Leadership Styles and Organizational Knowledge Management Activities: A Systematic Review

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Abstract: Leaders play a critical role in the success or failure of their organizations. Leaders can be effective in implementing changes, building their organization's capabilities, and improving its performance, or the opposite, they could be ineffective. In this systematic review, the authors aim to summarize the findings of previous quantitative research, published between the period from 2000 to 2018, to identify the effect of various leadership styles on organizational Knowledge management (KM) capabilities and activities. The authors reviewed 50 articles found in well-known databases included Emerald, ScienceDirect, Taylor and Francis, Ebsco, Google Scholar, and others, concerning the impact of leadership when implementing KM in business organizations. The review revealed that transformational, transactional, knowledge-oriented leadership, top executives, and strategic leadership have evidence of their constant and positive effect on the KM process. The authors encourage organizations to use a combination of those styles to maximize the effect of leadership on KM. The authors also recommend conducting further studies on the effect of the remaining leadership styles, such as the ethical and servant leadership styles on KM and the other specific KM activities.

Keywords: leadership, leadership styles, knowledge, knowledge management, organization

JEL Classification: M000, M100, M150

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Introduction

According to the literature, KM has a significant impact on organizational performance and innovation. Researchers have found a strong link between KM and different aspects of management innovation that provide an organization with a competitive advantage. KM’s implementation in business organizations could be affected by several factors, such as the organization culture, budget, infrastructure, technology, and leadership.

The impact of leadership on business and organizational management has been recognized as a significant factor that could make a difference in organizational performance. The academic gurus proposed several theories, such as the great man theory, various behavioral theories, Lewin’s theory, the contingency theory, the situational leadership theory, the transformational theory, the transactional theory (or managerial leadership), and many others.

Based on the existing literature, the outcome of implementing KM projects and processes in organizations varies according to the style of leadership. The evidence reveals a positive impact of leadership styles on KM, while other studies affirm a contradictory result. Therefore, this paper, as per the existing literature, is the first systematic review that aims to identify the leadership styles and roles recognized as facilitators or inhibitors of building KM capabilities in organizations and the contribution of those styles and roles to the successful implementation of KM activities. Also, it aims to summarize the evidence and come up with recommendations to guide researchers in their future projects.

To achieve the study goal, the authors conducted a systematic literature review of the quantitative studies published between the period from 2000 to 2018 concerning leadership and KM. Hence, we surveyed some well-known databases, including Emerald, ScienceDirect, Taylor and Francis, Ebsco, Google Scholar, and others.

Literature Review

Leadership is one of the important topics that are studied extensively by researchers. They have come up with several different theories and definitions of the concept. To help readers understand the history of the evolution of leadership theories, we have summarized the most common theories in Table 1.

As can be noticed above, there is a problem with the various definitions of leadership, as they are based on one isolated variable. Therefore, Winston and Patterson (2006) came up with a solution by reviewing over 90 variables that were used by previous researchers and academic gurus to define leadership, and then they proposed an integrated definition of leadership that is “A leader is one or more people who select, equips, trains, and influences one or more follower(s) who have diverse gifts, abilities, and skills and focuses the follower(s) on the organization’s mission and objectives, causing the follower(s) to willingly and enthusiastically expend their spiritual, emotional, and physical energy in a concerted coordinated effort to achieve the organization’s mission and objectives.”

Ribie`re1 and Sitar (2003) addressed the critical role of leadership in organizations that were willing to evolve their culture into a knowledge supporting culture and implement successful KM activities. According to Bolden (2010), leadership, management, and organizational development are all parts of
one process for enhancing the capacity of organizations, and people, to improve their performance. According to the Center for Creative Leadership, leadership has several roles in developing an organization's capabilities and implementing strategic changes. Leadership enables executive teams to collaborate effectively to drive change and execute strategy, develop processes, skills, mindsets, and tools to navigate change together, ignite innovation across the organization, manage talent, and create the right culture.

On the other hand, the knowledge-based theory (Curado, 2006) of a firm, which is an extension of the resource-based theory (Barney, 1991), argued that knowledge is a unique strategic resource that does not depreciate the way traditional resources do. According to Polanyi (1966), knowledge, which is classified as explicit knowledge is transmitted formally between people, while tacit knowledge is transmitted informally. Nonaka (1994) developed the dynamic theory of organizational knowledge's creation, which proposed that organizational knowledge is created through a continuous exchange between tacit and explicit knowledge via four mechanisms for interactions: socialization, combination, internalization, and externalization.

Table 1: The most common leadership theories

| Theory                          | Description                                                                                                                                                                                                 |
|---------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Great man theories or hero      | Great man (hero) is a wise, gifted, noble-hearted man who stands behind an accomplishment in the world as an outcome of thoughts that dwelt in him (Carlyle, 1840).                                                        |
| Lewin's leadership theory and styles | It includes three popular leadership behavioral styles that are autocratic, democratic, and laissez-faire (Lewin, Lippitt, and White, 1939).                                                                  |
| Leadership behavior and theories| Those theories focus on how leaders behave toward a task, people, and participation, rather than leadership traits (Vroom and Jago, 2007).                                                                   |
| Fiedler's contingency theory    | It proposes an interaction of three variables that are leader-member relations, task structure, and leader's positional power, as determinants for the extent of the situational control that the leader has (Fiedler, 1964). |
| Situational leadership theory   | The style to be used by leaders, such as telling, selling, participating, or delegating depends upon factors, such as the situation, the people, and the task (Blanchard and Hersey, 1969). |
| Transformational leadership     | The theory is about the leadership that transforms people and organizations, and raises people to higher levels of motivation and morality. Vision, culture, values, development, teamwork all have meaning in transformational leadership (Fairholm, 2001). |
| Transactional leadership        | The theory is about persons who exercise the authority of their office under formal legality; they obey only the law, obligate others, and follow the principle of hierarchy (Weber, 1968, p. 238). |
| Servant leadership              | According to Robert Greenleaf (as cited in Essays, UK, 2018), the servant-leadership starts with the leader's feeling to serve and, then, his role is changed to lead.                                      |
| Authentic leadership            | According to Walumbwa et al., (2008), authentic leadership is positively related to ethical leadership and transformational leadership. It includes self-awareness of one's strengths and weaknesses, self-moral perspective, balanced processing, and being true. |
| Ethical leadership              | According to Brown, Trevino, and Harrison (2005), ethical leadership is the demonstration of appropriate conduct through communication, reinforcement, and decision-making.                                        |
Hansen, Nohria, and Tierney (1999) proposed two main KM strategies; firstly, the personalization strategy which theorized that tacit knowledge is shared through conversations and direct contact between people, and secondly, the codification strategy which described the process of conversion of knowledge into a resource that can be used later by people.

The evolution of KM in the last 20 years encouraged many authors to find an appropriate definition that explains the concept. Alavi and Leidner (2001, p. 114) defined KM as a process that involves various activities; minimally it includes the processes of creating, storing and retrieving, transferring, and applying knowledge. In his study, Heisig (2009) summarized the six most frequently used KM activities that are knowledge transfer, creation, application, storage, identification, and acquisition. Also, he listed the critical success factors of KM including: 1) human-oriented factors that are culture, people, and leadership, 2) organizational processes and structure, 3) technology’s infrastructure and application, and 4) management processes, including strategies, goals, and outcome measurements.

Young (2010) highlighted four levels of successful KM; firstly, the individual (or personal) level includes personal knowledge, capabilities, experiences, competence, and development that is managed by the individuals themselves, by using tools, e.g., mobiles, wireless and web-based applications; secondly, team KM is recognized as the collaboration between team members to produce new knowledge and transfer knowledge based on “share” or “pull” models of knowledge transfer; thirdly, the organizational KM that includes the introduction of a KM strategy and providing the infrastructure to implement the KM process across the entire organization through the “top-down approach”; and fourthly the inter-organizational KM that adopts knowledge from outside resources, e.g., co-partners, customers, suppliers, and competitors.

Based on the above review, we will identify the various leadership styles and roles that facilitate or inhibit an organization’s implementation of its KM activities.

Methods

The authors used the systematic review method to answer the research question and achieve their objectives. The systematic review has a high academic value as it is a collaboration of experts who synthesize strong evidence by reviewing and summarizing secondary data that is relevant to the question under review. This systematic review was undertaken from November 2018 to April 2019.

Inclusion criteria of studies

In this study, the authors have included all the papers that met the following criteria:

1. The title of the article includes the word “leadership or leader” or an alternative word, e.g., “manager or supervisor.”
2. The title of the article includes the word “knowledge” or any of the KM activities, e.g., KM, creation, acquisition, identification, transfer, storage, or application.
3. Leadership is the independent variable or a moderating variable in the study, while KM is a dependent or a mediating variable.
4. Quantitative research.
5. Published in peer-review journals between the period 2000 and 2018.
Exclusion criteria of studies

In this study, the authors excluded all the papers that met the following criteria:

1. Research studied the effect of leadership on information systems and technology rather than KM activities.
2. Qualitative or mixed methodology research.
3. Non-English papers.
4. Papers published before 2000.

Search Strategy

The authors used “leadership,” “leadership styles,” “KM,” and “KM activities” as the key search words to search well-known databases included Emerald, ScienceDirect, Taylor and Francis, Ebsco, Google Scholar, and others.

The authors used “AND & OR” as the main basic Boolean operators to combine keywords in a search. Thus, the main search strategy for this review was “leadership AND (knowledge AND/OR (knowledge management OR knowledge creation OR knowledge acquisition OR knowledge identification OR knowledge transfer OR knowledge storage OR knowledge application). Additionally, the authors used the filters recommended by some databases to search for the relevant papers.

Primary Research Methods

The review process started by reviewing the titles and abstracts of the selected articles against the inclusion and exclusion criteria. Then, the included articles were reviewed for the research question, method, sample, tools, and findings. In this study, the included articles are classified in appendixes 1 and 2.

The Study Flow

For this systematic review, the preferred reporting items on systematic reviews and meta-analyses (PRISMA) flow diagram was used to map out the flow of information through the different phases of the systematic review. PRISMA (Figure 1) maps out the number of records identified, screened for eligibility, included, and excluded as justified by the inclusion and exclusion criteria (Mo-
her, Liberati, Tetzlaff, and Altman, 2009). As a result, we ended up with 50 research papers.

The Study Coding Categories

The authors organized the information into tables, including several sub-sections. Those sub-sections included the author, the year of publication, the design, the sector, the country, the sample size, and the findings. The first author of the study analyzed all the articles and organized the data in the tables. The second and third authors double-checked the results and validated the conclusion and the recommendations.

Results

Paper’s Characteristics

Appendix 1 presents the authors of the included research papers, their year of publication, journals’ names, databases, research design, countries, industries, and samples. An analysis of the contents of Table 1 shows that the number of published papers that are relevant to the systematic review’s question has significantly increased with time. According to the review, 7 (14%) of the research papers were published between 2001 and 2009, 16 (32%) between 2010 and 2014, and 27 (54%) between 2015 and 2019. The authors found 26 (52%) of those papers in Google Scholar, Emerald had 11 (22%), DirectScience contained 3 (6%), Taylor and Francis had 2 (4%), and others held 8 (16%).

Those studies were conducted in numerous countries; 12 (24%) in Iran, 7 (14%) in Pakistan, 3 (6%) in Spain, 2 (4%) in Iraq, Taiwan, China, Indonesia, India, Nigeria, and Australia, and 1(2%) in the USA, Thailand, Korea, Croatia, Bangladesh, Singapore, UAE, Bahrain, Mongolia, the UK, the Netherlands, Malaysia, and 2 (4%) in multiple countries.

The studies also covered various industrial sectors: education 9 (18%), manufacturing 7 (14%), various-sized organizations 6 (12%), ICT 5 (10%), banking 3 (6%), government 3 (6%), oil, gas, and thermopower 2 (4%), service 2 (4%), healthcare 2 (4%), research institutes 2 (4%), food industry 2 (4%), hotels 1 (2%), construction 1 (2%), consulting 1 (2%), technology 1 (2%), export processing zones 1 (2%), multimedia super corridor status firms 1 (2%), and a port company 1 (2%). Concerning the methodology, all the papers were cross-sectional researches.

Regarding the size of the research’s samples, 2 (4%) included 1 to 50 participants, 4 (8%) 51 to 100, 6 (12%) 101 to 150, 4 (8%) 151 to 200, 12 (24%) 201 to 250, 11 (22%) 251 to 300, 3 (6%) 301 to 350, 2 (4%) 351 to 400, and 6 (12%) more than 400. Regarding the respondents’ positions, 27 (54%) of the sample were employees, 12 (24%) were at various levels, 5 (10%) were managers and supervisors, 4 (8%) senior managers, 1 (2%) experts, and 1 (2%) students.

Appendix 2 presents a summary of the research papers’ contents, including the leadership styles and roles, the KM activities, and the outcomes of the research. The analysis of the contents of Table 2 shows that 14 (28%) of the included papers studied transformational leadership style, 2 (4%) transactional style, 7 (14%) both transformational and transactional styles, 4 (8%) transformational, transactional, and laissez-faire styles, 4 (8%) knowledge leadership, 3 (6%) leadership in general, 2 (4%) senior and strategic leadership, 1 (2%) leader-member exchange (LMX), 1 (2%) communicative and non-communicative styles, 1 (2%) task-oriented and human-oriented styles and 11 (24%) studied multiple leadership styles, including rewarding, directive, innovator, monitor, autocratic, democratic, consulting, counseling, telling,
selling, referent power, cognitive style, trust, empowering, authority, leadership traits, coercive power, legitimate power, encouraging, self-management, initiating structure, and consideration styles. See Figure 2 for the distribution of studies according to the style.

Concerning the KM activities, Figure 3 also shows that 27 (54%) of the included papers studied the KM activities in general, 19 (38%) knowledge sharing, 1 (2%) knowledge creation and application, 1 (2%) knowledge transfer, 1 (2%) knowledge acquisition, and 1 (2%) looked at knowledge slack, absorptive capacity, and tacitness.

Paper’s Contents Summary
Transformational leadership

Regarding the systemic review’s question concerning the influence of leadership styles and roles on KM, the authors found in 12 studies that transformational leadership had a positive, significant correlation with the entire KM capability and its various activities, such as knowledge creation, transfer, utilization, retention, integration, and others (Aung and Vinitwatanakun, 2018; Farooqi, Gohar, Nazish and Ahmad, 2017; Uddin, Fan and Das, 2017; Nouri, Mousavi and Soltan, 2016; Hayat, Maleki Hasanvand, Nikakhlag and Dehghani, 2015; Birasnav, 2014; Gelard, Boroumand and Mohammadi, 2014; Noruzy, Dalfard, Azhdar, Nazari-Shirkouhi and Rezazadeh, 2013; Allameh, Babaei, Chitsaz and Gharibpour, 2012; Analoui, Doloriert and Sambrook, 2012; Nguyen and Mohamed, 2011; Crawford, 2005). Another study found that transformational leadership had a positive moderating effect on the relationship between KM and organizational effectiveness (Chi, Lan, and Dorjgotov, 2012).

On the other hand, the effects of transformational leadership were studied on particular KM activities. Eight studies into the effect of transformational leadership on knowledge sharing found that transformational leadership had a direct, significant, and positive impact on knowledge sharing (Al-Husseini and Elbeltagi, 2018; Park and Kim, 2018; Le and Lei, 2017; Mahmood and Khattak, 2017; Imdad Ullah, Bin Ab Hamid and Shahzad, 2016; Al-Husseini and Dosa, 2016; Akpotu and Jasmine, 2013; Mushtaq, 2013; Allameh, Babaei, Chitsaz and Gharibpour, 2012; Analoui, Doloriert and Sambrook, 2012; Nguyen and Mohamed, 2011; Crawford, 2005). Another study found that transformational leadership had a positive moderating effect on the relationship between KM and organizational effectiveness (Chi, Lan, and Dorjgotov, 2012).
Another study found a significant relationship of transformational leadership with the internal component of knowledge sharing (Chen and Barry, 2006). Some components of transformational leadership, particularly individual's consideration and individual's inspirational impact positively on knowledge sharing activities, while the intellectual stimulation and inspirational motivation do not significantly encourage activities related to knowledge sharing (Rawung, Wuryaningrat, and Elvinita, 2015). Furthermore, the idealized influence is significant only when considered with socialization, the intellectual stimulation leadership is significantly correlated with all the dimensions of knowledge sharing (socialization, externalization, combination, and internalization), and the individualized consideration is significant for knowledge externalization (Bradshaw, Chebbi, and Oztel, 2015).

Furthermore, a few studies revealed that transformational leadership had a positive effect on negotiation, which is a component of knowledge acquisition (Politis, 2001), while leadership constructs including emotional intelligence, leadership traits, and transformation team (i.e. a team of experts who lead a project) significantly influence the transfer of knowledge (Idris, Ali, and Godwin, 2015) and transformational leadership positively affects all the strategic variables, including knowledge slack, absorptive capacity, and tacitness directly and indirectly (Garcí’a-Morales, Lloréns-Montes, and Verdu´-Jover, 2008).

### Transactional leadership

Transactional leadership, another common leadership style, was found in four studies has a significant, positive relationship with KM’s capabilities and activities (Farooqi, Gohar, Nazish, and Ahmad, 2017; Ghanbari and Abedzadeh, 2016; Hayat, Maleki Hasanvand, Nikakhlag and Dehghani, 2015; Analoui, Doloriert, and Sambrook, 2012; Nguyen and Mohamed, 2011). Furthermore, transactional leadership has a significant positive relationship with particular components of KM, which are knowledge’s externalization and internalization (Allameh, Babaei, Chitsaz, and Gharibpoor, 2012), and knowledge sharing (Hussain, Abbas, Lei, Haider, and Akram, 2017).

On the other hand, particular components of transactional leadership were found to positively affect knowledge management activities. Contingent rewards, one of the transactional dimensions, was found to have
a positive correlation with knowledge sharing (Farooq, Hanif, and Khan, 2018), with socialization, and combination (Bradshaw, Chebbi, and Oztel, 2015), and with both internal and external knowledge sharing with customers (Chen and Barry, 2006). Also, the initiating structure, one of the transactional dimensions, was found to be positively correlated with communication and the problem of understanding the components of knowledge acquisition, and negatively correlated with the personal traits, organization, and negotiation (Politis, 2001).

A few studies found no significant relationship between transactional leadership and KM (Aung and Vinitwatanakhun 2018; Crawford, 2005), transactional leadership with conversion and socialization (Allameh, Babaei, Chitsaz, and Gharibpoor, 2012), and the dimensions of the contingent reward with knowledge sharing (Rawung, Wuryaningrat, and Elvinita, 2015).

Other Leadership Styles

Regarding knowledge leadership, evidence was found that knowledge-oriented leadership had a positive effect on KM (Jad et al., 2017; Sadeghi and Rad, 2018; Donate and De Pablo, 2015), and it also had positive effects on knowledge creation and application (Safari and Azadehdel, 2015).

About the other leadership styles, some papers revealed that leadership, in general, correlated with KM (Kafashpoor, Shakoori, and Sadeghian, 2013) and had a positive moderating effect on the relationship between knowledge sharing and organizational learning (Khalid and Ahmed, 2015), while leadership behavior (i.e. leadership style, professional authority, and counseling skills) had a positive relation with KM (Tang, 2017). Furthermore, one study inferred that senior managers’ attitudes, subjective norms, and perceived behavioral control all had a positive influence on the intention to encourage knowledge-sharing, which in turn is the main determinant of corporate knowledge-sharing behavior (Lin and Lee, 2004). Additionally, the strategic dimension of leadership had a positive relationship with the success of KM practices (Mas-Machuca, 2014).

Regarding the directive, participative, and supportive leadership styles, they had minor positive influences on KM (Aldulaimi, 2015). One prior study revealed that the directive and supportive styles had negative associations with KM practices, while the consulting and delegating styles had significant positive relationships with KM practices (Singh, 2008).

Regarding leadership powers, the expert power had positive effects on both knowledge’s acquisition and dissemination, the reward power had a positive effect on knowledge dissemination in small firms, the legitimate power had a negative effect on knowledge acquisition, the coercive power had only a detrimental effect in small organizations, whereas the referent power did not affect anything in the knowledge-based context (Jayasingam, Ansari, and Jantan, 2010).

The remaining papers studied a variety of individual leadership styles, the mentor leadership style was positively related to knowledge sharing behavior, whereas the facilitator leadership style was not found to be related to knowledge sharing behavior (Jahani, Ramayah, and Effendi, 2011), the cognitive styles (i.e. radical and innovative-collaborator styles) had a negative impact on KM practices; while the cognitive adaptor style had a positive impact on KM practices (Jain and Jeppesen, 2013), the leader-member exchange (LMX) affected knowledge sharing
and performance positively and meaningfully (Sharifkhani, Pool, and Asian, 2016), the telling, selling, participating, and delegating styles had a significant influence on KM (Pringga-bayu and Ramdlany, 2017), the democratic style affected KM activities more successfully in small enterprises and enterprises oriented toward international markets, whereas the autocratic style affected KM more in large enterprises (Miloloža, 2018), the command leadership style had a great effect on the KM process, while the supportive leadership style positively and significantly affected three aspects of KM, which are knowledge generation, sharing, and utilization (Akhavan, Zahedi, Dastary, and Abasaltian, 2014), and the charismatic and human-oriented leadership (communicative styles) had a significant relationship with knowledge sharing, while the task-oriented (non-communicative) style had no relation with knowledge sharing (De Vries, Bakker-Pieper, and Oostenveld, 2010).

Discussion

This study reviewed prior quantitative research to identify the effect of various leadership styles and roles on KM’s capabilities in business organizations, summarize the findings, and come up with recommendations that could guide researchers in the future. The review found that the role and influence of the transformational, transactional, knowledge-based leadership, and top executives that were studied influenced KM’s activities in several contexts. Other leadership styles were also studied to a limited extent in a certain context.

However, the transformational leadership style was studied in more than half of the included research papers. One-fifth of the included papers pointed out strong evidence for a positive effect of transformational leadership on knowledge management’s capabilities in all contexts, as well as having a strong significant, positive effect on a particular knowledge management activity, namely knowledge sharing. Besides, transformational leadership was also found to have a positive effect on knowledge acquisition, knowledge transfer, and strategic knowledge variables, such as knowledge slack, absorptive capacity, and tacitness in a limited number of studies.

Regarding transactional leadership, four studies provided a significant, positive relationship of transactional leadership with the entire capability and activities of KM. Also, particular components of transactional leadership were found to affect knowledge management activities positively, mainly the contingent rewards, which had a positive correlation with KM and knowledge sharing. On the other hand, a few studies revealed contradicting evidence that transactional leadership had no effect on KM and knowledge sharing.

Regarding the general leadership styles, three studies revealed a positive correlation between leadership and leadership behavior with KM and knowledge sharing. Three studies revealed a positive effect of knowledge leadership on KM, as well as knowledge creation and application, while another two studies provided positive evidence for the relationship between senior managers and strategic leadership on KM and knowledge sharing. Furthermore, the effects of many other leadership styles on KM had been studied, but by an insufficient number of studies. The findings of those studies vary and, in our opinion, do not provide solid evidence for the effects of those styles on KM.

Lastly, the authors conclude that the transformational, transactional, knowledge-
based, top executives and strategic leadership were all found to have constant positive effects on KM activities, although in different contexts.

**Conclusion**

Based on the above discussion, this review found that the transformational, transactional, knowledge-based, top executives and strategic leaderships have positive effects on KM activities. Thus, the authors argue that organizations should use a combination of all those leadership styles to maximize the effect of leadership on KM. In other words, organizations should involve their top executives and strategic leadership, as well as transformational and transactional leadership styles at all organizational levels, as independent variables to build an efficient KM capability and implement KM activities. Furthermore, the authors suggest that knowledge-orientation could enhance the above-discussed relationship if used as a moderating variable.

**Recommendations**

The authors encourage researchers to direct their future studies to fill the gaps in the literature and concentrate on the inadequately examined leadership styles and KM activities. Furthermore, they should consider conducting longitudinal studies and using representative samples.

On the other hand, the authors encourage interested researchers to conduct quantitative studies to examine the above-suggested model in various contexts. This will provide evidence of the effectiveness of the model, or suggest new modifications, as well as confirming, or not, the generalizability of the model.

**Limitations**

All those papers used a cross-sectional design, some of those studies used small samples, and the papers did not consider several well-known leadership styles, such as the ethical and servant leadership style.

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## Appendix 1: Characteristics of articles included in the review

| Author/s                      | Study Design | Country      | Industry                                      | Sample Size                      |
|-------------------------------|--------------|--------------|-----------------------------------------------|----------------------------------|
| Politis, 2001                 | Cross sectional | Australia    | Manufacturing                                 | 216 employees                    |
| Lin & Lee, 2004               | Cross sectional | Taiwan       | Large companies                              | 154 senior managers              |
| Crawford, 2005                | Cross sectional | USA          | Education                                     | 1,046 non-traditional students and others |
| Chen & Barry, 2006            | Cross sectional | Taiwan & USA | Professional service firms                    | 165 employees                    |
| Yang, 2007                    | Cross sectional | Taiwan       | Hotel                                         | 499 employees                    |
| Garcia-Morales., Llorens-Montes, & Ververdu-.Jover, 2008 | Cross sectional | Spain        | Organizations                                 | 408 CEOs                         |
| Chen  & Barry, 2006            | Cross sectional | Taiwan & USA | Professional service firms                    | 165 employees                    |
| Singh, 2008                   | Cross sectional | India        | Software firm                                 | 331 knowledge workers            |
| Jayasingam, Ansari, & Jantan, 2010 | Cross sectional | Malaysia     | Multimedia super corridor status firms        | 402 knowledge workers            |
| De Vries, Bakker-Pieper, & Oostenveld, 2010 | Cross sectional | Netherlands | Governmental organization.                    | 279 employees                    |
| Mushtaq & Bokhari, 2011       | Cross sectional | Pakistan     | Banking                                       | 116 employees                    |
| Nguyen & Mohamed, 2011        | Cross sectional | Australia    | Small-to-medium sized enterprises (SMEs)      | 157 middle managers              |
| Jahani, Ramayah, & Effendi, 2011 | Cross sectional | Iran         | University                                    | 126 lecturers                    |
| Allameh, Babaci, Chitsaz, & Gharibpoor, 2012 | Cross sectional | Iran         | University                                    | 90 faculty members               |
| Analoui, Doloriert, & Sambrook, 2012 | Cross sectional | UK           | Information and communications technology (ICT) | 111 knowledge managers           |
| Chi, Lan, & Dorjgotov, 2012   | Cross sectional | Mongolia     | Research institutes                           | 524 research and development professional |
| Kafashpoor, Shakoori, & Sadeghian, 2013 | Cross sectional | Iran         | Municipality                                  | 224 employees                    |
| Akpotu & Jasmine, 2013        | Cross sectional | Nigeria      | ICT                                           | 221 managers & employees         |
| Jain & Jeppesen, 2013         | Cross sectional | India        | Thermal power generation                      | 210 middle and senior managers   |
| Noruzy, Dalfard, Azhdari, Nazari-Shirkouhi, & Rezazadeh, 2013 | Cross sectional | Iran         | Manufacturing companies                      | 280 managers                     |
| Gelard, Boroumand, & Mohammadi, 2014 | Cross sectional | Iran         | Colors, chemicals, textile and leather industries | 47 experts                      |
| Authors                        | Study Design     | Country       | Industry/Scope                           | Sample Size                                                                 |
|-------------------------------|-----------------|---------------|------------------------------------------|-----------------------------------------------------------------------------|
| Akhavan, Zahedi, Dastyari, & Abasaltian, 2014 | Cross sectional | Iran | Research                                 | 224 experts, researchers, and managers                                    |
| Mas-Machuca, 2014             | Cross sectional | Spain | Consulting                               | 100 knowledge workers and KM project managers                               |
| Birasnav, 2014                | Cross sectional | Bahrain | Service firms                            | 238 managers                                                                |
| Aldulaimi, 2015               | Cross sectional | GCC countries | Telecommunications companies             | 384 human resources professionals                                          |
| Khalid & Ahmed, 2015          | Cross sectional | Pakistan | Banking                                  | 103 employees                                                               |
| Idris, Ali, & Godwin, 2015    | Cross sectional | Nigeria | Construction                             | 220 knowledge workers                                                      |
| Bradshaw, Chebbi, & Oztel, 2015 | Cross sectional | UAE | Schools                                  | 223 employees                                                               |
| Rawung, Wuryaningra, & Elvinita, 2015 | Cross sectional | Indonesia | Small- and medium-scale production companies | 176 owners & managers                                                      |
| Safari & Azadehdel (2015)     | Cross sectional | Iran | Manufacturing and commercial companies   | 282 employees                                                               |
| Hayat, Maleki Hasanvand, Nikakhlag, & Dehghani, 2015 | Cross sectional | Iran | University                               | 214 employees                                                               |
| Donate & De Pablo, 2015       | Cross sectional | Spain | Technology                               | 111 CEOs and directors                                                     |
| Nouri, Mousavi, & Soltan, 2016 | Cross sectional | Iran | University                               | 277 managers, employees, and faculty members                               |
| Imdad Ullah, Bin Ab Hamid, & Shahzad, 2016 | Cross sectional | Pakistan | Dairy sector                             | 254 managers and owners                                                    |
| Ghanbari & Abedzadeh, 2016    | Cross sectional | Iran | Plastic industry                         | 253 of managers, experts, and employees                                    |
| Al-Husseini & Dosa, 2016      | Cross sectional | Iraq | Public higher education                  | 254 employees                                                               |
| Sharifkhani, Pool & Asian, 2016 | Cross sectional | Singapore | Oil and gas                              | 116 employees                                                               |
| Pringgabayu & Ramdlany, 2017  | Cross sectional | Indonesia | State Owned-Port Company                 | 412 employees                                                               |
| Tang, 2017                    | Cross sectional | China | Medical industry                          | 288 managers, physicians, and employees                                    |
| Farooqi, Gohar, Nazish, & Ahmad, 2017 | Cross sectional | Pakistan | SME sector                               | 302 employees                                                               |
| Jad et al., 2017              | Cross sectional | Iran | Food industry                             | 316 employees                                                               |
| Uddin, Fan & Das, 2017        | Cross sectional | Bangladesh | Export processing zones                  | 273 managers                                                               |
| Mahmood & Khattak, 2017       | Cross sectional | Pakistan | Public sector hospitals                  | 100 nurses, doctors, and paramedics                                        |
| Leadership Style/Role | KM Activity | Findings |
|----------------------|-------------|----------|
| Politis, 2001        | Knowledge acquisition: Communication / problem understanding, Personal traits, Control, Organization, Negotiation | A positive effect of self-management on communication and problem understanding, personal traits, and organization. A positive effect of transformational style in negotiations. A positive effect of transactional style on personal traits and organization. A positive effect of initiating structure on communication/problem understanding. A negative effect of initiating structure on personal traits, organization, and negotiation. Consideration has no effect on knowledge acquisition. |
| Lin & Lee, 2004      | Knowledge sharing | A positive correlation of senior managers intentions to encourage knowledge sharing |
| Crawford, 2005       | KM | A positive correlation of transformational leadership with KM. A positive correlation of the combination of organizational position and transformational leadership with KM. A negative correlation of laissez-faire leadership with KM. No correlation between transactional leadership and KM. |
Chen & Barry, 2006

- Transformational
- Contingent reward
- Laissez-faire

Knowledge sharing: Internal
External

A positive correlation of transformational leadership behavior with internal knowledge sharing.
A positive correlation of contingent reward leadership behavior with both internal and external knowledge sharing.
A negative correlation of laissez-faire leadership with external knowledge sharing.

Yang, 2007

- Facilitator
- Mentor
- Innovator
- Monitor role

Knowledge sharing

A positive correlation of leader's facilitator, mentor, and innovator roles with knowledge sharing effectiveness.
A negative correlation of leader's monitor role with knowledge sharing.

García-Morales, Llorens-Montes & Verdu-Jover, 2008

- Transformational

Knowledge slack
Absorptive capacity
Tacitness

A positive direct effect of transformational leadership on all variables.
Note: knowledge slack, absorptive capacity and tacitness mediate the relationship between transformational leadership and organization learning and innovation.

Singh, 2008

- Directive
- Supportive
- Consulting
- Delegating

KM

A positive relationship between consulting and delegating styles with KM.
A negative association of directive and supportive styles with KM.

Jayasingam, Ansari & Jantan, 2010

- Legitimate power
- Coercive power
- Reward power
- Referent power
- Expert power

KM

A positive effect of expert power on knowledge acquisition and dissemination.
A negative effect of legitimate power on knowledge acquisition.
A positive effect of reward power on knowledge dissemination in small firms.
A positive effect of coercive power has a detrimental effect on KM in small organizations only.
No effect of referent power on KM.

De Vries, Baker-Pieper & Oostenveld, 2010

- Communicative:
  - Charismatic
  - Human-oriented
  - Non-communicative (Task-oriented leadership)

Knowledge sharing

A positive relationship between communicative and knowledge sharing.
No relation between non-communicative style and knowledge sharing.

Mushtaq & Bokhari, 2011

- Transformational

Knowledge sharing

A positive effect of transformational leadership on knowledge sharing and promoting knowledge sharing.

Nguyen & Mohamed, 2011

- Transformational
- Transactional

KM

A positive relationship between both transformational and transactional leadership and KM.
Jahani, Ramayah & Effendi, 2011
Facilitator Mentor Knowledge sharing
A positive relationship between the mentor leadership style and knowledge sharing.
No relation between facilitator leadership and knowledge sharing.

Allameh, Babaci, Chitsaz & Gharibpoor, 2012
Transformational Transactional KM: Knowledge conversion Socialization Externalization Combination Internalization.
A positive correlation between transformational leadership and all variables.
A positive correlation between transactional leadership and knowledge externalization, and internalization.
No correlation between transactional leadership and knowledge conversion and socialization.

Analoui, Dolori- ert & Sambrook, 2012
Transformational Transactional Passive-Avoidance leadership KM
A positive correlation between transformational and transactional leadership styles and KM.
No relation exists between passive avoidance leadership and KM.

Chi, Lan & Dor- igotov, 2012
Transformational leadership (Moderator) KM
A positive moderating effect of transformational leadership on the relation of KM and organizational effectiveness.
Note: transformational leadership and KM have a reinforcement interaction effect on organizational effectiveness.

Kafashpoor, Shakoori & Sadeghian, 2013 Leadership style KM
A positive relationship between leadership style and KM.
Note: KM has a mediating role in the relationship between leadership style and effectiveness.

Akpotu & Jas- mine, 2013 Transformational Knowledge sharing KM
A positive relationship between transformational leadership and knowledge sharing.

Jain &Jeppesen, 2013 Cognitive styles: Radical style Innovative-collaborative or adaptive style KM
A positive effect of the adaptive style on KM practices.
A negative effect of the radical and innovative-collaborator style on KM.

Noruzy, Dal- fard, Azhdari, Nazari-Shirkouhi & Rezaazadeh, 2013 Transformational KM
A positive effect of transformational leadership on organizational learning and KM.
Note: transformational leadership influences organizational innovation through organizational learning and KM.

Gelard, Borou- mand & Mohammadi, 2014 Transformational KM
A positive correlation between transformational leadership and KM.
Akhavan, Zahedi, Dastyari & Abasaltian, 2014: Supportive Command leadership on KM: Generation, Sharing, Organization, Utilization. A positive effect of command leadership on the KM process. A positive effect of the supportive leadership on three aspects of KM (i.e., knowledge generation, sharing, and utilization). No association between supportive leadership and knowledge organization.

Mas-Machuca, 2014: Strategic Leadership KM. A positive relationship between the strategic dimension of leadership on KM practices.

Birasnav, 2014: Transformational KM. A positive effect of transformational leadership on KM. Note: KM partially mediates the relationship between transformational leadership and organizational performance after controlling for the effects of transactional leadership.

Aldulaimi, 2015: Organizational leadership: Directive, Participative, Supportive KM. A positive effect on organizational leadership on KM. Note: KM partially mediates the impact of organizational leadership on organizational effectiveness.

Khalid & Ahmed, 2015: Leadership (Moderating) Knowledge sharing. A positive moderating effect of leadership on the relationship between knowledge sharing and organizational learning.

Idris, Ali & Godwin, 2015: Leadership: Emotional intelligence, Leadership traits, Transformation team Knowledge transfer. A positive effect of leadership constructs on the transfer of knowledge among organizational leadership.

Bradshaw, Chebbi & Oztel, 2015: Transformation: Idealized influence attributes, Idealized influence behavior, Intellectual stimulation, Individualized consideration, Inspirational motivation, Transactional, Contingent reward, Active management by exception, Passive management by exception, Laissez-faire Knowledge sharing: Socialization, Externalization, Combination, Internalization. A positive correlation of the idealized influence behavior with socialization. A positive correlation of intellectual stimulation with all dimensions of knowledge sharing. A positive correlation of individualized consideration with externalization. A positive correlation of the contingent reward with socialization and combination.
| Authors | Transformational vs. Transactional Leadership | Knowledge Sharing | Notes |
|---------|---------------------------------------------|-------------------|-------|
| Rawung, Wuryaningra & Elvinita, 2015 | Knowledge sharing | Collecting, Donating | A positive effect of individual consideration and individual inspiration on knowledge sharing. No effect of intellectual stimulation and inspirational motivation on knowledge sharing. No effect of the contingent reward dimension on knowledge sharing. |
| Safari & Azadhehdel (2015) | Knowledge-oriented leadership | Knowledge creation, Knowledge application | A positive effect of the knowledge-oriented leadership on knowledge creation and application. Note: knowledge creation and application mediate the relationship between knowledge-oriented leadership and innovation performance. |
| Hayat, Maleki Hasanvand, Nikakhlag & Dehghani, 2015 | Transformational leadership: Inspirational motivation, Idealized influence, Transactional Laissez-faire | KM | A positive correlation of transformational leadership with KM. A positive correlation of transactional leadership with KM. No relationship between the laissez-faire style and KM. |
| Donate & De Pablo, 2015 | Knowledge-oriented leadership | KM | A positive relationship between knowledge leadership and KM. Note: knowledge leadership has an indirect effect on a company's innovation results through its KM initiatives. |
| Nouri, Mousavi & Soltan, 2016 | Transformational leadership | KM | A positive effect of transformational leadership on KM. Note: KM has a positive mediating role between transformational leadership and organizational innovation. |
| Imdad Ullah, Bin Ab Hamid & Shahzad, 2016 | Transformational leadership | Knowledge sharing | A positive effect of transformational leadership on knowledge sharing. Note: knowledge sharing mediates the relationship between transformational leadership and innovative capability. |
| Ghanbari & Abedzadeh, 2016 | Transactional leadership | KM | A positive relationship between transactional leadership and KM. |
| Al-Husseini & Dosa, 2016 | Transformational leadership | Knowledge sharing | A positive relationship between transformational leadership and knowledge sharing. Note: knowledge sharing mediates the relationship between transformational leadership and innovation. |
| Sharifkhani, Pool & Asian, 2016 | Leader-member exchange (LMX) | Knowledge sharing | A positive effect of the LMX on knowledge sharing. Note: knowledge sharing mediates the relationship between the LMX and performance. |
| Study                                | Leadership Styles | KM                  | Notes                                                                 |
|--------------------------------------|------------------|---------------------|----------------------------------------------------------------------|
| Pringgabayu & Ramdlany, 2017         | The leadership styles:  
  Telling  
  Selling  
  Participating  
  Delegating | KM                  | A positive effect of the four constructs on KM.                     |
|                                      |                  |                     | Note: the combination of leadership and organizational culture has a strong influence on knowledge management. |
|                                      |                  |                     | Also, leadership has a significant positive influence in shaping the organizational culture that in turn has a significant influence on KM. |
| Tang, 2017                           | Leadership behaviors:  
  Professional authority  
  Counselling skills | KM                  | A positive relationship between leadership behavior and KM.         |
|                                      |                  |                     | Note: KM mediates the relation of leadership behavior and organizational innovation. |
| Farooqi, Gohar, Nazish & Ahmad, 2017 | Transformational  
  Transactional     | KM: Socialization Externalization  
  Combination Internalization | A positive relationship between transformational and transactional leadership with KM.  |
|                                      |                  |                     | Note: the transformational leadership style has a stronger effect than the transactional style. |
| Jad et al., 2017                     | Knowledge leadership | KM                  | A positive effect of the knowledge-oriented leadership on KM activities.  |
|                                      |                  |                     | Note: KM activities have a mediating effect on the relationship between knowledge leadership and product innovation. |
| Uddin, Fan & Das, 2017               | Transformational  | KM                  | A positive effect of transformational leadership on organizational KM and learning. |
| Mahmood & Khattak, 2017              | Transformational  | Knowledge sharing   | A positive direct relationship between transformational leadership and knowledge sharing. |
|                                      |                  |                     | Notes: trust and organizational culture play a mediating role in the relationship between transformational leadership and knowledge sharing. |
| Hussain, Abbas, Lei, Haider & Akram, 2017 | Transactional    | Knowledge sharing   | A positive relationship of transactional leadership with knowledge sharing. |
|                                      |                  |                     | Note: knowledge sharing mediates the relationship between transactional leadership and creativity. |
| Le & Lei, 2017                       | Transformational  | Knowledge sharing:  
  Collecting  
  Donating     | A positive direct effect of transformational leadership on knowledge sharing. |
|                                      |                  |                     | Note: justice and trust in leadership play mediating roles in the relationship between transformational leadership and knowledge sharing behavior. |
| Authors                          | Leadership Styles | Knowledge Generation | Summary |
|---------------------------------|-------------------|----------------------|---------|
| Miloloža, 2018                  | Autocratic        | KM                   | A positive effect of autocratic styles on KM in large enterprises and enterprises in the stagnation phase. A neutral effect of autocratic styles on KM in enterprises oriented toward international and domestic markets. A negative effect of autocratic style on KM in small enterprises and enterprises in the growth and maturity phase. |
|                                | Democratic        |                      | A positive effect of democratic styles on KM in small and medium-sized enterprises, enterprises in the stagnation phase, and enterprises oriented toward international markets. A neutral effect of autocratic styles on KM in enterprises oriented toward international and domestic markets. A negative effect of democratic style on KM in enterprises in the growth and maturity phase. |
|                                | Laissez-faire     |                      | A positive effect of laissez-faire style on KM in large enterprises, enterprises in the maturity and growth phase, as well as in enterprises in the stagnation phase. A neutral effect of laissez-faire style on KM in all enterprise groups. |
| Farooq, Hanif & Khan, 2018      | Leadership:       | Knowledge sharing    | A positive effect of the three leadership styles on knowledge sharing. |
|                                | Empowering        |                      | |
|                                | Trust             |                      | |
|                                | Reward            |                      | |
| Sadeghi & Rad, 2018             | Knowledge based   | KM                   | A positive relationship between knowledge-based leadership with KM. Note: a direct positive and meaningful relationship exists between KM and innovation performance and between knowledge-based leadership and innovation performance. |
|                                | leadership        |                      | |
| Aung & Vin-itiwatanakhun, 2018  | Transformational  | KM                   | A positive relationship between transformational leadership and KM. No relationship between transactional leadership and KM. |
|                                | Transactional     |                      | |
| Authors                  | Type of Leadership | Knowledge Sharing | Findings                                                                                                                                 |
|-------------------------|--------------------|-------------------|------------------------------------------------------------------------------------------------------------------------------------------|
| Park & Kim, 2018        | Transformational   | Knowledge sharing climate | A positive direct effect of transformational leadership on both the knowledge sharing climate and knowledge sharing behavior. Note: transformational leadership also indirectly affects organizational learning's knowledge sharing behavior, and interpersonal trust through knowledge-sharing climate. |
| Al-Husseini & Elbeltagi, 2018 | Transformational   | Knowledge sharing | A positive effect of transformational leadership on knowledge sharing. |