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Top management knowledge value, knowledge sharing practices, open innovation and organizational performance

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ABSTRACT

Open innovation as driver of organizational performance of small and medium-sized enterprises (SMEs) has received relatively little scholarly attention. Drawing upon the resource-based view and the knowledge-based view of firms, we examined antecedents and outcome of open innovation in SMEs. We collected multisource data from 404 SMEs and used structural equation modeling to test the hypotheses. Our study suggests that top management knowledge value and knowledge creating practices influence open innovation, which, in turn, influences organizational performance. Results of the study are discussed in the light of previous studies and suggest implications for theory and practice of open innovation.

1. Introduction

Open innovation has received much academic interest in recent years (Dahlander & Gann, 2010; Huizingh, 2011), as firms, including the SMEs, need to depend on external information and research collaborations (Popa, Soto-Acosta, & Martinez-Conesa, 2017) for continuous innovation in processes, products, and services and increase competitive advantages over their rivals. Open innovation refers to a cognitive framework for SMEs to generate revenue out of process and product innovation (Chesbrough, 2006) through purposeful usage of inflow and outflow of knowledge to fast-track innovation. Furthermore, open innovation consists of *inbound* –identification, selection, utilization, and internalization of novel ideas flowing into firms from the external environment - and *outbound* – commercialization of internally developed ideas to the firms' external environment (e.g., Burnswicker & Vanhaverbeke, 2015; Chesbrough, 2003). However, the extant literature suggests that the focus of open innovation research is primarily on large high-tech firms than SMEs, though innovation plays significant role in SMEs too (Burnswicker & Vanhaverbeke, 2015; Dell'Anno, Evangelista, & Del Giudice, 2018; Popa et al., 2017).

Previous studies suggest that organizational flexibility (Hienerth, Keinz, & Lettl, 2011), organizational culture and employees' characteristics (Appu & Sia, 2017; Della Peruta, Holden, & Del Giudice, 2016; Huizingh, 2011), innovation climate (Popa et al., 2017; Sia & Appu, 2015) and innovation strategy (Burnswicker & Vanhaverbeke, 2015) have impact on open innovation. Furthermore, the effect of leaders and their directions (West et al., 2003) along with knowledge sharing practices (Del Giudice, Della Peruta, & Maggioni, 2015; Shujahat et al., 2019) play critical roles in open innovation. Therefore, we posit that knowledge sharing drives innovation (Calantone & Stanko, 2007; Khedhaouria & Jamal, 2015; Lin, 2007; Tangaraja, Mohd Rasdi, Ismail, & Abu Samah, 2015) and the support of top management is necessary for knowledge sharing practices (Lin, 2007); however, to date, few studies have been conducted on SMEs. The key findings and the gaps in the above mentioned past studies draw our attention to investigate how top management value knowledge and knowledge sharing practices affect open innovation and organizational performance. Using the resource-based view and the knowledge-based view, we speculate that knowledge sharing practices drive innovation (Calantone & Stanko, 2007; Castro, 2015; Khedhaouria & Jamal, 2015; Lin, 2007; Oliva et al., 2019) and top management's emphasis on valuing knowledge as strategic resources for knowledge sharing practices (Al Ahbabi, Singh, Balasubramanian, & Gaur, 2018; Kwon & Cho, 2016; Lin, 2007) influences OI in SMEs.

This study makes three key contributions to advance knowledge in the domain of open innovation in SMEs together with advancing the

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aims of the Journal of Business Research. First, our study suggests the critical role of top management valuing knowledge and knowledge sharing practices to support open innovation. Second, this study predicts that open innovation affects organizational performance of SMEs wherein the extant literature has scarce research-based knowledge on linkage between open innovation and organizational performance. Third, this study supports emerging research interest in open innovation in SMEs and how to use internal knowledge sharing practices and external information and research collaborations for product innovation to stay competitive in their markets. Lastly, this study contributes to the aims of the Journal of Business Research to apply theoretical knowledge to actual business decisions, processes, and activities, especially those of SMEs.

This paper is arranged as follows: Section 2 presents theoretical lenses and hypotheses, followed by the methods in Section 3. Then, Section 4 details the results followed by the discussion and conclusion in Section 5.

2. Theoretical background

2.1. The resource-based view (RBV) and knowledge-based view (KBV)

Drawing upon the RBV and the KBV for the firms, this study examines how SMEs use their strategic resources to support open innovation to influence organizational performance. Using the RBV, we argue that distribution of valued resources and capabilities by SMEs that are inelastic in supply results in improved OI and OP (Barney, 1991) and that, in turn, enhances their competitive advantage over their competitors. SMEs should hold assets that are valued, rare, and hard for the competitors to emulate (Barney, 1991). Furthermore, these intangible resources of SMEs deliver competitive advantage, as their values are difficult for competitors to duplicate and their functions very hard to replace (e.g., Hitt, Bierman, Uhlenbruck, & Shimizu, 2006). All that is required is the synchronization of varied resources, capabilities, and strategy implementation for SMEs to offer superior products/goods to customers and thus increases advantage over their rivals (Hitt, Xu, & Carnes, 2016). To add to this, we posit that performance differential between SMEs depends upon how their employees allow realization of the varied bundles of resources for potential value creation (e.g., Bridoux, Coeurderoy, & Durand, 2011; Del Giudice, Scuotto, Garcia-Perez, & Petruzzelli, 2018). Therefore, we deduce that managing and using cognitive capabilities of coworkers, in terms of critical knowledge that they possess, become essential for firms to engage in open innovation for superior organizational performance (e.g., Bridoux et al., 2011). Thus, RBV puts "employees" on the strategy radar monitor (Snell, Stueber, & Lepak, 2001) that helps align top management knowledge value and knowledge sharing practices with organizational processes (Teece, Pisano, & Shuen, 1997) to influence open innovation and that, in turn, enhances organizational performance of SMEs.

The knowledge-based view (KBV), an extension of the RBV, offers organizations strategies to attain competitive advantage through leveraging the potential of their knowledge workers to achieve organizational outcomes. The theory and research suggests that knowledge varies by organization and knowledge is generally associated with desired organizational outcomes (Grant, 1996a, 1996b). Furthermore, knowledge as a unique strategic resource is at the core of knowledge-based theory and views the organization as a dynamic entity that continuously evolves through knowledge production and utilization (Spender, 1996). Therefore, if knowledge is the key strategic resource and allows firms to compete in the dynamic environment (Grant, 1996a, 1996b; Spender, 1996), it becomes imperative for top management to value knowledge, create and sustain knowledge sharing practices that fuel open innovation and desired levels of organizational performance. Furthermore, we argue that top management value for knowledge and knowledge sharing practices are extremely valued intangible resources (e.g., Grant, 1996a, 1996b; Grant, 2002) that SMEs need to enhance open innovation and firm level performance to beat competition in dynamic markets. This study posit that SMEs are filled with knowledge-based resources (Marr, 2004), and knowledge resources are imperative to ensure sustained levels of open innovation and organizational performance (e.g., Wiklund & Shepherd, 2003). These tangible resources facilitate a firm's competitive advantage and make it hard for rivals to imitate (Grant, 1996a, 1996b). Therefore, this study posits that SMEs' competitive advantage depends upon their capability to use their established and new knowledge for creating new processes and goods/products. In this sense, knowledge management favors identification and application of knowledge to support and nurture open innovation in enterprises (Santoro, Ferraris, Giacosa, & Giovando, 2018; Santoro, Vrontis, Thrassou, & Dezi, 2018; Darroch, 2005).

However, the implementation and usage of knowledge sharing practices in SMEs can be daunting and challenging tasks. Nevertheless, we speculate that top management value for knowledge will drive knowledge sharing practices to help achieve open innovation and desired organizational performance.

2.2. Top management knowledge value

Top management people have massive influence on the path and success of managing knowledge in the organization (Nguyen & Mohamed, 2011). The top management knowledge value (TMKV) in SMEs creates environments that allow employees across functions to exercise and nurture their knowledge manipulation skills (e.g., Crawford, Gould, & Scott, 2003; Politis, 2002) in a manner that influences open innovation and organizational performance. Wang and Noe (2010) submit that top management support for valuing knowledge can create employee commitment along with knowledge sharing and exchange amongst the employees. Similarly, a study by J. Singh (2008)and S.K. Singh (2008) found that delegating rather than directive leadership style has a positive influence in knowledge management practices in technological settings. Furthermore, Lubatkin, Simsek, Ling, and Veiga (2006) emphasized how the essential role played by top management behavioral integration leads to dispensation of disparate demands vital for achieving ambidexterity in SMEs. Therefore, this study posits that top management knowledge value facilitates knowledge sharing wherein the former motivates employees to share their knowledge for organizational success (Lee, Shiue, & Chen, 2016; Yew Wong & Aspinwall, 2005) through both inbound and outbound innovation. However, what remains unclear is how top management knowledge value supports knowledge sharing practices for open innovation and SMEs' performance. Therefore, this paper examines how top management value for knowledge in SMEs may influence knowledge sharing practices for OI and OP.

2.3. Knowledge sharing practices

Knowledge sharing denotes making available relevant knowledge to coworkers in the enterprise (Grant, 2016; Lin & Lo, 2015; Wang, Wang, & Liang, 2014; Zhang & Jiang, 2015) for the purpose of attaining innovation at the individual level (Bavik, Tang, Shao, & Lam, 2018; Huang, Hsieh, & He, 2014), the team level (Gong, Kim, Lee, & Zhu, 2013), and the organizational level (Donnelly, 2019; Oyemomi, Liu, Neaga, Chen, & Nakpodia, 2019). Past research suggests that knowledge sharing increases the innovativeness of the organization (e.g., Chen & Huang, 2009; Del Giudice & Straub, 2011; Tsai, 2001). Similarly, other colleagues establish the vital role of knowledge sharing practices (KSP) in open innovation, and that depends upon adequate organization arrangements (Cavaliere, Lombardi, & Giustiniano, 2015; Cunha & Orlikowski, 2008), but further research is required, as the literature on knowledge sharing practices vis-à-vis OI and OP in SMEs is scant. In addition, there is scarce coverage in the extant literature on explorative and exploitative innovation in SMEs rather than larger firms (Lubatkin et al., 2006) and how top management support facilitates sharing of

knowledge (Lee et al., 2016; Wang & Noe, 2010; Yew Wong, 2005) for enhanced performance (Pittino, Martinez, Chirico, & Galvan, 2018; Lee et al., 2016).

2.4. Open innovation

The extant literature on innovation management suggests that organizations should and must innovate while leveraging their available internal and external knowledge sources (Ferraris, Santoro, & Bresciani, 2017). Open innovation (OI) is best stated as the opposite of the old-style vertical integration model wherein internal innovation events affect internally developed products and services (Chesbrough, 2017; Della Peruta, Del Giudice, Lombardi, & Soto-Acosta, 2016) that firms sell in the markets. OI is a dispersed innovation practice that depends on consciously monitored flow of knowledge across a firm's frontiers, using financial and non-financial instruments in sync with the firm's business model to monitor and motivate the sharing of knowledge (Chesbrough, 2017). OI consists of *inbound and outbound open innovation* (Popa et al., 2017) that help firms to meet the needs of the customers and beat competition in the markets. Inbound OI (IOI) in SMEs comprises exploratory learning behavior (e.g., Popa et al., 2017) to discover and seize new information and knowhow from the external sources, namely research institutions, universities, consultants, competitors, governmental agencies, suppliers, and customers (Cheng & Shiu, 2015; Popa et al., 2017). Whereas, outbound OI (OOI) aims to exploit internal ideas or knowledge through licensing, patenting or contractual arrangements (Hung & Chou, 2013; Lichtenthaler, 2009) to enhance organizational performance. Moreover, OI repeatedly starts with subcontracting to service firms (Gassmann, Enkel, & Chesbrough, 2010) and it relates to how firms should cooperate with outside parties to boost process and product innovation (Huizingh, 2011). We note that OI has curvilinear association with the development and launch of the newest products (Greco, Grimaldi, & Cricelli, 2016) and OI moderates the influence of dynamic innovation on breakthrough innovation (Cheng & Chen, 2013). However, past studies on OI have been conducted mainly in medium to large organizations, and inquiry in the context of SMEs is still in its infancy (Santoro, Ferraris, et al., 2018), though attempts have been made to investigate how SMEs engage in knowledge sourcing (Burnswicker & Vanhaverbeke, 2015). Therefore, our study is an endeavor to plug the knowledge gap and advance understanding of open innovation in SMEs.

2.5. Organizational performance

Organizational performance (OP) is a key construct in management research and it has received much attention (Kirby, 2005). Organizational performance relates to three precise areas of organizational outcomes - financial performance, market performance, and return to shareholder (Pierre, Timothy, George, & Gerry, 2009). Several studies indicate that open innovation positively influences different measures of organizational performance (Carayannis & Grigoroudis, 2014; Chiang & Hung, 2010; Popa et al., 2017). Therefore, SMEs can benefit from outside knowledge, as they are more responsive to the needs of the markets and are also flexible compared to large organizations (Spithoven, Vanhaverbeke, & Roijakkers, 2013) and likely to increase their overall performance through open innovation (Popa et al., 2017). OI practices are strategic assets that drive sustainable competitive advantage and enhanced firm level performance (Camisón & Villar-López, 2014) in SMEs too. Previous studies suggest that OI helps firms to attain competitive advantage (Goldman, Nagel, & Preiss, 1995) and results in enhanced organizational performance (OECD, 2005) and both the RBV and the KBV consider differential organizational performance as an outcome of an organization's internal characteristics (Camisón & Villar-López, 2014).

3. Hypotheses development

3.1. Top management knowledge value and knowledge sharing practices

Top management knowledge value (TMKV) is an essential precondition for knowledge sharing practices in the organization. Knowledge-oriented leadership emphasizes that knowledge management practice plays a noticeable role in the organization, so that it can effectively sense and seize occasions for innovation (Teece, 2009) and stay relevant in dynamic markets. Therefore, it becomes imperative for the knowledge-oriented leaders in organizations to champion the cause of development of knowledge sharing practices and initiatives for knowledge exploration and exploitation (Donate & Sánchez de Pablo, 2015) for open innovation and enhanced organizational performance. Top management in organizations that values knowledge as competitive advantage for firms' success, has a strong tendency to create the internal environment in a manner that allows coworkers to exercise and nurture their knowledge manipulation abilities (Crawford et al., 2003; Del Giudice & Maggioni, 2014; Politis, 2002), which can be leveraged by the firms for innovation and performance. Similarly, J. Singh (2008) and S.K. Singh (2008) argues that delegating, rather than a directive leadership style, has a positive influence on knowledge sharing practices in technological settings. The top management value for knowledge influences employee commitment along with high levels of sharing and exchange of knowledge amongst employees (Wang & Noe, 2010). Therefore, we hypothesize that:

H1. TMKV positively influences KSP.

3.2. Knowledge sharing practices and open innovation

Knowledge sharing is a vital constituent of innovation (Brachos, Kostopoulos, Eric Soderquist, & Prastacos, 2007; Chiang & Hung, 2010; Gächter, von Krogh, & Haefliger, 2010) and innovation depends how firms use employees' knowledge, ability, and experience during organizational value creation processes. A firm's capability to renovate and use knowledge may influence innovation levels, for instance, how firms use the latest tools, techniques and methods of problem-solving (Du Plessis, 2007). However, firms can only begin to efficiently deal with knowledge when workforces are eager to be involved in knowledge sharing activities. Knowledge sharing practices in firms is essential for idea generation for innovative organizational actions to respond to evolving business opportunities in the markets (Lundvall & Nielsen, 2007) and results in quick reactions to customer requirements at minimum costs (Sher & Lee, 2004). Similarly, Lin (2007) found knowledge sharing as an essential element of firm's learning tasks, resulting in the development of market innovation activities (Lin, 2007).

Several studies suggest a new topology of innovation based on the conceptualization of knowledge using three facets, namely implicit-explicit, general-independent and simple-complex (Gopalakrishnan & Bierly, 2001) and knowledge sharing practices help increase relative innovation performance of organizations (Ritala, Olander, Michailova, & Husted, 2015). Abou-Zeid and Cheng (2004) propose different innovation types and link them with knowledge formation and exploitation activities. Similarly, Wang and Wang (2012) suggest that the sharing of knowledge amongst coworkers positively influences innovation, which augments superior firm performance. Therefore, SMEs should effectively harness potential benefits of knowledge sharing through the use of varied combinations of organizational and managerial practices to reward employees for exhibiting knowledge sharing behaviors in the workplace (Foss, Laursen, & Pedersen, 2011). Therefore, we predict that:

H2. KSP positively influences IOI.

H3. KSP positively influences OOI.

3.3. Open innovation and organizational performance

In dynamic markets, organizations generally do not have any choice other than to open up; however, they differ in their capability to seize benefits from open innovation (Biscotti, Mafrolla, & Giudice, 2018; Lichtenthaler, 2011). Wang, Chang, and Shen (2015) found that organizations with the ability to construct solid connections with outside channels increase the effectiveness of inbound open innovation to enhance their organizational performance. The extant literature on open innovation advances past research by openly integrating inward and outward knowledge transfer (Chesbrough, 2006). At the same time, Van de Vrande, De Jong, Vanhaverbeke, and De Rochemont (2009) emphasize how organizations concurrently rely on both IOI and OOI to enhance their performance. At the same time, much of the work on open innovation has focused on inbound rather than outbound open innovation (Lichtenthaler, 2011; Chesbrough, 2003) and that calls upon firms to develop organizational policies and practices for the kind of organizational capabilities that leverage the benefits of both IOI and OOI to augment organizational performance.

IOI refers to discovering and assimilating outside knowledge to develop and exploit technology for the benefits of organizations (Parida, Westerberg, & Frishammar, 2012). The extant literature reports heterogeneous findings on the association between IOI and organizational performance wherein many researchers contend that IOI influences organizational performance (Rass, Dumbach, Danzinger, Bullinger, & Moeslein, 2013), while other colleagues suggest negative or non-linear associations between IOI and organizational performance (Laursen & Salter, 2006; Love, Roper, & Bryson, 2011). Therefore, organizations that engage in IOI practices benefit from innovative thinking and amalgamations of renewed problem-solving capabilities, knowledge, and new opportunities in the markets (Hung & Chou, 2013; Zahra, Sapienza, & Davidsson, 2006). Several studies suggest that firms engage in different forms of pecuniary (i.e., purchasing and licensing) and non-pecuniary (i.e., external Research & Development and/or Research & Development cooperation) IOI (Chesbrough, 2003; Dahlander & Gann, 2010) to satisfy customer needs and beat competition from rivals to stay competitive in dynamic markets. Therefore, we hypothesize that:

H4. IOI positively influences OP.

Outbound open innovation (OOI) consists of the spinning-off of different undertakings grounded on past products or technological development and outside connection to develop innovative products and/or authorize other firms to use their technologies (Lichtenthaler, 2011; Van De Vrande et al., 2009). OOI allows organization to gain financial and non-financial profits from the utilization of its current knowledge and technologies, and effective usage of their capabilities to reduce obsolescence threats and stay competitive in the markets (Hung & Chou, 2013). However, past research shows organizations' inclination for IOI (Bianchi, Campodall'Orto, Frattini, & Vercesi, 2010; Grönlund, Rönnberg-Sjödin, & Frishammar, 2010), as OOI activities impose severe management challenges owing to inadequacies in marketing the new knowhow (Lichtenthaler & Ernst, 2007), along with absence of efficient internal procedure to support such ingenuities (Lichtenthaler, Lichtenthaler, & Frishammar, 2009).

Several scholars have argued that SMEs, rather than large firms, possess comparatively fewer assets to screen out their external business environment for invaluable information (Dahlander & Gann, 2010; Van de Vrande et al., 2009). Furthermore, SMEs that engage in outbound OI mainly prefer activities such as venturing or spinoffs, outward IP licensing, etc. (Van de Vrande et al., 2009). Hence, SMEs that employ outbound OI will have a tendency to calculate direct monetary benefits when they commercialize their internally developed innovative products and technologies in the markets (Popa et al., 2017). Hence, we predict that:

H5. OOI positively influences OP.

3.4. The mediating role of knowledge sharing practices

Organizations surely benefit when they search for ideas beyond their factory gates (Von Krogh, Netland, & Wörter, 2018), as ideas and knowledge sharing are not only a must from internal organizational members, but from outside the organization as well. Such a scenario calls for the top management to value knowledge essential for OI; and several past studies argue the positive influence of the top management people in building a helpful environment for knowledge sharing practices in organizations (Crawford et al., 2003; Donate & Sánchez de Pablo, 2015; J. Singh, 2008; S.K. Singh, 2008. Therefore, we argue that SMEs' top management in consonance with formalized organizational processes play a vital part in supporting knowledge sharing practices for OI (e.g., Brunswicker & Chesbrough, 2018), wherein the top management needs to purposefully weigh the tension between sharing and protecting knowledge amongst coworkers (e.g., Jarvenpaa & Majchrzak, 2016) to reap the benefits of OI. Wang and Noe (2010) propose top management support for employee commitment along with knowledge sharing and exchange amongst the coworkers in the organization. Similarly, several other studies suggest knowledge sharing enhances firms' innovation performance (Ritala et al., 2015; Wang & Wang, 2012) and that, in turn, augments organizational performance (Wang & Wang, 2012). Furthermore, this paper argues that organizations need to utilize their organizational and managerial practices to reward their employees for their knowledge sharing activities (Foss et al., 2011), in turn helping open innovation to flourish in the SMEs. As a result, we advance our hypotheses:

H6. KSP mediates the influence of TMKV on IOI.

H7. KSP mediates the influence of TMKV on OOI.

3.5. The mediating role of open innovation

Knowledge sharing is a vital aspect of innovation (Chiang & Hung, 2010; Gachter et al., 2010; Brachos et al., 2007). It is evident that the capabilities of firms to renovate and use knowledge may decide their levels of innovation, for instance, the latest methods of problem-solving (Du Plessis, 2007). Knowledge sharing practices help enhance value for the innovator (Gachter et al., 2010), in turn augmenting open innovation in the organization. As a result, this study posits that SMEs' engagement in external knowledge sourcing offers performance benefits and improves their innovation performance (Burnswicker & Vanhaverbeke, 2015). On the other hand, other researchers argue for the role of organizational culture (Tellis, Prabhu, & Chandy, 2009), customer acquisition (Arnold, Fang, & Palmatier, 2011), and absorptive capacity (Forés & Camisón, 2016) in supporting and enhancing open innovation. Several other studies suggest linkages amongst knowledge management, innovation and performance in organization (Santoro, Ferraris, et al., 2018; Santoro, Vrontis, et al., 2018; Del Giudice & Della Peruta, 2016; López-Nicolás & Meroño-Cerdán, 2011) along with open search from a broad range of external channels influence firms' radical innovation performance (Chiang & Hung, 2010).

Open innovation depends on knowledge sharing culture, which is significantly boosted when top management implements, supports, and nurtures knowledge sharing and innovation (Vera & Crossan, 2004) of firms operating in dynamic markets. It is true that SMEs operating in dynamic markets do not have any choice other than to open up; however, they differ in their capability to seize benefits from open innovation (Lichtenthaler, 2011). Several previous studies suggest that open innovation thrives in firms that have intentions and capabilities to openly integrate inward and outward knowledge transfer (Chesbrough, 2006), such that it increases the effectiveness of IOI and that, in turn, influences firm performance (Wang et al., 2015). Furthermore, firms that engage in different forms of financial and non-financial IOI and OOI prefer activities such as venturing or spinoffs, and outward IP licensing (Chesbrough, 2003; Dahlander & Gann, 2010; Van De Vrande et al.,

2009) to satisfy customer needs and enhance their financial and market performance. Drawing upon both RBV and KBV, we predict that open innovation practices facilitate the influence of knowledge sharing practices on SMEs' performance. Therefore, we hypothesize that:

H8. IOI mediates the influence of KSP on OP.

H9. OOI mediates the influence of KSP on OP.

Fig. 1 depicts the hypothesized framework.

4. Methods

4.1. Data and sample

We approached 939 manufacturing sector SMEs in the United Arab Emirates (UAE) to take part in the study. The specific criteria adopted to approach the SMEs and make a request to participate in the study were: a) the SMEs should have established HR and production departments, and b) the SMEs should be at least two years old so that they have relatively well developed process and systems to manage their operations. Only 887 SMEs agreed to participate and distributed physical copies of the survey questionnaire to the chief executive officer (CEO), the production manager, and the HR manager from each SME. We met and distributed the physical copies of the survey questionnaire to the triads from each of the SMEs, whereby the CEO filled in survey questionnaire for top management knowledge value (TMKV) and organizational performance (OP), whereas the production manager and the human resource (HR) manager responded to the questionnaires on open innovation (OI) and knowledge sharing practices (KSP) respectively. We received filled-in questionnaires back from the matched triads (i.e., the CEO, the production manager, the HR manager) of 428 SMEs. However, 24 sets of triadic respondents (i.e., the CEO, the production manager, the HR manager) had left many items unanswered. We therefore deleted them and used the remaining 404 sets to examine the hypotheses of this study. Overall, the response rate was 45.55%. It is important to mention that data collection from triads from the SMEs was a difficult and tiresome journey. However, we took help of friends to introduce one of the co-authors to the CEOs of these SMEs to talk about the purpose of this study and make a request to participate. Before proceeding with actual data collection, we pre-tested the survey questionnaire on 15 experts to establish validity, readability and usefulness of the measurement instruments. The data was collected from three different sources (i.e., the CEOs, the production manager and the HR manager) from each of the participating SMEs to avoid the common method biases.

Table 1 shows that the SMEs in our study were established between 2000 and 2016 and the employee counts in these SMEs ranged from 115 to 355. Furthermore, 52.3% of the participating SMEs were founded between 2006 and 2010 with the majority (i.e., 82.7%) having employee counts ranging from 201 to 300. All 404 SMEs in this study were from the manufacturing sector, namely aluminum fabrications, automobile accessories, communication equipment, detergents and disinfectants, electrical switchgears, firefighting equipment, lubricants and grease, perfumes, pipes and pipe fittings, plastic accessories, steel fabrication, telephone equipment, and water purifiers. Furthermore, as per Table 1, the average age of the CEOs, the production managers, and the HR managers were 43.4, 36.28, and 35.84 years respectively. Table 1 also shows that 86.4% of the CEO participants were male, while 93.07% of the production managers and 84.65% of the HR managers were male. Similarly, In terms of educational qualifications, 82.18% of the CEOs, 75.25% of the production managers, and 69.80% of the HR managers had minimum bachelor level degrees in management, sciences, or technology disciplines (see Table 1).

4.2. Measures

The respondent rated each items measuring instruments on seven point rating scale (1 = low; 7 = high). Appendix A presents the Cronbach's alpha coefficient, the Composite reliability, and the average variance explained (AVE) of the measuring instruments, namely Top management knowledge value, Knowledge sharing practices, Open innovation and Organizational performance.

4.2.1. Top management knowledge value (TMKV)

TMKV measuring instruments had six items adopted from Davenport, De Long, and Beers (1998), Davenport and Prusak (2000), Hsu (2005), Hauschild, Licht, and Stein (2001), Husted and Michailova (2002) and Cabrera and Cabrera (2002). Appendix A presents the sample items, Cronbach's alpha coefficient, composite reliability, and average variance explained (AVE) of the TMKV measuring instrument. The results of these were 0.934, 0.934, and 0.704 respectively.

4.2.2. Knowledge sharing practices (KSP)

The KSP scale had seven items adopted from Calantone, Cavusgil and Zhao (2002), Alavi and Leidner (2001), Gupta and Govindarajan (2000), Lepak and Snell (1999), Liebowitz (1999), and Delaney and Huselid (1996). Appendix A depicts the sample items, Cronbach's alpha coefficient, composite reliability, and average variance explained (AVE) of the KSP scale. The results were 0.937, 0.937, and 0.679 respectively.

4.2.3. Open innovation (OI)

The OI scale consisted of five items for inbound OI and four items for outbound OI adopted from Naqshbandi (2016) and Sisodiya, Johnson, and Grégoire (2013). Appendix A illustrates the sample items, Cronbach's alpha coefficient, composite reliability, and average variance explained (AVE) of the inbound OI. The results were 0.918, 0.918, and 0.691 respectively; whereas, Cronbach's alpha coefficient, composite reliability, and average variance explained (AVE) of the outbound OI were 0.894, 0.894, and 0.678 respectively.

4.2.4. Organizational performance (OP)

The OP measuring instrument consisted of six items adopted from Delaney and Huselid (1996). Appendix A presents the sample items, Cronbach's alpha coefficient, composite reliability, and average variance explained (AVE) of the OP scale as 0.930, 0.929, and 0.686 respectively.

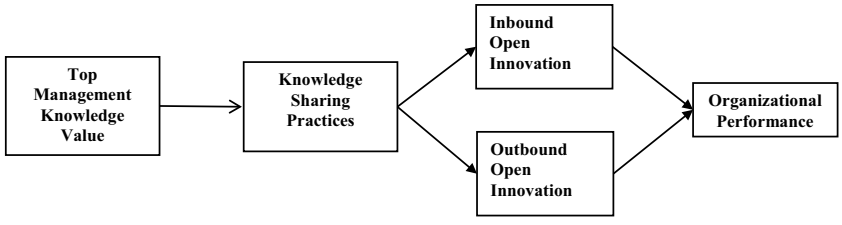

Fig. 1. Conceptual research model.

Table 1
Sample and organization details.

CEOs (n = 404)		Production managers (n = 404)		HR managers (n = 404)		The SMEs (N = 404)	
Average age (in years)	43.40	Average age (in years)	36.28	Average age (in years)	35.84	Year when born	
						2000–2005	64 (15.8%)
						2006–2010	211 (52.3%)
						2011–2016	129 (31.9%)
Gender		Gender		Gender		Employee counts	
Male	348 *(86.14%)*	*Male*	376 (93.07%)	*Male*	342 (84.65%)	115–200	55 (13.6%)
Female	56 *(13.86%)*	*Female*	28 (6.93%)	*Female*	62 (15.35%)	201–250	166 (41.1%)
						251–300	168 (41.6%)
						>301	15 (3.7%)
Education		Education		Education		Industry	
Bachelor degree	332 (82.18%)	*Bachelor degree*	304 (75.25%)	*Bachelor degree*	282 (69.80%)	Manufacturing	404 (100%)
Master degree	72 (17.82%)	*Master degree*	100 (24.75%)	*Master degree*	122 (30.20%)	Others	None

5. Results

5.1. Data analysis

We tested for non-response bias before analyzing the data to examine the hypotheses of our study. The test was performed to ensure that the sample of our study had the same characteristics with sampling frame wherein we used an independent sample *t*-test to compare the responses of early respondents with responses of the late respondents after the cut-off date. The results suggest no significant differences in the responses of the early and the late respondents. Thus, our study does not have problems related to the non-response bias.

Yunis, Tarhini, and Kassar (2018) employed partial least squares structural equation modeling (PLS-SEM) in their theory-backed research and we have employed the same to analyze the standardized data of the 404 respondents. Hair, Sarstedt, Pieper, and Ringle (2012) and Ali, Kan, and Sarstedt (2016) suggest that PLS-SEM is more appealing in cases where the research objective focuses on prediction. In this study, WarpPLS version 6.0 was used to perform PLS-SEM. Factor-based SEM with the common factor model assumptions method was employed as compared to the use of the conventional PLS Regression algorithm (Kock, 2017). In Table 2, the model fit and quality indices are showcased. It is evident that APC and ARS have significant values. The AVIF value is within the ideal limit of 3.3.

Table 3 shows the causality assessment which suggests that the directions of the hypotheses are correctly posited. The four indices obtained and depicted in Table 3 affirm that the model that we tested was appropriate. Here, the values of these four indices are more than the acceptable limit and this suggests that the direction of the hypotheses that were considered in this study is correct.

The reliability and validity of the model can be tested by employing confirmatory factor analysis. In Appendix B, the factor loading of items from each of the constructs in the study is more that 0.50 as per the recommendations of Hair et al. (2012). Table 4 illustrates that R-squared coefficients of exploration, exploitation and organizational performance suggest that these variables have been well explained by the factors that we considered in this study. In addition, the value of R-squared coefficients and adjusted R-squared coefficients is similar and this reaffirms the extent of the explanation of the variables by their factors. The value of composite reliability and Cronbach's alpha for each variable is more than the threshold value of 0.70 (Tellis, Yin, & Bell, 2009). The average variances extracted of the constructs were >0.50 as suggested by Hair et al. (2012). Furthermore, Table 5 suggests that all the constructs in the study had discriminant validity, as the correlations amongst the constructs are less than squared roots of the AVE (Fornell & Larcker, 1981).

Table 2
Quality indices and model fit.

Average path coefficient	0.276, p < 0.001
Average R-squared	0.136, p < 0.001
Average block VIF	1.063

Table 3
Assessment indices for causality.

Sympson's paradox ratio	1.000
R-squared contribution ratio	1.000
Statistical suppression ratio	1.000
Nonlinear bivariate causality direction ratio	0.800

Table 4
Latent variable coefficients.

	TMKV	KSP	IOI	OOI	OP
R-squared	–	0.312	0.038	0.007	0.187
Adjusted R-squared	–	0.311	0.036	0.005	0.183
Composite reliability	0.934	0.937	0.918	0.894	0.929
Cronbach's alpha	0.934	0.937	0.918	0.894	0.93
Average variances extracted	0.704	0.679	0.691	0.678	0.686

Table 5
Testing for discriminant validity.

	TMKV	KSP	IOI	OOI	OP
TMKV	***(0.839)***				
KSP	0.545	***(0.824)***			
IOI	0.144	0.057	***(0.831)***		
OOI	−0.028	−0.013	0.297	***(0.824)***	
OP	0.145	0.052	0.364	0.296	***(0.828)***

Note: Diagonal bold value shows square roots of AVEs (SQAVEs).

Table 6
Hypotheses testing.

Hypotheses	β and *p*-value	Decision
H1: TMKV positively influences KSP.	β = 0.56, $p < 0.01$	Accepted
H2: KSP positively influences IOI.	β = 0.20, $p < 0.01$	Accepted
H3: KSP positively influences OOI.	β = 0.08, $p = 0.04$	Accepted
H4: IOI positively influences OP.	β = 0.32, $p < 0.01$	Accepted
H5: OOI positively influences OP.	β = 0.22, $p < 0.01$	Accepted
H6: KSP mediates the influence of TMKV on IOI.	β = 0.109, $p < 0.001$	Accepted
H7: KSP mediates the influence of TMBV on OOI.	β = 0.047, $p = 0.088$	Rejected
H8: IOI mediates the influence of KSP on OP.	β = 0.017, $p = 0.364$	Rejected
H9: OOI mediates the influence of KSP on OP.	β = 0.003, $p = 0.820$	Rejected

5.1.1. Testing for direct effect

Table 6 illustrates that the path coefficients (direct effects) on the relationships amongst the hypothesized constructs were supported, and significant at 0.05 level of significance. Specifically, the hypothesized relationship between TMKV→KSP (H1), KSP→IOI (H2), KSP→OOI (H3), IOI→OP (H4), and OOI→OP (H5) were significant, with beta (β) values of 0.56, 0.20, 0.08, 0.32, and 0.22 respectively, and significant at $p = 0.01 < 0.05$, $p = 0.01 < 0.05$, $p = 0.04 < 0.05$, $p = 0.01 < 0.05$, and $p = 0.01 < 0.05$ of 95% BCa CI. This means that hypotheses 1, 2, 3, 4, and 5 (i.e., H1, H2, H3, H4, and H5) were supported.

5.1.2. Testing for indirect effect

We tested for the indirect effect to determine the role of the KSP construct as mediator in the relationships TMKV and IOI, and TMKV and OOI. Also, we examined for the mediating influence of inbound OI and outbound OI on the linkage between KSP and OP. Table 6 illustrates the relationships between TMKV→KSP→IOI (H6) as $\beta = 0.109$, $p < 0.001$ and was found significant, whereas the relationship between TMKV→KSP→OOI (H7) as $\beta = 0.047$, $p < 0.088$ and was found non-significant. Therefore, H6 was supported and H7 was not supported in this study. On the other hand, we also tested for the mediating role of both inbound OI and outbound OI on the influence of knowledge sharing practices on organizational performance (Table 6). We found that relationships between KSP→IOI→OP (H8) as $\beta = 0.017$, $p < 0.364$ and KSP→OOI→OP (H9) as $\beta = 0.003$, $p < 0.820$ were non-significant. Therefore, H8 and H9 were not supported in our study.

6. Discussion and conclusions

Drawing on the RBV and the KBV, our study focuses on the antecedents and the outcomes of open innovation in SMEs. The findings of our study confirm that organizations with strong knowledge sharing practices are more competent in chasing open innovation. The results of our study support the findings of previous studies where top management knowledge value influences knowledge sharing practices (Del Giudice & Maggioni, 2014; Donate & Sánchez de Pablo, 2015; Wang & Noe, 2010) and knowledge sharing practices affect open innovation (Veronica, Del Giudice, Bresciani, & Meissner, 2017; Wang & Wang, 2012; Lee, Ooi, Tan, and Chong, 2010; Lee, Park, Yoon, and Park, 2010). Our study also supports previous studies that suggest that open innovation benefits organizations in terms of enhanced organizational performance (Popa et al., 2017; Wang et al., 2015). Furthermore, our study suggests that top management knowledge value indirectly affects open innovation through knowledge sharing practices and finds some support from previous studies (e.g., Brunswicker & Chesbrough, 2018; Jarvenpaa & Majchrzak, 2016), and that is the unique contribution of our study. However, in a dynamic business environment, organizational knowledge quickly becomes outdated (Jansen, Van Den Bosch, & Volberda, 2006; Popa et al., 2017), but open innovation policies and practices (Cheng & Shiu, 2015) help SMEs to stay relevant and competitive in the markets. Therefore, the findings of this study have theoretical and practical implications.

6.1. Implications for theory

The findings of our study suggest an association between top management knowledge value, knowledge sharing, open innovation and organizational performance of SMEs. The findings of our study offer three key contributions to theoretical development on the antecedents and the outcomes of the open innovation.

Firstly, the roles of top management knowledge value and knowledge sharing practices as critical for influencing inbound and outbound open innovation were established in past research on large firms (Lee et al., 2016; Wang & Noe, 2010). A possible reason may be that knowledge-oriented leaders support the development of knowledge sharing practices for making SMEs effectively sense and seize opportunities to innovate (Donate & Sánchez de Pablo, 2015; Teece, 2009) and stay competitive in dynamic markets. Furthermore, previous studies also report that knowledge sharing practices influence inbound and outbound open innovation (Lee, Ooi, et al., 2010; Lee, Park, et al., 2010; Brockman & Morgan, 2006; Liu, Chen, & Tsai, 2005). Therefore, our study confirms that top management knowledge value and knowledge sharing practices also support open innovation in the context of SMEs. As a result, we contend that knowledge-oriented leaders have the tendency to install and support knowledge sharing practices and initiatives to facilitate knowledge exploration and exploitation (Donate & Sánchez de Pablo, 2015) for open innovation and enhanced organizational performance in SMEs.

Secondly, our study advances the existing knowledge that open innovation predicts organizational performance (Popa et al., 2017; Wang et al., 2015; Lichtenthaler, 2011; Dahlander & Gann, 2010; van de Vrande et al., 2009) in the context of SMEs, as there is a dearth of research-based knowledge on the linkage between open innovation and organizational performance. Therefore, our study suggests that open innovation requires integration of both inward and outward knowledge transfer (Chesbrough, 2006) to benefit from the amalgamation of SMEs' renewed problem-solving capabilities, knowledge, and new opportunities (Hung & Chou, 2013; Zahra et al., 2006) in dynamic markets. Our study advances the existing literature that inbound (Chesbrough, 2003; Dahlander & Gann, 2010) and outbound open innovation (Popa et al., 2017) bring pecuniary and non-pecuniary benefits to SMEs especially when they operate in a dynamic business environment.

Thirdly, we found evidence that knowledge-sharing practices mediate the influence of top management knowledge value on open innovation – inbound and outbound. These findings of our study are supported by previous studies, which found knowledge sharing practices to mediate the influence of top management knowledge value on inbound and outbound open innovation in SMEs (Brunswicker & Chesbrough, 2018; Jarvenpaa & Majchrzak, 2016). We believe that top management in consonance with formalized organizational processes play an important role for knowledge sharing practices for open innovation (Brunswicker & Chesbrough, 2018), where top management purposefully weigh tension between sharing and protection of knowledge (Jarvenpaa & Majchrzak, 2016) for SMEs to reap the benefits of open innovation. At the same time, our study concurs with the findings of Von Krogh et al. (2018) that SMEs could really benefit when they search for ideas and knowledge beyond their factory gates together with knowledge sharing practices amongst their internal organizational members.

Finally, we contend that our study supports emerging research interests on open innovation in SMEs (Dahlander & Gann, 2010; Huizingh, 2011), as they need to rely on both internal knowledge sharing practices and external information and research collaborations (Popa et al., 2017) for innovation in processes and products to stay competitive in their markets.

6.2. Implications for practice

We found that top management commitment to value of knowledge helps create and sustain knowledge sharing practices so as to increase organizational ability for OI and organizational performance. Therefore, our study has three implications for practice too.

Firstly, our study suggests that SMEs depend upon how top management teams value knowledge creation and sharing amongst organizational members in value creation processes to beat competition from their rivals and stay relevant in their markets. Therefore, we posit that top management in SMEs should engage and direct collective minds of organizational members in a manner that motivates their employees to share knowledge amongst themselves for SMEs to develop processes and products to satisfy the changing needs of their customers.

Secondly, the findings of our study suggest that SMEs that believe in knowledge sharing practices have a competitive advantage over their

rivals in the markets, as knowledge sharing practices enhances open innovation - quick actions to customer requirements at minimum costs. Therefore, our study recommends the top leadership team of SMEs to install and support knowledge sharing practices essential for them to be market oriented in terms of their products and services that are valued, rare, and tough to duplicate by their rivals.

Thirdly, our study suggests that SMEs' open innovation practices are their strategic asset to attain sustainable competitive advantage and enhanced organizational level performance. Therefore, we suggest that SMEs should endeavor to install functional processes and systems to support inbound and outbound open innovation to seize market opportunities to outperform their competitors. Our study offers suggestions to SMEs' top management to embrace the philosophy of open innovation to make their firms responsive to the needs of their customers and to be quick enough to incorporate customer's demands in the offerings to outperform the competitors in their markets.

6.3. Conclusions, limitations and direction for future research

Based on the findings of our study, we conclude that top management knowledge value impacts knowledge sharing practices, knowledge-sharing practices influence open innovation and open innovation, in turn, influences organizational performance. Furthermore, we found that top management knowledge value indirectly through knowledge sharing practices influences open innovation. The findings of our study supports previous studies in the field, advance theory and influence practice of open innovation in SMEs. Lastly, but not the least, our study suggests that open innovation benefits SMEs, as it enhances their organizational performance.

However, like any other study in the management science discipline, our study has limitations. Firstly, we tested the conceptual research framework of our study in the manufacturing sector, which limits its generalization to the service sector SMEs in the UAE. Therefore, we suggest that future research should extend our research framework and make comparative study of both service and manufacturing sector SMEs for a bigger picture to advance knowledge and help policy makers develop suitable policy to help support SMEs that have open innovation practices in the UAE. Secondly, our study tested the role of macro level variables on open innovation and SMEs' performance. Therefore, we suggest that future research in this area should explore how micro level variables (i.e., trust, personality characteristics, employee engagement and involvement) operate in the workplace to support or obstruct open innovation in SMEs. Thirdly, our study used quantitative inquiry, which has its own limitations, to study open innovation in SMEs. Thus, the future research should use mixed methods to investigate what makes open innovation thrive in SMEs.

Appendix A. Operationalization of constructs

Latent variable	Indicator	Measurement construct items
Top Management Knowledge Value (TMKV)		*The top management……*
	TMKV1	Emphasis on sharing of knowledge
	TMKV2	Supports knowledge sharing
	TMKV3	Establishment of knowledge sharing mechanisms
	TMKV4	Knowledge sharing contributes to performance
	TMKV5	Knowledge sharing for SMEs to earn profits
	TMKV6	Firm-specific knowledge
Knowledge Sharing Practices (KSP)		*My organization…..*
	KSP1	Uses mentoring
	KSP2	Uses work team
	KSP3	Disseminates data on past failure & lessons learned amongst employees
	KSP4	Uses IT systems to share knowledge
	KSP5	Uses knowledge sharing mechanisms
	KSP6	Uses of incentives
	KSP7	Uses varied training programs
Inbound Open Innovation (IOI)		*Scanning external environment for…..*
	IOI1	Technology, information, ideas, etc.
	IOI2	Knowledge and know-how to develop novel products
	IOI3	Finding external sources to supplement R&D
	IOI4	Information and know-how to use in combination with own R&D
	IOI5	Know-hows and copyrights from outside
Outbound Open Innovation (OIO)		*We sell novel information, knowledge,* etc. *to…..*
	OOI1	Outside firms
	OOI2	Outside firms that are also used internally
	OOI3	Mature and proven technologies
	OOI4	Core technologies
Organizational Performance (OP)		*As compared to the competitors, my organization has high……..*
	OP1	Long-run profitability
	OP2	Growth prospect
	OP3	Employee job satisfaction
	OP4	Productivity
	OP5	Goodwill in the markets
	OP6	Quality products or services

Appendix B. Combined loadings and cross-loadings

	TMKV	KSP	IOI	OOI	OP	Std. error	*p* value
TMKV1	0.838	−0.025	0.01	0.039	−0.103	0.044	<0.001
TMKV2	0.865	0.022	−0.059	0.004	−0.054	0.044	<0.001
TMKV3	0.831	−0.085	−0.042	−0.037	−0.008	0.044	<0.001
TMKV4	0.857	−0.03	−0.008	0.032	−0.002	0.044	<0.001

(*continued on next page*)

(*continued*)

	TMKV	KSP	IOI	OOI	OP	Std. error	*p* value
TMKV5	0.818	−0.089	−0.017	−0.017	0.044	0.045	<0.001
TMKV6	0.823	−0.074	0.027	−0.038	0.026	0.045	<0.001
KSP1	−0.026	0.838	−0.053	0.071	−0.023	0.044	<0.001
KSP2	−0.021	0.834	0.009	0.005	0.007	0.044	<0.001
KSP3	−0.046	0.808	−0.091	0.096	−0.025	0.045	<0.001
KSP4	0.013	0.828	−0.007	0.011	0.027	0.044	<0.001
KSP5	−0.088	0.816	−0.023	0	0.037	0.045	<0.001
KSP6	−0.038	0.833	0.045	0.017	−0.073	0.044	<0.001
KSP7	−0.048	0.809	0.085	−0.037	0.015	0.045	<0.001
IOI1	−0.043	0.021	0.838	−0.024	−0.097	0.044	<0.001
IOI2	0.024	−0.02	0.854	−0.084	−0.01	0.044	<0.001
IOI3	0.109	−0.115	0.829	−0.007	−0.009	0.044	<0.001
IOI4	−0.018	0.036	0.834	0.025	−0.034	0.044	<0.001
IOI5	−0.05	0.051	0.8	0.027	−0.049	0.045	<0.001
OOI1	0.009	0.016	0.026	0.801	−0.012	0.045	<0.001
OOI2	−0.023	0.017	−0.043	0.846	−0.067	0.044	<0.001
OOI3	0.016	−0.055	−0.099	0.818	0.026	0.045	<0.001
OOI4	0.017	0.031	0.029	0.829	−0.06	0.044	<0.001
OP1	−0.04	0.002	−0.049	0.029	0.871	0.044	<0.001
OP2	0.061	0.005	−0.03	−0.055	0.799	0.045	<0.001
OP3	−0.002	0.015	0.046	−0.089	0.818	0.045	<0.001
OP4	0.019	−0.033	−0.059	0.071	0.835	0.044	<0.001
OP5	−0.049	0.041	−0.007	−0.004	0.838	0.044	<0.001
OP6	−0.005	0.051	0.018	−0.007	0.805	0.045	<0.001

Note: Unrotated loadings and oblique-rotated cross-loadings.

References

Abou-Zeid, E. S., & Cheng, Q. (2004). The effectiveness of innovation: A knowledge management approach. *International Journal of Innovation Management, 8*(3), 261–274.

Al Ahbabi, S. A., Singh, S. K., Balasubramanian, S., & Gaur, S. S. (2018). Employee perception of impact of knowledge management processes on public sector performance. *Journal of Knowledge Management*. https://doi.org/10.1108/JKM-08-2017-0348 (Online).

Alavi, M., & Leidner, D. E. (2001). Review: Knowledge management and knowledge management systems: Conceptual foundations and research issues. *MIS Quarterly, 25*(1), 107–136.

Ali, M., Kan, K. A. S., & Sarstedt, M. (2016). Direct and configurational paths of absorptive capacity and organizational innovation to successful organizational performance. *Journal of Business Research, 69*(11), 5317–5323.

Appu, A. V., & Sia, S. K. (2017). Creativity at workplace: Role of self-efficacy and harmonious passion. *International Journal of Human Resources Development and Management, 17*(3–4), 205–219.

Arnold, T. J., Fang, E. E., & Palmatier, R. W. (2011). The effects of customer acquisition and retention orientations on a firm's radical and incremental innovation performance. *Journal of the Academy of Marketing Science, 39*(2), 234–251.

Barney, J. (1991). Firm resources and sustained competitive advantage. *Journal of Management, 17*(1), 99–120.

Bavik, Y. L., Tang, P. M., Shao, R., & Lam, L. W. (2018). Ethical leadership and employee knowledge sharing: Exploring dual-mediation paths. *The Leadership Quarterly, 29*(2), 322–332.

Bianchi, M., Campodall'Orto, S., Frattini, F., & Vercesi, P. (2010). Enabling open innovation in small and medium sized enterprises: How to find alternative applications for your technologies. *R&D Management, 40*(4), 414–431.

Biscotti, A. M., Mafrolla, E., Giudice, M. D., & D'Amico, E. (2018). CEO turnover and the new leader propensity to open innovation: Agency-resource dependence view and social identity perspective. Management Decision, 56(6), 1348–1364.

Brachos, D., Kostopoulos, K., Eric Soderquist, K., & Prastacos, G. (2007). Knowledge effectiveness, social context and innovation. *Journal of Knowledge Management, 11*(5), 31–44.

Bridoux, F., Coeurderoy, R., & Durand, R. (2011). Heterogeneous motives and the collective creation of value. *Academy of Management Review, 36*(4), 711–730.

Brockman, B. K., & Morgan, R. M. (2006). The moderating effect of organizational cohesiveness in knowledge use and new product development. *Journal of the Academy of Marketing Science, 34*(3), 295.

Brunswicker, S., & Chesbrough, H. (2018). The adoption of open innovation in large firms. *Research-Technology Management, 61*(1), 35–45.

Burnswicker, S., & Vanhaverbeke, W. (2015). Open innovation in small and medium-sized enterprises (SMEs): External knowledge sourcing strategies and internal organizational facilitators. *Journal of Small Business Management, 53*(4), 1241–1263.

Cabrera, A., & Cabrera, E. F. (2002). Knowledge-sharing dilemmas. *Organization Studies, 23*(5), 687–710.

Calantone, R. J., Cavusgil, S. T., & Zhao, Y. (2002). Learning orientation, firm innovation capability, and firm performance. *Industrial marketing management, 31*(6), 515–524.

Calantone, R. J., & Stanko, M. A. (2007). Drivers of outsourced innovation: An exploratory study. *Journal of Product Innovation Management, 24*(3), 230–241.

Camisón, C., & Villar-López, A. (2014). Organizational innovation as an enabler of technological innovation capabilities and firm performance. *Journal of Business Research, 67*, 2891–2902.

Carayannis, E., & Grigoroudis, E. (2014). Linking innovation, productivity, and competitiveness: Implications for policy and practice. *Journal of Technology Transfer, 39*(2), 199–218.

Castro, L. (2015). Strategizing across boundaries: Revisiting knowledge brokering activities in French innovation clusters. *Journal of Knowledge Management, 19*(5), 1048–1068.

Cavaliere, V., Lombardi, S., & Giustiniano, L. (2015). Knowledge sharing in knowledge-intensive manufacturing firms. An empirical study of its enablers. *Journal of Knowledge Management, 19*(6), 1124–1145.

Chen, C.-J., & Huang, J.-W. (2009). Strategic human resource practices and innovation performance: The mediating role of knowledge management capacity. *Journal of Business Research, 69*, 104–114.

Cheng, C. C., & Chen, J. S. (2013). Breakthrough innovation: the roles of dynamic innovation capabilities and open innovation activities. *Journal of Business & Industrial Marketing, 28*(5), 444–454.

Cheng, C. C., & Shiu, E. C. (2015). The inconvenient truth of the relationship between open innovation activities and innovation performance. *Management Decision, 53*(3), 625–647.

Chesbrough, H. (2017). The Future of Open Innovation: The future of open innovation is more extensive, more collaborative, and more engaged with a wider variety of participants. *Research-Technology Management, 60*(1), 35–38.

Chesbrough, H. W. (2003). *Open innovation: The new imperative for creating and profiting from technology*. Boston, MA: Harvard Business School Press.

Chesbrough, H. W. (2006). *Open business models: How to thrive in the new innovation landscape*. Boston, MA: Harvard Business School Press.

Chiang, Y. H., & Hung, K. P. (2010). Exploring open search strategies and perceived innovation performance from the perspective of inter-organizational knowledge flows. *R&D Management, 40*(3), 292–299.

Crawford, C. B., Gould, L. V., & Scott, R. F. (2003). Transformational leader as champion and techie: Implications for leadership educators. *Journal of Leadership Education, 2*(1), 1–12.

Cunha, J. V., & Orlikowski, W. J. (2008). Performing catharsis: The use of online discussion forums in organizational change. *Information and Organization, 18*(2), 132–156.

Dahlander, L., & Gann, D. M. (2010). How open is innovation? *Research Policy, 39*(6), 699–709.

Darroch, J. (2005). Knowledge management, innovation and firm performance. *Journal of Knowledge Management, 9*(3), 101–115.

Davenport, T. H., De Long, D. W., & Beers, M. C. (1998). Successful knowledge management projects. *Sloan Management Review, 39*(2), 43–57.

Davenport, T. H., & Prusak, L. (2000). *Working knowledge: How organizations manage what they know*. Boston, MA: Harvard Business School Press.

Del Giudice, M., & Della Peruta, M. R. (2016). The impact of IT-based knowledge management systems on internal venturing and innovation: A structural equation modeling approach to corporate performance. *Journal of Knowledge Management, 20*(3), 417–422.

Del Giudice, M., Della Peruta, M. R., & Maggioni, V. (2015). A model for the diffusion of knowledge sharing technologies inside private transport companies. *Journal of Knowledge Management, 19*(3), 611–625.

Del Giudice, M., & Maggioni, V. (2014). Managerial practices and operative directions of knowledge management within inter-firm networks: A global view. *Journal of Knowledge Management, 18*(5), 841–846.

Del Giudice, M., Scuotto, V., Garcia-Perez, A., & Petruzzelli, A. M. (2018). Shifting Wealth II in Chinese economy. The effect of the horizontal technology spillover for SMEs for international growth. *Technological Forecasting and Social Change*. https://doi.org/10.1016/j.techfore.2018.03.013 (Online).

Del Giudice, M., & Straub, D. (2011). IT and entrepreneurism: An on-again, off-again love affair or a marriage? *MIS Quarterly, 35*(4), 3–11.

Delaney, J. T., & Huselid, M. A. (1996). The impact of human resource management practices on perceptions of organizational performance. *Academy of Management Journal, 39*(4), 949–969.

Della Peruta, M. R., Del Giudice, M., Lombardi, R., & Soto-Acosta, P. (2016). Open innovation, product development, and inter-company relationships within regional knowledge clusters. *Journal of the Knowledge Economy*, 1–14.

Dell'Anno, D., Evangelista, F., & Del Giudice, M. (2018). Internationalization of science-based start-ups: Opportunity or requirement? *Journal of the Knowledge Economy, 9*(2), 649–664.

Donate, M. J., & Sánchez de Pablo, J. D. (2015). The role of knowledge-oriented leadership in knowledge management practices and innovation. *Journal of Business Research, 68*(2), 360–370.

Donnelly, R. (2019). Aligning knowledge sharing interventions with the promotion of firm success: The need for SHRM to balance tensions and challenges. *Journal of Business Research, 94*, 344–352.

Du Plessis, M. (2007). The role of knowledge management in innovation. *Journal of Knowledge Management, 11*(4), 20–29.

Ferraris, A., Santoro, G., & Bresciani, S. (2017). Open innovation in multinational companies' subsidiaries: The role of internal and external knowledge. *European Journal of International Management, 11*(4), 452–468.

Forés, B., & Camisón, C. (2016). Does incremental and radical innovation performance depend on different types of knowledge accumulation capabilities and organizational size? *Journal of Business Research, 69*(2), 831–848.

Fornell, C., & Larcker, D. F. (1981). Evaluating structural equation models with unobservable variables and measurement error. *Journal of Marketing Research, 18*(1), 39–50.

Foss, N. J., Laursen, K., & Pedersen, T. (2011). Linking customer interaction and innovation: The mediating role of new organizational practices. *Organization Science, 22*(4), 980–999.

Gächter, S., von Krogh, G., & Haefliger, S. (2010). Initiating private-collective innovation: The fragility of knowledge sharing. *Research Policy, 39*(7), 893–906.

Gassmann, O., Enkel, E., & Chesbrough, H. (2010). The future of open innovation. *R&D Management, 40*(3), 213–221.

Goldman, S., Nagel, R., & Preiss, K. (1995). *Agile competitors and virtual organisations: Strategies for enriching the customer*. New York: Van Nostrand Reinhold.

Gong, Y., Kim, T. Y., Lee, D. R., & Zhu, J. (2013). A multilevel model of team goal orientation, information exchange, and creativity. *Academy of Management Journal, 56*(3), 827–851.

Gopalakrishnan, S., & Bierly, P. (2001). Analyzing innovation adoption using a knowledge-based approach. *Journal of Engineering and Technology Management, 18*(2), 107–130.

Grant, R. (1996a). Toward a knowledge-based theory of the firm. *Strategic Management Journal, 17*, 109–122.

Grant, R. (2002). The knowledge-based view of the firm. In N. Bontis, & C. Wei Choo (Eds.), *Strategic management of intellectual capital and organizational knowledge*. New York: Oxford University Press.

Grant, R. M. (1996b). Prospering in dynamically-competitive environments: Organizational capability as knowledge integration. *Organization Science, 7*(4), 375–387.

Grant, S. B. (2016). Classifying emerging knowledge sharing practices and some insights into antecedents to social networking: A case in insurance. *Journal of Knowledge Management, 20*(5), 898–917.

Greco, M., Grimaldi, M., & Cricelli, L. (2016). An analysis of the open innovation effect on firm performance. *European Management Journal, 34*(5), 501–516.

Grönlund, J., Rönnberg-Sjödin, D., & Frishammar, J. (2010). Open innovation and the stage-gate process: A revised model for new product development. *California Management Review, 52*(3), 106–131.

Gupta, A. K., & Govindarajan, V. (2000). Knowledge management's social dimension: Lessons from Nucor Steel. *MIT Sloan Management Review, 42*(1), 71.

Hair, J. F., Sarstedt, M., Pieper, T., & Ringle, C. M. (2012). The use of partial least squares structural equation modeling in strategic management research: A review of past practices and recommendations for future applications. *Long Range Planning, 45*(5–6), 320–340.

Hauschild, S., Licht, T., & Stein, W. (2001). Creating a knowledge culture. *The McKinsey Quarterly, 1*(6), 74–81.

Hienerth, C., Keinz, P., & Lettl, C. (2011). Exploring the nature and implementation process of user-centric business models. *Long Range Planning, 44*(5–6), 344–374.

Hitt, M. A., Bierman, L., Uhlenbruck, K., & Shimizu, K. (2006). The importance of resources in the internationalization of professional service firms: The good, the bad, and the ugly. *Academy of Management Journal, 49*(6), 1137–1157.

Hitt, M. A., Xu, K., & Carnes, C. M. (2016). Resource based theory in operations management research. *Journal of Operations Management, 41*, 77–94.

Hsu, I.-C. (2005). Developing a model of knowledge management from a human capital perspective – Preliminary thoughts. In *Paper Presented at the 2005 Academy of Management Meeting, Aug. 5–10*.

Huang, X., Hsieh, J. J., & He, W. (2014). Expertise dissimilarity and creativity: The contingent roles of tacit and explicit knowledge sharing. *Journal of Applied Psychology, 99*(5), 816–830.

Huizingh, E. K. R. E. (2011). Open innovation: State of the art and future perspectives. *Technovation, 31*(1), 2–9.

Hung, K. P., & Chou, C. (2013). The impact of open innovation on firm performance: The moderating effects of internal R&D and environmental turbulence. *Technovation, 33*(10), 368–380.

Husted, K., & Michailova, S. (2002). Diagnosing and fighting knowledge-sharing hostility. *Organizational Dynamics, 31*(1), 60–73 (Honolulu, Hawaii, U.S.).

Jansen, J. J., Van Den Bosch, F. A., & Volberda, H. W. (2006). Exploratory innovation, exploitative innovation, and performance: Effects of organizational antecedents and environmental moderators. *Management Science, 52*(11), 1661–1674.

Jarvenpaa, S., & Majchrzak, A. (2016). Interactive self-regulatory theory for sharing and protecting in inter-organizational collaborations. *Academy of Management Review, 2*(3), 226–246.

Khedhaouria, A., & Jamal, A. (2015). Sourcing knowledge for innovation: Knowledge reuse and creation in project teams. *Journal of Knowledge Management, 19*(5), 932–948.

Kirby, J. (2005). Toward a theory of high performance. *Harvard Business Review, 83*, 30–39.

Kock, N. (2017). Structural equation modeling with factors and composites: A comparison of four methods. *International Journal of e-Collaboration, 13*(1), 1–9.

Kwon, K., & Cho, D. (2016). How transactive memory systems relate to organizational innovation: The mediating role of developmental leadership. *Journal of Knowledge Management, 20*(5), 1025–1044.

Laursen, K., & Salter, A. (2006). Open for innovation: The role of openness in explaining innovation performance among UK manufacturing firms. *Strategic Management Journal, 27*(2), 131–150.

Lee, J.-C., Shiue, Y.-C., & Chen, C.-Y. (2016). Examining the impacts of organizational culture and top management support of knowledge sharing on the success of software process improvement. *Computers in Human Behavior, 54*, 462–474.

Lee, S., Park, G., Yoon, B., & Park, J. (2010). Open innovation in SMEs - an intermediated network model. *Research Policy, 39*(2), 290–300.

Lee, V. H., Ooi, K. B., Tan, B. I., & Chong, A. Y. L. (2010). A structural analysis of the relationship between TQM practices and product innovation. *Asian Journal of Technology Innovation, 18*(1), 73–96.

Lepak, D. P., & Snell, S. A. (1999). The human resource architecture: Toward a theory of human capital allocation and development. *Academy of Management Review, 24*(1), 31–48.

Lichtenthaler, U. (2009). Outbound open innovation and its effect on firm performance: Examining environmental influences. *R&D Management, 39*(4), 317–330.

Lichtenthaler, U. (2011). Open innovation: Past research, current debates, and future directions. *Academy of Management Perspectives, 25*(1), 75–93.

Lichtenthaler, U., & Ernst, H. (2007). Developing reputation to overcome the imperfections in the markets for knowledge. *Research Policy, 36*(1), 37–55.

Lichtenthaler, U., Lichtenthaler, E., & Frishammar, J. (2009). Technology commercialization intelligence: Organizational antecedents and performance consequences. *Technological Forecasting and Social Change, 76*(3), 301–315.

Liebowitz, J. (1999). Key ingredients to the success of an organization's knowledge management strategy. *Knowledge and Process Management, 6*(1), 37–40.

Lin, H. F. (2007). Knowledge sharing and firm innovation capability: An empirical study. *International Journal of Manpower, 28*(3/4), 315–332.

Lin, S. W., & Lo, L. Y. S. (2015). Mechanisms to motivate knowledge sharing: Integrating the reward systems and social network perspectives. *Journal of Knowledge Management, 19*(2), 212–235.

Liu, P. L., Chen, W. C., & Tsai, C. H. (2005). An empirical study on the correlation between the knowledge management method and new product development strategy on product performance in Taiwan's industries. *Technovation, 25*(6), 637–644.

López-Nicolás, C., & Meroño-Cerdán, Á. L. (2011). Strategic knowledge management, innovation and performance. *International Journal of Information Management, 31*(6), 502–509.

Love, J. H., Roper, S., & Bryson, J. R. (2011). Openness, knowledge, innovation and growth in UK business services. *Research Policy, 40*(10), 1438–1452.

Lubatkin, M. H., Simsek, Z., Ling, Y., & Veiga, J. F. (2006). Ambidexterity and performance in small-to medium-sized firms: The pivotal role of top management team behavioral integration. *Journal of Management, 32*(5), 646–672.

Lundvall, B.Å., & Nielsen, P. (2007). Knowledge management and innovation performance. *International Journal of Manpower, 28*(3/4), 207–223.

Marr, B. (2004). Is it impossible to benchmark intellectual capital? In Bart, Bontis and Head (Eds.) Conference Proceedings of the 25th McMaster World Congress, Janeiro de 2004, Hamilton, Canada: MWC.

Naqshbandi, M. M. (2016). Managerial ties and open innovation: Examining the role of absorptive capacity. *Management Decision, 54*, 2256–2276.

Nguyen, H. N., & Mohamed, S. (2011). Leadership behaviors, organizational culture and knowledge management practices: An empirical investigation. *Journal of Management Development, 30*(2), 206–221.

OECD. (2005). The measurement of scientific and technological activities. In *Oslo manual. Guidelines for collecting and interpreting innovation data* (3rd ed.). Paris: OECD EUROSTAT.

Oliva, F. L., Semensato, B. I., Prioste, D. B., Winandy, E. J. L., Bution, J. L., Couto, M. H. G., & Singh, S. K. (2019). Innovation in the main Brazilian business sectors: Characteristics, types and comparison of innovation. *Journal of Knowledge Management, 23*(1), 135–175.

Oyemomi, O., Liu, S., Neaga, I., Chen, H., & Nakpodia, F. (2019). How cultural impact on knowledge sharing contributes to organizational performance: Using the fsQCA approach. *Journal of Business Research, 94*, 313–319.
Parida, V., Westerberg, M., & Frishammar, J. (2012). Inbound open innovation activities in high-tech SMEs: The impact on innovation performance. *Journal of Small Business Management, 50*(2), 283–309.
Peruta, M. R. D., Holden, N. J., & Del Giudice, M. (2016). Cross-cultural challenges for innovation management. In I. Dubina, & E. Carayannis (Eds.), *Innovation, technology, and knowledge managementCreativity, innovation, and entrepreneurship across cultures* (pp. 95–107). New York, NY: Springer.
Pierre, J. R., Timothy, M. D., George, S. Y., & Gerry, J. (2009). Measuring organizational performance: Towards methodological best practices. *Journal of Management, 35*(3), 718–804.
Pittino, D., Martinez, A. B., Chirico, F., & Galvan, R. S. (2018). Psychological ownership, knowledge sharing and entrepreneurial orientation in family firms: The moderating role of governance heterogeneity. *Journal of Business Research, 84*, 312–326.
Politis, J. D. (2002). Transformational and transactional leadership enabling (disabling) knowledge acquisition of self-managed teams: The consequences for performance. *Leadership and Organization Development Journal, 23*(4), 186–197.
Popa, S., Soto-Acosta, P., & Martinez-Conesa, I. (2017). Antecedents, moderators, and outcomes of innovation climate and open innovation: An empirical study in SMEs. *Technological Forecasting and Social Change, 118*, 134–142.
Rass, M., Dumbach, M., Danzinger, F., Bullinger, A. C., & Moeslein, K. M. (2013). Open innovation and firm performance: The mediating role of social capital. *Creativity and Innovation Management, 22*(2), 177–194.
Ritala, P., Olander, H., Michailova, S., & Husted, K. (2015). Knowledge sharing, knowledge leaking and relative innovation performance: An empirical study. *Technovation, 35*, 22–31.
Santoro, G., Ferraris, A., Giacosa, E., & Giovando, G. (2018). How SMEs engage in open innovation: A survey. *Journal of the Knowledge Economy, 9*(2), 561–574.
Santoro, G., Vrontis, D., Thrassou, A., & Dezi, L. (2018). The Internet of Things: Building a knowledge management system for open innovation and knowledge management capacity. *Technological Forecasting and Social Change, 136*, 347–354.
Sher, P. J., & Lee, V. C. (2004). Information technology as a facilitator for enhancing dynamic capabilities through knowledge management. *Information & Management, 41*(8), 933–945.
Shujahat, M., Sousa, M. J., Hussain, S., Nawaz, F., Wang, M., & Umer, M. (2019). Translating the impact of knowledge management processes into knowledge-based innovation: The neglected and mediating role of knowledge-worker productivity. *Journal of Business Research, 94*, 442–450.
Sia, S. K., & Appu, A. V. (2015). Work autonomy and workplace creativity: Moderating role of task complexity. *Global Business Review, 16*(5), 772–784.
Singh, J. (2008a). Distributed R&D, cross-regional knowledge integration and quality of innovative output. *Research Policy, 37*(1), 77–96.
Singh, S. K. (2008b). Role of leadership in knowledge management. *Journal of Knowledge Management, 12*(4), 3–15.
Sisodiya, S. R., Johnson, J. L., & Grégoire, Y. (2013). Inbound open innovation for enhanced performance: Enablers and opportunities. *Industrial Marketing Management, 42*(5), 836–849.
Snell, S. A., Stueber, D., & Lepak, D. P. (2001). Virtual HR departments: Getting out of the middle. In R. L. Heneman, & D. B. Greenberger (Eds.), *Human resource management in virtual organizations*. Greenberg: Information Age Publishing.
Spender, J. C. (1996). Making knowledge the basis of a dynamic theory of the firm. *Strategic Management Journal, 17*(S2), 45–62.
Spithoven, A., Vanhaverbeke, W., & Roijakkers, N. (2013). Open innovation practices in SMEs and large enterprises. *Small Business Economics, 41*(3), 537–562.
Tangaraja, G., Mohd Rasdi, R., Ismail, M., & Abu Samah, B. (2015). Fostering knowledge sharing behaviour among public sector managers: A proposed model for the Malaysian public service. *Journal of Knowledge Management, 19*(1), 121–140.
Teece, D. J. (2009). *Dynamic capabilities and strategic management: Organizing for innovation and growth. 4*. Oxford: Oxford University Press.
Teece, D. J., Pisano, G., & Shuen, A. (1997). Dynamic capabilities and strategic management. *Strategic Management Journal, 18*(7), 509–533.
Tellis, G. J., Prabhu, J. C., & Chandy, R. K. (2009). Radical innovation across nations: The preeminence of corporate culture. *Journal of Marketing, 73*(1), 3–23.
Tellis, G. J., Yin, E., & Bell, S. (2009). Global consumer innovativeness: Cross-country differences and demographic commonalities. *Journal of International Marketing, 17*(2), 1–22.
Tsai, W. (2001). Knowledge transfer in intra-organizational networks: Effects of network position and absorptive capacity on business unit innovation and performance. *Academy of Management Journal, 44*(5), 996–1004.
Van de Vrande, V., De Jong, J. P., Vanhaverbeke, W., & De Rochemont, M. (2009). Open innovation in SMEs: Trends, motives and management challenges. *Technovation, 29*(6–7), 423–437.
Vera, D., & Crossan, M. (2004). Strategic leadership and organization learning. *Academy of Management Review, 29*(2), 222–240.
Veronica, S., Del Giudice, M., Bresciani, S., & Meissner, D. (2017). Knowledge-driven preferences in informal inbound open innovation modes. An explorative view on small to medium enterprises. *Journal of Knowledge Management, 21*(3), 640–655.
Von Krogh, G., Netland, T., & Wörter, M. (2018). Winning with open process innovation. *MIT Sloan Management Review, 59*(2), 53–56.
Wang, C. H., Chang, C. H., & Shen, G. C. (2015). The effect of inbound open innovation on firm performance: Evidence from high-tech industry. *Technological Forecasting and Social Change, 99*, 222–230.
Wang, S., & Noe, R. A. (2010). Knowledge sharing: A review and directions for future research. *Human Resource Management Review, 20*(2), 115–131.
Wang, Z., & Wang, N. (2012). Knowledge sharing, innovation, and firm performance. *Expert Systems with Applications: An International Journal, 39*(10), 8899–8908.
Wang, Z., Wang, N., & Liang, H. (2014). Knowledge sharing, intellectual capital and firm performance. *Management Decision, 52*(2), 230–238.
West, M. A., Borrill, C. S., Dawson, J. F., Brodbeck, F., Shapiro, D. A., & Haward, B. (2003). Leadership clarity and team innovation in health care. *The Leadership Quarterly, 14*(4–5), 393–410.
Wiklund, J., & Shepherd, D. (2003). Knowledge-based resources, entrepreneurial orientation, and the performance of small and medium-sized businesses. *Strategic Management Journal, 24*, 1307–1314.
Yew Wong, K. (2005). Critical success factors for implementing knowledge management in small and medium enterprises. *Industrial Management & Data Systems, 105*(3), 261–279.
Yew Wong, K., & Aspinwall, E. (2005). An empirical study of the important factors for knowledge-management adoption in the SME sector. *Journal of Knowledge Management, 9*(3), 64–82.
Yunis, M., Tarhini, A., & Kassar, A. (2018). The role of ICT and innovation in enhancing organizational performance: The catalysing effect of corporate entrepreneurship. *Journal of Business Research, 88*, 344–356.
Zahra, S. A., Sapienza, H. J., & Davidsson, P. (2006). Entrepreneurship and dynamic capabilities: A review, model and research agenda. *Journal of Management Studies, 43*(4), 917–955.
Zhang, X., & Jiang, J. Y. (2015). With whom shall I share my knowledge? A recipient perspective of knowledge sharing. *Journal of Knowledge Management, 19*(2), 277–295.

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