbach's alpha

Conbrach's α	*Construct and references*	*Items*
0.831	KG (adapted from Donate and Sánchez de Pablo, 2015)	Over the past three years, in this company: – There is a high dependency on internal R&D activities – There is a strong investment in external R&D – There is a strong investment in internal R&D – There is a strong commitment to using proprietary technology developed in-house here is a strong commitment to using internal proprietary technology – There is a strong commitment to maintaining a highly qualified R&D unit to internally develop or improve technologies
0.776	KS (adapted from Donate and Sánchez de Pablo, 2015)	Over the past three years, in this company: – Organizational processes are codified and documented in manuals or other types of devices – There are databases that allow employees to use knowledge and experiences that have previously been loaded into the databases – It is possible to access knowledge repositories, databases and documents through some kind of internal computer network as an intranet – Databases are frequently updated – In particular, there are updated databases about customers – There are procedural guidelines, manuals or books including problems that have been solved successfully
0.847	KT (adapted from Donate and Sánchez de Pablo, 2015)	Over the past three years, in this company: – Information technologies (internet, intranet, e-mail, etc.) are used to encourage information flows and improve employees' communication – The firm's objectives and goals are clearly communicated to all the organizational members – There are frequent, well-distributed internal reports that inform employees about the firm's progress – There are periodical meetings in which employees are informed about the initiatives that have been implemented – There are formal mechanisms that guarantee the best practises to be shared in the firm – There are projects with interdisciplinary teams to share knowledge – There are communities of practises or learning groups to share knowledge and experiences
0.769	KA (adapted from Donate and Sánchez de Pablo, 2015)	Over the past three years, in this company: – All the employees have access to relevant information and key knowledge within the firm – There are interdisciplinary teams with autonomy to apply and integrate knowledge – Suggestions from employees, customers or suppliers are frequently incorporated into products, processes or services – Knowledge that has been created is structured in independent modules, which allow for its integration or separation to create different applications and new usages
0.862	OL (adopted from Martín-Rojas *et al.*, 2013)	Over the past three years, in this company: – The organization has acquired and shared much new and relevant knowledge that provided competitive advantage – The organization's members have acquired some critical capacities and skills that provided competitive advantage – Organizational improvements have been influenced fundamentally by new knowledge entering the organization – Our organization is a learning organization
0.876	Performance (P) (adapted from Arend, 2013 and Wiklund and Shepherd, 2003)	Related to the main competitor, evaluate the results in terms of as follows: – Sales growth – Profit margin – Product/service quality – Product/service variety – Customer¨s satisfaction – Ability to attract and maintain essential employees – Market share – Competitive position

Appendix 2

Table A2 Confirmatory factor analysis

Paths[a]	*Standardized estimates*	t-*value*
First-order		
KG		
V1 ← KG	0.873	22.825
V2 ← KG	0.591	12.827
V3 ← KG	0.930	25.505
V4 ← KG	0.685	15.596
V5 ← KG	0.803[b]	
KS		
V1 ← KS	0.720	16.012
V2 ← KS	0.756	17.160
V3 ← KS	0.585	12.200
V4 ← KS	0.708	15.629
V5 ← KS	0.662	14.296
V6 ← KS	0.707[b]	
KT		
V1 ← KT	0.626	12.762
V2 ← KT	0.627	12.779
V3 ← KT	0.754	15.750
V4 ← KT	0.805	17.008
V5 ← KT	0.804	16.984
V6 ← KT	0.782	16.427
V7 ← KT	0.760[b]	
KA		
V1 ← KAp	0.732	17.245
V2 ← KAp	0.800	19.835
V3 ← KAp	0.698[b]	16.096
V4 ← KAp	0.783[b]	
Second-order		
KF		
KT ← KF	0.994	17.770
KAp ← KF	0.987[b]	

Notes: [a]Goodness-of-fits statistics: χ^2 = 778.615(207), CFI = 0.850, IFI = 0.851, TLI = 0.833, AGFI = 0.809 and RMSEA = 0.083; and [b]Fixed parameter; KAc: knowledge acquisition, KAp: knowledge application, KF: knowledge flow, KS: knowledge storage, KT: knowledge transfer

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