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How Transformational Leadership Influences the Knowledge-Sharing Process: Mediating the Role of Trust

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ABSTRACT

This study aims to investigate the mediating effects of both affect-based and cognition-based trust on the relationship between using a transformational leadership style and the effectiveness of followers' knowledge sharing processes (i.e., knowledge donating and knowledge collecting). Using data collected from 287 employees at 32 pharmaceutical companies in Pakistan, the structural equation modelling (SEM) technique was utilised to analyse the hypothesised relationships. The results showed that leaders with a transformational leadership style directly affect their followers' knowledge donating and knowledge collecting processes. In addition, affect-based trust was found to fully mediate the relationships between transformational leadership and followers' knowledge donating and knowledge collecting processes, while cognition-based trust produced insignificant mediation effects. From a social exchange perspective, these findings demonstrate the importance of focusing on building affect-based trust between leaders and followers in order to develop transformational leadership that could positively influence the knowledge sharing process.

KEYWORDS

Affect-Based Trust, Cognition-Based Trust, Knowledge Collecting, Knowledge Donating, Knowledge Sharing, Transformational Leadership

INTRODUCTION

Knowledge is a key strategic resource for building sustainable competitiveness in an organisation in a modern, knowledge-based economy (Le & Lei, 2018b). Knowledge, as the crucial resource, has caused a major shift in the design and adoption of an organisation's competition model for achieving inimitable economic value and competitive differentiation (Sedighi, Lukosch, Brazier, Hamedi, & van Beers, 2018). Modern organisations have shifted their paradigm of success from creating tangible assets to intangible resources using effective knowledge sharing among employees who help promote organisational creativity and innovation (Xiao, Zhang, & Ordóñez de Pablos, 2017). However, the fundamental issue experienced by many organisations is a deficit in employees' willingness to share this crucial resource of knowledge with their workmates (Casimir, Lee, & Loon, 2012).

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Several knowledge sharing practitioners have attempted to identify diverse components through which knowledge sharing can be encouraged, including the use of effective human resource management (HRM) practices (Collins & Smith, 2006; Naeem, Mirza, Ayyub, & Lodhi, 2017), the exploration of environmental and motivational factors, and the exploitation of individual dispositions (Casimir et al., 2012; Van Den Hooff & De Ridder, 2004; Wang & Noe, 2010). Among these methods, Wang and Noe (2010) highlighted the need to conduct more empirical studies on the role of leadership, as leaders play a decisive role in establishing knowledge sharing processes among subordinates (Wang & Noe, 2010; Xiao et al., 2017). Leadership practitioners have generally recognised transformational leadership as one of the most remarkable styles in terms of encouraging subordinates to share and develop knowledge in the workplace (Al-husseini & Elbeltagi, 2018; Le & Lei, 2017, 2018a). This type of knowledge sharing among subordinates is often carried out via two channels: knowledge donating and knowledge collecting.

Knowledge donating occurs "when individuals willingly share their knowledge, skills, and abilities with their colleagues" (Al-husseini & Elbeltagi, 2018). Knowledge collecting deals with "individuals' willingness to acquire and gather information, skills, and expertise from their colleagues through consultation or discussion" (Al-husseini & Elbeltagi, 2018). Limited empirical evidence exists to help understand the direct impact of transformational leadership on the process of employees' donating and collecting knowledge (Al-husseini & Elbeltagi, 2018; Le & Lei, 2017, 2018a), particularly in the context of the pharmaceutical industry of Pakistan.

The pharmaceutical industry of Pakistan has been recognized as one of the most influential contributor in the health manufacturing industry by producing medicines and drugs for patients' medicament. According to the Pakistan Pharmaceutical Manufacturer's Association (PPMA), there was an unusual pharma production unit in the country during the period of independence in 1947. However, Pakistan now has more than 800 pharma production units, of which 25 units are multinational. Despite this excessive increment, the pharmaceutical industry of Pakistan is experiencing major challenges in the prize freezing of pharma products and out-dated treatment methods. Moreover, an economic survey of Pakistan (2018-2019) also highlighted the negative growth of the pharmaceutical industry by 8.40%.

The need of the hour in the pharmaceutical industry of Pakistan is to transform this industry into cost-effectiveness in its production and operations, and innovate its treatment methods by encouraging the knowledge sharing process among its employees' through transformational leadership style of their managers/HODs. Therefore, this study intends to fill this research gap by investigating the influence of transformational leadership (TL) by leaders/managers on their subordinates' knowledge sharing processes, via knowledge donating and knowledge collecting, in the context of the pharmaceutical industry located in Pakistan.

Looking through the lens of the social exchange theory, the distinct catalytic mechanisms of affect-based and cognition-based trust in the knowledge sharing process between leaders and members of an organization is also examined. Social exchange theory suggests that affect-based trust is developed by dealing with socio-emotional exchange relationships that capture reciprocal exchange; meanwhile, cognition-based trust is built from rational evaluation of organisational members' salient characteristics that facilitate the process of negotiated exchange (Zhu, 2012). Both affective and cognitive trust between leaders and members can be wielded by leaders to influence their followers' work outcomes (Miao, Newman, & Huang, 2014; Zhu et al., 2013; Zhu & Akhtar, 2014a, 2014b).

Prior studies (Zhu, Newman, Miao, & Hooke, 2013; Zhu & Akhtar, 2014a, 2014b) have attempted to test the effects of affect-based and cognition-based trust on followers' different work outcomes, such as task performance, job satisfaction, organisational citizenship behaviour, and affective commitment. Limited evidence exists to illustrate how transformational leadership could be mediated by these two different trust constructs to affect the knowledge sharing process. Thus, the current study is aimed at addressing the key research question of "would both affect-based and cognition-based trust mediate the relationship between transformational leadership and the knowledge-sharing process"; and, if

so, what is the strength of the mediating effect on the two channels of knowledge-sharing, that is the follower's and employees' knowledge donation and knowledge collection? The researchers use the context of the pharmaceutical industry in Pakistan to collect data and test the research hypotheses.

LITERATURE REVIEW AND HYPOTHESES DEVELOPMENT

Transformational Leadership and the Knowledge Sharing Process

The term "knowledge sharing" can simply be defined as "a process where employees willingly exchange their knowledge, skills, and experiences with other colleagues in an organisation for creating new and valuable knowledge" (Van den Hooff & De Ridder, 2004). Many prior studies (Ardichvili et al., 2003; Oldenkamp, 2001; Weggeman, 2000) have utilised knowledge sharing from the bi-dimensional perspective. For example, Ardichvili et al. (2003) recognised that the knowledge sharing process was about the "supply" of and "demand" for new knowledge, Oldenkamp (2001) said it was comprised of "knowledge carrier" and "knowledge requester," and Weggeman (2000) distinguished "knowledge source" from "knowledge receiver."

By combining the views of previous research, Van den Hooff and De Ridder (2004) defined knowledge sharing as two central processes: knowledge donating and knowledge collecting. Knowledge donating deals with the willingness of employees to share their personal intellectual capital with their colleagues, and knowledge collecting occurs when employees willingly acquire and accept intellectual capital from their colleagues through consultation, observation, and practise (Van den Hooff & De Ridder, 2004). It is argued that employees have a multiple of reasons to refrain from sharing their strategic resources (knowledge) with others (Carmeli et al. 2011). Li et al. (2014) finds that employees perceive their personal knowledge as a source of authority; hence, without strong motivation, they usually lack the desire to share their knowledge due to the inevitable fear of losing authoritative power in the workplace.

An effective mechanism to overcome this type of resistance towards knowledge sharing is through transformational leadership, as suggested by Srivastava, Bartol, and Locke (2006). Transformational leader has the capability to create knowledge friendly environment among its employees' by exhibiting respect and openness towards them (Cabrilo & Leung, 2019). An idealised influential behaviour of transformational leaders is believed to be more likely to increase knowledge sharing among followers, when leaders act as role models by knowledge sharing with their followers (Zhu, 2012). This leadership behaviour creates confidence among the followers who perceive their leader as having a competency that fairly recognises their efforts, trusts in their abilities, and appreciates their contribution of ideas and information (Al-husseini & Elbeltagi, 2018). As a result of this transformational leadership type, followers are more willing to share their skills and experiences with each other. Similarly, intellectually stimulating behaviour in transformational leaders opens opportunities for their followers to share ideas during decision-making processes (Srivastava et al., 2006). This leadership behaviour motivates discussions and consultations among followers who openly communicate and exchange their opinions and suggestions with one another.

Leaders who exhibit inspirational motivation stimulate their followers to enthusiastically get involve in the fulfilment of goals and to work collaboratively, growing their organisation (Al-husseini & Elbeltagi, 2018). Finally, when leaders display coaching and mentoring acts towards their individual followers, they are considered to demonstrate leadership behaviour with genuine care and concern for their followers' different needs and abilities (Avolio et al., 1991). Leaders who exhibit individualised consideration are aware of the unique knowledge and intelligence of each follower and can create a cooperative environment by coaching and mentoring followers; these followers will, in turn, be stimulated to share their knowledge with each other via both knowledge donating and knowledge collecting (Al-husseini & Elbeltagi, 2018).

A study by Al-husseini and Elbeltagi (2018) empirically examined the direct effects of transformational leadership on knowledge donating and knowledge collecting practices in public higher

educational institutions in Iraq, from a sample of 250 academic staff. It was found that transformational leadership had a positive and significant effect on both knowledge donating and knowledge collecting processes. Similarly, using a sample of 336 participants from 35 large service firms in Vietnam, Le and Lei (2018b) examined the link between transformational leadership and knowledge sharing processes, including both knowledge donating and knowledge collecting. The results show a positive link between transformational leadership and knowledge donating and knowledge collecting.

Furthermore, Connelly and Kelloway (2003) surveyed 126 MBA and MPA students from four Canadian Universities and identified leadership as a key indicator to predict knowledge sharing behaviour among employees. This result was supported by Lin (2007) who examined the influence of top management support on knowledge sharing processes among the 50 top organisations of Taiwan. It is concluded that support from management stimulated employees' willingness to collect and donate knowledge amongst one another, which, in turn, helped improve the firm's capability to innovate. Jennex and Olfman (2006) highlighted senior management support as one of the most notable managerial success factor in creating and promoting knowledge sharing culture in an organization. Similarly, another study conducted by Shanshan (2014) also empirically confirmed the positive and significant role of top management support on attitude to knowledge sharing among employees' in different kinds of organizations of China. Based on the findings of the above-discussed studies, the following hypotheses are proposed:

Hypothesis 1: Transformational leadership has a positive and significant impact on knowledge donating.

Hypothesis 2: Transformational leadership has a positive and significant impact on knowledge collecting.

Transformational Leadership and Trust

It is argued that transformational leaders inspires confidence, ability, and motivation in their followers to perform their duties beyond expectation and, as a result, help to improve their organisation's position (Top, Akdere, & Tarcan, 2015). Trust, as a psychological construct, can be separated into two distinct foundations (McAllister, 1995): the first is affect or relationship-based trust that arises as a result of socio-emotional exchange relationships between parties, usually based on deep and long-term social exchange relationships, namely reciprocal exchange (Dirks & Ferrin, 2002; McAllister, 1995). The second is cognition or character-based trust that deals with the perception of one party about certain salient characteristics, such as reliability, competency and, integrity, etc., of the other party in specific situations (Dirks & Ferrin, 2002; McAllister, 1995).

Prior studies (Holste & Fields, 2010; Jain, Sandhu, & Goh, 2015; Miao, Newman, Schwarz, & Xu, 2013; Swift & Hwang, 2013) have provided considerable empirical support for the distinct effects of cognition-based trust and affect-based trust on multiple outcomes in different contexts. For example, Jain et al. (2015) found that cognition-based trust is positively associated with knowledge donating while affect-based trust is positively associated with knowledge collecting, in the context of Malaysian multinational firms. Swift and Hwang (2013) concluded that affect-based trust plays a significant role in predicting knowledge sharing while cognition-based trust plays an important role in developing an organisational learning environment among sales and marketing executives. Similarly, Webber (2008) found, among organisational behaviour students of a large Canadian University, that affect-based trust is significantly related to team performance, while cognition-based trust is non-significantly related to team performance.

Despite the considerable evidence for the validity of distinct effects of both foundations of trust, very rare empirical studies have concurrently considered affect-based and cognition-based trust in transformational leadership research (Zhu et al., 2013; Zhu & Akhtar, 2014a, 2014b). Among these studies, Zhu and Akhtar (2014b) argued that transformational leaders can strongly leverage their

influence on follower's various work outcomes by completely understanding the differential impacts of both affect-based and cognition-based trust. To empirically examine the distinct role that both foundations of trust may have in mediating transformational leadership and follower's knowledge-sharing processes, it is necessary to test the effect of transformational leadership as an antecedent on these two foundations of trust.

Transformational leaders can stimulate affect-based and cognition-based trust in their followers simultaneously, but in different ways; for instance, idealised influence, a critical component, can increase the influence transformational leaders have on their followers' cognition-based trust (Zhu & Akhtar, 2014b). Idealized influence occurs when a leader acts as a role model and exhibits a consistent and fair image, so that he or she can easily convince followers that each person's contribution towards a target accomplishment is individually recognised and fairly rewarded (Zhu & Akhtar, 2014b). Other transformational leadership behaviours include communicating a strong and clear vision, involving followers in making decisions, keeping open communication, and encouraging followers' creativity by challenging them to confront issues from different points of view (Zhu & Akhtar, 2014a). Such behaviours increase followers' confidence in their contribution being fairly recognised and rewarded by their leader. As a result, the follower's perception of their leader's characteristics, such as reliability, integrity, and dependability, increases, leading them to develop a higher level of cognition-based trust in the leader.

Similarly, from an affect-based trust perspective, followers are empowered and authorised by leaders to provide valuable contributions during the decision-making process (Bass & Riggio, 2006). This method stimulates the involvement of transformational leaders in social exchange relationships with their followers, revealing respect for and valuing followers' suggestions (Zhu et al., 2013). Moreover, transformational leaders exhibit coaching and mentorship by giving respect, genuine care, and concern to each follower individually (Zhu & Akhtar, 2014a). Through open and one-on-one communication, followers feel free to consult and discuss their problems with their leaders (Zhu & Akhtar, 2014b). When followers perceive this level of respect, they reciprocate with emotional investments, which, in turn, develop affect-based trust. The following hypotheses are proposed:

Hypothesis 3: Transformational leadership has a positive and significant impact on follower's cognition-based trust in the leader.

Hypothesis 4: Transformational leadership has a positive and significant impact on follower's affect-based trust in the leader.

Mediating Roles of Affect-Based and Cognition-Based Trust

The earlier section of this paper discussed the role of transformational leadership in promoting followers' knowledge sharing processes. Trust is a key phenomenon that strengthens the notable effect of transformational leadership on followers' knowledge sharing. Existing studies (Zhu et al., 2013; Zhu & Akhtar, 2014a, 2014b) have explored the distinct mediating roles of cognition and affect-based trust in transformational leadership processes with different outcomes; for example, Zhu and Akhtar (2014b), who conducted their study in a private retail and manufacturing company in the Zhejiang Province in China. Based on a sample of 175, the researchers found that affect-based trust can significantly mediate the relationship between transformational leadership and a follower's job satisfaction, while cognition-based trust can significantly mediate the relationship between transformational leadership and follower's task performance. Similarly, Zhu et al. (2013) used a sample of 318 employees—superiors in a large garment manufacturing firm in China—to examine the indirect impact of transformational leadership on followers' job performance, organisational citizenship behaviour, and affective commitment through affective trust; the mediation of cognition-based trust was significant, but negative between transformational leadership and job performance.

Some studies have empirically tested the role of trust in mediating the relationship between transformational leadership and knowledge sharing (Shih, Chiang, & Chen, 2012), but they considered trust and knowledge sharing as a uni-dimensional construct, tested only in the context of Taiwanese electronic product manufacturers. Until now, no empirical research has been found that validates the distinct psychological mechanisms of affect-based and cognition-based trust between transformational leadership and their followers' knowledge-sharing processes (knowledge donating and knowledge collecting) at an individual level. The current study empirically tested the distinct mediating effects of both foundations of trust through which transformational leaders exert their influence on follower's knowledge donating and collecting behaviour in the pharmaceutical industry of Pakistan.

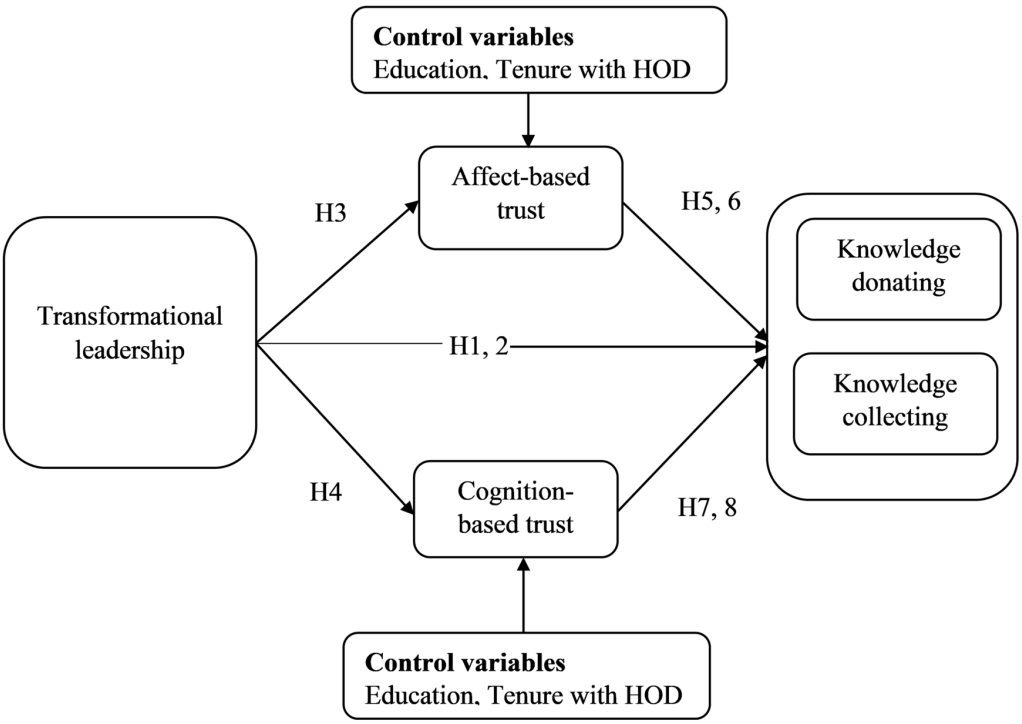
Existing literature uses social the exchange theory to analyse the mediating role of trust in transformational leadership processes, as trust is a crucial feature of social exchange (Zhu et al., 2013; Zhu & Akhtar, 2014a, 2014b). Blau (1987) has defined social exchange theory as "follower's voluntary actions stimulated by the returns that they expect from their leaders." He pointed out two perspectives of social exchange theory: negotiated exchange and reciprocal exchange. Negotiated exchange is based on "tangible returns" and "rational self-interest," such as rewards and money, etc. (Wang, Lin, Li, & Lin, 2014). In contrast, reciprocal exchange deals with "intangible returns" and "reciprocity" (Wang et al., 2014). Based on the above distinction between two the perspectives of social exchange, it is clear that cognition-based trust represents negotiated exchange while affect-based trust represents reciprocal exchange.

Bock and Kim (2002) suggested that both kinds of exchange relationships could determine a follower's inclination towards different knowledge sharing processes. In the context of transformational leadership, a negotiated exchange relationship is established when followers believe that they will receive fair rewards and recognition from their leaders. This expectation increases the followers' perception of positive qualities in their leader with a guarantee of expected rewards when they willingly share their knowledge with other colleagues. On the other hand, reciprocal exchange is established when followers perceive genuine care and consideration by their leaders, so they feel obliged to reciprocate in terms of socio-emotional investments and extra-role behaviour (knowledge sharing). Followers' extra-role behaviour can be highly dependent upon their treatment by their leaders (Zhu et al., 2013).

Organ (1990) argued that social exchange theory is most strongly associated with followers' extra-role behaviour (knowledge sharing). The argument of Organ (1990) about "social exchange theory" is more closely related to reciprocal exchange, rather than negotiated exchange, as reciprocal exchange is based on deeper, long-term exchange relationships. In this context, affect-based trust is likely to mediate the impact of transformational leadership on knowledge donating and collecting behaviour, as affective trust represents reciprocal exchange and emotional investment. Transformational leaders exhibit care and concern for the welfare and needs of each follower to establish socio-emotional exchange relationships (Podsakoff, MacKenzie, Moorman, & Fetter, 1990). This stimulates followers to respond with extra-role behaviour (knowledge sharing), in a reciprocal way. In particular, affect-based trust reduces perceived risks and uncertainties followers have regarding jeopardy to self-interest and opportunity costs (Casimir et al., 2012). As a result, followers are encouraged to willingly donate their knowledge to other colleagues by continually investing time and effort. They are also motivated to gain new knowledge and skills through consultation and discussion with their other colleagues.

On the other hand, leaders recognise their followers' inclination for knowledge sharing as an instrumental aspect. In other words, leaders respond to their followers' willingness and attitude towards knowledge donating and collecting behaviour in terms of greater incentives and high-performance evaluations (Zhu, 2012). Therefore, it is proposed that cognition-based trust is likely to mediate the impact of transformational leadership on knowledge donating and collecting behaviour. Specifically, negotiated exchange reflects expected rewards and incentives, so followers are stimulated to engage in knowledge sharing processes in order to obtain benefits (Zhu, 2012). In addition, a transformational leader's salient characteristics assure followers that their efforts are individually recognised and no

Figure 1. Conceptual model



unfair advantage has been awarded, at any cost (Zhu & Akhtar, 2014b). When followers receive fair rewards, promotion, and pay, they are more likely to cooperate with their leaders' desired expected outcomes by engaging in knowledge sharing processes. The following hypotheses have been formulated (Figure 1):

Hypothesis 5: Affect-based trust significantly mediates the relationship between transformational leadership and followers' knowledge donating behaviour.

Hypothesis 6: Affect-based trust significantly mediates the relationship between transformational leadership and followers' knowledge collecting behaviour.

Hypothesis 7: Cognition-based trust significantly mediates the relationship between transformational leadership and followers' knowledge donating behaviour.

Hypothesis 8: Cognition-based trust significantly mediates the relationship between transformational leadership and followers' knowledge collecting behaviour.

RESEARCH METHODOLOGY

This study intended to measure the impact of transformational leadership on the knowledge sharing process (knowledge donating and knowledge collecting) and test the mediation of affect-based-trust and cognition-based trust among them. Thus, a positivism paradigm was favoured to test these relationships by using a survey questionnaire design. The population of interest in this study included subordinates from various departments, such as HRM, finance, operation, manufacturing, etc. Each department consisted of one leader, the Head of Department (HOD), and several sub-ordinates or employees. In

Table 1. Frequency summary of demographic characteristics

Profile	Categories	Frequencies & Percentages
Age Group	20-30	114 (39.7%)
	31-40	125 (43.6%)
	41-50	36 (12.5%)
	More than 50	12 (4.2%)
Gender	Male	125 (44%)
	Female	162 (56%)
Education	Bachelor	38 (13.2%)
	Master	153 (53.3%)
	MPhil	96 (33.4%)
Tenure with HOD	Less than 1 year	106 (36.9%)
	1-3 years	122 (42.5%)
	4-6 years	36 (12.5%)
	More than 7 years	23 (8%)

this study, subordinates ranked the transformational leadership behaviour of their HOD, their affect-based and cognition-based trust in their HOD, and their involvement in knowledge sharing processes.

A pre-test study was initially carried out where a drafted version of the questionnaire was reviewed by five academic professors and 10 pharmaceutical industry experts to ensure the questions were clear, understandable, and well structured. After this, paper-and-pencil questionnaires were used for final data collection. To collect responses, researchers personally visited 40 pharmaceutical companies in Lahore, which are listed in Pakistan's stock exchange (PSX) and the Pakistan Pharmaceutical Manufacturers Association (PPMA), from which 32 companies were given permission for data collection.

The researchers distributed 400 questionnaires along with cover letters explaining the purpose of this study by using a convenience sampling approach. All participants were guaranteed the confidentiality of their information, and their responses were used only for research purposes. Of the 400 questionnaires, 338 responses were received. For assurance of data quality, the cases were screened using the following criteria: 1) questionnaires with similar responses on all instrument items, and 2) responses with more than six missing values were discarded. Hence, from 338 responses, 51 were discarded and 287 valid responses (71.75% response rate) were retained for data analysis.

Demographic Information

Table 1 provides a summary of demographic data of this study. From 287 employees, 56% (N = 162) were female and 44% (N = 125) male. In terms of their age division, the majority of employees were between 20 and 30 years (39.7%), and 31 to 40 years (43.6%), 12.5% (N = 36) of employees were aged 41 to 50 years, and the remaining 4.2% (N = 12) of employees were over 50 years old. In terms of educational level, over 53.3% of employees (N = 153) had master's degrees, whilst 33.4% (N = 96) had MPhil's and 13.2% (N = 38) had bachelor's degrees. In terms of tenure with their HOD, 37% (N = 106) of employees had been working with their HODs for less than one year, 42% (N = 122) for one to three years, 12% (N = 36) for four to six years, and the remaining 8% (N = 23) for more than seven years.

Measures

Consistent with existing literature (Miao, Newman, & Huang, 2014; Newman & Butler, 2014; Zhu & Akhtar, 2014b), all items were measured on a five-point Likert scale where "1 = strongly disagree, 3 = neither disagree nor agree, and 5 = strongly agree." The English versions of all of the scales were used for data collection from employees, as the English language was officially used in the pharmaceutical industry of Pakistan. Therefore, language validity was not an issue in this study.

Transformational Leadership

The 23-item multi-factor leadership questionnaire (MLQ), developed by Bass and Avolio (1995), was used to measure four sub-constructs of transformational leadership. Seven of these items were used to measure idealized influence (e.g. "My HOD takes a stand on difficult issues") and six items were used to measure intellectual stimulation (e.g. "My HOD encourages me to seek different perspectives when solving problems"). Five items were used to measure inspirational motivation (e.g. "My HOD articulates a compelling vision of the future") and individualized consideration (e.g. "My HOD provides useful advice for my development").

The researchers conducted a second order confirmatory factor analysis (CFA) of transformational leadership by using Amos 22, as the hypotheses did not distinguish between its four sub-constructs. The second-order measurement model of transformational leadership indicated an acceptable fitness with the data Chi-square = 213.781, CMIN/DF = 1.68, GFI = 0.93, AGFI = 0.90, NFI = 0.94, RFI = 0.93, IFI = 0.974, TLI = 0.969, CFI = 0.974, RMSEA = 0.049 and SRMR = 0.033 (Bentler, 1990; Hoyle, 1995; Kline, 2005; Newman & Butler, 2014; Sheikh, Newman, & Al Azzeh, 2013).

Knowledge Sharing Process

The two dimensions of the knowledge sharing processes were measured using the 10-item scale of Van Den Hooff and De Ridder (2004). Six items were used to measure knowledge donating (e.g. "I willingly share my knowledge with colleagues within my department, when they ask me about it"), and four items were used to measure knowledge collecting (e.g. "Colleagues within my department tell me what they know, when I ask them about it").

Trust

The 11-item scale adapted from the research of McAllister (1995) was used to measure the two dimensions of trust. Affect-based trust contained five items (e.g. "My HOD and I have a sharing relationship. We can both freely share our ideas, feelings, and hopes"), and cognition-based trust contained six items (e.g. "My HOD approaches his/her position with professionalism and dedication").

Control Variables

Education and tenure with HOD were included as control variables to account for their potential effects on affect-based and cognition-based trust; these control variables are in line with existing studies (Zhu et al., 2013; Zhu & Akhtar, 2014a). Education and tenure with HOD were utilised as dichotomous variables; education was coded as: 1 = Bachelor, 2 = Master, and 3 = M.Phil. Similarly, tenure with HOD was coded as: 1 = less than one year, 2 = 1-3 years, 3 = 4-6 years, and 4 = more than 7 years.

Data Analysis and Results

Descriptive Statistics

Table 2 depicts the mean, standard deviation, and correlations of all key constructs under study. Transformational leadership was positively and significantly correlated with affect-based trust ($r = 0.71$, $p < 0.01$), cognition-based trust ($r = 0.80$, $p < 0.01$), knowledge donating ($r = 0.17$, $p < 0.01$), and knowledge collecting ($r = 0.28$, $p < 0.01$). In addition, affect-based trust was revealed to be significantly correlated with both knowledge donating ($r = 0.19$, $p < 0.01$) and knowledge collecting

Table 2. Means, standard deviations and correlations

	Mean	Standard Deviation	1	2	3	4	5
1. Transformational leadership	3.86	0.71	(0.95)				
2.Affect-based trust	3.73	0.94	0.71**	(0.82)			
3.Cognition-based trust	3.88	0.97	0.80**	0.60**	(0.89)		
4. Knowledge donating	3.76	0.67	0.17**	0.19**	0.12	(0.80)	
5. Knowledge collecting	3.65	0.74	0.28**	0.34**	0.20**	0.40**	(0.83)
Note: ** Correlation is significant at the 0.01 level (two-tailed) (p<0.01) Diagonal values represent Cronbach Alpha and non-diagonal values indicate correlations							

(r = 0.34, p < 0.01), while cognition-based trust was found to be significantly correlated only with knowledge collecting (r = 0.20, p < 0.01). Multicollinearity was detected by using the variance inflation factor (VIF) score, which must be lower than 5 to guarantee lack of multicollinearity (Kock & Lynn, 2012). The VIF scores of all variables in this study ranged from 1.20 to 3.72.

Measurement Model

The measurement model was analysed by performing confirmatory factor analysis (CFA) in Amos 22, where composite reliability (CR) and convergent and discriminant validity of all constructs were established. A five-factor CFA was drawn to estimate the overall fitness of the measurement model in which second-order transformational leadership construct, knowledge donating, knowledge collecting, affect-based trust, and cognition-based trust were correlated. Overall fitness of the measurement model was estimated by considering the following fit statistics: Minimum discrepancy (CMIN/DF), Goodness of fit index (GFI), Adjusted Goodness of fit index (AGFI), Incremental fit index (IFI), Normed Fit Index (NFI), Non-normed fit index (NNFI) also known as TLI, Comparative fit index (CFI), and Root Mean square error of approximation (RMSEA). Regarding CMIN/DF, Byrne (2012) recommended its value should be less than 2, while GFI, AGFI, NFI, IFI, TLI, and CFI recommended thresholds equal to or greater than 0.90, with an RMSEA value less than 0.60 or 0.80 considered adequate fitness of the model (Bentler, 1990; Hoyle, 1995).

The results of the five factor CFA demonstrated good fit statistics (CMIN/DF = 1.53, GFI = 0.89, AGFI = 0.86, NFI = 0.91, RFI = 0.89, IFI = 0.97, TLI = 0.96, CFI = 0.99, SRMR = 0.058, and RMSEA = 0.043) when the following constructs were combined: (a) affect-based trust and cognition-based trust $[\Delta x^2 (13) = 227.078, p < 0.01]$; (b) knowledge collecting and knowledge donating $[\Delta x^2 (13) = 369.352, p < 0.01]$; (c) affect-based trust, cognition-based trust and knowledge collecting $[\Delta x^2 (16) = 659.559, p < 0.01]$; (d) affect-based trust, cognition-based trust, knowledge collecting, and knowledge donating $[\Delta x^2 (18) = 982.214, p < 0.01]$; and (e) combined all constructs on a single factor $[\Delta x^2 (23) = 1147.495, p < 0.01)$. The chi-square difference test results supported discriminant validity of all variables of this study, which can also be seen in Table 3 (Miao et al., 2014; Zhu & Akhtar, 2014b).

Convergent validity was computed by adopting the three recommended measures of Hair et al. (2009): (1) the standardised loadings of instrument items of all constructs, which need to be greater than the threshold of 0.50 and statistically significant; (2) composite reliability, which must be higher than the recommended limit 0.70; and (3) average variance extracted (AVE) from all constructs, which must exceed the proposed cut-off, 0.50 (Fornell & Larcker, 1981). While estimating five-factor CFA, the researchers deleted those items from the constructs whose standardised loadings were lower

Table 3. Comparison of measurement models

Model comparison test														
Models	**X²**	*Df*	x^2 / *df*	**RMSEA**	**IFI**	**TLI**	**SRMR**	**RFI**	**NFI**	**AGFI**	**GFI**	**CFI**	Δx^2	Δ *df*
1. Five factor CFA[a]	542.484	353	1.53	0.043	0.97	0.96	0.058	0.89	0.91	0.86	0.89	0.97		
2. Four factor CFA 1[b]	769.562	366	2.10	0.062	0.93	0.92	0.065	0.86	0.87	0.81	0.84	0.93	227.078**	13
3. Four factor CFA 2[c]	911.836	366	2.49	0.072	0.90	0.89	0.067	0.83	0.85	0.78	0.82	0.90	369.352**	13
4. Three factor CFA[d]	1202.043	369	3.26	0.089	0.85	0.83	0.071	0.78	0.80	0.74	0.78	0.85	659.559**	16
5. Two factor CFA[e]	1524.698	371	4.11	0.10	0.79	0.77	0.080	0.72	0.74	0.67	0.72	0.79	982.214**	18
6. One factor CFA[f]	1689.979	376	4.50	0.11	0.76	0.74	0.082	0.69	0.71	0.65	0.70	0.76	1147.495**	23

Notes: ** p < 0.01
[a]Base line measurement model: Transformational leadership, affect-based trust, cognition-based trust, knowledge donating and knowledge collecting
[b] Combined affect-based trust and cognition-based trust
[c] Combined knowledge collecting and knowledge donating
[d] Combined affect-based trust, cognition-based trust, and knowledge collecting
[e] Combined affect-based trust, cognition-based trust, knowledge collecting and knowledge donating
[f] Combined transformational leadership, affect-based trust, cognition-based trust, knowledge collecting and knowledge donating

than 0.50 (Hair, Anderson, Babin, & Black, 2010). After deleting those items, knowledge donating, individualized consideration, and intellectual stimulation remained three items, while affect-based trust and cognition-based trust remained two items. No item was deleted from the knowledge-collecting construct.

In addition, the measurement errors between similar and related items were also limited by covariance to improve the fit indices of the five factor CFA model (Hair et al., 2010). As can be seen in Table 4, all standard loadings in our five-factor CFA ranged from 0.51 to 0.98 and were statistically significant at 0.001. Composite reliability values ranged from 0.82 to 0.97, and AVE scores ranged from 0.55 to 0.89. Hence, results supported convergent validity of all scales (Hair Jr., Black, Babin, Anderson, & Tatham, 2009; Kline, 2015; Wegge, Jungbauer, & Shemla, 2019).

Common Method Variance

This study employed Harman's single factor test for detection of common method variance (CMV), as recommended by Podsakoff, MacKenzie, Lee, and Podsakoff (2003). This test was initially implemented in SPSS 16 using a principal component analysis, where all instrument items were added for factor analysis and run as an un-rotated solution. The un-rotated solution of principal component analysis explained 42.027% of the variance on a single factor, which was lower than 50% of the recommended threshold value by (Podsakoff et al., 2003).

Moreover, a single factor CFA was also conducted in Amos software where all measurement items were loaded on a single construct, and was indicating a very poor fit indices (x^2 = 1689.979, CMIN/DF = 4.495, GFI = 0.695, AGFI = 0.647, NFI = 0.714, RFI = 0.691, IFI = 0.763, TLI = 0.742, CFI = 0.761, SRMR = 0.88, and RMSEA = 0.111). The chi-square difference test of the five factor CFA baseline model with a single factor CFA was also significant ($\Delta x^2 \left(23\right) = 1147.495, p < 0.01$), which demonstrates that CMV is not a serious problem (Ayyub, 2015).

Hypotheses Testing

Direct Effects

The researchers applied structural equation modelling (SEM), a multivariate data analytical technique in Amos 22, to examine the proposed hypotheses. The standardised regression weights from transformational leadership to knowledge donating ($\beta = 0.155, p < 0.05$) and knowledge collecting

Table 4. Results of convergent validity

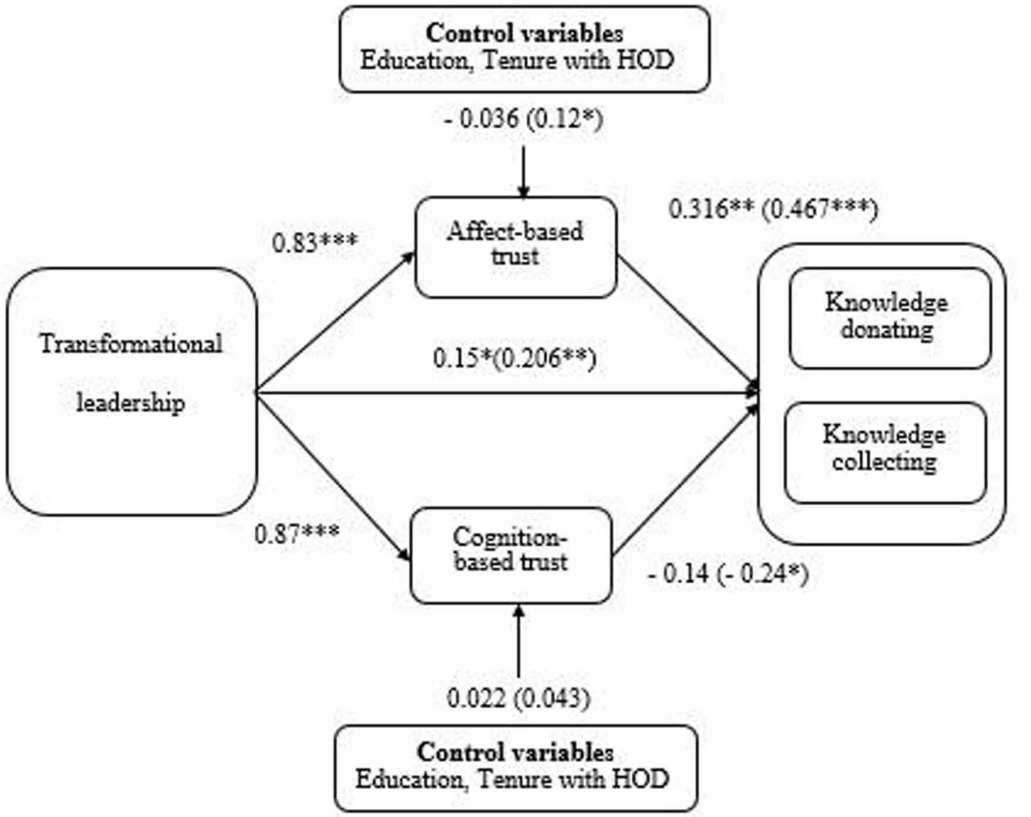
Construct	Indicators	Standard loadings	CR	AVE	ASV	MSV
Transformational leadership	ID	0.98	0.97	0.89	0.379	0.773
	IM	0.92				
	IS	0.95				
	IC	0.92				
Affect-based trust	ABT1	0.81	0.82	0.69	0.318	0.679
	ABT2	0.86				
Cognition-based trust	CBT1	0.92	0.90	0.82	0.324	0.773
	CBT2	0.89				
Knowledge donating	KD4	0.68	0.83	0.62	0.067	0.225
	KD5	0.85				
	KD6	0.83				
Knowledge collecting	KC1	0.51	0.82	0.55	0.089	0.225
	KC2	0.53				
	KC3	0.92				
	KC4	0.90				

Note. ID = Idealised influence, IM = Inspirational motivation, IS = Intellectual stimulation, IC = Individualised consideration, ABT = Affect-based trust, CBT = Cognition-based trust, KD = Knowledge donating, KC = Knowledge collecting, CR = Composite reliability, AVE = Average variance extracted, ASV = Average shared variance, and MSV = Maximum shared variance.

behaviour ($\beta = 0.206, p < 0.01$) were positive and significant; thus, hypotheses 1 and 2 were supported. The standardised coefficients from transformational leadership to affect-based trust ($\beta = 0.833, p < 0.001$) and cognition-based trust ($\beta = 0.874, p < 0.001$) were also positive and statistically significant, supporting hypotheses 3 and 4 (see Figure 2). Moreover, affect-based trust was significantly and positively related to knowledge donating ($\beta = 0.316, p < 0.01$) and knowledge collecting behaviour ($\beta = 0.467, p < 0.001$) . While, cognition-based trust was significantly negatively related to knowledge collecting ($\beta = -0.245, p < 0.05$) , revealing an insignificant negative effect on knowledge donating behaviour ($\beta = -0.142, p = 0.21, n.s.$).

The fit indices of the full mediation model (Figure 2) were compared with the partial mediation model (where researchers added two direct paths, from transformational leadership to knowledge donating and knowledge collecting). The fit statistics for the full mediation model (Figure 2) were CMIN/Df = 1.66, RMSEA = 0.048, IFI = 0.96, TLI = 0.95, CFI = 0.96, GFI = 0.88, AGFI = 0.86, NFI = 0.90, and RFI = 0.89, and for the partial mediation model were CMIN/Df = 1.66, RMSEA = 0.048, IFI = 0.96, TLI = 0.95, CFI = 0.96, GFI = 0.88, AGFI = 0.85, NFI = 0.90, and RFI = 0.88. The chi-square difference test was Δx^2 (2) = 1.988, with a probability value of p = 0.37, which was not significant at the 0.1, p>0.1 level. In addition, the direct path from transformational leadership to knowledge donating and knowledge collecting behaviour was non-significant in the partial mediation model, indicating that this partial mediation model did not add any significance to the full mediation model. Considering these effects, the researchers accepted the full mediation model as a baseline model (Zhu et al., 2013; Zhu & Akhtar, 2014b).

Figure 2. Relationships among transformational leadership, cognition-based trust, affect-based trust and knowledge sharing process Note: Fit Indices: CMIN/Df = 1.66, RMSEA = 0.048, IFI = 0.96, TLI = 0.95, CFI = 0.96, GFI = 0.88, AGFI = 0.86, NFI = 0.90 and RFI = 0.89 *** p < 0.001, ** p < 0.01, * p < 0.05 (*Impacts of transformational leadership, affect-based and cognition-based trust on knowledge collecting are in parenthesis)* (Impact of tenure with HOD on affect-based and cognition-based trust are in parenthesis)



Note:
Fit Indices: CMIN/Df = 1.66, RMSEA = 0.048, IFI = 0.96, TLI = 0.95, CFI = 0.96, GFI = 0.88, AGFI = 0.86, NFI = 0.90 and RFI = 0.89
*** p < 0.001, ** p < 0.01, * p < 0.05
(Impacts of transformational leadership, affect-based and cognition-based trust on knowledge collecting are in parenthesis)
(Impact of tenure with HOD on affect-based and cognition-based trust are in parenthesis)

Indirect Effects

A well-known method, "Bootstrapping," was employed to analyse the specific indirect effects (Bollen & Stine, 1990). Cheung and Lau's (2008) proposed procedure was used to apply a bootstrap in the Amos software where 95% confidence intervals were established with 5000 samples. As indicated by Table 5, the indirect path from transformational leadership to knowledge donating (Estimate = 0.156, $p < 0.05$, 95% CI [0.025, 0.29]) and knowledge collecting behaviour (Estimate = 0.218, $p < 0.001$, 95% CI [0.096, 0.33]) through affect-based trust, was positive and significant each time, thus providing support for hypotheses 5 and 6. In contrast, the indirect path from transformational leadership to knowledge donating (Estimate = 0.09, $p > 0.05$, 95% CI [-0.035, 0.24]) and knowledge

Table 5. Results of indirect effects

Regression Paths	Hypothesis tested	Estimated indirect effect	P-value	95% CI	
				Lower	Upper
Transformational leadership ® affect-based trust → Knowledge donating	H5	0.156*	0.016	0.025	0.29
Transformational leadership ® affect-based trust → Knowledge collecting	H6	0.218***	0.001	0.096	0.33
Transformational leadership ® cognition-based trust → knowledge donating	H7	0.09	0.15	-0.035	0.24
Transformational leadership ® cognition-based trust → knowledge collecting	H8	0.11	0.12	-0.025	0.23

Note: CI = Confidence interval, * $p < 0.05$ and *** $p < 0.001$

collecting behaviour (Estimate = 0.11, $p > 0.05$, 95% CI [-0.025, 0.23]) through cognition-based trust revealed no significant values, allowing the researchers to reject hypotheses 7 and 8.

DISCUSSION

The primary purpose of this study was to test the mediating effect of trust on the relationship between transformational leadership and followers' knowledge sharing processes (knowledge donating and knowledge collecting). The findings regarding the hypothesised relationships between transformational leadership and knowledge donating and knowledge collecting (H1 and H2) were found to be significant, in line with the findings of Le and Lei (2018), Al-husseini and Elbeltagi (2018), and Shanshan (2014). In addition, the effects of transformational leadership on affect-based and cognition-based trust (H3 and H4) were found to be statistically significant, consistent with the findings of prior research (Zhu et al., 2013; Zhu & Akhtar, 2014a, 2014b).

The findings from testing the mediators of two trust constructs show that both affect-based and cognition-based trust are of a different nature and hence mediate the relationship between transformational leadership and knowledge sharing processes differently. Affect-based trust was found to positively and significantly mediate the relationship between transformational leadership and knowledge donating (H5) and knowledge collecting behaviour (H6); whilst cognition-based trust revealed no significant mediation between them (H7 and H8). The results derived from prior studies tend to argue affect-based trust is more significantly associated with knowledge sharing as compared to cognition-based trust (Bock, Zmud, Kim, & Lee, 2005; Casimir et al., 2012; Chowdhury, 2005; Yang & Farn, 2009; Zhang & Chen, 2018). However, this study's findings regarding the direct impacts of affective trust on knowledge donating and knowledge collecting processes were both found to be statistically significant. This result is consistent with the notion that knowledge sharing can be facilitated by social exchange relationships (affect-based trust), which is the most instrumental factor in reducing fear of loss on the potential benefits of knowledge sharing (Chowdhury, 2005; Ribiere & Tuggle, 2005).

On the other hand, prior studies have argued for a negative effect of cognition-based trust on knowledge sharing (e.g. Bakker, Leenders, Gabbay, Kratzer, and Van Engelen (2006) or an insignificant relationship between cognitive trust and knowledge sharing (e.g. Ko (2010); Swift and Hwang (2013). In contrast, this study's findings show, cognition-based trust was negatively related to knowledge collecting but remained statistically non-significant for knowledge donating behaviour. It is concluded that affect-based trust alone was the most effective mediator to influence the positive relationship between transformational leadership and knowledge sharing processes among followers (Zhu, 2012).

PRACTICAL IMPLICATIONS

The findings of this study offer some practical implications, especially for those heads of department (HODs) or leaders/managers working in the pharmaceutical industry. First, this study had justified that transformational leadership of HODs plays a significant role in engendering both affect-based and cognition-based trust, which, in turn, facilitates effective follower knowledge sharing processes. HODs should be aware of their role as transformational leaders to influence their followers' knowledge sharing behaviour, as some employees may be helped and motivated to overcome fear of loss of individual benefits when involved in knowledge sharing activities. Hence, organisations need to design and develop HR policies and practices to encourage and promote leaders and managers to adopt various transformational leadership styles, such as displaying equality, open communication, coaching and mentoring individual employees, with the aim of encouraging discussion, and collaboration among followers or employees.

Secondly, the findings from testing the mediating effects of trust on the relationship between transformational leadership and follower's knowledge sharing processes should point organisational leaders/managers, such as HODs, towards developing emotional ties and socio-exchange relationships with their followers, because this type of affect-based trust was found to have contributed significantly towards promoting effective knowledge sharing behaviour.

LIMITATIONS AND FUTURE DIRECTIONS

Despite the various notable contributions, this study contains several limitations. First, this study was conducted in a cross-sectional manner that likely removes the possibility of determining casual inference among variables; for example, employees who have a current personal relationship with their HODs may favourably rate their HOD when asked about distinct behaviour. Future research in a similar field is encouraged to apply longitudinal experimental design and, thus, test the casual directions.

Second, the survey was administered to the designated employees in the pharmaceutical industry at a single point in time, which may cause an issue of common method bias. Although the researchers applied various analytical techniques, such as the un-rotated principle component analysis recommended by Podsakoff et al. (2003) and confirmatory factor analysis (CFA), to demonstrate constructs distinctiveness, a common method bias may still exist. To combat this issue, the collection of responses from different points in time should be considered in future research.

Third, the distinct, intervening roles of cognition-based trust and affect-based trust were tested with only one antecedent of transformational leadership style. Future work may also examine other types of leadership styles, such as transactional, authentic, and laissez-faire leadership styles, to investigate their respective effects on cognition-based and affect-based trust and their subsequently impact on the knowledge sharing process. Moreover, future work could also consider organisational structure and culture as moderators, as the current study only considered a few control variables, such as educational level and tenure with HOD. The focus on one industry (i.e. pharmaceutical) in the study may impose an additional limitation of generalizability. The extent to which the study's findings can be extrapolated to other industries to integrate organisational culture and structural factors should be considered in a future study, which should further verify the mediating effect of trust on the relationship between leadership style and knowledge sharing processes.

THEORETICAL CONTRIBUTIONS AND CONCLUSION

The findings of this study have some implications for theoretical development in the leadership literature. First, the significance of transformational leadership can be argued by building affect-

based trust between leaders and members to facilitate effective knowledge sharing processes through followers' willingness to donate and collect knowledge. The study's findings further advance the understanding of how knowledge can be shared and created through an underlying mechanism such as trust-building between leaders and members (Al-husseini & Elbeltagi, 2018; Le & Lei, 2018b).

Second, this study's findings provide additional empirical support to verify the different roles played by affect-based and cognition-based trust in mediating the relationship between transformational leadership and followers' knowledge donating and knowledge collecting behaviour. The findings complement an earlier study's results on testing different work outcomes, such as task performance and job satisfaction (Zhu & Akhtar, 2014b), follower's helping behaviour (Zhu & Akhtar, 2014a), affective commitment, and organisational citizenship behaviour (Zhu et al., 2013). This present study is among one of the first to test the intervening roles of affect and cognition-based trust on followers' willingness to engage in knowledge donating and knowledge collecting behaviour. The results enhance the understanding of how different trust constructs contributed to different components of the knowledge sharing processes. From the perspective of social exchange theory, the researchers further confirm that affect-based trust, in terms of reciprocal exchange, serves as the most effective approach to enhance knowledge sharing among followers.

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APPENDIX: SURVEY QUESTIONNAIRE

Items Measuring Transformational Leadership

Idealized Influence

1. My HOD instills pride in me for being associated with him/her.
2. My HOD considers the moral and ethical consequences of his/her actions.
3. My HOD displays a sense of power and confidence.
4. My HOD takes a stand on difficult issues.
5. My HOD act in ways that builds my respect.
6. My HOD specifies the importance of having a strong sense of purpose.
7. My HOD behave in ways that are consistent with his/her expressed values.

Inspirational Motivation

8. My HOD is very optimistic about the future.
9. My HOD talks enthusiastically about what needs to be accomplished.
10. My HOD articulates a compelling vision of the future.
11. My HOD expresses his/her confidence that we will achieve our goals.
12. My HOD makes me aware of essential work-related issues.

Individualized Consideration

13. My HOD focusses me on developing my strengths.
14. My HOD considers me with different needs, abilities and aspirations from others.
15. My HOD listens attentively to my concerns.
16. My HOD spends time on teaching and coaching me.
17. My HOD provides useful advice for my development.

Intellectual Stimulation

18. My HOD encourages me to express my ideas and opinions.
19. My HOD encourages me to seek differing perspectives when solving problems.
20. My HOD suggests new ways of looking at how to complete assignments.
21. My HOD suggests me to look at problems from different angels.
22. My HOD encourages me to address problems by using reasoning and evidence, rather than unsupported opinions.
23. My HOD emphasizes the value of questioning assumptions.

Items Measuring Knowledge Sharing Process

Knowledge Collecting

1. Colleagues within my department tell me what they know, when I ask them about it.
2. Colleagues within my department tell me what their skills are, when I ask them about it.
3. Colleagues outside my department tell me what they know, when I ask them about it.
4. Colleagues outside my department tell me what their skills are, when I ask them about it.

Knowledge Donating

5. When I have learned something new, I see to it that colleagues in my department can learn it as well.
6. I share the information I have with colleagues within my department.
7. I share my skills with colleagues within my department.
8. When I have learned something new, I see to it that colleagues outside my department can learn it as well.
9. I share the information I have with colleagues outside my department.
10. I share my skills with colleagues outside my department.

Items Measuring Trust

Affect-Based Trust

1. My HOD and I have a sharing relationship. We can both freely share our ideas, feelings, and hopes.
2. I can talk freely to my HOD about difficulties I am having at work and know that she/he will want to listen.
3. My HOD and I would both feel a sense of loss if one of us was transferred and we could no longer work together.
4. If I shared my problems with my HOD, I know she/he would respond constructively and caringly.
5. I would have to say that both my HOD and I have made considerable emotional investments in our working relationship.

Cognition-Based Trust

6. My HOD approaches his/her job with professionalism and dedication.
7. Given my HOD's track record, I see no reason to doubt his/her competence and preparation for the job.
8. I can rely on my HOD not to make my job more difficult by careless work.
9. Most people, even those who aren't close friends of my HOD, trust and respect him/her as a co-worker.
10. Other work associates of mine who must interact with my HOD consider him/her to be trustworthy.
11. If people knew more about my HOD and his/her background, they would be more concerned and monitor his/her performance more closely.

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