It's a knowledge centric world! Does ethical leadership promote knowledge sharing and knowledge creation? Psychological capital as mediator and shared goals as moderator

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Abstract

Purpose – *The purpose of this study is to examine the impact of ethical leadership and psychological capital on knowledge sharing and knowledge creation in organizations. It also investigates the mediating effect of psychological capital and moderating effect of shared goals in the relationship between ethical leadership and knowledge sharing and between ethical leadership and knowledge creation.*

Design/methodology/approach – *The study uses a quantitative research design wherein the survey questionnaire has been used to gather data from 700 respondents in public sector research organizations, information technology companies and central universities and colleges. Hypotheses of the study have been tested using structural equation modelling.*

Findings – *The findings unveil that ethical leadership and psychological capital have a positive impact on knowledge sharing and knowledge creation. Psychological capital mediates and shared goals moderates the relationships of ethical leadership with knowledge sharing and knowledge creation. Knowledge sharing mediates between ethical leadership and knowledge creation.*

Research limitations/implications – *The study exploits quantitative research methodology, which may be supplemented by other research methodologies by future researchers.*

Practical implications – *This study offers new insights into the sharing and creating of knowledge by employees under the influences of ethical leadership and psychological capital. It will encourage future researchers and practitioners to further explore these dimensions for a more detailed investigation and explanation at work place. This study suggests that organizational leaders should behave in an ethical manner and should emphasise on various organizational interventions to increase psychological capital and shared goals to strengthen knowledge sharing and knowledge creation.*

Originality/value – *This study is among early attempts for investigating the linkage of ethical leadership and psychological capital with knowledge sharing and knowledge creation.*

Keywords *Knowledge management, Ethical leadership, Psychological capital, Shared goals, Knowledge sharing, Knowledge creation*

Paper type *Research paper*

Introduction

Knowledge is a strategic and valuable resource (Kim *et al.*, 2017). It is a guiding force for organizations to achieve growth, success and sustainable competitive advantage (Shahzad *et al.*, 2020). To respond to business, agile and dynamic organizations are focussing significantly on knowledge management (KM) (Shahzad *et al.*, 2020). Thus, KM in organizations is continuously gaining attention from researchers (Harvey *et al.*, 2021).

Knowledge sharing is an important, indispensable and crucial aspect (Zahedi *et al.*, 2016) of KM to endure and flourish in a dynamic and competitive business environment (Kim *et al.*, 2017). Knowledge creation is a vital process for the long-term success of an organization (Hoon Song *et al.*, 2012) and has turned out to be very essential in ambiguous, complex, uncertain and volatile environments of business (Konno and Schillaci, 2021). Knowledge sharing and knowledge creation are fundamental facets of KM (Anantatmula, 2010) and are regarded as key strategic capabilities (Nonaka *et al.*, 2000). However, the limited focus has been accorded to the underlying processes for creating of new knowledge (Goswami and Agrawal, 2021; Tootell *et al.*, 2021). This study concentrates on knowledge sharing and knowledge creation.

Knowledge sharing (Wu and Lee, 2016) and knowledge creation (Zelaya-Zamora and Senoo, 2013) are influenced by leaders. As such, research establishing linkage between leadership styles and knowledge sharing is attracting interest from scholars (Le and Lei, 2018). Further, there is limited systematic and analytical exposure to leadership's role in knowledge creation (Goswami and Agrawal, 2021). In recent times, organizations are witnessing the occurrences of several business frauds and scandals, due to which research on the ethical aspect of leadership is getting momentum (Goswami *et al.*, 2021; Shakeel *et al.*, 2020; Frisch and Huppenbauer, 2014) and both researchers and practitioners are keen to explore its role in an organizational context (Halbusi *et al.*, 2020). Although there is a boost in research on the influences of ethical leadership on employees' behaviour, its influence on KM is inadequate and disintegrated (Goswami and Agrawal, 2021; Tang *et al.*, 2015). However, it is expected that ethical leadership might be significant in influencing knowledge sharing and knowledge creation. Moreover, knowledge sharing is influenced by positive organizational factors (Wu and Lee, 2016), and knowledge creation is triggered by positive anticipations (Sankowska, 2013). Out of many identifiable domains of positivity, psychological capital acts as a motivational and positive psychological resource (Bouckenooghe *et al.*, 2015), which is linked to employee behaviour, attitude and performance (Luthans *et al.*, 2007b). It is expected that psychological capital might also play a critical role in impacting knowledge sharing and knowledge creation.

Further, the relationships of ethical leadership with knowledge sharing and knowledge creation seem to be more complex. There is a dearth of research about the underlying processes that link ethical leadership with numerous in-role performances (Bouckenooghe *et al.*, 2015). The underlying mechanism may be understood by exploring the roles of psychological capital in the linkage of ethical leadership with knowledge sharing and knowledge creation. Psychological capital has been examined by scholars in explaining underlying mechanisms between leadership styles and various outcomes (Wu and Lee, 2016; Walumbwa *et al.*, 2011; Li *et al.*, 2018). However, it is the role in relationships of ethical leadership with knowledge sharing and knowledge creation is yet to be examined. A cognitive social capital, namely, shared goals, may also have a role in the relationships of ethical leadership with knowledge sharing and knowledge creation. Cognitive social capital is very significant for innovation (Molina-Morales and Martínez-Fernández, 2010) and the building of intellectual capital (Nahapiet and Ghoshal, 1998). However, it is not so much studied (García-Villaverde *et al.*, 2018). Moreover, the dimensions of social capital, namely, cognitive, relational and structural, combined in a single construct obstruct significant inferences (García-Villaverde *et al.*, 2018), and thus, each dimension is required to be probed independently.

Research on exploring the effect of ethical leadership and psychological capital on knowledge sharing and knowledge creation is very limited. To the authors' best of knowledge, hardly any study has examined the impact of ethical leadership and psychological capital on knowledge creation. Further, the role of psychological capital as a mediator and the role of shared goals as a moderator in the relationships of ethical leadership with knowledge sharing and knowledge creation has seldom been explored.

Hence, significant research gaps prevail in the literature. The purpose of the study is to examine the effect of ethical leadership and psychological capital on knowledge sharing and knowledge creation. Furthermore, it aims to look into the mediating role of psychological capital and moderating role of shared goals in the relationships between ethical leadership and knowledge sharing and ethical leadership and knowledge creation. This paper is organized into six sections. Section 1 provides the introduction. In Section 2, literature related to the constructs of the study is reviewed, and hypotheses have been built. Section 3 discusses about the methodology adopted, and Section 4 presents results and analyses. Section 5 furnishes the findings of the study along with theoretical and practical contributions. In Section 6, the conclusion is given.

Literature review and building of hypotheses

Knowledge sharing

Knowledge sharing is a social activity (Lin and Lo, 2015) in which people "mutually exchange their (implicit and explicit) knowledge and jointly create new knowledge" (Van Den Hooff and De Ridder, 2004, p. 118). It mostly relies on the people who may or may not be eager to involve in this process as and when required (Husted and Michailova, 2002). It is very crucial for organizations to educate and train their employees to share knowledge because organisations may suffer a loss of knowledge in case employees leave the organization (Yang, 2004). There are various technological, social and psychological factors that shape the extent to which people take part in sharing their knowledge (Wu and Zhu, 2012). Knowledge sharing is influenced by organizational, group and sharers' characteristics (Zhang and Jiang, 2015). It is affected positively by group-based incentives (Siemsen *et al.*, 2007), promotion, higher salary and bonus (Wang and Noe, 2010), whereas it is affected negatively by anticipated extrinsic rewards (Bock *et al.*, 2005). Leadership as a motivational factor has a significant effect on sharing of knowledge (Wu and Lee, 2016). Various human resource practices (Fong *et al.*, 2011), cultural dimensions (Wang and Noe, 2010), trust among organizational members (Kotlarsky and Oshri, 2005), as well as organizational commitment (Lin, 2007) are also significant mechanisms to influence knowledge sharing.

Knowledge creation

Knowledge creation is a multi-source phenomenon (Akhavan *et al.*, 2015). It is "a dialectical process where various contradictions are synthesized through dynamic interactions among individuals, the organization, and the environment" (Nonaka and Toyama, 2003: p. 2). It takes place through continual exchange between explicit and tacit knowledge (Nonaka, 1994). Du Toit (2003) defined knowledge creation as the outcome of interaction among people who are working side by side and involved in the sense-making of new stimuli. Knowledge creation has the potential to make organizations competitive, innovative and successful, and it results in generating intellectual capital (Mehralian *et al.*, 2018). Researchers have found a number of antecedents of knowledge creation. While Zelaya-Zamora and Senoo (2013) found managerial influence to shape knowledge creation, Sankowska (2013) found trust to be a significant factor affecting knowledge creation. Supporting learning culture and transformational leadership is significant in influencing knowledge creation (Yoo *et al.*, 2021). Goswami and Agrawal (2020) concluded that hope, as well as shared goals, act as significant antecedents for knowledge creation.

Ethical leadership

Ethical leadership is "the demonstration of normatively appropriate conduct through personal actions and interpersonal relationships and the promotion of such conduct to followers through two-way communication, reinforcement, and decision-making"

(Brown *et al.*, 2005, p. 120). Ethical leaders have many characteristics such as conveying ethical messages, having altruistic motivation, credible role modelling, caring and being fair (Brown *et al.*, 2005). Moral person and moral manager are two dimensions of ethical leadership (Brown *et al.*, 2005). The moral person dimension emphasises on integrity, trustworthiness and honesty (Brown and Treviño, 2006). The moral manager dimension focuses on discussing ethical issues with members, making ethical decisions, encouraging two-way and open communications with members and punishing for unethical conduct (Brown and Treviño, 2006). Ethical leadership has a significant effect on trust (Avey *et al.*, 2011), moral awareness, moral identity (Yidong *et al.*, 2017), organizational commitment and psychological ownership (Neubert *et al.*, 2009). It positively affects organizational citizenship behaviour (Gao and He, 2017), job satisfaction and work motivation (Toor and Ofori, 2009).

Psychological capital

Psychological capital is "an individual's positive psychological state of development and is characterized by:

- having confidence (self-efficacy) to take on and put in the necessary effort to succeed at challenging tasks;
- making a positive attribution (optimism) about succeeding now and in the future;
- persevering towards goals and, when necessary, redirecting paths to goals (hope) to succeed; and
- when beset by problems and adversity, sustaining and bouncing back and even beyond (resiliency) to attain success" (Luthans *et al.*, 2007b, p. 3).

Due to it being state-like, psychological capital is dissimilar from trait-like personality characteristics that are relatively more stable and hard to change (Han and Garg, 2018). Psychological capital affects numerous areas of a person's life that include behaviour, cognition, motivation and emotion (Li *et al.*, 2018). It compliments human and social capital in a vital way to manage human resources effectively and goes beyond these capitals to provide a competitive advantage to organizations (Luthans *et al.*, 2007a). Psychological capital significantly determines the effect of individuals on their work environment (Grover *et al.*, 2018). It strengthens organizational citizenship behaviour, job performance (Avey *et al.*, 2011) and work-life quality (Han and Garg, 2018). It influences work engagement, psychological well-being (Grover *et al.*, 2018) and organizational commitment (Luthans *et al.*, 2007b). It results in reducing of turnover intentions, job stress, cynicism and anxiety of employees (Avey *et al.*, 2011).

Shared goals

The social capital theory has attained significance in the area of management (García-Villaverde *et al.*, 2018). Social capital is "the sum of the actual and potential resources embedded within, available through, and derived from the network of relationships possessed by an individual or social unit" (Nahapiet and Ghoshal, 1998: p. 243). It enables knowledge sharing (Yu *et al.*, 2013) and helps to understand innovation and value creation (Nahapiet and Ghoshal, 1998). It has three dimensions, namely, cognitive, structural and relational dimensions (Nahapiet and Ghoshal, 1998). Shared goals belong to the cognitive dimension of social capital and refer to "the degree to which the employees of the organization share an approach and common understanding for attaining results" (Goswami and Agrawal, 2020; p. 173). Collective goals among people make them to trust more amongst each other with expectations of meeting such goals (Tsai and Ghoshal, 1998). Shared goals help people to assimilate knowledge (Inkpen and Tsang, 2005)

encourage them to enhance their mutual understanding and share their ideas and resources (García-Villaverde *et al.*, 2018).

Linking ethical leadership with knowledge sharing and knowledge creation

Leadership has a remarkable impact on knowledge sharing as well as knowledge creation (Lakshman, 2005; Srivastava *et al.*, 2006). This influence is delineated by social learning theory, which exhibits the learning of suitable behaviour by employees by means of observing others as well as by their own experiences (Bandura, 1977). Behaviour of a follower is changed (Islam *et al.*, 2019) by ethical leadership through role modelling (Brown *et al.*, 2005). Further, social exchange theory exhibits that leader first builds reciprocity with followers by providing them numerous benefits that are returned in terms of beneficial behaviours (Wu and Lee, 2017). Ethical leaders display fairness, trustworthiness and honesty (Brown and Treviño, 2006), provide care and support to followers and create an ethical framework for them, which is reciprocated in a way valued by ethical leaders (Islam *et al.*, 2019). Theory of planned behaviour (Ajzen, 1991) postulates that ethical leadership, as perceived behavioural control, should influence the desired behaviours such as knowledge sharing and knowledge creation. Followers perceive their leader as the representative of the organization, and thus, the care and support shown by ethical leaders are observed as organizational support (Islam *et al.*, 2019). Thus, as per organizational support theory, the employees with such perceptions respond positively (Islam *et al.*, 2019) in terms of knowledge sharing and knowledge creation.

Ethical leaders deliberate ethical values, establish ethical standards (Yidong *et al.*, 2017) and convey ethical messages (Trevino *et al.*, 2000) which have significant influence on employees' attitudes towards KM (Le and Lei, 2018). They play critical role in determining attitudes and behaviours of followers (Ma *et al.*, 2013) to influence knowledge sharing (Bavik *et al.*, 2018; Bouckenooghe *et al.*, 2015). Ethical leaders motivate followers for sharing of their knowledge (Tang *et al.*, 2015) by removing knowledge sharing structural barriers, promoting trust and providing fair resource sharing (Le and Lei, 2018). Based on earlier empirical researches, Frisch and Huppenbauer (2014) found that ethical leadership strengthens organizational citizenship behaviour, organizational commitment and trust of followers in a leader. Knowledge sharing is enhanced by organizational citizenship behaviour, (Yang and Farn, 2007), organizational commitment (Van Den Hooff and De Ridder, 2004) and trust among management and co-workers (Finestone and Snyman, 2005). Ethical leaders build mutual trust among leaders and followers (Islam *et al.*, 2019), and this trust has a positive influence on knowledge creation (Sankowska, 2013). A high level of care of organizational members and trust among them is critical to creating knowledge (Von Krogh *et al.*, 2012). The organizational commitment displayed by ethical leaders (Ma *et al.*, 2013) encourages followers to originate new ideas (Yidong and Xinxin, 2013). Ethical leaders motivate followers to convey their viewpoints and opinions freely through two-way open communication (Ma *et al.*, 2013) that inspires followers to originate new ideas by using their imagination (Yidong and Xinxin, 2013). It is anticipated that employees working under an ethical leader will share unique ideas and generate novel solutions to the challenges (Ahmad *et al.*, 2019). Further, ethical leaders promote creativity (Ahmad *et al.*, 2019) and innovative work behaviours (Yidong and Xinxin, 2013).

Hence, the following hypotheses are proposed:

H1. Ethical leadership is positively related to knowledge sharing.

H2. Ethical leadership is positively related to knowledge creation.

Mediating role of knowledge sharing

Knowledge sharing is pivotal for creating knowledge (Bartol and Srivastava, 2002) and promoting creativity among people (Carmeli *et al.*, 2013). Knowledge creation builds upon direct social interactions among the employees having access to various sources of knowledge (Kawai and Chung, 2019) and the communication among experts of the organization (Boland and Tenkasi, 1995). New knowledge is generated when people share their diverse tacit knowledge (Nonaka *et al.*, 2000) and integrate their knowledge and ideas to originate new knowledge (Smith *et al.*, 2005). Knowledge sharing is vital for facilitating the use of existing knowledge to strengthen the capacities of people to obtain creative solutions (Carmeli *et al.*, 2013). Sharing of required information among people in an accurate and timely manner induces better problem solving (Sankowska, 2013) that may result in the generation of new knowledge. Arikan (2009) emphasized on sharing of knowledge by members to enhance the knowledge creation capabilities of the organization. Knowledge creation needs "a process of mutual perspective taking where distinctive individual knowledge is exchanged, evaluated, and integrated with that of others in the organization" (Boland and Tenkasi, 1995; p. 358). Collaboration among employees is necessary for the creation of knowledge (Von Krogh *et al.*, 2012), and this collaborative behaviour needs to be voluntarily for effective knowledge creation (Hoon Song *et al.*, 2012). One of the key processes of knowledge creation socialization, externalization, combination, internalization (SECI) model (Nonaka, 1994) is the socialization that provides interaction of tacit with tacit knowledge. In socialization process, employees communicate and share their tacit knowledge with others, which results in knowledge creation.

Hence, the following hypothesis is proposed:

H3. Knowledge sharing is positively related to knowledge creation.

Leaders play a crucial role in motivating employees to involve in collaborative problem solving that leads to knowledge creation (Grimsdottir and Edvardsson, 2018). Knowledge sharing helps in collaborative problem-solving. Ethical leaders are likely to enhance knowledge creation by promoting knowledge sharing by building interpersonal relations of mutual trust among followers. They encourage followers to engage in knowledge-sharing behaviour (Bouckenooghe *et al.*, 2015) that might result in the generation of new knowledge. They motivate followers to exploit their imagination for generating of various ideas (Yidong and Xinxin, 2013). Followers of ethical leaders are expected to share unique ideas and generate novel solutions to the problems (Ahmad *et al.*, 2019). A leader enhances creative activities in the organization (Hoon Song *et al.*, 2012) by encouraging collaboration such as knowledge sharing among them. Further, knowledge sharing mediates between ethical leadership and creativity (Ma *et al.*, 2013).

Hence, the following hypothesis is proposed:

H4. Knowledge sharing mediates the relationship between ethical leadership and knowledge creation.

Linking psychological capital with knowledge sharing and knowledge creation

Conservation of resource theory explains the relationship of psychological capital with knowledge sharing and knowledge creation. It postulates that resources possessed by people have an influence on their work outcomes (Li *et al.*, 2018). This theory explains that if people lack in internal resources, they dissociate themselves from work (Hobfoll, 1989), and if they have enough internal resources, they will associate themselves in beneficial work behaviour. So in line with this theory, people having higher psychological capital will involve in beneficial work behaviour, namely, knowledge sharing and knowledge creation. Knowledge sharing is enhanced by positive organizational factors (Wu and Lee, 2016), and psychological capital is a positive organizational factor (Luthans *et al.*, 2007a).

Psychological capital positively influences organizational commitment (Larson and Luthans, 2006) and organizational citizenship behaviour (Avey *et al.*, 2010). It helps in creating environment for building trust, encouraging people for enhancing their strengths and making them more positive (Jensen and Luthans, 2006). Knowledge sharing is strengthened by trust among management and co-workers (Finestone and Snyman, 2005), organizational citizenship behaviour (Yang and Farn, 2007) and organizational commitment (Van Den Hooff and De Ridder, 2004). Low psychological capital lowers the knowledge-sharing intention of the people (Wu and Lee, 2016). People with greater positive psychological resources handle issues related to working with higher motivation, perseverance and positivity (Luthans *et al.*, 2007a) and show more willingness towards knowledge sharing (Wu and Lee, 2017). People with a positive mindset are expected to act in a positive manner and positive anticipations result in innovative behaviours (Sankowska, 2013). Employees were having high psychological capital exhibit high creativity (Gonçalves and Brandão, 2017). Such employees tend to explore various means to achieve organizational objectives, and they consider setbacks in a positive way (Wu and Lee, 2017). High self-confidence enables employees to involve in creative problem solving (Ahmad *et al.*, 2019). A confident employee takes on challenging and motivating tasks (Luthans *et al.*, 2007a) such as knowledge creation. Such employees have the propensity to originate novel and beneficial ideas to meet desired goals (Gonçalves and Brandão, 2017). High optimism helps employees to seek novel ways and alternatives to solve problems (Gonçalves and Brandão, 2017). People with high resilience learn new ways to work during difficulties and failures (Gonçalves and Brandão, 2017).

Therefore, it is proposed:

H5. Psychological capital is positively related to knowledge sharing.

H6. Psychological capital is positively related to knowledge creation.

Mediating role of psychological capital

Psychological capital is "malleable, open to development, and can be improved by leader behaviours" (Wang *et al.*, 2018: p. 510). Ethical leaders provide credible role modelling, envisage the developmental needs of subordinates and motivate them to achieve their maximum potential, which increases the psychological capital of employees and such employees are encouraged towards goal-directed behaviour (Bouckenooghe *et al.*, 2015). Internalized moral perspective and positive ethical climate created by ethical leaders result in increased psychological capacities and positive behaviours of followers (Brown and Treviño, 2006). Ethical leadership is expected to boost knowledge sharing and knowledge creation by promoting psychological capital. The ethical leader gives direction to followers through role modelling to boost their positive psychological states (Bouckenooghe *et al.*, 2015). High psychological capital enables employees to achieve numerous outcomes related to work (Frederickson, 2001), like knowledge sharing and knowledge creation. Ethical leadership has a positive linkage with optimism (De Hoogh and Den Hartog, 2008), self-efficacy, hope and coping skill of followers (Bouckenooghe *et al.*, 2015). There exists a positive relationship between psychological capital and knowledge sharing (Nemati, 2015). Psychological capital behaves as the mediator in the relationship of humble leader behaviour with followers' creativity (Wang *et al.*, 2018) and transactional leadership and transformational leadership with work engagement (Li *et al.*, 2018). It also plays a mediator role between ethical leadership and job performance (Bouckenooghe *et al.*, 2015). Further, it mediates between authentic leadership and followers' various outcomes (Walumbwa *et al.*, 2011) as well as between abusive supervision and knowledge sharing (Wu and Lee, 2016).

Thus, based on *H1*, *H2*, *H5* and *H6*, and logical arguments discussed above, the following hypotheses are proposed:

H7. Psychological capital mediates the relationship between ethical leadership and knowledge sharing.

H8. Psychological capital mediates the relationship between ethical leadership and knowledge creation.

Moderating role of shared goals

The influence of shared goals in the relationships of ethical leadership with knowledge sharing and knowledge creation can be explained using social exchange theory, social capital theory and self-categorization theory. Social exchange theory (Blau, 1968) emphasizes on exchange relationships based on cost-benefit analysis to influence social behaviour. So, employees in the organization may work hard to realise shared goals as all will be benefited by doing this. For achieving shared goals, they are likely to involve in the sharing and creation of knowledge. The social capital theory highlights that social capital resides in relationships among employees and encourages them to exhibit helping behavior (Nahapiet and Ghoshal, 1998). People understand that there are more benefits in cooperation with each other, and hence, they might involve in sharing their knowledge to meet the common objectives. To achieve shared goals, people may involve more in socialization behaviour. Socialization as a component of the SECI framework results in knowledge creation through tacit to tacit knowledge interaction (Nonaka, 1994). According to self-categorization theory, employees who consider similarity among themselves form cognitive groups (Turner *et al.*, 1987). Employees are believed to involve in knowledge sharing among them if they anticipate for being cognitive equivalent to each other (Zagenczyk *et al.*, 2010). Social capital facilitates knowledge sharing, knowledge creation (Yang and Farn, 2009), innovation and value creation (Nahapiet and Ghoshal, 1998). Cognitive social capital influences the potential of employees to assimilate knowledge for the creation of intellectual capital (Nahapiet and Ghoshal, 1998). Shared goals motivate employees to exchange ideas and resources and strengthen common understanding (García-Villaverde *et al.*, 2018). Knowledge is immersed in a social context (Nahapiet and Ghoshal, 1998), and shared goals provide such a social context. Higher the common goals, higher is the tendency towards knowledge sharing (Doh and Acs, 2010). Shared goals promote trust among people so that the goals are attained (Tsai and Ghoshal, 1998), and knowledge sharing is influenced by trust (Holste and Fields, 2010). Shared goals enable people to interact and work together, and this might result in the socialization process, which leads to knowledge creation. Doh and Acs (2010) found that the higher the common goals, the more is the innovation in the organization. Ethical leaders are likely to motivate followers to achieve shared goals through various work behaviours like knowledge sharing and knowledge creation by portraying themselves as role models for such desired behaviours.

Hence, the following hypotheses are proposed (Figure 1):

H9. Shared goals moderates the relationship between ethical leadership and knowledge sharing such that the relationship will be stronger for higher as compared with lower, shared goals.

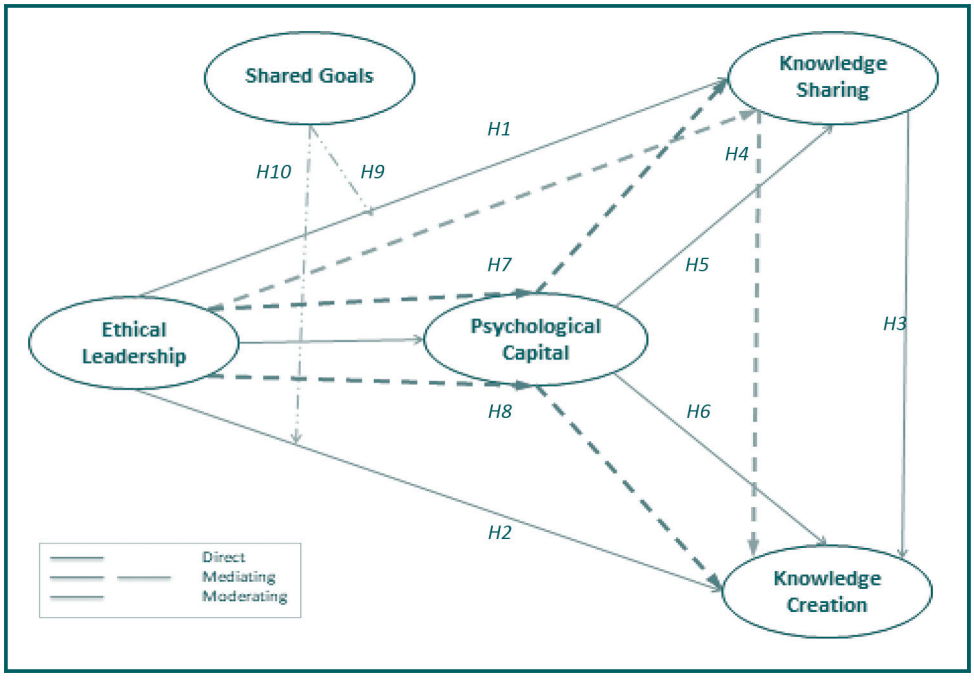
H10. Shared goals moderates the relationship between ethical leadership and knowledge creation such that the relationship will be stronger for higher as compared with lower, shared goals.

Methods

Data collection and sample demographics

The quantitative research methodology was adopted for the study, where a survey research strategy was applied to gather the data using a questionnaire. This strategy is the most accepted practice in management research because it helps to gather a huge quantity of

Figure 1 Hypothesised research model of the study



data from the significant population in a highly economical way by ensuring privacy to employees resulting in support from participating organizations. Data was collected from three different industries in India: scientists and technical officers of public sector research organizations (PSRO) consisting of all research and development organizations belonging to the public sector, employees of information technology companies (ITC) belonging to business process management, information technology and information technology-enabled services companies and faculty members of central university and colleges (ACAD). All respondents were involved in knowledge-intensive activities. While the respondents in PSRO were officers involved in the design and development of critical systems and technologies, the respondents in ITC were managers and engineers involved in the development of software, advanced technologies and services. The respondents in ACAD were assistant professors or higher-level faculty involved in teaching and research work. Three different industries were selected for two reasons. Firstly, all three industries, i.e. PSRO, ITC and ACAD, are knowledge-based organizations that are suitable for this study. Secondly, these three different industries have different contexts that make the model of the study more generalized. PSRO belong to the public sector, whereas ITC belong to the private sector. Both sectors have a different working environment, a different constraint, different objectives and different rules and regulations. Although the major objective of the public sector is social welfare, the main objective of the private sector is profitability. Apart from PSRO and ITC, ACAD have an altogether different context where teaching and research go hand in hand. With respect to their work context, there is no major difference between private universities/colleges and public universities/colleges. A total of 2,000 questionnaires were distributed and 815 responses were returned back. Out of 815 cases, 49 cases were removed as they were incomplete. Further, 66 cases were found to be outliers. Finally, 700 cases were found valid, and these cases (final response rate = 35%) were used for analyses. Table 1 displays the demographic data of the participants. Data shows the respondents belong to all three management levels, i.e. top, middle and lower.

Table 1 Sample demographic

Measures	*Items*	*Frequency*	*(%)*	*Cumulative (%)*
Gender	Female	252	36.0	36.0
	Male	448	64.0	100.0
	Total	*700*	*100.0*	
Age	Less than 30 years	232	33.1	33.1
	30–39 years	309	44.1	77.3
	40–49 years	123	17.6	94.9
	50 years or more	36	5.1	100.0
	Total	*700*	*100.0*	
Work experience	Below 5 years	206	29.4	29.4
	5–9 years	139	19.9	49.3
	10–14 years	179	25.6	74.9
	15–19 years	108	15.4	90.3
	20 years or more	68	9.7	100.0
	Total	*700*	*100.0*	
Management level	Top	40	5.7	5.7
	Middle	408	58.3	64.0
	Lower	252	36.0	100.0
	Total	*700*	*100.0*	
Qualification	PHD	84	12.0	12.0
	PG	330	47.1	59.1
	UG	286	40.9	100.0
	Total	*700*	*100.0*	
Industry	PSRO	286	40.9	40.9
	ITC	248	35.4	76.3
	ACAD	166	23.7	100.0
	Total	*700*	*100.0*	
Sector	Public	323	46.1	46.1
	Private	377	53.9	100.0
	Total	*700*	*100.0*	

Notes: PHD – (PhD); UG (Under Graduate); and PG (Post Graduate)

Measures

Knowledge sharing was estimated by a five-item scale modified by Lin and Lo (2015) and given by Bock *et al.* (2005). This measure has two sub-dimensions, i.e. tacit and explicit knowledge sharing. Respondents were asked the frequency to share specific types of knowledge within their organization on a five-point Likert scale (1 – very rarely to 5 – very frequently).

For measuring knowledge creation, a six-item scale was applied where two items were used from Khedhaouria and Jamal (2015), and four items were used from Andreeva and Kianto (2011). Respondents gave their choices on a seven-point Likert scale (1 – strongly disagree 7 – strongly agree).

A 10-item scale of Brown *et al.* (2005) was used for measuring of ethical leadership. Respondents provided a measure for ethical conduct of their supervisors on a five-point Likert scale (1 – strongly disagree to 5 – strongly agree).

Psychological capital was estimated by twelve item scale of Luthans *et al.* (2007a). Respondents provided an answer on a six-point Likert scale (1 – strongly disagree to 6 – strongly agree).

Shared goals were measured using a three-item scale given by Akhavan *et al.* (2015). Respondents provided their responses on a five-point Likert scale (1 – strongly disagree 5 – strongly agree).

Sample items of all constructs of the study are given in Appendix. Initially, the questionnaire consisted of a total of 36 items (5 for knowledge sharing, 6 for knowledge creation, 10 for

ethical leadership, 12 for psychological capital and 3 for shared goals). A pre-testing of the questionnaire was administered to test the face validity of the questionnaire. Based on the pre-testing of the questionnaire, two items of knowledge sharing scale were split into five items: the item "I share my manuals, methodologies and models with members of my organization" was split into three items (a) "I share my manuals with members of my organization", (b) "I share my methodologies with members of my organization" and (c) "I share my models with members of my organization"; the item "I provide my know-where or know-whom at the request of other organizational members" was split into two items (a) "I provide my know-where at the request of other organizational members" and (b) "I provide my know-whom at the request of other organizational members". This resulted in an eight-item scale for knowledge sharing, and total numbers of items in the questionnaires were increased to a total of 39 items. Additionally, based on the feedback of respondents, minor modifications in the language of items were made in the questionnaire without losing the original meaning of items for the purpose of reducing ambiguity, vagueness and unfamiliar terms.

Data analysis procedures

Firstly, preliminary data analyses were conducted that included handling of missing values and removal of outliers. A two-step process of analysis was used for testing of the hypotheses. The first step involved the examination of reliability and construct validity (convergent and discriminant) of constructs used in the study. The second step involved examination of all the direct, mediation and moderation hypotheses. Structural equation modelling was used for confirmatory factor analysis (CFA) and testing of eight hypotheses (*H1* to *H8*). Two hypotheses (*H9* and *H10*) were tested using PROCESS macro added in SPSS.

Control variables

This study used five demographic control variables as considered by other studies, i.e. age, gender, work experience (Bavik *et al.*, 2018; Gao and He, 2017), qualification (Islam *et al.*, 2019) and industry (Andersen and Dejoy, 2011).

Common method variance

Based on the suggestions of Chang *et al.* (2010), a number of measures were used to decrease common method variance. Assurance of anonymity, as well as confidentiality, was mentioned on the first page of the questionnaire. The use of different Likert scales for measuring different constructs, reverse coding of five randomly selected items and random placing of the items in the questionnaire were also used. Further, Harman's single factor test was exploited after the data collection,

Results and analysis

After the data collection, Harman's single factor test was conducted, and it explained 23.83% of the total variance (<50%; threshold value). This decreased the likelihood of common method variance in gathered data. Further, the result suggested that values of all variance inflation factors (1.622 for knowledge sharing, 1.345 for ethical leadership, 2.137 for psychological capital and 1.713 for shared goals) were much less than the cut-off point of 10.

Measurement model: confirmatory factor analysis

Firstly, the reliability of all constructs of the study was assessed using Cronbach's alpha. One item of the psychological capital scale (Item: "I usually take stressful

things at work in stride") was deleted due to having a low item-total correlation (0.246; threshold value = 0.30). Cronbach's alpha for ethical leadership, knowledge creation and shared goals were 0.913, 0.834 and 0.765. The Cronbach's alpha of knowledge sharing and its two sub-scales, namely, explicit knowledge sharing and tacit knowledge sharing, were 0.837, 0.786 and 0.825, respectively. The Cronbach's alpha of psychological capital and its four components, namely, efficacy, hope, optimism and resiliency, were 0.850, 0.760, 0.701, 0.711 and 0.702, respectively. Hence, all the scales and their corresponding sub-scales reported Cronbach's alpha from 0.701 to 0.913, which were more than 0.70, the acceptable value; these have been given in Table 2. This indicated the internal consistency of all the scales of the study. Then, CFA was applied on the remaining 38 items for affirming the validation and robustness and for examining the dimensionality of the measurement scales by using the maximum likelihood estimation method. This overall measurement model showed a desirable fit (χ^2 = 1453.394, df = 645, χ^2/df = 2.253, comparative fit index (CFI) = 0.930, Tucker Lewis index (TLI) = 0.924, incremental fit index (IFI) = 0.930, normed fit index (NFI) = 0.881, goodness-of-fit index (GFI) = 0.898, adjusted goodness-of-fit index (AGFI) = 0.882, standardized root mean square residual (SRMR) = 0.052, root mean square residual (RMR) = 0.051, root mean square error of approximation (RMSEA) = 0.042).

For construct validity, discriminant validity and convergent validity were measured. In this study, full CFA having all constructs together exhibited significant factor loading for all items (0.491–0.894) to their respective constructs, higher or close to 0.50. The composite reliabilities of knowledge sharing (0.892), knowledge creation (0.835), ethical leadership (0.911), psychological capital (0.897) and shared goals (0.775) were greater than the cut-off value of 0.70. Additionally, the average variance extracted (AVE) of knowledge sharing, knowledge creation, ethical leadership, psychological capital and shared goals had 0.518, 0.460, 0.511, 0.472 and 0.536, respectively. Here, the values of AVE of knowledge sharing, ethical leadership and shared goals were in the acceptable range. Although values of AVE of psychological capital and knowledge creation were below 0.50, but they were also acceptable because these two had composite reliability of more than 0.60 (0.835 and 0.897, respectively) (Fornell and Larcker, 1981). Hence, the measurement models had acceptable convergent validity. Table 2 provides composite reliability, AVE and factor loadings of constructs.

For discriminant validity, the squared correlation between two constructs should be below than their respective AVEs (Fornell and Larcker, 1981). All the squared correlations of the study for each pair of constructs were less than their respective AVEs, thus, showing discriminant validity (Table 2). Further, five alternative CFA models were also tested. The result indicated that hypothesised five factors CFA model had the best fit (χ^2 = 1732.184, df = 650, χ^2/df = 2.665, CFI = 0.906, TLI = 0.898, IFI = 0.907, NFI = 0.858, GFI = 0.879, AGFI = 0.862, SRMR = 0.053, RMR = 0.051, RMSEA = 0.049) and had significantly lower χ^2 value in contrast to other alternative models. This indicated discriminant validity among all constructs of the study. Table 3 displays the model fit indices of all alternative CFA models.

Table 2 Cronbach's alpha, AVE, construct reliability, descriptive statistics and correlations

Variables	*Range of Item loadings*	*Cronbach's alpha*	*AVE*	*CR*	*Mean*	*SD*	*1*	*2*	*3*	*4*	*5*
1. KS	0.491–0.843	0.837	0.518	0.892	2.812	0.465	0.518*				
2. KC	0.607–0.757	0.834	0.460	0.835	5.372	0.729	0.312**	0.460*			
3. EL	0.546–0.791	0.913	0.511	0.911	2.607	0.521	0.108**	0.298**	0.511*		
4. PC	0.533–0.894	0.850	0.472	0.897	4.357	0.525	0.529**	0.675**	0.308**	0.472*	
5. SG	0.653–0.821	0.765	0.536	0.775	3.987	0.647	0.266**	0.431**	0.429**	0.481**	0.536*

Notes: KS: knowledge Sharing; KC: knowledge creation; EL: ethical leadership; PC: psychological capital; SG: shared goals; SD: standard deviation; AVE: average variance extracted; CR: composite reliability. **Correlation is significant at the 0.01 level (two-tailed)

Table 3 Alternate measurement models

Description	*1 Factor Model*	*2 Factors Model*	*3 Factors Model*	*4 Factors Model*	*5 Factors Model*
χ^2	7,266.000	6,236.444	5,826.436	3,530.552	1,732.184
df	665	664	662	655	650
χ^2/df	10.927	9.392	8.801	5.390	2.665
Diff in χ^2		5,533.816	4,504.260	4,094.252	1,798.368
CFI	0.427	0.516	0.552	0.750	0.906
TLI	0.394	0.488	0.524	0.732	0.898
IFI	0.429	0.518	0.553	0.751	0.907
NFI	0.406	0.490	0.523	0.711	0.858
GFI	0.483	0.535	0.554	0.728	0.879
AGFI	0.424	0.481	0.500	0.692	0.862
SRMR	0.131	0.152	0.151	0.080	0.053
RMR	0.132	0.153	0.153	0.084	0.051
RMSEA	0.119	0.110	0.106	0.079	0.049

Notes: 1 factor model – all items loaded to one factor; 2 factors model – knowledge sharing and knowledge creation combined and ethical leadership, psychological capital and shared goals combined; 3 factors model – knowledge sharing and knowledge creation combined, ethical leadership and psychological capital combined and shared goals; 4 factors model – knowledge sharing and knowledge creation combined, ethical leadership, psychological capital and shared goals; 5 factors model – knowledge sharing, knowledge creation, ethical leadership, psychological capital and shared goals

Structural model: direct and mediation models

Eight hypotheses (*H1* to *H8*) were tested using three structural models (Model 1, Model 2 and Model 3). In Model 1, the relationships of ethical leadership with knowledge sharing and knowledge creation were examined. In Model 2, the mediation effects of psychological capital were tested. In Model 3, the mediation effect of knowledge sharing was tested. A total of 5,000 bootstrap samples created at 95% bias-corrected confidence intervals were used to examine the indirect effect. The fit indices of all the models were in the acceptable range that signified all the models having a desirable fit (Model 1: χ^2=852.762, df = 350, χ^2/df = 2.436, CFI = 0.945, TLI = 0.936, IFI = 0.945, NFI = 0.911, GFI = 0.921, AGFI = 0.902, SRMR = 0.056, RMR = 0.056, RMSEA = 0.045; Model 2: χ^2=1487.777, df = 700, χ^2/df = 2.125, CFI = 0.936, TLI = 0.928, IFI = 0.936, NFI = 0.886, GFI = 0.900, AGFI = 0.883, SRMR = 0.049, RMR = 0.048, RMSEA = 0.040; Model 3: χ^2=823.006, df = 349, χ^2/df = 2.358, CFI = 0.948, TLI = 0.940, IFI = 0.949, NFI = 0.914, GFI = 0.924, AGFI = 0.905, SRMR = 0.048, RMR = 0.048, RMSEA = 0.044). The details of these three structural models along with fit indices are given in Table 4 and Figures 2–4.

Moderation model

In Model 4, moderation effects of shared goals (*H9* and *H10*) were investigated. For this purpose, PROCESS macro was exploited. Model 1 of PROCESS macro with 5,000 bootstrap samples and with 0.05 significant level was used. The moderation model (Model 4) was significant. Table 5 shows the models' summary and other relevant parameters for interaction effect (Figures 5 and 6).

Hypotheses testing

There are five direct hypotheses (*H1*, *H2*, *H3*, *H5* and *H6*), three mediation hypotheses (*H4*, *H7* and *H8*) and two moderation hypotheses (*H9* and *H10*). The analysis found ethical leadership to have a significant correlation with knowledge sharing (r = 0.108, $p < 0.01$), knowledge creation (r = 0.298, $p < 0.01$), psychological capital r = 0.308, $p < 0.01$) and shared goals (0.429, $p < 0.01$); psychological capital to have significant correlation with knowledge sharing (0.529, $p < 0.01$), knowledge creation (0.675, $p < 0.01$) and shared

Table 4 Results of structural models

Main relationship	Model 1		Model 2		Model 3
	Model 1(a) knowledge sharing	Model 1(b) knowledge creation	Model 2(a) knowledge sharing	Model 2(b) knowledge creation	Knowledge creation
Overall fit indices					
χ^2	852.762		1,487.777		823.006
df	350		700		349
χ^2/df	2.436		2.125		2.358
CFI	0.945		0.936		0.948
TLI	0.936		0.928		0.940
IFI	0.945		0.936		0.949
NFI	0.911		0.886		0.914
GFI	0.921		0.900		0.924
AGFI	0.902		0.883		0.905
SRMR	0.056		0.049		0.048
RMR	0.056		0.048		0.048
RMSEA	0.045		0.040		0.044
Path model					
Ethical leadership ——> Knowledge sharing	0.167**		−0.020		0.160**
Ethical leadership —> Knowledge creation		0.325**		0.083*	0.280**
Ethical leadership —> Psychological capital			0.354**		
Psychological capital Knowledge sharing			0.507**		
Psychological capital —> Knowledge creation				0.682**	
Knowledge sharing —> Knowledge creation					0.264**
Total effect			0.160**	0.325**	0.322**
Direct effect			−0.020	0.083*	0.280**
Indirect effect			0.180**	0.242**	0.042**

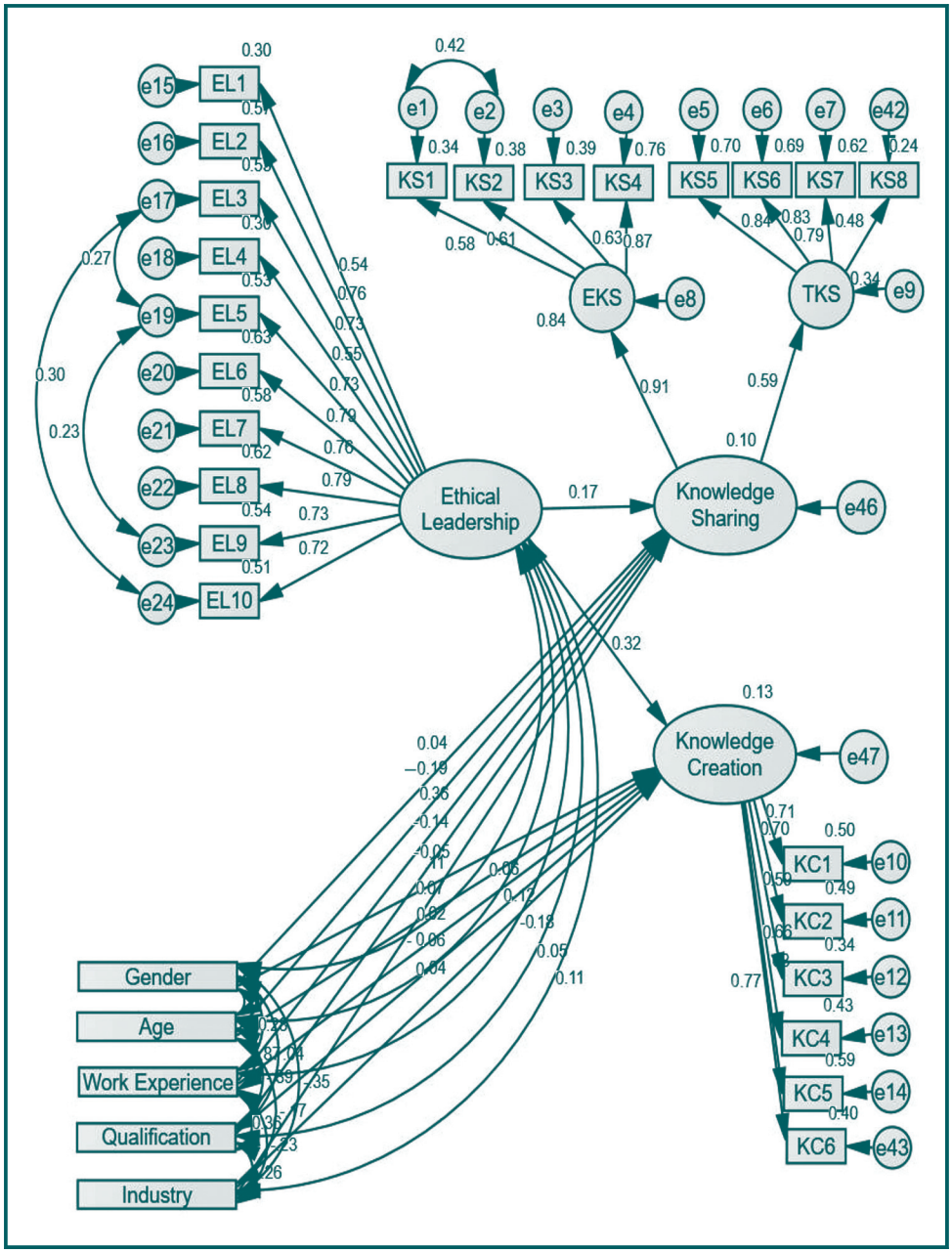
Notes: *$p < 0.05$; **$p < 0.01$

goals (0.481, $p < 0.01$); knowledge sharing to have significant correlation with knowledge creation (0.312, $p < 0.01$) and shared goals (0.266, $p < 0.01$); knowledge creation to have significant correlation with shared goals (0.431, $p < 0.01$). All the correlations among variables were significant; thus, indicating the relationship among variables.

H1 and *H2*, that "ethical leadership is positively related to knowledge sharing" (β = 0.167, $p < 0.01$; Model 1) and "knowledge creation" (β = 0.325, $p < 0.01$; Model 1), are supported. *H3*, that "knowledge sharing influences knowledge creation", is supported (β = 0.264, $p < 0.01$; Model 3). For *H4*, which states that "knowledge sharing mediates between ethical leadership and knowledge creation", the total effect was significant (0.322, $p < 0.01$; Model 3), the indirect effect was significant (0.042, $p < 0.01$; Model 3) and the direct effect was also significant (0.280, $p < 0.01$; Model 3). This indicates the partial mediation of knowledge sharing between ethical leadership and knowledge creation; *H4* is supported (partial mediation).

H5 and *H6*, that "psychological capital is positively related to knowledge sharing" (β = 0.507, $p < 0.01$: Model 2) and "knowledge creation" (β = 0.682, $p < 0.01$; Model 2), are supported. For *H7*, that "psychological capital mediates between ethical leadership and knowledge sharing", the total effect was significant (0.160, $p < 0.01$; Model 2), the indirect effect was significant (0.180, $p < 0.01$; Model 2), but the direct effect was insignificant (−0.020, $p > 0.05$; Model 2). This indicates the full mediation of psychological capital between ethical leadership and knowledge sharing; *H7* is

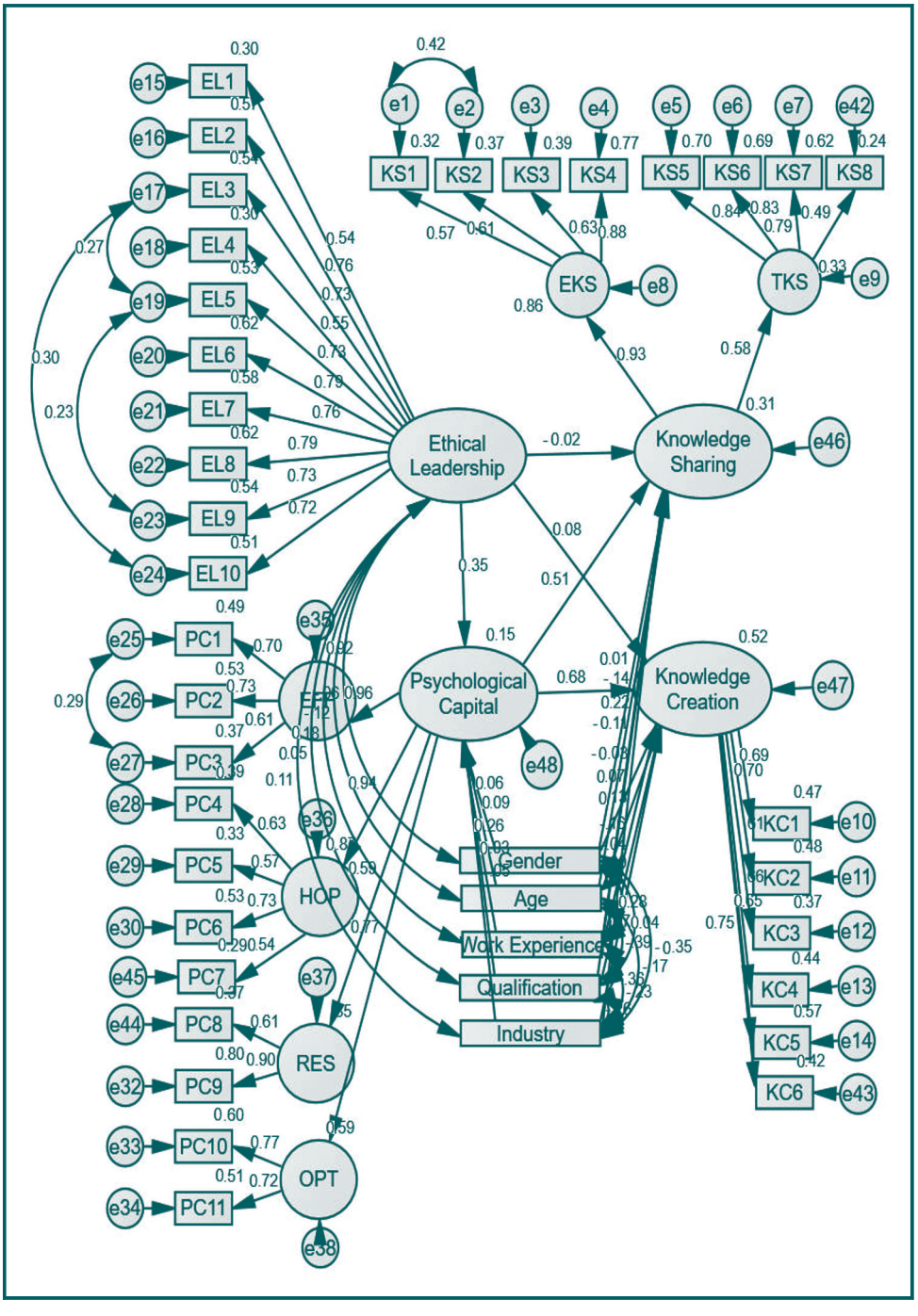
Figure 2 Structural Model 1(direct model)



supported (full mediation). For *H8*, which states that "psychological capital mediates between ethical leadership and knowledge creation", the total effect was significant (0.325, $p < 0.01$; Model 2), the indirect effect was significant (0.242, $p < 0.01$; Model 2) and the direct effect was also significant 0.083, $p < 0.05$; Model 2). This indicates the partial mediation of psychological capital between ethical leadership and knowledge sharing; *H8* is supported (partial mediation).

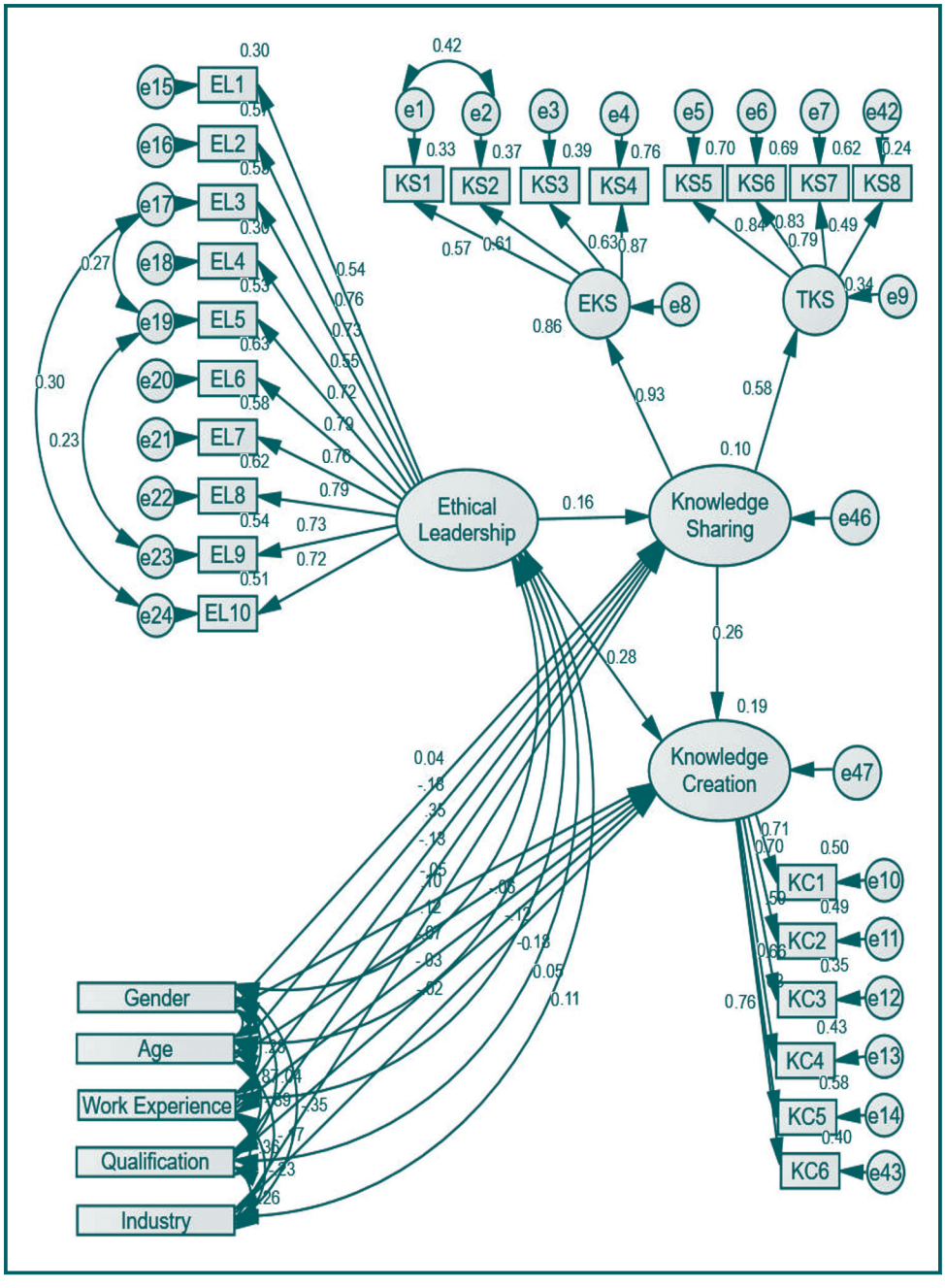
H9, that "shared goals moderates the relationship between ethical leadership and knowledge sharing such that the relationship will be stronger for higher as compared with lower, shared goals.", is supported ($\Delta R^2 = 0.010$, F (1, 691) = 8.719, $p = 0.003$; Model 4(a)).

Figure 3 Structural Model 2 (mediation model)



H10, that "shared goals moderates the relationship between ethical leadership and knowledge creation such that the relationship will be stronger for higher as compared with lower, shared goals.", is supported $\Delta R^2 = 0.006$, F (1, 691) = 6.063, $p = 0.014$; Model 4(b)). Interaction plots indicate an enhancing effect. At a low level of ethical leadership, knowledge sharing and knowledge creation are similar for a low and high level of shared goals. But with a high level of ethical leadership, knowledge sharing and knowledge

Figure 4 Structural Model 3 (mediation model)



creation are enhanced with enhancing levels (low to high) of shared goals. Overall all hypotheses of the study were supported (Table 6).

Discussion

The first and second findings of the study indicate that ethical leadership enhances knowledge sharing and knowledge creation in an organization. The first finding supports the findings of earlier limited studies that investigated the influence of leadership on knowledge sharing (Srivastava *et al.*, 2006; Von Krogh *et al.*, 2012) and

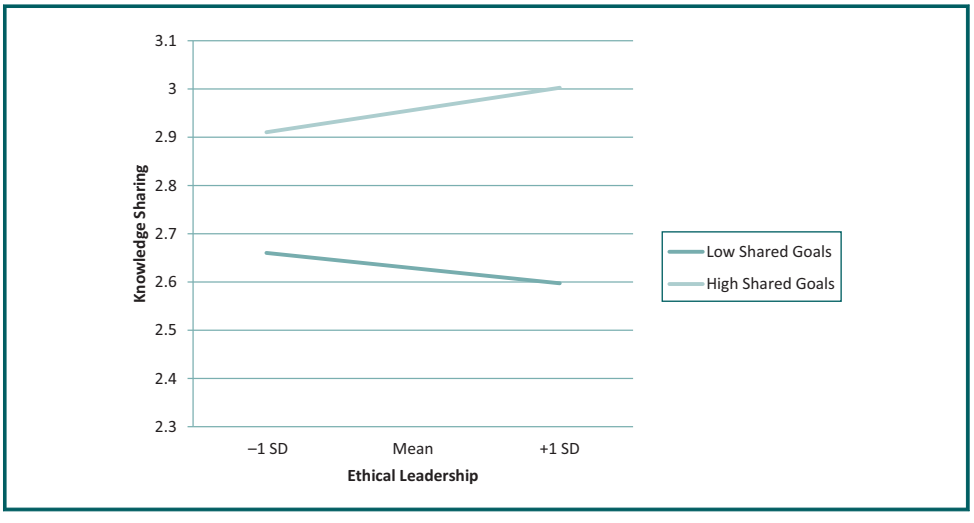
Table 5 Moderating effect of shared goals on relationship of ethical leadership with knowledge sharing and knowledge creation

Model	*Outcome variable*	R	R *square*	*MSE*	p	*R square change*	*Change statistics* F	*df1*	*df2*	p
(a) Overall model parameters										
Model 4(a)	Knowledge sharing	0.420	0.176	0.180	0.000	0.010	8.719	1	691	0.003
Model 4(b)	Knowledge creation	0.547	0.299	0.377	0.000	0.006	6.063	1	691	0.014

(b) Model summary and interaction effect					
Outcome variable = Knowledge Sharing (Model 4(a))					
	Coeff	SE	*t*	*p*	LLCI	ULCI
Constant	2.882	0.133	21.718	0.000	2.622	3.143
Ethical leadership (EL)	0.014	0.036	0.388	0.698	−0.057	0.085
Shared Goals (SG)	0.254	0.029	8.787	0.000	0.197	0.310
EL X SG	0.115	0.039	2.953	**0.003**	0.039	0.191
Gender	0.027	0.037	0.727	0.467	−0.045	0.099
Age	−0.092	0.040	−2.279	0.023	−0.170	−0.013
Work experience	0.105	0.026	3.984	0.000	0.053	0.156
Qualification	−0.077	0.028	−2.725	0.006	−0.133	−0.022
Industry	−0.026	0.024	−1.084	0.279	−0.072	0.021
Outcome variable = knowledge creation (Model 4(b))						
Constant	5.276	0.192	27.475	0.000	4.899	5.653
Ethical leadership (EL)	0.205	0.052	3.927	0.000	0.103	0.308
Shared goals (SG)	0.512	0.042	12.265	0.000	0.430	0.594
EL × SG	0.139	0.056	2.462	**0.014**	0.028	0.249
Gender	0.125	0.053	2.350	0.019	0.021	0.229
Age	0.022	0.058	0.376	0.707	−0.092	0.136
Work experience	0.023	0.038	0.613	0.540	−0.051	0.098
Qualification	−0.073	0.041	−1.790	0.074	−0.154	0.007
Industry	−0.036	0.034	−1.058	0.291	−0.103	0.031

Notes: LLCI -lower limit confidence interval; ULCI – upper limit confidence interval)

Figure 5 Moderation effect of shared goals in relationship between ethical leadership and knowledge sharing



ethical leadership on knowledge sharing (Bavik *et al.*, 2018; Bouckenooghe *et al.*, 2015; Tang *et al.*, 2015). The second finding is similar to the other studies conducted to find the linkage of leadership with knowledge creation (Lakshman, 2005; Cannatelli *et al.*, 2017). Ethical leaders shape knowledge sharing and knowledge creation by means of

Figure 6 Moderation effect of shared goals in relationship between ethical leadership and knowledge creation

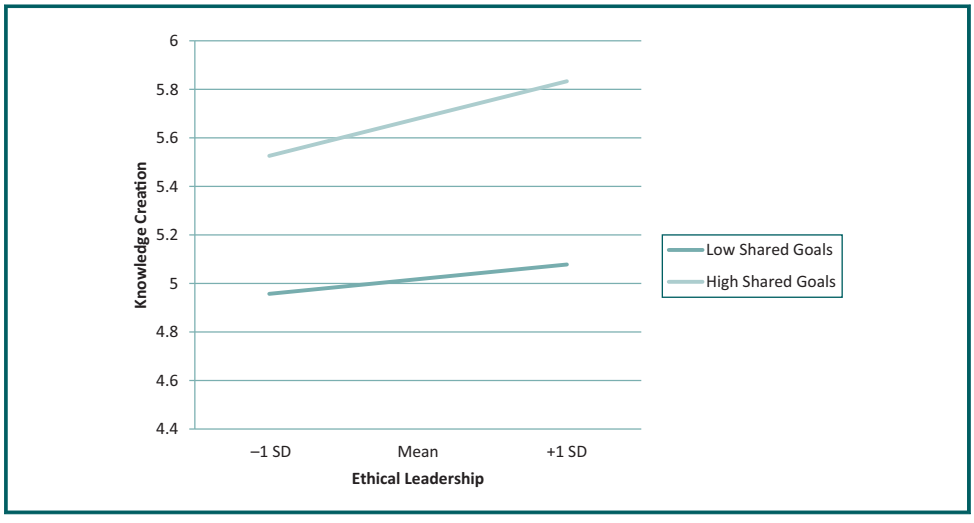


Table 6 Results of hypotheses testing

Hypotheses		p-*value*	*Results*
H1	Ethical leadership ———> Knowledge sharing	$p < 0.01$	Supported
H2	Ethical leadership ———> Knowledge creation	$p < 0.01$	Supported
H3	Knowledge sharing ——> Knowledge creation	$p < 0.01$	Supported
H4	Ethical leadership ———> Knowledge sharing ——> Knowledge creation	$p < 0.01$	Supported (Partial Mediation)
H5	Psychological capital –> Knowledge sharing	$p < 0.01$	Supported
H6	Psychological capital –> Knowledge creation	$p < 0.01$	Supported
H7	Ethical leadership ———> Psychological capital —> Knowledge sharing	$p < 0.01$	Supported (Full Mediation)
H8	Ethical leadership ———> Psychological capital —> Knowledge creation	$p < 0.01$	Supported (Partial Mediation)
H9	Shared goal as moderator in – ethical leadership ———> Knowledge sharing	$p < 0.01$	Supported
H10	Shared goal as moderator in – ethical leadership ———> Knowledge creation	$p < 0.05$	Supported

rewards and punishment that affect the cost-benefit perception of employees and by ethical conduct that enhances the faith of employees. They take fair as well as balanced decisions and determine success not only in terms of results but also in how they have attained. The followers of such leaders share their tacit as well as explicit knowledge with others in the organization. Moreover, by exploiting their know-how in a creative manner, followers of such leaders originate new methods when traditional methods are not effective anymore. For better problem solving, they imply unconventional and innovative thinking and explore new alternatives. Ethical leaders promote trust, provide fair resource sharing and involve in principled decision-making (Bavik *et al.*, 2018) that encourage followers to share their knowledge for organizational benefit. An ethical leader motivates followers to express and provide suggestions (Cheng *et al.*, 2014), enable them to feel psychologically safe to create novel ideas and inspires them to originate new ideas by using their imagination (Yidong and Xinxin, 2013). New knowledge is generated by means of experimentations, problem-solving and learning from experiences (Fartash *et al.*, 2021).

According to the third finding, knowledge sharing enhances knowledge creation in the organization. Knowledge sharing is vital for knowledge creation (Bartol and Srivastava, 2002) and facilitating the use of existing knowledge to strengthen the capacities of people to obtain creative solutions (Carmeli *et al.*, 2013). Knowledge sharing strengthens the absorptive capacity of the organization, which results in nurturing of knowledge creation (Le and Lei, 2018). Sharing of models, methodologies, manuals, work reports and other official documents by people who possess them to provide access to these critical resources to other employees of the organization. It strengthens the capacities of these employees to generate new ideas about working methods, processes, products and services. Knowledge sharing leads to better problem solving (Sankowska, 2013) and enhances knowledge creation capabilities (Arikan, 2009). The fourth finding provides evidence of knowledge sharing being a mediator between ethical leadership and knowledge creation. Ethical leaders promote knowledge creation by motivating followers to involve in knowledge-sharing behaviour. Leaders involved in motivating employees to have a collaborative problem-solving approach that leads to knowledge creation (Grimsdottir and Edvardsson, 2018). Ethical leaders motivate followers to share of their know-how, know-whom, experiences, expertise, models, methodologies, manuals and work reports with other employees of the organization, which, in turn, enable these employees to generate new ideas about working methods, processes, products and services.

The fifth and sixth findings conclude that psychological capital influences knowledge sharing and knowledge creation, respectively, in the organization. The fifth finding is similar to findings of earlier studies that investigated the relationship of psychological capital with knowledge sharing (Nemati, 2015; Wu and Lee, 2017). People with more psychological capital are more willing to exchange their knowledge with others (Wu and Lee, 2017) because they handle various issues related to work with more motivation, perseverance and positivity (Walumbwa *et al.*, 2011). Psychological capital influences knowledge sharing by making employees more committed towards organization, enhancing their organizational citizenship behaviour and building trust among them. People having high psychological capital display more creativity (Gonçalves and Brandão, 2017). People who have high hope perceive obstacles as opportunities for incremental growth and find the solution to problems through creative methods (Zhou and George, 2003). People with more self-efficacy undertake risky and challenging activities (Bandura, 1997) and use creative cognitive processes in finding new solutions (Wang *et al.*, 2018). High resiliency among employees increases the probability of finding creative outcomes (Wang *et al.*, 2018) and enables them to find new ways to do tasks during difficulties and failures (Youssef and Luthans, 2007).

The seventh and eighth findings provide evidence of psychological capital to be the mediator in the relationships of ethical leadership with knowledge sharing and knowledge creation. Previous studies have found psychological capital to act as a mediator between ethical leadership and job performance of subordinates (Bouckenooghe *et al.*, 2015), transformational leadership and followers' various outcome, and authentic leadership and followers' various outcome (Walumbwa *et al.*, 2011) and abusive supervision and knowledge sharing (Wu and Lee, 2016). Ethical leaders strengthen the psychological capital of followers, and followers reciprocate it with beneficial behavior (Wu and Lee, 2017) like sharing and creation of knowledge at work place. They, through role modeling, lead employees to boost their positive psychological states, which make employees to achieve their work-related outcomes (Frederickson, 2001) by involving in knowledge sharing and knowledge creation. The extrinsic motivation provided by ethical leaders has an impact on the intrinsic motivation of employees, this affects their cognition. Employees in such an environment develop their positive capacities, which help them to indulge in knowledge sharing and knowledge creation at workplace.

The ninth and tenth findings indicate the role of shared goals as moderators, and it strengthens the relationship of ethical leadership with knowledge sharing and knowledge creation in such a way that high shared goals lead to more knowledge sharing and knowledge creation. In the presence of ethical leadership, if employees agree with their co-workers on what is important at work, share with them the same vision and ambition at work and are always enthusiastic about undertaking the missions and collective goals of the organization, then knowledge sharing and knowledge creation are significantly enhanced in the organization. For meeting the collective interest, such employees cooperate with each other and thus enhance knowledge sharing in the organization. Employees having shared goals help each other to achieve common objectives and are involved in the origination of new ideas, developing new methods and experimenting with new alternatives to solve problems.

Theoretical implications

The findings have many notable theoretical implications. Previous literature suggests that the articulations of ethical leadership and psychological capital with knowledge sharing and knowledge creation, and psychological capital as a mediator and shared goals as a moderator in relationships of ethical leadership with knowledge sharing and knowledge creation have got very little attention in the KM research area. This study extends the previous insights of knowledge sharing and knowledge creation by employees of the organization and strengthens the similar findings of a few earlier studies conducted to explore the relationship between ethical leadership and knowledge sharing (Bavik *et al.*, 2018; Tang *et al.*, 2015) and ethical leadership and psychological capital (Nemati, 2015; Wu and Lee, 2016). Hardly any study has been conducted in the past that establishes the relationship of ethical leadership with knowledge creation and of psychological capital and knowledge creation. Thus, this study incorporates these new findings into the literature. This study also adds to the literature of leadership, emphasizing the importance of ethical aspects of leadership in the present day business environment.

As an internal motivational factor to an employee, psychological capital positively influences his/her act of knowledge sharing and knowledge creation. This is a vital contribution as it will help to understand the internal mechanisms of an individual to share and create knowledge. This study is among very few early studies that extend the theoretical understanding of psychological capital as a mediator in the relationship of ethical leadership with knowledge sharing and knowledge creation. It will enable us to further understand and explore the underlying mechanisms of shaping employees' behaviour by leaders through followers' cognitive mechanisms, which is still not fully explored by researchers. Further, the present study empirically concludes the significance of shared goals in knowledge sharing and knowledge creation. It appends to the literature of social capital about the influence of shared goals in managing knowledge. This study also throws light upon the managing of knowledge from the internal (psychological capital) as well as external (ethical leadership) perspective of an individual.

The study strengthens the literature of organizational behavior as well as positive organizational behaviour along with literature of leadership and KM. This study adds to the body of KM literature about new antecedents of knowledge sharing and knowledge creation, namely, ethical leadership and psychological capital, thus, providing more insight and understanding of it. It also makes the KM literature rich in terms of adding a new study taken in organizations in the Indian context, a context that is fast-changing and growing and is outside the western world.

Practical implications

The findings are significant and useful for practitioners. This study exhibits a new and different viewpoint to operate the knowledge assets of the organization. This study has

revealed the need for an ethical climate, flow from ethical leaders, to promote knowledge sharing and knowledge creation. The leadership of the organization should focus on conducting themselves in an ethical manner and building a conducive environment of honesty and fairness for enhancing knowledge sharing and knowledge creation. Ethical leadership needs to be built among managers at all the management levels of the organizational hierarchy through leadership training and development programs and leadership performance indicators. All the managers should also be assessed based on their ethical conduct during their performance appraisal conducted from time to time. This should be inculcated among future generations of managers also who may be selected through succession planning or the hiring process. During recruitment, the perspective candidates need to be evaluated based on ethical aspects of leadership to get ethically oriented managers. Further, an organization should have an ethical code of conduct for both managers and employees.

An understanding of the mechanisms associated with psychological capital and all of its components enables managers to improve knowledge sharing and knowledge creation. Managers need to strengthen the psychological capital of employees by making relevant organizational interventions to promote knowledge sharing and knowledge creation. Managers need to focus on designing interventions related to hope, optimism, efficacy and resiliency that make KM more effective. Hope can be developed by effective designing of goals and making of strategies for overcoming obstacles (Luthans *et al.*, 2006). Efficacy can be developed by positive feedback, vicarious learning, mastery experiences and workplace well-being (Bandura, 1997). Resiliency can be developed by strengthening asset factors and reducing risk factors (Masten, 2001). Optimism among employees can be enhanced by managers by making them to accept their past, to appreciate the moments and to view the future as a source of opportunity (positivepsychologyprogram.com).

The management needs to give attention to cognitive social capital too for effective KM. Organizational goals need to be formulated in such a way that it gives the participation of all people so that they can own them and consider them as shared goals. Managers should provide employees with a strong purpose as well as clarity about shared goals. The human resources departments get important understandings and insights from the outcome of this study, which can be used by them for effective designing and execution of training programs for managers to strengthen their ethical conduct and for employees to strengthen their psychological capital to manage knowledge assets of the organization in an effective and efficient way.

Conclusion

In conclusion, this study provides important insights into an area that is not fully explored. It is the first of its kind to provide the evidence of psychological capital as a mediator and shared goals as a moderator between ethical leadership and knowledge sharing and between ethical leadership and knowledge creation. The outcome of this study also presents important implications for managers and researchers. Yet, this study is not without its limitations. It has been conducted in PSRO, ITC and ACAD, i.e. specific research settings of Indian organizations. Other studies may evaluate the model of the study in many more other research settings to verify the findings and provide more generalizations. This is a quantitative study with a survey questionnaire strategy that may be supplemented and complimented with qualitative studies using other approaches such as grounded theory, action research, ethnography, case study and experiment. Although the present has relied on single-source data, other studies may adopt multi-method, multi-source data collection techniques or mixed-method approaches to make the results more robust. In the future, researchers could also include other antecedents and processes of KM. They may explore the other underlying mechanisms, both moderating and mediating, to explain the linkage of ethical leadership and other aspects of positive leadership with knowledge sharing and

knowledge creation. Organizations have knowledge as their core resource; hence, the findings of the study will help them to gain competitive advantage by managing knowledge in an effective and efficient way through ethical leadership and enhanced psychological capital.

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Appendix

Table A1

Variables	*Scale*	*Sample Items*
1. Knowledge sharing	Five item scale modified by Lin and Lo (2015) and given by Bock *et al.* (2005)	"1 share my work reports and official documents with members of my organization." "1 share my experience or know-how from work with other organizational members."
2. Knowledge creation	Six item scale (two items from Khedhaouria and Jamal (2015) and four items from Andreeva and Kianto (2011))	"I frequently come up with new ideas about our working methods and processes." "I am highly imaginative in thinking about new or better solutions to resolve problems."
3. Ethical leadership	Ten item scale of Brown *et al.* (2005)	"My superior conducts his/her personal life in an ethical manner." "My superior has the best interests of employees in mind."
4. Psychological capital	Twelve item scale of Luthans *et al.* (2007a)	"I feel confident in representing my work area in meetings with management." "I always look on the bright side of things regarding my job."
5. Shared goals	Three item scale of Akhavan *et al.* (2015)	"My co-workers and I are always enthusiastic about pursing the collective goals and missions of the whole company."

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