

## RESEARCH ARTICLE

# The sharing and management of managers' knowledge: A structured literature review

Miché Ouédraogo  | Natalie Rinfret

Chaire La Capitale en leadership dans le secteur public, École nationale d'administration publique, Québec, Canada

## Correspondence

Miché Ouédraogo, Chaire La Capitale en leadership dans le secteur public, École nationale d'administration publique, 555, boulevard Charest Est, Québec, Québec, Canada G1K 9E5.  
Email: miche.ouedraogo@enap.ca

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The management and sharing of managers' knowledge constitute vital components of organizational success and performance. A range of existing studies on managerial knowledge has analyzed various aspects of knowledge sharing and management on a patchwork basis. With future research developments in mind, some stock-taking of the current body of research studies should now be undertaken for the purpose of obtaining a clearer understanding of how managerial knowledge is and could be shared and managed. Specifically, this study strives to reply to three questions: (1) What is the status of the development of literature concerning managers' knowledge? (2) What are the various conceptualizations of managers' knowledge and of its sharing and management? (3) What are the main determinants of the sharing and management of managers' knowledge that have been identified in the literature?

A structured literature review method was used to code and analyze 57 studies published between 1997 and 2016.

The results show that 128 authors produced an average of 3.2 publications per year, offering an abundance of conceptualizations of managers' knowledge and of its sharing and management. Several individual and organizational determinants of managerial knowledge sharing and management were identified in our review. The various findings provide a basis for orienting future research in this field.

## 1 | INTRODUCTION

Whereas the management and sharing of knowledge were for many years neglected, they have recently become a subject of interest (Blankenship & Ruona, 2009; Gourlay, 2001). For organizations, knowledge management and sharing represent two indispensable, strategic cornerstones of their performance or success (McAdam & Reid, 2000; Tangaraja, Mohd Rasdi, Ismail, & Abu Samah, 2015; Witherspoon, Bergner, Cockrell, & Stone, 2013).

According to several researchers, knowledge management and sharing can have positive impacts, both for an organization and the individuals of which it is comprised. For organizations, these impacts are visible in terms of effectiveness (Bharadwaj, Chauhan, & Raman, 2015; Pangil & Moi Chan, 2014; Quigley, Tesluk, Locke, & Bartol, 2007; Yao, Kam, & Chan, 2007), capacity for innovation (Yeşil & Dereli, 2013), improved productivity (Noaman & Fouad, 2014; Yao

et al., 2007), team performance (Cheng & Li, 2011; Silvi & Cuganesan, 2006; Yao et al., 2007), and competitive advantage (Felin & Hesterly, 2007). For individuals, the benefits can be observed in terms of performance (van Woerkom & Sanders, 2010) and innovative behaviors (Yu, Yu, & Yu, 2013). As concerns the public sector specifically, improved knowledge management helps to improve the delivery of services and increase the productivity of employees and organizations (Gorry, 2008; Yusof, Ismail, Ahmad, & Yusof, 2012).

Managers are key players in the smooth running of organizations. In their capacity as leaders, they play a strategic role, taking part in both the development and implementation of organizational vision for the purpose of maximizing performance (Mintzberg, 2009, 2011). And, as concerns the public sector particularly, they contribute to the development and implementation of public policies (Taylor & Wright, 2004); in that role, they are instrumental in accomplishing their government's mission (Singh Sandhu, Kishore Jain, & Umi Kalthom bte Ahmad,

2011). Decisions by public sector managers thus have a considerable impact on the public service delivery network, as they are a reflection of both the image and the position of the government (Jackson & Stainsby, 2000). Furthermore, the management of the knowledge deriving from managers' practices offers a window onto the numerous challenges currently confronting organizations (Girard, 2006; Girard & McIntyre, 2010). In the same vein, the sharing of knowledge—from the holders of managerial knowledge to managers seeking to acquire such knowledge—can be seen as a way of ensuring the ongoing, effective delivery of services by organizations (Lin & Lee, 2004; Tangaraja et al., 2015). Obviously, there is already a body of research devoted to the management and sharing of managers' knowledge (Deem, 2004; Liebowitz & Beckman, 1998; Oluikpe, 2012). Their findings have produced several disparate lines of research presenting an abundance of determinants concerning knowledge management and sharing (Majid, Mehran, Zarei, & Somaye, 2013). This conclusion thus points to the need to perform some stock-taking and propose a comprehensive framework for achieving a better understanding of the management and sharing of managerial knowledge (Girard & McIntyre, 2010), all with a view to charting out some future avenues of research in the field.

This study uses a literature review approach drawing on those proposed by Guthrie, Ricceri, and Dumay (2012), Dumay (2014), Dumay and Cai (2014), Massaro, Dumay, and Garlatti (2015), and Rezazadeh and Hoover (2018) and seeks to devise answers to the following three research questions (RQs):

RQ1: What is the status of the development of literature concerning managers' knowledge?

RQ2: What are the various conceptualizations of managers' knowledge and of its sharing and management?

RQ3: What are the main determinants of the sharing and management of managers' knowledge that have been identified in the literature?

## 2 | METHODOLOGY

According to Webster and Watson (2002), "A review of prior, relevant literature is an essential feature of any academic project. An effective review creates a firm foundation for advancing knowledge. It facilitates theory development, closes areas where a plethora of research exists, and uncovers areas where research is needed" (p. xiii). There can be no denying that the multiplication of methods in the field of literature reviews has given rise to a plethora of approaches and terminologies, which, despite obvious differences, "share certain essential characteristics, namely collecting, evaluating and presenting the available research evidence" (Arksey & O'Malley, 2005, p. 3). The labels frequently used to refer to this process include systematic review, meta-analysis, rapid review, (traditional) literature review, narrative review, research synthesis, scoping review, literature mapping, evidence mapping, systematic mapping, and structured review (Colquhoun et al., 2014; Dijkers, 2015; Massaro et al., 2015; Pham et al., 2014).

In any literature review, it is important to specify the approach adopted (Arksey & O'Malley, 2005). For the purposes of the present study, a structured literature review was used. Following Guthrie et al. (2012), Dumay and Cai (2014), Dumay (2014), Massaro et al. (2015), Dijkers (2015), and Rezazadeh and Hoover (2018), this structured review was framed in accordance with six steps: (a) defining the RQs, (b) developing a research protocol, (c) identifying criteria for including and excluding articles, (d) developing a coding framework for use with articles, (e) coding articles and ensuring reliability, and (f) critically analyzing and discussing the results.

### 2.1 | Developing a research protocol

In particular, it is worth recalling that "a structured literature review is a form of content analysis whereby the unit of analysis is the article" (Krippendorff, 2013, p. 9). In order to perform a literature review appropriately, it is thus important to establish a research protocol. Following Massaro et al. (2015), we established such a protocol by means of specifying the RQs, determining the articles to be included, collating the target information in each of the selected articles, and identifying the method of coding and analysis.

### 2.2 | Search for relevant literature

In order to identify relevant articles, several searches were performed between September 2 and 28, 2017. To that end, the following keywords were used in both English and French: *knowledge management*, *knowledge transfer*, *knowledge sharing*, and *manager*. Searches were performed in the ABI/INFORM GLOBAL and Academic Search Complete (EBSCO) databases, which were selected on account of the diversity of themes they covered, including knowledge management. Searches were also performed on Google Scholar so as to broaden coverage. Furthermore, we reviewed various publications in the relevant journals on knowledge management and sharing identified by Massaro et al. (2015): *Journal of Knowledge Management*, *Journal of Intellectual Capital*, *The Learning Organization*, *Knowledge Management Research and Practice*, *Knowledge and Process Management*, *International Journal of Knowledge Management*, *Journal of Information and Knowledge Management*, *Journal of Knowledge Management Practice*, *Electronic Journal of Knowledge Management*, and *International Journal of Learning and Intellectual Capital*.

Upon the completion of this comprehensive document search, 1,580 articles were inventoried. Following an in-depth reading of the summaries and methodology section of each article, we ultimately selected 52 scholarly articles, 4 PhD and 1 Master theses for use in the present study. Only those articles whose subject was managers' knowledge sharing and management and whose survey sample consisted of managers were selected. In addition, we also decided to use 1997 as the cutoff year, considering that previous research on managers' knowledge was embryonic and rather limited in scope (Grant, 1997). Previous references were integrated via the bibliography of the articles selected for our study.

### 2.3 | Code development and coding procedure

In accordance with our research goals and drawing on the coding frameworks developed by other researchers who have adopted the structured literature review method (Broadbent & Guthrie, 2008; Dumay & Garanina, 2013; Guthrie et al., 2012; Massaro et al., 2015), five categories were selected for use in coding articles. The first such category provided a basis for the descriptive analysis of articles. Falling under this rubric were the year of publication; the number of authors; the academic journals in which the articles were published, the countries concerned by the studies, the sector (private or public), the fields of activity featured in the study sample (health, education, information technology, manufacturing, services, etc.), and the research methods (quantitative or qualitative) used by various authors. The second category served to identify conceptualizations of knowledge. How is knowledge defined? What forms of knowledge among managers are studied—that is, individual, group, or organizational; tacit, implicit, and explicit? The third category covered various conceptualizations of knowledge management; it served to identify how the concept of knowledge management is defined and implemented, and to delineate its components. The fourth category served to identify how authors conceive of knowledge sharing. The notion of knowledge sharing also encompassed that of knowledge transfer. Finally, the fifth coding category dealt with the determinants of the sharing and management of managers' knowledge. These determinants were further subdivided into two subcategories—that is, those located at the individual level and those at the organizational level (Gao, Li, & Clarke, 2008; Lemay, Bernier, Rinfret, & Houlfort, 2012; Rinfret, Bernier, Houlfort, Lemay, & Mercier, 2010).

Manual coding of the selected article was performed using Microsoft Excel software. Manual coding is always recommended in preference to automated software-assisted coding, as it enables the coder to grasp the meaning of words and concepts in context (Guthrie et al., 2012). To ensure the reliability of results, dual coding was performed by two researchers independently of one another. A comparison of results produced a match rate of 98.66%. Where these operations instead produced differences, the authors worked their way to a consensus about how to code the articles in question.

## 3 | RESULTS

In this section, we set out the results in relation to our five coding categories. We thus present, in order, a descriptive analysis of the articles, conceptualizations of knowledge, conceptualizations of knowledge management, conceptualizations of knowledge sharing, and the determinants of managerial knowledge sharing and management.

### 3.1 | Descriptive analysis of the selected articles

Taken together, the 57 articles concerning managers' knowledge selected for our review cover a period extending from 1997 to 2016, which works out to an average of 3.2 articles per year over the last 20 years. Those years featuring the greatest number of publications

on the subject were 2004, with seven (accounting for 12.3% of the total), and 2005 and 2007, with six publications each (10.5%).

A total of 128 authors contributed to the writing and publication of the reviewed articles, which works out to an average of 2.3 authors per article. The better part of these articles—that is, 36.8%—was the work of a team of two authors.

In most of the articles, the origin of the participating managers was not indicated (30%). Where such origin was indicated, Canadians ranked first, with nine articles, followed by Britons, at six, and Malaysians and Taiwanese, at two articles each.

A comparative analysis of the research performed—private versus public sector—shows a predominance of research originating in the former. Thirty articles (52.6%) concerned the managerial knowledge of private sector managers versus 23 (40.4%) in the case of the public sector, with only four articles investigating managers in both sectors.

Concerning the field of specialization pertaining to the knowledge of the managers figuring in the various studies, more than half of the reviewed articles discussed the knowledge of managers who worked in several fields of activity. Among those articles that dealt with one particular field of activity, the information and communications technology (ICT) sector ranked first, with six articles, followed by the health sector, with five, and the education sector, with two. Other sectors were also represented, but with only one published article each; these sectors included agriculture, armed forces, infrastructures, commerce, and justice. Furthermore, it should be noted that three articles did not specify the field of managerial knowledge concerned by their analysis.

Most of the articles surveyed used quantitative methods (40.4%). Ranked by frequency, the quantitative methods they used included linear regression (12 articles), structural equation modeling (three articles), and descriptive analyses (three articles). Ranked by frequency, the qualitative methods used in 36.8% of the articles reviewed were case studies (three articles), interpretative analyses (three articles), and grounded theory (two articles). It is also worth noting the considerable number of theoretical articles—that is, 11 (or 19.3% of the total). Only two articles adopted a combined approach in their analyses.

The scholarly journal featuring the greatest number of publications on managers' knowledge was the *Journal of Knowledge Management*, which alone accounted for 13 articles in our survey. The *Journal of International Business Studies*, with three articles, followed. It is also worth noting the considerable number of journals—33 in total—that published one article on the subject.

### 3.2 | Conceptualizations of knowledge

Managers' knowledge was conceptualized and defined in 20 articles surveyed in our review.

Prior even to defining knowledge, several authors made a point of differentiating between data, information, and knowledge (Girard, 2006; Karagoz, Korthaus, & Augar, 2016; Monavvarian & Kasaei, 2007). Even though there is no consensus on the meaning of these three notions (Karagoz et al., 2016; Monavvarian & Kasaei, 2007),

most authors appear to work from the pyramid model developed by Davenport and Prusak (1998)—namely, that knowledge derives from information, which itself derives from data (Bhatt, 2001). Among these three notions, consensus is strongest concerning the definition of data. Following Davenport and Prusak (1998), four authors defined data as a set of discrete, objective facts about events, or as raw facts, such as a set of abstract numbers or values (Karagoz et al., 2016). Also, following Davenport and Prusak (1998, p. 3), six authors described information as a “message, usually in the form of a document or an audible or visible communication” having a sender and receiver. It is “data endowed with relevance and purpose” (Drucker, 1993, in Gao et al., 2008). Information was also defined as data placed in a given context that is endowed with meaning and purpose (Wallace, 2007) and that in turn supports decision-making (Cong & Pandya, 2003; Karagoz et al., 2016).

Divergences between authors cropped up more frequently regarding the definition of knowledge (Asllani & Luthans, 2003; Béliveau, 2011; Gao et al., 2008). In three of the studies in which a definition appears, the authors borrowed from the definition provided by Davenport and Prusak (1998), according to whom knowledge is a fluid mix of framed experience, values, contextual information, and expert insight that provides a framework for evaluating and incorporating new experiences and information. According to this definition, knowledge is, therefore, constructed and is embedded in individuals and communities (Monavvarian & Kasaei, 2007). According to Lemay et al. (2012), knowledge can be viewed as an object (Gherardi, 2009) that can be processed in a range of ways—cognitive (DeFillippi & Ornstein, 2005; Dodgson, 1993), social (Gherardi, Nicolini, & Odella, 1998; Lave & Wenger, 1991), behavioral (Cyert & March, 1963), and technical and technological (Miller, Zhao, & Calantone, 2006; Tuomi, 2000). Béliveau (2011) has drawn on the definition set out by Roy et al. (1995, p.1), according to whom knowledge is:

*“any idea or organized representation of the real, whether founded on lived experience, experiment, experience, science, facts or beliefs. By extension, the products stemming from this representation: practices, techniques, processes, software, tools and technologies all come under the heading of objects of knowledge.”*  
[our translation]

Drawing on Polanyi (1962), Fowler and Pryke (2003) suggested that knowledge is not only objective information but is also about the perception that emerges when that information is refracted through the individual's personal lens (Faulkner, Fleck, & Williams, 1998)—it being understood that this lens is itself determined by the scope and types of previous experiences as well as the capacity of the individual to intellectualize this experience (Wathne, Roos, & Von Krogh, 1996). In the same vein, Gao et al. (2008), borrowing from Drucker (2001), defined knowledge as information that changes something or someone by enabling an individual or an institution to perform a different, more effective action. From another perspective—that is, that of ideas—Bailey and Clarke (2000) defined knowledge as, simply, “usable ideas.” For these authors, in order to be usable, managers' ideas

must be current, personally relevant and actionable (Bailey & Clarke, 1999). This perspective is related to the concept of strategically actionable knowledge outlined by Avenier and Schmitt (2007)—that is, knowledge that is both valid and capable of being put into action in an organization's day-to-day activities (Argyris, 1995). In a nutshell, knowledge in the field of management will only be usable to the extent that it deals with the issues encountered by managers (Avenier & Schmitt, 2007). Notwithstanding these differing conceptions of knowledge, we have adopted that of Davenport and Prusak (1998), considering it to be more comprehensive and explicit than the others.

### 3.3 | Individual, group, and organizational knowledge

An analysis of the articles we selected for our review shows that knowledge can be stored at the level of the individual (manager), group of individuals, and organization (Chinying Lang, 2001; Monavvarian & Kasaei, 2007; Rinfret et al., 2010). At the individual level, knowledge is encountered in memory, which constitutes a store of processes and coded information (Rinfret et al., 2010). At the group level, knowledge can be held within “communities of practice,” where individuals work and collaborate closely (Chinying Lang, 2001; Lave & Wenger, 1991; Monavvarian & Kasaei, 2007), thus endowing knowledge with a social character (Chinying Lang, 2001). At the organizational level, knowledge is often integrated not only in documents or reference systems but also in organizational routines, processes, practices, and norms (Monavvarian & Kasaei, 2007). Organizational knowledge takes shape as the result of interactions between an organization's technologies, practices, and members and is conditioned by the history and culture of the organization (Bhatt, 2001; Monavvarian & Kasaei, 2007).

### 3.4 | Tacit, implicit, and explicit knowledge

Various types of knowledge are discussed in 11 of the articles we surveyed. Those authors who differentiated between forms of knowledge drew either on Polanyi (1962, 1996)—in particular, his categories of tacit (subjective) and explicit (objective) knowledge—or on Gao et al. (2008)—in particular regarding implicit knowledge.

Thus, in reference to Polanyi (1962, 1996), Nonaka (1998), and Nonaka and Takeuchi (1995), the authors we reviewed defined tacit knowledge as personal knowledge related to a given individual's practice, experience, and skills (Stoyko, Guimont, & Fang, 2007). Such knowledge is intangible, abstract (Dhanaraj, Lyles, Steensma, & Tihanyi, 2004), embedded in the cognitive minds of people (Singh Sandhu et al., 2011), and is difficult to codify (Haldin-Herrgard, 2000; Légaré, 2014), to document or even articulate (Leonard & Swap, 2004; Rinfret et al., 2010; Tsoukas, 2003). It also touches on behaviors and perceptions that are personal, cognitive, and contextual in nature (Duffy, 2000); that are rooted in intuitions, deals, beliefs, values, and emotions (Elston, 2016; Girard, 2006; Gore & Gore, 1999; Monavvarian & Kasaei, 2007; Nonaka & Takeuchi, 1995; Wittorski, 2007); and that often guide managers' decision making or actions (Lejeune, 2005).

The second form of knowledge identified was explicit knowledge. In the view of Monavvarian and Kasaei (2007), knowledge is said to be explicit whenever it can be documented and shared, thanks to information technologies; this type of knowledge is structured, externalized, and conscious (Duffy, 2000; Mårtensson, 2000). Légaré (2014) goes one step further, adding that explicit knowledge comes in a format appropriate to its transmission, because it has previously undergone formalization by its holder. Upon being validated and recognized within the organization (Haldin-Herrgard, 2000; Lejeune, 2005), this knowledge can then be found in, in particular, the written documents (books, codes, procedures, memos, intranet, etc.) used in the workplace (for the professional development of managers; Goh, 2002; Haldin-Herrgard, 2000).

In addition to knowledge of the tacit and explicit type, four authors also identified and defined implicit knowledge. According to Gao et al. (2008), implicit knowledge is another form of tacit knowledge that is shared or understood by people or groups that are either unwilling or unable to explicitly express it (for cultural reasons, for example; Li & Gao, 2003). Implicit knowledge is informal and refers to practice (Frappaolo, 2008; Li & Gao, 2003)—“that is, the way things are done, behaviors, and a kind of unwritten instructional manual that is tinged by the personality of the individuals (idiosyncrasy)” (Lemay et al., 2012, p. 300).

### 3.5 | Conceptualizations of knowledge management

Knowledge management was defined and conceptualized in 12 of the articles we reviewed. Our survey brought out a total of five perspectives on knowledge management, conceptualized in terms of practices, processes, organizational learning, managerial perspective, and its “hard” or “soft” character—that is, in reference to the nature of the means used to implement it.

In the form of practices, knowledge management was defined as a set of policies, programs, practices, activities, and techniques used by organizations to create, share, and use knowledge to achieve organizational objectives (Abdul-Rahman, Yahya, Berawi, & Wah, 2008; Jain & Jeppe Jeppesen, 2013; Karagoz et al., 2016; Mason & Pauleen, 2003; Sarayreh, Mardawi, & Dmour, 2012; Wiig, 2000).

In the form of processes, knowledge management was defined as a set of organizational processes that seek optimal combination of data and information processing capacity of Information technologies (ITs) with the creative and innovative capacity of individuals (Malhotra, 1998; Monavvarian & Kasaei, 2007). It also refers to the knowledge management processes at work in an organization (Karagoz et al., 2016; Maier, Hädrich, & Peinl, 2005), namely, mobilization (Pérez López, Manuel Montes Peón, & José Vázquez Ordás, 2004), as well as the sharing and understanding of knowledge (Monavvarian & Kasaei, 2007; Nonaka & Konno, 1998). Several key stages were identified as part of the knowledge management life cycle or cyclic process (Bose, 2004; Dalkir, 2005), including the identification and creation of knowledge (Analoui, Hannah Doloriert, & Sambrook, 2012; Evans, Dalkir, & Bidian, 2014; Karagoz et al., 2016; Maier & Mosley, 2003;

Monavvarian & Kasaei, 2007); the collection, capture, storage, and retrieval of knowledge (Analoui et al., 2012; Evans et al., 2014; Karagoz et al., 2016; Maier & Moseley 2003; Monavvarian & Kasaei, 2007); knowledge conversion (i.e., from implicit to explicit; Herschel, Nemati, & Steiger, 2001); the sharing, dissemination, and transfer of knowledge (Analoui et al., 2012; Evans et al., 2014; Karagoz et al., 2016; Maier & Moseley 2003; Monavvarian & Kasaei, 2007); the application of knowledge (Analoui et al., 2012; Evans et al., 2014; Karagoz et al., 2016; Maier & Moseley 2003); and the improvement of knowledge (Evans et al., 2014).

Knowledge management was also examined from the point of view of organizational learning, which serves to define the quality of knowledge in an organization as well as the effectiveness with which knowledge is used (Lemay et al., 2012; Pérez López et al., 2004). According to Lemay et al., (2012), there are three main perspectives on organizational learning. To begin with, it can be approached from a largely instrumental angle, in which ICTs or sociocognitive mechanisms predominate within the framework of the intergenerational transfer of knowledge. From a second perspective, the emphasis is on intragenerational and intergenerational knowledge transfer, bringing into play the question of management—that is, the role of senior managers in a group's learning process. Finally, according to a third perspective, knowledge management is examined from a strategic point of view, whereby an organization aspires to become “intelligent”—that is, one that is able to challenge its ways of doing and thinking things and is indeed able to reinvent itself, thanks to its ongoing human and technological learning processes.

Working from a managerial perspective, Bailey and Clarke (2000) defined knowledge management as a process in which managers generate, communicate, and use knowledge in a way benefiting employees and the organization. This definition emphasizes the importance and relevance of an individual manager's action in knowledge management.

Finally, the conception of Mason and Pauleen (2003) and Gao et al. (2008), with its focus on means and aims, has given rise to two main approaches to knowledge management. The first emphasizes the “hard” aspects—that is, the deployment and use of the technology appropriate to knowledge management. This approach considers knowledge as an object to be processed by information management systems, software, etc. The second emphasizes the “soft” aspect—that is, people, along with those processes or conditions that facilitate the creation, capture, and sharing of knowledge (Gao et al., 2008; Mason & Pauleen, 2003; Nonaka & Takeuchi, 1995).

### 3.6 | Conceptualizations of knowledge sharing

Knowledge sharing was conceptualized and defined in 13 of the articles we surveyed. An analysis of this concept reveals a degree of confusion with respect to the terminologies associated with knowledge sharing and knowledge transfer. The following section presents both concepts as they were defined in the articles reviewed, along with the nuance whereby they may be differentiated.

To begin with, knowledge sharing was conceptualized as an activity during which knowledge—including information, beliefs, experiences, and contextualized practices—are shared and disseminated among employees or members of an organization (Karagoz et al., 2016; Szabó & Csepregi, 2011). It was also conceptualized as the process of capturing knowledge, or moving knowledge from a source unit to a recipient unit within or between organizations (Bircham-Connolly, Corner, & Bowden, 2005; Singh Sandhu et al., 2011). This process is comprised of two core components: knowledge donating and knowledge collecting. Consequently, knowledge sharing can be either one way (Tangaraja et al., 2015; Yi, 2009) or two-way (Singh Sandhu et al., 2011; Tangaraja et al., 2015; Tohidinia & Mosakhani, 2010; Van den Hooff & De Ridder, 2004).

Furthermore, our analysis brought out several different definitions of knowledge transfer. Authors such as Karagoz et al. (2016) defined knowledge transfer as the transfer of information from source to recipient (Lejeune, 2005; Renzl, 2008) and the transfer of skills (May, Puffer, & McCarthy, 2005). Emphasizing the description of this transfer process, Légaré (2014), in reference to Marchand et al. (2007, p. 4), defined knowledge transfer in terms of “making knowledge available and accessible to any learner who wants to discuss, criticize or experiment with them.” [our translation] Patalas-Maliszewska (2015) and Tangaraja et al. (2015) have made out two subprocesses in the knowledge transfer process: sending and receiving knowledge. Finally, Pette and Randolph (2009), in reference to Szulanski (1996), identified four steps in knowledge transfer: (a) initiation (need for knowledge), (b) implementation (search for knowledge), (c) ramp-up (use of knowledge), and (d) integration (“routinization” of knowledge).

To sum up, based on the conceptualization of Singh Sandhu et al. (2011) and Karagoz et al. (2016), it is clear that even if knowledge sharing and knowledge transfer are considered to be synonyms by some authors, the two notions nevertheless mean different things, as knowledge transfer is only one aspect of knowledge sharing and can thus be considered a subcomponent of the latter.

### 3.7 | Determinants of managers' knowledge management and sharing

#### a. Determinants of managers' knowledge management

In this section, we present the determinants of managers' knowledge management, meaning those factors that support or contribute to its effectiveness. As was noted in the methodology section, the studies figuring in our review distinguished between two levels of determinants—that is, individual and organizational (see Appendix, Table A1).

#### 3.7.1 | Individual determinants

As the result of our review, we were able to identify three individual determinants—namely, motivation, social networks, and recognition of the importance of knowledge.

The motivation of managers is key to securing their involvement and engagement in the knowledge management process, as was noted

in six of the articles surveyed (Asllani & Luthans, 2003; Chinying Lang, 2001; Kelly et al., 2013; Li & Scullion, 2010; Mason & Pauleen, 2003; Pee & Kankanhalli, 2016). Motivation type was examined primarily in its extrinsic form (e.g., monetary compensation, bonuses, and gifts), with research highlighting its positive relationship with managers' engagement (Chinying Lang, 2001; Mason & Pauleen, 2003; Pee & Kankanhalli, 2016).

Aside from motivation, social networks were identified in three articles as being a vital component of knowledge management (Asllani & Luthans, 2003; Kelly et al., 2013; Li & Scullion, 2010). In particular, these networks create ties between managers and, so doing, contribute to the use of knowledge (Li & Scullion, 2010), especially within communities of practice (Kelly et al., 2013). Furthermore, the importance that managers ascribe to knowledge—tacit knowledge in particular—can have a determining effect on their management, according to Bailey and Clarke (2001). These researchers noted that managers engage more with knowledge management whenever they consider knowledge as a source of competitive advantages for the organization, perceive a personal value in it, or find a source of motivation in it.

#### 3.7.2 | Organizational determinants

Organizational determinants refer to the mechanisms implemented by managers for the purpose of managing knowledge. As identified in the present review, these determinants are organizational structure, communication, leadership, organizational culture, ICTs, social capital, strategic alliances, human resources, and training.

Organizational structure was identified as a determinant of knowledge management in four of the articles we reviewed (Barrette et al., 2007; Grant, 1997; Monavvarian & Kasaei, 2007; Pee & Kankanhalli, 2016). Organizational structure refers to the formal division of roles, administrative mechanisms, and the decision-making procedure used within the organization so that it may accomplish its work (Monavvarian & Kasaei, 2007; Pee & Kankanhalli, 2016). For these authors, a high degree of formalization of procedures and a concentration of decision-making by upper management can inhibit the implementation of knowledge management mechanisms (Barrette et al., 2007; Grant, 1997; Pee & Kankanhalli, 2016).

To continue, four of the articles we reviewed showed that the communication mechanisms put in place by an organization play a vital, determining role in the management of managers' knowledge (Asllani & Luthans, 2003; Barrette et al., 2007; Monavvarian & Kasaei, 2007; Rinfret et al., 2010). Likewise, knowledge management improves whenever communication occurs both top-down and bottom-up (Barrette et al., 2007; Monavvarian & Kasaei, 2007), and the documents available within an organization enjoy a status of transparency (Monavvarian & Kasaei, 2007).

Leadership was also identified as a determinant of the management of managers' knowledge in nine of the articles reviewed (Analoui et al., 2012; Asllani & Luthans, 2003; Chinying Lang, 2001; Garavan et al., 2007; Jain & Jeppe Jeppesen, 2013; Martin & Marion, 2005; Mason & Pauleen, 2003; Mutlu, 2014; Pee & Kankanhalli, 2016). This determinant refers to the role played by upper management in

articulating the knowledge management-related vision, goals, and strategy, on the one hand, and supporting the development of the structures required to actively promote knowledge management, on the other (Martin & Marion, 2005; Pee & Kankanhalli, 2016). The effect of different leadership styles on knowledge management was also examined by various authors figuring in this review. These styles include the transformational (Martin & Marion, 2005), transactional (Martin & Marion, 2005), laissez-faire (hands-off; Mutlu, 2014), participative (hands-on; Mutlu, 2014), radical (Jain & Jeppe Jeppesen, 2013), innovator-collaborator (Jain & Jeppe Jeppesen, 2013), and adaptor (Jain & Jeppe Jeppesen, 2013). Of all these styles, the participative leadership style appeared to be the most appropriate for promoting knowledge management (Mutlu, 2014).

Organizational culture was defined as a set of attitudes, values, goals, and practices that characterize an organization; it determines how a group perceives, thinks, and reacts in a given environment (Barrette et al., 2007; Schein, 1985). The two components of organizational culture that determine the management of managers' knowledge and that have a positive relationship with it are collaboration and trust (Garavan et al., 2007; Pérez López et al., 2004).

The technology available to an organization is also vital to the success of efforts aimed at promoting knowledge management. Four of the articles reviewed referring specifically to the important role played by ICTs (Mason & Pauleen, 2003; Monavvarian & Kasaei, 2007; Pee & Kankanhalli, 2016; Rinfret et al., 2010), particularly in terms of how they are used to search, capture, collect, systematically store, transform, and share knowledge (Monavvarian & Kasaei, 2007; Pee & Kankanhalli, 2016). The more an organization is able to use these technologies, the more it is able to provide effective knowledge management.

On the social level, the social capital of organizations was identified as a determinant of knowledge management by Pee and Kankanhalli (2016). Referring to Chuang (2004) and Lee and Choi (2003), Pee and Kankanhalli (2016) defined social capital as the "sum of actual and potential resources embedded with, available through, and derived from the network of interpersonal relationships in an organization" (p. 190), all of which can become sources of knowledge. The more social capital an organization has, the more its knowledge management capacities will be nurtured.

It is also important to note that the knowledge required by an organization is not located solely within it; indeed, strategic alliances were identified as constituting a determinant of knowledge management by Grant (1997). According to this researcher, such alliances bring into play collaboration strategies that an organization may deploy in order to optimize the use of its internal and external knowledge alike.

An organization's human resources were also seen as constituting a critical component of knowledge management (Monavvarian & Kasaei, 2007). According to these researchers, citing Lim and Klobas, 2000, strong human resources policies in an organization will have an impact on the ways in which it manages its knowledge, particularly because people (i.e., an organization's staff) play a decisive role in how knowledge is created, disseminated, shared, and stored within the organization (Monavvarian & Kasaei, 2007).

Finally, the training provided to managers factors critically in the success of an organization's knowledge management initiatives. The more that managers receive training, the more they will be willing not only to manage knowledge but also to apply the acquired knowledge in their tasks (Monavvarian & Kasaei, 2007).

To sum up, according to the results presented in Table A1, a comparative analysis of the determinants of knowledge management identified in this review as pertaining to the tacit or explicit nature of knowledge brings to light a lack of precision in articles on this point. Concerning individual determinants, only one article analyzed the motivation of managers in terms of constituting a determinant of the management of tacit knowledge (Kelly et al., 2013); all the others made no distinction between the tacit or explicit nature of knowledge. Concerning the organizational determinants of knowledge management, only leadership (Analoui et al., 2012) was examined from the perspective of explicit knowledge, and organizational culture was analyzed in relation to tacit knowledge (Kelly et al., 2013). The other organizational determinants were analyzed without any distinction being made between types of knowledge.

#### b. Determinants of the managers' knowledge sharing

In this section, we begin by setting out the individual determinants of knowledge sharing identified in the course of our review and then examine organizational determinants.

### 3.7.3 | Individual determinants

A list of individual determinants includes motivation, knowledge as a source of power, social networks, relationship of trust between knowledge holder and knowledge recipient, level of education, manager's qualities, and the nature of manager's activities, capacity for absorbing and retaining knowledge, and time allotted to sharing knowledge, values, spaces, and infrastructures appropriate to knowledge sharing.

Concerning the knowledge sharing motivation of managers, 12 of the articles in our review examined categories of motivation, including extrinsic, intrinsic, expected relationships, public service motivation, properties of knowledge, nature of tasks, and managerial support. Extrinsic motivation, which was examined in six of the articles reviewed, refers to the motivation of managers to share their knowledge in return for any of a range of potential rewards (Chen & Hsieh, 2015; Goh, 2002; Ipe, 2003; Minbaeva, Pedersen, Björkman, Fey, & Park, 2003; Riege, 2005; Singh Sandhu et al., 2011) such as bonuses, promotions, and monetary compensation. The second type of motivation analyzed in eight articles was intrinsic motivation, which refers to the willingness of managers to share their knowledge, thanks to the enjoyment they experience teaching, sharing, or helping others (Chen & Hsieh, 2015; Davenport & Prusak, 1997; Olatokun & Nwafor, 2012; Tangaraja et al., 2015), or their inclination toward teaching (Chen & Hsieh, 2015; Richards & Duxbury, 2015; Taylor & Wright, 2004). Intrinsic motivation may also have its basis in knowledge self-efficacy, a concept that refers to the confidence that managers derive from

how their knowledge can help their colleagues solve problems in their organization (Howse, 2005; Singh Sandhu et al., 2011; Tangaraja et al., 2015). The third type of motivation encountered in three articles touched on expected, anticipated, or desired relations between the various actors involved in the sharing process. Indeed, the motivation of knowledge holders to share their knowledge may be related to either the relationship that they hope to create with knowledge recipients (Chen & Hsieh, 2015) or to the fair, reciprocal benefits that they anticipate (Chai, Das, & Rao, 2011; Tangaraja et al., 2015). Our review also came across a category of knowledge sharing motivation that is specific to public administrations—namely, public service motivation, as discussed by Tangaraja et al. (2015) and Chen and Hsieh (2015). Working from Perry and Wise (1990), these authors conceived of public service motivation as the willingness of an individual to act on the basis of motivations that are primarily or solely rooted in institutions or public organizations—namely, compassion, self-sacrifice, commitment to the public interest, and attraction to public policy making. Finally, the last category of knowledge sharing motivation refers to the nature of tasks (Howse, 2005), with task clarity, task difficulty, and managerial support all determining and stimulating managers' motivations to share knowledge.

Another individual determinant of knowledge sharing, identified in two articles, concerns the sources of power. Accordingly, the fear of losing power as the result of sharing knowledge constitutes a determinant linked to a manager's unwillingness to share his or her knowledge (Chen & Hsieh, 2015). There is also an apprehension that sharing may reduce or jeopardize one's job security (Riege, 2005).

Social networks were identified as a determinant of knowledge sharing in eight articles. According to these studies, employees with strong social ties will tend to share their knowledge (Girard, 2005; Riege, 2005; Singh Sandhu et al., 2011; Szabó & Csepregi, 2011; Tangaraja et al., 2015). Social networks thus refer to the strength of bonds between knowledge holders and knowledge recipients and the capacity of these actors to maintain a relationship (Szabó & Csepregi, 2011; Wang & Noe, 2010), in terms of emotional intensity, amount of time, intimacy, and reciprocal services (Lin, 2007).

Over and beyond social networks, the concept of trust between knowledge holder and recipient was discussed in four of the articles reviewed, primarily in respect of interpersonal relationships. A further distinction was introduced between two dimensions—namely, cognition-based trust and affection-based trust (Tangaraja et al., 2015). The first type is based on available knowledge and the competence and responsibility of individuals, whereas the second type is based on emotional bonds between individuals (Casimir, Lee, & Loon, 2012; Tangaraja et al., 2015). The presence or absence of trust between individuals was found to be a determinant of managerial knowledge sharing (Riege, 2005; Singh Sandhu et al., 2011; Tangaraja et al., 2015), regardless of whether the knowledge involved was tacit or explicit in nature (Dhanaraj et al., 2004).

Another individual determinant highlighted in two of the articles reviewed was managers' level of education: the higher their education level, the more they will be willing to share their knowledge (Michalopoulos & Psychogios, 2003; Riege, 2005).

Furthermore, as was examined in three articles, the competences specific to managers (Minbaeva et al., 2003)—be they professional (Szabó & Csepregi, 2011), personal (Szabó & Csepregi, 2011), or intercultural (Szabó & Csepregi, 2011) in nature—along with their level of experience (Riege, 2005) are important determinants of knowledge sharing. Sociodemographic characteristics such as age and gender were also identified as determinants of managerial knowledge sharing (Cabrera-Suárez, De Saá-Pérez, & García-Almeida, 2001; Riege, 2005).

The ability of managers to recognize the value of a new piece of knowledge or external information, to assimilate it and put it to use in their activities, particularly their exploitation activities (Mom, Van Den Bosch, & Volberda, 2007), was also found to increase their participation, according to Goh (2002) and May et al. (2005).

Moreover, the time available to managers was identified as a determinant of knowledge sharing in two of the articles reviewed (Riege, 2005; Singh Sandhu et al., 2011). In the view of these authors, managerial knowledge sharers and knowledge recipients usually do not have enough time to identify important knowledge for sharing or to interact with one another.

In addition to time, Riege (2005) mentioned the need among managers for spaces and appropriate formal or informal infrastructures dedicated to knowledge sharing activities.

Finally, Minbaeva et al. (2003) noted that when managers share the same values or system of values, they show greater willingness to share knowledge among themselves.

### 3.7.4 | Organizational determinants

Where the organizational determinants of knowledge sharing are concerned, our review examined the following components: organizational structure, leadership, organizational culture, organizational climate, ICTs, internal communication, forward-looking manpower planning, training, and performance orientation.

The structural form of organizations as a determinant of knowledge sharing in organizations was examined in two articles (Chen & Hsieh, 2015; Riege, 2005). Organizational structure can mean a given organization's centralized or decentralized management (Chen & Hsieh, 2015), its hierarchical structure, or its size (Riege, 2005). Smaller organizations having a decentralized management and little in the way of hierarchy constitute settings that are conducive to knowledge sharing.

In addition to structure, the leadership demonstrated by upper management was identified as a determinant of knowledge sharing in eight articles (Lemay et al., 2012; Rinfret et al., 2010). Leadership was seen as coming into play as a determinant whenever upper management has a clear vision of organizational changes (Taylor & Wright, 2004), promotes or fosters knowledge sharing (Béliveau, 2011; Goh, 2002; Lin & Lee, 2004), clearly communicates the benefits of knowledge sharing (Lin & Lee, 2004; Riege, 2005), and has a well-defined knowledge sharing strategy (Goh, 2002; Ward & Wooler, 2010).

In our review, organizational culture was identified as an organizational determinant of knowledge sharing in five articles (Béliveau, 2011; Chen & Hsieh, 2015; Goh, 2002; Riege, 2005; Taylor & Wright, 2004). Organizational culture was said to have an impact when, above

all, it is geared toward learning from mistakes (Taylor & Wright, 2004), encourages collaboration between members of an organization with a view to solving problems (Goh, 2002; Riege, 2005), and is a vector of continuous improvement (Goh, 2002; Riege, 2005).

Addition to organizational culture, the organizational climate—that is, the organizational conditions that have repercussions on social conditions and that influence the perception and attitudes of managers—was identified as constituting a determinant of knowledge sharing by Béliveau (2011). If the organizational climate is positive, knowledge sharing will occur to a greater extent.

The presence and use of ICTs in an organization were shown to be determinants of knowledge sharing in five of the articles figuring in our review (Chen & Hsieh, 2015; Goh, 2002; Patalas-Maliszewska, 2015; Singh Sandhu et al., 2011). In order for ICTs to facilitate knowledge sharing, IT systems and processes must be fully integrated with one another, fit must be achieved between individuals' needs and IT systems, and training must be provided to employees so as to familiarize them with these tools and practices (Riege, 2005; Singh Sandhu et al., 2011). For example, mobile technology use as a determinant of knowledge sharing by managers was validated by Patalas-Maliszewska (2015).

Furthermore, internal communication, which refers to the exchange of information (Minbaeva et al., 2003)—top-down or bottom-up—as well as its format (verbal/written; Riege, 2005), was also identified as a determinant of managerial knowledge sharing in five of the articles reviewed (Fowler & Pryke, 2003; May et al., 2005; Minbaeva et al., 2003; Riege, 2005; Szabó & Csepregi, 2011).

Concerning human resource management, forward-looking manpower planning was seen as serving to not only foresee retirements but also to anticipate the hiring of new managers and oversee their orientation, training, and integration into the organization—all of which contributes to the sharing of knowledge by more experienced managers (Béliveau, 2011). This determinant was analyzed by one of the articles we reviewed.

Furthermore, the existence of continuing professional development or a manager training system within an organization was identified as a determinant of knowledge sharing in four of the articles reviewed (Cabrera-Suárez et al., 2001; Fowler & Pryke, 2003; Goh, 2002; Minbaeva et al., 2003). According to these researchers' findings, training within an organization stimulates the sharing of knowledge.

Finally, the performance orientation of organizations was identified as a determinant of knowledge sharing in four articles (Björkman, Barner-Rasmussen, & Li, 2004; Minbaeva et al., 2003; Szabó & Csepregi, 2011; Taylor & Wright, 2004). The more an organization's managers are aware of the importance and impact of the sharing of their knowledge on their organization's performance (Björkman et al., 2004), the more such sharing will occur.

As is shown by the findings presented in Table A2 (see Appendix), analysis of knowledge sharing determinants in respect of the tacit or explicit nature of knowledge has, until now, occurred to only a very small extent. All of the individual determinants identified in our review were examined in relation to knowledge in general, with no distinction being made as to type. Where organizational determinants are

concerned, only the performance orientation (Björkman et al., 2004) was examined in terms of being a determinant of explicit knowledge. In contrast, leadership (Béliveau, 2011), organizational climate (Béliveau, 2011), forward-looking manpower planning (Béliveau, 2011), organizational culture (Béliveau, 2011), and training (Cabrera-Suárez et al., 2001) were examined in terms of constituting determinants of the sharing of tacit knowledge.

## 4 | DISCUSSION AND CONCLUSION

This study reviewed 57 articles published over a 20-year period on the subject of managers' knowledge (see Table A3 in the Appendix). These articles were written by more than 128 authors hailing from several different countries. In these articles, research was conducted predominantly in the private sector, with quantitative approaches being adopted for the most part. These analyses offer evidence that a range of definitions and conceptualizations of knowledge currently exists (Karagoz et al., 2016; Monavvarian & Kasaei, 2007). They also bring out how knowledge is located both within individuals and organizations (Monavvarian & Kasaei, 2007; Rinfret et al., 2010) and can be tacit, implicit, or explicit in nature (Gao et al., 2008; Légaré, 2014; Lemay et al., 2012). Both knowledge management and knowledge sharing have given rise to a broad range of conceptualizations. Concerning knowledge management in particular, five perspectives could be distinguished in terms of, respectively, practices, processes, organizational learning, managers' viewpoints, and the nature of the knowledge involved—that is, “hard” or “soft.” For its part, knowledge sharing was viewed as either an activity or a process, with some authors confusing this concept with that of knowledge transfer, which in fact constitutes one aspect of sharing. The abundance of definitions brought to light by this review presents a challenge to the research community, which, following the example of Tangaraja, Mohd Rasdi, Abu Samah, and Ismail (2016) and Pemsel, Wiewiora, Müller, Aubry, and Brown (2014), must further investigate the definition of these various concepts in order to more fully distinguish their respective nuances and better gauge their implications for research in specific contexts.

In addition to highlighting the diversity of conceptions surrounding knowledge, knowledge management, and knowledge sharing, this study has shed light on 16 individual determinants and nine organizational determinants of knowledge sharing, along with three individual determinants and nine organizational determinants of knowledge management. These determinants were examined in the private sector (e.g.: Lin & Lee, 2004; Rodan, 2002; Tippmann et al., 2014) or the public sector (e.g.: Barrette et al., 2007; Chen & Hsieh, 2015; Girard, 2005). Our review has also served to produce a synthesis of individual and organizational determinants that provides a basis for proposing various models or comprehensive frameworks concerning managers' knowledge sharing and management. In keeping with the recommendation of Tangaraja et al. (2015), empirical research on managers' knowledge should now be undertaken with the aim of developing and testing such models and comprehensive frameworks.

Furthermore, future research should make a priority of focusing on the public sector and tacit knowledge, because few studies have until now been conducted in this sector or involving this type of managerial knowledge. These variables could well serve to differentiate in respect of the effectiveness, meaning, and intensity of the determinants of knowledge sharing and management, (Becerra, Lunnan, & Huemer, 2008; Bock, Zmud, Kim, & Lee, 2005; Chumg, Cooke, Fry, & Hung, 2015; Hau, Kim, Lee, & Kim, 2013; Park, Vertinsky, & Becerra, 2015; Schoenherr, Griffith, & Chandra, 2014; Suppiah & Singh Sandhu, 2011). With the exception of Lemay et al. (2012), no study in this survey specifically investigated the nature of the essential knowledge sought by managers seeking to strengthen their competence. It is thus vital to conduct further research in order to identify the nature and type of this essential knowledge as well as the conditions that facilitate its sharing.

#### 4.1 | Practical implications

This review has served to bring out the individual and organizational determinants of managers' knowledge sharing and management.

At an individual level, by implementing mechanisms aimed at promoting knowledge, allocating the required time and space, and creating networks, managers can become more strongly motivated to share their managerial knowledge. At an organizational level, the commitment of upper management to promoting participative leadership will foster the development of determinants that are conducive to an organization's efforts to obtain better managerial knowledge management and sharing; such determinants include, particularly, an organizational culture of collaboration and trust; a low degree of formalization; decentralized decision making; fluid, transparent communication; a system of ongoing education; social capital reinforced by external partnerships; and access to appropriate ICTs.

By promoting the implementation of these different precepts, organizations will be able to ensure the management and ongoing sharing of managers' knowledge. So doing, they will also be helping to strengthen organizational memory—and thus organizational performance—in a context of mass retirement.

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#### ORCID

Miché Ouédraogo  <https://orcid.org/0000-0001-5458-5719>

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## APPENDICES

**TABLE A1** Determinants of knowledge management

Determinants of knowledge management	Type of knowledge concerned	Authors
Individual determinants		
Motivation	Both; tacit (1)	Pee and Kankanhalli (2016), Mason and Pauleen (2003), Li and Scullion (2010), Asllani and Luthans (2003), Chinying Lang (2001), and Kelly, Edkins, Smyth, and Konstantinou (2013)
Social networks	Both	Li and Scullion (2010), Asllani and Luthans (2003), and Kelly et al. (2013)
Relevance of knowledge	Both	Bailey and Clarke (2001)
Organizational determinants		
Social capital	Both	Pee and Kankanhalli (2016)
Organizational culture	Both, Unspecified (2), Tacit (1)	Monavvarian and Kasaei (2007); Barrette, Lemyre, Cornei, and Beauregard (2007); Rinfret et al. (2010); Mason and Pauleen (2003); Pérez López et al. (2004); Garavan, Carbery, and Murphy (2007); and Kelly et al. (2013)
Organizational structure	Both, Unspecified (1)	Monavvarian and Kasaei (2007), Pee and Kankanhalli (2016), Grant (1997), and Barrette et al., 2007
Training	Both	Monavvarian and Kasaei (2007)
Information and communications systems	Both, Unspecified (1)	Monavvarian and Kasaei (2007), Rinfret et al. (2010), Barrette et al. (2007), and Asllani and Luthans (2003)
Human resources		
Leadership	Both, Unspecified (2), Explicit (1),	Pee and Kankanhalli (2016), Jain and Jeppe Jeppesen (2013), Mason and Pauleen (2003), Martin and Marion (2005), Analoui et al. (2012), Mutlu (2014), Asllani and Luthans (2003), Garavan et al. (2007), and Chinying Lang (2001)
Strategic alliances	Both	Grant (1997)
Information and communications technologies	Both	Monavvarian and Kasaei (2007), Rinfret et al. (2010), Mason and Pauleen (2003), and Pee and Kankanhalli (2016)

**TABLE A2** Determinants of knowledge sharing

Determinants of knowledge sharing	Type of knowledge concerned	Authors
Individual determinants		
Extrinsic motivations	Both	Goh (2002), Minbaeva et al. (2003), Ipe (2003), Riege (2005), Singh Sandhu et al. (2011), and Chen and Hsieh (2015)
Intrinsic motivations	Both; Unspecified (1)	Chen and Hsieh (2015), Olatokun and Nwafor (2012), Tangaraja et al. (2015), Howse (2005), Singh Sandhu et al. (2011), Taylor and Wright (2004), Richards and Duxbury (2015), and Chen and Hsieh (2015)

(Continues)

**TABLE A2** (Continued)

Determinants of knowledge sharing	Type of knowledge concerned	Authors
Expected relationships	Both	Chen and Hsieh (2015) and Tangaraja et al. (2015)
Public service motivation	Both	Tangaraja et al. (2015) and Chen and Hsieh (2015)
Tasks and managerial support	Both	Howse (2005)
Knowledge as a source of power	Both	Chen and Hsieh (2015) and Riege (2005)
Social networks	Both	Szabó and Csepregi (2011), Girard (2005), Riege (2005), Singh Sandhu et al. (2011), Szabó and Csepregi (2011), Tangaraja et al. (2015), Björkman et al. (2004), and Ward and Wooler (2010)
Level of education	Both	Michalopoulos and Psychogios (2003) and Riege (2005)
Manager's qualities	Both	Minbaeva et al. (2003), Szabó and Csepregi (2011), and Riege (2005)
Capacity for absorbing and retaining knowledge	Both	Goh (2002) and May et al. (2005)
Trust	Both	Tangaraja et al. (2015), Riege (2005), Singh Sandhu et al. (2011), and Dhanaraj et al. (2004)
Time for sharing knowledge	Both	Singh Sandhu et al. (2011) and Riege (2005)
Sharing the same system of values	Both	Minbaeva et al. (2003)
Access to spaces and infrastructures appropriate to knowledge sharing	Both	Riege (2005)
Nature of manager's activities	Both	Mom et al. (2007)
Organizational determinants		
Leadership	Both; Tacit (1)	Lemay et al. (2012), Rinfret et al. (2010), Taylor and Wright (2004), Goh (2002), Lin and Lee (2004), Béliveau (2011), Riege (2005), and Ward and Wooler (2010)
Organizational climate	Tacit	Béliveau (2011)
Forward-looking manpower planning	Tacit	Béliveau (2011)
Organizational culture	Both; Tacit (1)	Béliveau (2011), Taylor and Wright (2004), Goh (2002), Riege (2005), and Chen and Hsieh (2015)
Information and communications technologies (ICTs)	Both	Chen and Hsieh (2015), Singh Sandhu et al. (2011), Goh (2002), Riege (2005), and Patalas-Maliszewska (2015)
Training	Both; Tacit (1)	Goh (2002), Minbaeva et al. (2003), Fowler and Pryke (2003), and Cabrera-Suárez et al. (2001)
Internal communication	Both	Minbaeva et al. (2003), Riege (2005), Fowler and Pryke (2003), Szabó and Csepregi (2011), and May et al. (2005)
Performance orientation	Both; Explicit (1)	Taylor and Wright (2004), Minbaeva et al. (2003), Björkman et al. (2004), and Szabó and Csepregi (2011)
Organizational structure	Both	Riege (2005) and Chen and Hsieh (2015)

**TABLE A3** List of articles reviewed

Authors' names	Title of the article
Alan (2006)	A study exploring managers' knowledge sharing strategies through the learning styles of experiential learning theory.
Analoui et al. (2012)	Leadership and knowledge management in UK ICT organizations.
Asllani and Luthans (2003)	What knowledge managers really do: an empirical and comparative analysis.
Avenier and Schmitt (2007)	Élaborer des savoirs actionnables et les communiquer à des managers.

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TABLE A3 (Continued)

Authors' names	Title of the article
Bailey and Clarke (2000)	How do managers use knowledge about knowledge management?
Bailey and Clarke (2001)	Managing knowledge for personal and organizational benefit.
Barrette et al. (2007)	Organizational learning among senior public-service executives: An empirical investigation of culture, decisional latitude and supportive communication.
Béliveau (2011)	Le rôle des cadres intermédiaires dans le transfert d'une approche humaniste de gestion, de soins et de services: une étude multi-cas au Centre de réadaptation Estrie.
Björkman et al. (2004)	Managing knowledge transfer in MNCs: The impact of headquarters control mechanisms.
Burgess and Currie (2013)	The knowledge brokering role of the hybrid middle level manager: the case of health care.
Cabrera-Suárez et al. (2001)	The succession process from a resource-and knowledge-based view of the family firm.
Chen and Hsieh (2015)	Knowledge sharing motivation in the public sector: the role of public service motivation.
Chinying Lang (2001)	Managerial concerns in knowledge management.
Dhanaraj et al. (2004)	Managing tacit and explicit knowledge transfer in IJVs: the role of relational embeddedness and the impact on performance.
Elston (2016)	Conflict between explicit and tacit public service bargains in UK executive agencies
Fowler and Pryke (2003)	Knowledge management in public service provision: The Child Support Agency.
Gao et al. (2008)	Knowledge, management, and knowledge management in business operations.
Garavan et al. (2007)	Managing intentionally created communities of practice for knowledge sourcing across organizational boundaries: Insights on the role of the CoP manager.
Girard (2005)	Taming enterprise dementia in public sector organizations.
Girard (2006)	Where is the knowledge we have lost in managers?
Goh (2002)	Managing effective knowledge transfer: An integrative framework and some practice implications.
Grant (1997)	The knowledge-based view of the firm: implications for management practice.
Howse (2005)	Factors that motivate hospital nurse middle managers to share knowledge related to boundary spanning roles
Jain and Jeppe Jeppesen (2013)	Knowledge management practices in a public sector organization: The role of leaders' cognitive styles
Karagoz et al. (2016)	How do ICT project managers manage project knowledge in the public sector? An empirical enquiry from the Victorian Public Sector in Australia.
Kelly et al. (2013)	Reinventing the role of the project manager in mobilizing knowledge in construction.
Légaré (2014)	Les facteurs influençant la transmission des savoirs professionnels en lien avec la viabilité hivernale; étude auprès des contremaîtres de la voirie des municipalités du Québec.
Lemay et al. (2012)	Maturité organisationnelle des organisations publiques et management des connaissances.
Li and Scullion (2010)	Developing the local competence of expatriate managers for emerging markets: A knowledge-based approach
Lin and Lee (2004)	Perceptions of senior managers toward knowledge-sharing behavior.
Martin and Marion (2005)	Higher education leadership roles in knowledge processing.
Mason and Pauleen (2003)	Perceptions of knowledge management: A qualitative analysis
May et al. (2005)	Transferring management knowledge to Russia: A culturally based approach
Michalopoulos and Psychogios (2003)	Knowledge management and public organizations: How well does the model apply to Greece?
Minbaeva et al. (2003)	MNC knowledge transfer, subsidiary absorptive capacity, and HRM.
Mom et al. (2007)	Investigating managers' exploration and exploitation activities: The influence of top-down, bottom-up, and horizontal knowledge inflows.
Monavvarian and Kasaei (2007)	A KM model for public administration: The case of Labour Ministry
Mutlu (2014)	Leadership role and competencies of managers in knowledge-intensive context
Patalas-Maliszewska (2015)	The effect of the use of mobile technologies by management in Polish manufacturing enterprises on the efficiency of knowledge transfer within a company.
Pee and Kankanhalli (2016)	Interactions among factors influencing knowledge management in public-sector organizations: A resource-based view.

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**TABLE A3** (Continued)

Authors' names	Title of the article
Pérez López et al. (2004)	Managing knowledge: The link between culture and organizational learning.
Petter and Randolph (2009)	Developing soft skills to manage user expectations in IT projects: Knowledge reuse among IT project managers.
Richards and Duxbury (2015)	Work-group knowledge acquisition in knowledge-intensive public-sector organizations: An exploratory study.
Riege (2005)	Three-dozen knowledge-sharing barriers managers must consider.
Rinfret et al. (2010)	Défis et enjeux des connaissances: la réalité des cadres de la fonction publique québécoise.
Rodan (2002)	Innovation and heterogeneous knowledge in managerial contact networks.
Singh Sandhu et al. (2011)	Knowledge sharing among public sector employees: evidence from Malaysia
Storey and Salaman (2005)	The knowledge work of general managers.
Syysnummi and Laihonon (2014)	Top management's perception of knowledge management in a vocational education and training organization in Finland.
Szabó and Csepregi (2011)	Competences found important for knowledge sharing: Investigation of middle managers working at medium- and large-sized enterprises
Tangaraja et al. (2015)	Fostering knowledge sharing behavior among public sector managers: A proposed model for the Malaysian public service
Taylor and Wright (2004)	Organizational readiness for successful knowledge sharing: Challenges for public sector managers
Thall (2004)	The role of the manager in the conversion of tacit to explicit knowledge.
Tippmann, Scott, and Mangematin (2014)	Subsidiary managers' knowledge mobilizations: Unpacking emergent knowledge flows.
Todorović, Petrović, Mihić, Obradović, and Bushuyev (2015)	Project success analysis framework: A knowledge-based approach in project management.
Ward and Wooler (2010)	Keeping knowledge flowing in a downturn: Actions for knowledge and information managers.
Woldesenbet, Storey, and Salaman (2007)	Senior managers' business knowledge in a transition economy

Abbreviations: ICT, information and communications technology; IT, information technology; MNCs, multinational corporations.