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## Leadership style and innovation atmosphere in enterprises: An empirical study

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## ABSTRACT

Existing literatures have explored the positive effect of leadership style on innovation atmosphere from a team perspective. However, much attention has been paid to transformational leadership style, whereas studies on transactional leadership style are not available. To this end, this paper explores the relationship between the two leadership styles and innovation atmosphere in enterprises. The intermediary role that trust and individual identification play in the relationship between leadership style and innovation atmosphere is examined as well. We conduct a survey on 294 respondents and run hierarchical regression and adjustment regression. The results show that (1) transformational leadership style can facilitate to build trust and individual identification; (2) transformational leadership style is more helpful for building innovation atmosphere; (3) it is easier for leaders with transformational leadership style to build trust and that trust positively affects innovation atmosphere; (4) trust and individual identity are helpful for creating innovation atmosphere; (5) trust and individual identification play an intermediary role between transformational leadership style and innovation atmosphere; (6) trust does not play an intermediary role between transactional leadership style and innovation atmosphere, whereas individual identity does. Implications from the findings are discussed.

### 1. Introduction

With the rapid development of social economy and the changing of business environment, market competition is getting fierce. In order to cope with competition, enterprises must innovate continuously (Li & Zheng, 2014). As more and more enterprises start to improve their competitiveness via technological innovation, innovation becomes an important value-added activity. The importance of technological innovation for economic growth has been widely recognized in existing literature (Achi et al. 2016; Chen and Chen, 2016; Cheng et al. 2018; Kumar and Chanda 2018; Li, 2017; Li, Xu and Zhao 2018; Lu 2017; Sachdeva et al. 2016; Sharma & Chanda 2017; van de Werff et al. 2017; Vuletic et al. 2017; Wekerle, Trabasso, Loures da Costa, Villela, Brandão, & Leonardi, 2017; Xu et al., 2014, 2017, 2018; Xu and Duan, 2018; Zhang et al. 2018). Emerging economies have made significant contributions to the global economy in recent years (Lebedev, Peng, Xie, & Stevens, 2015; Li, 2013; Padmanathan, Govindarajan, Ramachandaramurthy, Selvi, & Jeevarathinam, 2018; Qiao & Yang,

2015). Particularly, China has made a great success in economic development. In order to promote a long-term healthy development of economy, Chinese government vigorously encourages technological innovation and entrepreneurship. It is hoped that the socio-economic change can get more vitality from technological entrepreneurship. But other than providing impetus, knowledge economy also sets higher requirements for enterprises to generate innovation. The complexity of technology, the uncertainty of innovation, and the finiteness of resources generate challenges for enterprises. As such, it is important for enterprises to achieve effective and efficient technological innovation guided by proper leadership. Meanwhile, enterprises need an innovation-friendly atmosphere that inspires their creativity and promotes technological innovation (Li & Zheng, 2014; Tsai, Horng, Liu, & Hu, 2015). Enterprises need to know well about how to build innovation-friendly atmosphere and what factors affect the atmosphere. Among the many factors, leaders' leadership style is found to determine the atmosphere for enterprises to perform innovation (Li & Zheng, 2014; Noruzy, Dalfard, Azhdari, Nazari-Shirkouhi, & Rezazadeh, 2013).

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Existing literatures have explored the positive effect of leadership style on innovation atmosphere from a team perspective. However, much attention has been paid to transformational leadership style, whereas studies on transactional leadership style are not available (Liu, 2013). Particularly, studies on the relationship between transactional leadership style and innovation environment through the lens of trust and individual identification are missing. Accordingly, this paper explores the relationship between the two leadership styles and innovation atmosphere in enterprises. We also examine the intermediary role that trust and individual identification play in the relationship. We conduct a survey on 294 respondents and run hierarchical regression and adjustment regression. The results show that transformational leadership style can facilitate to build trust and individual identification, that trust and individual identity are helpful for creating innovation atmosphere, that trust and individual identification play an intermediary role between transformational leadership style and innovation atmosphere, and that trust does not play an intermediary role between transactional leadership style and innovation atmosphere, whereas individual identity does. We also find that it is easier for leaders with transformational leadership style to build trust and that trust positively affects innovation atmosphere. Implications for practitioners are discussed.

## 2. Literature review

### 2.1. Leadership style

Leadership style is a constant behavioral model and trait expressed in leaders' behavior. Burns (1978) categorizes leadership style into transformational leadership style and transactional leadership style. Transformational leadership style values employees' ideal and values, motivates them to put organization interest on the first place, and drives them to achieve the state of best self (Burns, 1978). According to Burns (1978), transformational leadership style helps employees achieve a higher level of demand and build an atmosphere of trust between leaders and team members. In this way, team members can realize the importance of their tasks. Li and Shi (2005) identify four dimensions of transformational leadership style, namely vision incentive, moral model, leadership charm, and individualized consideration. They further compile a scale for measuring transformational leadership style. According to Li and Shi (2005), vision incentive distributes meaningful and challenging tasks to team members aiming for making them aware of leaders' expectation. The goal of vision incentive is to generate work enthusiasm among subordinates and to let them achieve higher performance. Moral model is unique because it is developed based on Chinese culture. Leadership charm means to provide values for team members, to interpret the significance of tasks, and to arouse their sense of pride for obtaining respect and trust. Individual consideration takes into account the capacity and demand. It meets reasonable needs of team members in time to let them work hard by relying on their leaders. Similarly, Burns (1978) identifies three dimensions for transformational leadership style, including charismatic-inspirational leadership, intellectual stimulation, and individualized consideration.

Leithwood (1994) defines transactional leadership style as a leader model using various compensation incentive to exchange outcomes needed. Transactional leadership style is a task-oriented and interactive leader manner. It relies on timely and appropriate incentives. Different from transformational leadership style, transactional leadership style helps organizations achieve their goals by making job reward and remuneration clear (Burns, 1978). Bass (1985) argues that intellectual incentive might motivate subordinates to find problems actively and solve them. The essence of transactional leadership style is exchange, which motivates subordinates to work by offering material incentives. It aims to meet team members' inner needs, to give them clear direction, and to motivate followers to work by the exchange in time (Bass, 1985).

By understanding team members' demand fully and defining their roles, leader with transactional leadership style help team members finish their jobs (Chen & Shi, 2007). Transactional leadership style pursues the unity of finishing work and self-fulfillment. It aims to let leaders and team members benefit from each other. Bass (1985) divides transactional leadership style into two dimensions: contingent reward and management by exception. Contingent reward refers to appropriate reward offered by leaders to motivate team members. As a kind of external incentive, contingent reward includes commitment and fulfillment. Management by exception can be grouped into positive ones and negative ones (Bass, 1985). Positive management by exception refers to observing team members at any moment to ensure their tasks are finished. Negative management by exception is implemented when requirements are violated and errors occur.

### 2.2. Trust and individual identification

Trust has been defined by scholars in different ways. For example, Sabel (1993) notes that trust is a kind of faith, in which cooperative is convinced so that nobody obtains his/her own interests via using others' vulnerability. Mayer, Davis, and Schoorman (1995) think that trust means that one party has the ability to control the other one, but it is willing to give up the ability to make the other party willing to believe things to their advantage. Anderson and Narus (1990) argue that trust is the cooperation among people about the degree to accept chaos. Rousseau (1998) defines trust as a kind of psychological state, which is on the basis of positive expectations as well as willing to maintain the relationship with others and accept the risk. Sapienza and Zingales (2012) define trust as the expectation that one person (or institution) will perform actions that are beneficial, or at least not detrimental. Lins, Servaes, and Tamayo (2017) argue that the definition of trust should highlight the probabilistic nature of trust, the concept of cooperation, and the inability to monitor others' actions ex-ante.

The trust of leaders on subordinates is the degree of how much leaders are willing to bear the risk of being hurt by evaluating subordinates' credibility. In an organization, subordinates are hoped to be able to express the expected response and tendency so as to achieve organizational goals (Ding, 2007). Trust can reduce the uncertainty of behavior and help members gain confidence.

There are three types of trust inside an organization, namely deterrence-based trust, knowledge-based trust, and identification-based trust. Regardless of the type of an organization, deterrence-based trust is the weakest one, because it may be destroyed by a tiny defection. Deterrence-based trust depends on information exchange. People choose to understand and forgive others by listening to their interpretation for defections. Many organizations are built on acquaintance. Identification-based trust is the ideal one. When identification-based trust exists between leaders and team members, the work atmosphere is relaxed. Such atmosphere will contribute to the mutual trust between leaders and subordinates. In this paper, trust is defined as an interdependent and common endeavor psychological contract that contributes to unite leaders and subordinates.

Individual identification refers to an individual's deep understanding of himself/herself, the integration and coordination of his/her internal state and external environment, and the construction of personal identity (Gong, 2015). According to Jiao (2007), individual identification includes the recognition and trust of individual himself/herself as well as the relationship between the individual and others. Yin (2015) argues that individual identification refers to the cognition of individual characteristics and status. This paper adopts the definition of individual identification in Yin (2015). Essentially, individual identification is a degree of comprehension and acceptance to individual identity and role. In the process of individual identification, people introspect value conflict and crisis of confidence.

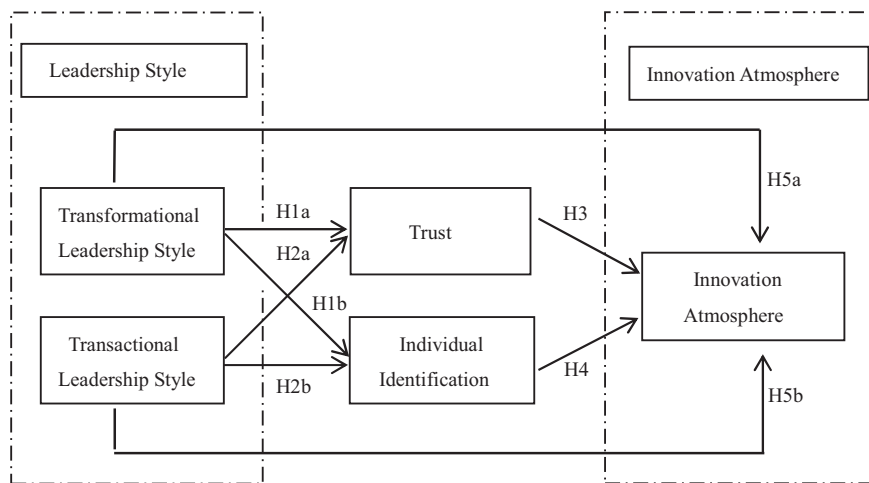


Fig. 1. The research model.

### 2.3. Innovation atmosphere

Innovation exists in all organizations. In order to generate innovation, enterprises need to build a flexible culture and an internal atmosphere that can speed information exchange and respond to new opportunities quickly (Urbancova, 2013). In an organization, members' competent behavior depends on their values and capabilities, and is inseparable from the organizational atmosphere (Cao & Zhao, 2009). Amabile, Conti, Coon, Lazenby, & Herron (1996) argue that the organizational innovation atmosphere is perceptual descriptions of the environment among the members, and is the support degree of the innovation capacity and innovative which members can perceive in their working environment. Choi, Price, and Vinokur (2003) note that the psychological perception of the environment varies among individuals, and that an individual's psychological perception causes his/her behavior. Anderson and West (1998) points out that the team innovation atmosphere is the team members' common cognition of the innovative work environment. West (2002) notes that the team innovation atmosphere consists of vision goals, participation in security, task-oriented and innovation support. The connotation definition of the innovation atmosphere proposed by Amabile (1988) is more comprehensive. In this paper, innovation atmosphere is defined as members' perception and experience of the common innovation vision goals, the vitality and persistence of innovation, as well as the degree of support for the innovation and others that related to the innovation environment.

## 3. Theory development

### 3.1. Research model

Atmosphere in an organization is influenced by the competent leadership behavior, organizational culture and values, and the behavior of its leadership (Ekvall & Ryhammar, 1998; Ekvall & Ryhammar, 1999). Trust affects members' creative behavior by influencing their thinking patterns and values. Wang (1992) notes that the role of leadership must be based on trust. The essence of leadership is how leaders influence their followers' judgment so that collective aims can be achieved though unified thought and actions. Therefore, the effect of leadership relies on trust. The lacking of trust between leaders and team members will weaken the morale of members for innovation, and generate negative impact on members' attitudes for innovation. Furthermore, the lacking of trust between leaders and team members will mislead the allocation of resources, affect members' perception of the importance of creativity and innovation, and hinder the persistent development of the innovation. Dirks and Ferrin (2002) point out that trust can save the cost of organizational management and supervision,

and further make contribution to the positive attitude of members in working, organizational commitment, and job satisfaction.

The leadership of an enterprise encourages its members to take active actions for achieving their goals (Hunt, Osborn, & Boal, 2009). Leadership is the most important factor affecting innovation because it can promote the implementation of creative ideas within an organization (Yoon, Lee, & Schniederjans, 2016). Driven by leaders' charm, members take initiative to recognize the team, and then generate the feeling of belonging to the team. Cooperation and team work, the sense of collective honor, and the faith are conducive to the occurrence of innovation and creative activities (Kanter, 2000). Enterprises with good leadership and strong innovation capabilities usually have better performance because they are able to seize opportunities by quick responding to competitive environment (Chassagnon & Haned, 2015).

Individual identity will promote the establishment of members' consensus and recognition of the innovation atmosphere. In turn, the formation of the trust and individual identify will make members generate a sense of honor and pride for the organizational innovation network. Furthermore, members will be actively involved in innovation activities and constantly improve their ability for making innovation. As a result, innovation performance of an organization is improved.

Leadership style of an enterprise impacts the innovation atmosphere inside it. In an enterprise, members' perception of innovation atmosphere is bound to its leadership style. Thus, leaders need to adopt suitable leadership style, to create an abiding creative atmosphere, to maintain the vitality of innovation, and to enhance innovation abilities.

It is important for an enterprise to create an internal innovation-friendly atmosphere. The role of leadership style in such an enterprise cannot be ignored. Some studies find that leadership styles can help build innovation atmosphere in a team, whereas other studies find that leadership styles hinder a team to achieve sustainable development. Leadership styles will shape innovation atmosphere, and the relationship between leaders and members. Leaders lead team members to cooperate with each other aiming for achieving certain goals. In this process, leaders' behavior affects members' attitudes, behaviors, thinking mode, and values for innovation. As such, this paper chooses the effect of trust, individual identity, and leadership style on innovation atmosphere as independent variables. Furthermore, this study explores what roles trust and individual identity play between leadership style and innovation atmosphere. Fig. 1 shows the research model.

### 3.2. Hypotheses

#### 3.2.1. Transformational leadership style, trust, and individual identification

Leaders with transformational leadership style pay attention to each member and provide them guidance and opportunities. They always

emphasize team work. Bass (1985) point out that the individualized care of transformational leadership includes providing member opportunity to learn, helping members use their special talents, and helping members to enhance confidence. Leaders with transformational leadership style help every member realize that he/she is irreplaceable and needed by the team. Accordingly, all members are willing to rely on the team and make contributions to the team. As a result, everyone gets the chance to make improvement. In this way, team performance can be improved.

Leaders with transformational leadership style understand psychological vision, needs and views of life, and value of members gradually in the working process. They are confident in their judgment and abilities. According to Jung and Avolio (2000), a common value helps leaders convey vision of the target to their subordinates. Appeal of leadership charm to members is benefit for mutual trust between leaders and subordinates. It can increase individual identification among team members. Based on mutual trust and individual identity, team members prefer to explore and exchange new ideas, try new methods, as well as to participate in a variety of activities which are conducive to upgrading the innovative performance. Geijsel, Sleegers, and van den Berg (1999) note that leaders with transformational leadership style encourage subordinates to be more creative and innovative. In addition, such leaders tend to create an open and dynamic environment, in which subordinates can put forward their doubts, challenge the existing decisions, and even propose creative solutions.

Leaders with transformational leadership style encourage subordinates to innovate and challenge themselves. They advocate subordinates to observe the environment and to come up with doubts. Subordinates report their unique and effective solution to leaders. Leaders and subordinates contact with each other tightly and produce trust. In no case would a subordinate be criticized for disagreement with his/her leaders. The working atmosphere takes into account to the activeness of subordinates. It not only enhances trust between leaders and subordinates, but also helps to achieve the sense of individual identification, which may play a positive role on team performance. According to Bass, Avolio, Jung, and Berson (2003), transformational leadership could create an atmosphere full of trust. An effective transformational leadership could build trust among group members, whereas trust comes from the identity to others (Zhang, 2011). This leads to the following hypotheses:

**Hypothesis 1a.** (H1a): Transformational leadership style positively impacts trust.

**Hypothesis 1b.** (H1b): Transformational leadership style positively impacts individual identification.

### 3.2.2. Transactional leadership style, trust, and individual identification

Jung and Avolio (2000) point out that transactional leadership tends to reach a consensus with subordinates instead of high trust. Leaders with transactional leadership style indicate what subordinates need to do to obtain things they want. Subordinates' personal values do not change. Team members work in an atmosphere that is lack of openness, safety, and trust in the long term. What they need to do is to finish their tasks by following procedures and minimizing mistakes. In such a circumstance, good suggestions will not be proposed actively because of disagreement on values and visions among team members. Because leaders monitor subordinates, it is hard to build trust between them. Individual identification is hard to develop either. Although transactional leadership is able to ensure accomplishment of team work, it is not helpful for building innovation atmosphere. Thus, transactional leadership style is not helpful for achieving innovation goals. This leads to the following hypotheses:

**Hypothesis H2a.** Transactional leadership style negatively impacts trust.

**Hypothesis H2b.** Transactional leadership style negatively impacts individual identification.

### 3.2.3. Trust and innovation atmosphere

Trust is a process of interaction in social communication and work situation. Tan and Tan (2000) find that supervisory trust significantly affect employees' satisfaction with their supervisors as well as their innovation behavior. Aryee, Budhwar, and Chen (2002) conclude that organizational trust significantly impact on employees' job satisfaction. Costigan, Ilter and Berman (1998) note that cognition trust and emotional trust of a supervisor are positively correlated with his/her own development initiative. Ferres, Connell, and Travaglione (2005) find that trust among colleagues greatly impact the organizational support perceived by employees. In an innovation-friendly enterprise, trust exists between leaders and team members as well as among team members. Trust will enhance members' initiative and satisfactions with the enterprise by motivating their willingness of cooperation and knowledge sharing, promoting teamwork, and facilitating the formation of innovation atmosphere. The high degree of trust between members can reduce the cost of communication and supervision, and increase the confidence of a team to achieve the target of technological innovation. Members tend to increase investment on technological innovation. In this way, innovative atmosphere is easier to form. This leads to the following hypothesis:

**Hypothesis 3.** (H3): Trust positively impacts innovation atmosphere in an enterprise.

### 3.2.4. Individual identification and innovation atmosphere

Individual identification is an important psychological variable of team members. It is based on individuals' perception of people and things around them. Members tend to be confident and content in work for the purpose of being taken into account and respected by their group. In this way, they are loyal to their team. A team with high performance usually consists of individuals with a sense of belonging. The sense of belonging to a team affects individuals' feeling and behavior. According to Brewer (1997), individual identification for organizations facilitates cooperation between members by raising the self-concept to the population level. Dukerich, Golden, and Shortell (2002) find that the intensity of an organizational identification affects the organization's internal cooperation. Dick, Wagner, Stellmacher, and Christ (2004) find that individuals' emotion and behavior towards an organization change and that individuals' job satisfaction improves when individual identification forms within the organization.

Members in an innovation-friendly enterprise will produce powerful centripetal force, strengthen cooperation, share resources, and exchange creative ideas to achieve their common innovation goals. Individuals' sense of belonging increases when they are satisfied with feedbacks from the team. As a result, they devote themselves into team tasks actively. The collective emotion enables members to innovate boldly, to exchange and share knowledge actively, to create an enduring innovation atmosphere consciously, and eventually to improve the innovation performance of an organization. This leads to the following hypothesis:

**Hypothesis 4.** (H4): Individual identification positively impacts the innovation atmosphere in an enterprise.

### 3.2.5. Leadership style and innovation atmosphere

Leadership style is important to innovation atmosphere. An innovation-friendly enterprise supports and encourages members' innovation behavior. The degree of supports determines the overall innovation capability and the running efficiency of the enterprise. To create a positive innovation atmosphere, a team needs intelligent, energetic and confident leaders. It also needs a leadership style that fits its

characteristics. Porter and McLaughlin (2006) argue that it is necessary for the leader in an enterprise to establish a common vision and atmosphere for the purpose of facilitating cooperation and innovation activities. Perks and Moxey (2011) think that an enterprise should allocate resources reasonably and effectively to promote the knowledge sharing among the members, to create an active innovation atmosphere, and to promote the innovation performance. The enterprise with transformational leadership style motivates members' higher-level demands and urges them to think the interests of the enterprise first. When the leadership style is perceived by members, the enterprise will establish the consistent innovation vision and thought, and enable the members to seek innovation and to implement innovation activities.

Murphy and Ensher (2008) find that the enterprise with transformational leadership style enhances the confidence of members by providing encouragements and rewards, establishing the mutual trust and dependency relationship between members, and promoting members' cooperation enthusiasm and willingness for knowledge sharing. In this way, transformational leadership style can affect innovation activities positively. They also find that the enterprise with transactional leadership style can identify members' demands. It offers rewards and incentives to members. When members in the enterprise perceive the transactional leadership style, they will improve their working autonomy and innovation impetus to get the rewards. This leads to the following hypotheses:

**Hypothesis 5a.** (H5a): Transformational leadership style positively impacts innovation atmosphere in an enterprise.

**Hypothesis 5b.** (H5b): Transactional leadership style positively impacts innovation atmosphere in an enterprise.

### 3.2.6. The intermediary role of trust and individual identification

Trust and individual identification are important for a team. Trust helps to improve members' sense of security and well-being, motivate team members' willingness to cooperate, promote mutual cooperation in work, and to improve team atmosphere.

Previous studies find that transformational leadership style directly impacts innovation atmosphere in a team. Creating innovation atmosphere requires leaders with effective leadership styles. Although transformational leadership and transactional leadership style both affect innovation atmosphere, their intensities are different. Generating trust relies on incentive mechanisms. Incentives can guide, strengthen, and change people's behavior. Incentives for trust rely on leadership styles. This leads to the following hypotheses:

**Hypothesis 6a.** (H6a): Trust plays an intermediary role between transformational leadership style and innovation atmosphere in an enterprise.

**Hypothesis 6b.** (H6b): Individual identification plays an intermediary role between transformational leadership style and innovation atmosphere in an enterprise.

**Hypothesis 7a.** (H7a): Trust plays an intermediary role between

Transactional leadership style and innovation atmosphere in an enterprise.

**Hypothesis 7b.** (H7b): Individual identification plays an intermediary role between Transactional leadership style and innovation atmosphere in an enterprise.

## 4. Research design

### 4.1. Samples

An anonymous online survey was conducted to collect data. When sending out the 385 questionnaires, we apply cross test and random order items to avoid common method biases. Altogether, we get 317 respondents. The response rate is 82.34%. We delete 23 invalid replies and get 294 valid respondents at the end. Among the respondents, 44.5% are males and 55.5% are females. Most of the respondents are well educated, 63% with a bachelor degree and 24.3% with a master degree. All respondents have 1–3 year working experience.

### 4.2. Variables

The questionnaire is developed based on existing literature. A 5-point Likert scale is adopted. The measurement of leadership style is adopted from Podsakoff, MacKenzie, Moorman, and Fetter (1990). Particularly, transformational leadership style is measured by positive encouragement, descriptive visions, promoting cooperation, respecting feelings, and inspiring capacity, whereas transactional leadership style is measured with reward afterwards, punishment afterwards, feedback of punishment, reward and punishment not afterwards (Podsakoff et al., 1990). The measurement of trust is adopted from Yang (2011), which focuses on the trust mechanism between leaders and subordinates, not bidirectional trust relationship of leaders and subordinates. The measurement of individual identification is adopted from Coleman (1982), Oakes (1996), and Prager (1997). The measurement of innovation atmosphere is adopted from Amabile (1988), Anderson and West (1998), and Bharadwaj and Menon (2000), including targeted vision, innovation support, and job autonomy. In addition, this paper chooses education level and working experience as control variables.

## 5. Empirical analysis

### 5.1. Reliability and validity

Descriptive statistical analysis of variables is shown in Table 1. Results of reliability and validity test are shown in Table 2. Reliability reflects the internal consistency of index of variables. Cronbach's alpha value is applied for measuring reliability (Colquitt, 2001). A Cronbach's alpha value > 0.7 means an acceptable reliability (Folger & Konovsky, 1989). As shown in Table 2, all Cronbach's alpha values are > 0.7. This indicates that the variables in this study have good internal consistency. The correlation coefficients of trust and individual identification with

**Table 1**  
Descriptive statistic, coefficient of correlation, and discriminant validity.

Variables	Mean	STDEV	1	2	3	4	5	6	7
Education degree	2.63	0.63	1						
Years of working	2.58	0.48	0.68**	1					
Transformational leadership	3.05	0.45	0.04	0.06	1				
Transactional leadership	3.04	0.43	0.13*	0.02	0.58*	1			
Trust	3.15	0.31	0.06	0.13	0.71**	0.54*	1		
Individual identification	3.13	0.32	0.10	0.21**	0.78**	0.63**	0.72**	1	
innovation atmosphere	3.56	0.71	0.16*	0.15	0.72**	0.60**	0.76**	0.72**	1

\*  $P < 0.05$ .

\*\*  $P < 0.01$ .

**Table 2**  
Variable metric and factor analysis.

Variables	Items	Cronbach's $\alpha$	Loading value	Variance of average extraction
Trust	5	0.805	0.868	0.841
Individual Identification	4	0.786	0.901	0.671
Transformational Leadership	3	0.743	0.732	0.697
Transactional Leadership	3	0.679	0.881	0.743
innovation atmosphere	4	0.893	0.854	0.632

innovation atmosphere are all > 0.7. This indicates a significant positive correlation. However, the correlation coefficients of transactional leadership style and innovation atmosphere is smaller than 0.7. This indicates a weak positive correlation.

Validity reflects the extent to which an index depicts the structuring variable that it measures, not other variables (Carmines & Zeller, 1979). It consists of convergent validity and discriminant validity. Convergent validity refers to whether the indexes depend on the structure variables or not. It is measured by loading values. When all loading values are > 0.7, convergent validity can be established. Table 2 shows that all loading values are > 0.7. Thus, the measurements have convergent validity. Discriminant validity is determined based on whether the variance of average extraction of every variable is greater than the correlation coefficient among variables. Usually, square root of the variance of average extraction is applied to do the comparison. Table 2 shows that square roots of the variance of average extraction of every variable are greater than its correlation coefficient with other variables. Therefore, the measurements have discriminant validity.

5.2. Result of hypotheses tests

First, we eliminate the influence of control variables on the dependent variable with hierarchical regression and adjustment regression. Then we analyze the main effect. At last, we analyze the role of intermediary variables. We run regression analysis in SPSS 18.0. Results are shown in Table 3.

The variance inflation factor (VIF) of the proposed model is < 3. This indicates that the model does not have collinearity. In addition, the

**Table 3**  
Regression analysis and results of hypothesis testing.

Variables	Innovation atmosphere		
	Model 1	Model 2	Model 3
<b>Control Variables</b>			
Education Degree	0.132* (0.021)	0.042 (0.013)	0.055 (0.030)
Years of working	0.057 (0.019)	0.053 (0.036)	0.024 (0.052)
<b>Independent Variables</b>			
Transformational leadership		0.277 * (0.041)	0.201 (0.041)
Transactional leadership		0.103 (0.015)	0.032* (0.022)
<b>Intervening Variables</b>			
Trust			0.172** (0.040)
Individual Identification			0.410*** (0.037)
R <sup>2</sup>	0.035	0.254	0.376
$\Delta R^2$		0.233	0.354
Model F	3.572*	9.385**	17.793***
Model F Change	3.572	10.702**	2.517*

Notes: \*p < 0.05, \*\*P < 0.01, \*\*\*P < 0.001.

single factor test of Harman shows that common method biases are acceptable.

Results shows that transformational leadership style is positively correlated with innovation atmosphere ( $\beta = 0.277, P < 0.05$ ). Thus, H5a is supported. However, the relationship between transactional leadership style and innovation atmosphere is not significant. Therefore, H5b is not supported. Trust is positively correlated with innovation atmosphere ( $\beta = 0.172, P < 0.01$ ). Individual identity is positively correlated with innovation atmosphere ( $\beta = 0.410, P < 0.001$ ). Thus, H3 and H4 are supported.

We apply the causal steps method proposed by Baron and Kenny (1986) to run the intermediary function test of trust and individual identification. Results are shown in Table 4 and Table 5.

As shown in Table 4, transformational leadership style positively correlates with trust ( $\beta = 0.364, P < 0.01$ ). Thus, H1a is supported. However, transactional leadership style does not negatively correlate with trust. Therefore, H2a is not supported. The results also show that transformational leadership style positively correlates with innovation atmosphere ( $\beta = 0.183, P < 0.05$ ). This indicates that trust plays an intermediary role between transformational leadership style and innovation atmosphere. Thus, H6a is supported. The proportion of intermediary effect from trust is:  $0.364 * 0.183 / 0.374 * 100\% = 17.8\%$ . In contrast, transactional leadership style does not negatively correlate with innovation atmosphere. Therefore, H7a is not supported.

As shown in Table 5, transformational leadership style positively correlates with individual identification ( $\beta = 0.434, P < 0.01$ ). Thus, H1b is supported. Transactional leadership style also positively correlate with individual identification ( $\beta = 0.201, P < 0.01$ ). Therefore, H2b is not supported. The results also show that transformational leadership style positively correlates with innovation atmosphere ( $\beta = 0.176, P < 0.05$ ). This indicates that individual identification plays an intermediary role between transformational leadership style and innovation atmosphere. Thus, H6b is supported. The proportion of intermediary effect from innovation atmosphere is:  $0.434 * 0.176 / 0.572 * 100\% = 13.4\%$ . In addition, transactional leadership style positively correlates with innovation atmosphere ( $\beta = 0.150, P < 0.05$ ). This indicates that individual identification plays an intermediary role between transactional leadership style and innovation atmosphere. Therefore, H7b is supported.

6. Conclusions

This paper studies the relationship between leadership style and innovation atmosphere in enterprises. The intermediary role that trust and individual identification play in the relationship is examined as well. The following conclusions can be reached based on the empirical test.

First, leadership style in enterprises can be categorized into transformational leadership style and transactional leadership style. Transformational leadership style can facilitate to build trust and individual identification. Leaders with transformational leadership style are more approachable. They tend to build trust within a team. In addition, they value the harmony in a team and promote resources sharing within the team. In this way, team members get supports for performing innovation. Team members also get trust from their leaders. They become more loyal to the team and tend to be satisfied with the team. As a result, it is easy for them to achieve individual identification. This study finds that leaders with transformational leadership style do not neglect trust and individual identification completely. Under certain conditions, leaders with transformational leadership style do boost team morale to some extent in a short term and build trust and individual identity in a team. The result is consistent with the finding in Bass, Avolio, and Goodheim (1987).

Second, trust and individual identity are helpful for creating innovation atmosphere. More trust can improve job satisfaction. A high level of individual identification helps team members establish the

**Table 4**  
Intermediary role of trust.

Steps	Explanatory variables	Explained variables	$\beta$	S.E.	Adj R <sup>2</sup>	F
Step 1	Trust	innovation atmosphere	0.374***	0.060	0.164	45.038***
Step 2	Transformational leadership Style	Trust	0.364**	0.058	0.157	27.034***
	Transactional leadership Style	Trust	0.152	0.071		
Step 3	Trust	innovation atmosphere	0.301***	0.063	0.182	24.305***
	Transformational leadership Style	innovation atmosphere	0.183*	0.065		
	Transactional leadership Style	innovation atmosphere	0.162	0.057		

Notes: \*p < 0.05, \*\*P < 0.01, \*\*\*P < 0.001.

**Table 5**  
Intermediary role of individual identification.

Steps	Explanatory variables	Explained variables	$\beta$	S.E.	Adj R <sup>2</sup>	F
Step 1	Individual Identification	innovation atmosphere	0.572***	0.051	0.203	74.031***
Step 2	Transformational leadership	Individual Identification	0.434**	0.037	0.174	63.109***
	Transactional leadership	Individual Identification	0.201**	0.031		
Step 3	Individual Identification	innovation atmosphere	0.431***	0.049	0.200	39.572***
	Transformational leadership	innovation atmosphere	0.176*	0.062		
	Transactional leadership	innovation atmosphere	0.150*	0.053		

Notes: \*p < 0.05, \*\*P < 0.01, \*\*\*P < 0.001.

sense of belonging and the sense of mission. In this way, they are more likely to be motivated.

Third, building innovation atmosphere must be based on the appropriate leadership style. Innovation atmosphere is significantly influenced by transformational leadership style and transactional leadership style. Compared with transactional leadership style, transformational leadership style is more helpful for building innovation atmosphere. Leaders with transformational leadership style focus on establishing a shared vision, which helps team members perceive support from their leaders, establish innovation values, and increase their innovation autonomy and degrees of cognitive innovation. Although leaders with transactional leadership style promote the innovative autonomy in a team, team members cannot perceive shared visions and goals of innovation.

Fourth, trust and individual identification are mediators between transformational leadership style and innovation atmosphere. However, trust does not play an intermediary role between transactional leadership style and innovation atmosphere, whereas individual identity does. This means that individual identity always plays an intermediary role between leadership style and innovation atmosphere.

Based on the findings from the empirical test, this paper proposes the following measurements for enterprises to facilitate innovation.

Leaders with proper leadership style should be selected in enterprises. Leaders should be aware of the impact of their leadership style on teams. Leaders should also pay attention to the incentive role of their charisma. Furthermore, leaders should actively improve their leadership style and make full use of the advantages of transformational leadership style to set examples for their subordinates with their own virtue, to motivate their subordinates with their individual personalities, to show their subordinates humanistic care, and to increase their subordinates' confidence and sense of belonging. Moreover, leaders should motivate their subordinates by combining the vision and goals of their enterprises and their subordinates' needs.

Leaders may have transformational leadership style and transactional leadership style simultaneously. Between these two styles, one dominates the other. Transformational leadership style is more effective to build innovation atmosphere. Transactional leadership style can motivate team members under certain conditions when transformational leadership style does not work. Leaders should change between transactional leadership style and transformational leadership style and apply them flexibly in different situations.

Meanwhile, team members should actively create a work

environment full of trust and cultivate a high degree of self-recognition. They should accept leaders' philosophy and leadership style and cultivate their personal plasticity. They should also be mutual trust, transparency, and sincerity in team work. By doing these, team members can integrate themselves into the team, realize their own value, and obtain pleasant working experience. Otherwise, they will not get enough confidence in the team. Neither will they achieve job satisfaction. As a result, their innovation initiative and innovation ability will be negatively impacted. Furthermore, team members should constantly enrich themselves and enhance their professionalism to make achievements in their field or position by performing innovation. In this way, their sense of identity and pride will be enhanced. A team full of trust will be built and team members have and a strong sense of belonging.

At present, many young people with distinctive personalities work in enterprises. They are self-motivated and interested in doing work to show their value. However, they tend to work independently, not in a team. Given the characteristics of young team members, leaders should lead their teams to build innovative atmosphere. Specifically, they should establish a clear vision for their team. They also should know their team members well. They need to learn how to control their own emotions and how to release positive energy as a leader. They should know how to use their feelings and emotions to motivate the morale of the team and appreciate team members. Leaders should work with team members to build a platform for attracting more people work together to achieve the common vision of their organization. Moreover, leaders should keep the communication within their team working well all the time. Leaders should give proper guidance, including reward and punishment, to their subordinates. Leaders should also ask their subordinates for advice with an open mind. In this way, trust can be built between leaders and subordinates. The loyalty of team members can be improved as well.

This study is to make its designation and demonstration in a rigorous and strict style. However, subject to the restrictions of time and resources, it has its deficiencies inevitably. First, the research is built on individual self-report questionnaires. As a result, the measurement results possess some subjectivity due to certain psychological factors. Therefore, future research should adopt objective approaches to improve the effectiveness and applicability of the findings in this study. Second, this study does not make distinguish of team types due to the difficulty in sampling. Future research need to make the improvements.

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