

# Linking transformational leadership with employees' engagement in the creative process

Engagement in  
the creative  
process

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## Abstract

**Purpose** – Given that individual creativity is a critical element to achieving organizational competitiveness, the purpose of this study is to attempt to investigate how transformational leadership (TL) drives employee creative process engagement (CPE) by improving their creative self-efficacy (CSE).

**Design/methodology/approach** – Analysis has been performed based on 194 responses from information and communication technology firms using a cross-sectional survey design. The study follows a deductive research approach to test the hypotheses. It uses SmartPLS2 and IBM SPSS 21 for a structural equation model.

**Findings** – The investigation finds that TL significantly predicts CPE, and CSE partially mediates the TL–CPE relationship. The result demonstrates that TL shapes an organizational climate conducive to the employees' CPE by building employees' self-efficacy.

**Research limitations/implications** – The study sample was drawn from a single sector of the Bangladeshi economy. The sampling design represents a limitation, for which the findings cannot be broadly generalized. Replications and augmentations of the study in various industrial areas will help test the robustness and generalizability of the discoveries.

**Practical implications** – TL and CPE are desirable organizational outcomes across all cultures. From a practical standpoint, the outcomes demonstrate that TL is linked to CPE and CSE among information and communication technology employees. This study extends the appropriateness of CSE into Asian countries. Notably, it provides additional insight into a contemporary TL model that can unequivocally impact leadership development in the Bangladeshi information and communication technology firms. Managers or



chief executive officers in the small and medium enterprises are expected to exhibit TL attributes by designing a supportive organizational climate that will motivate employees to exhibit creative activities.

**Social implications** – TL transforms employees' psychological state to get them to engage in creative processes, benefiting the organizational stakeholders by their unconventional creative behavior. The TL-driven innovative outcome through employees' CPE contributes to the development of social well-being.

**Originality/value** – This paper adds significance to the extant literature regarding the determinants of the mediating impact of CSE on TL and CPE from the viewpoints of information and communication technology firms, particularly from developing countries, such as Bangladesh. It also contributes to reconcile the findings of the previous studies around the globe in both developed and developing countries.

**Keywords** Transformational leadership, Innovation, Small and medium enterprises, Information and communication technology, Organizational theory and behavior, Creative process engagement, Creative self-efficacy

**Paper type** Research paper

## Introduction

The past few decades have witnessed sweeping changes in the rate of competition, workforce composition and exploitation of information and communication technology (Huang *et al.*, 2016). These remarkable improvements have reshaped our conventional way of doing things, ultimately leading to the competitive warfare of technology (Arad *et al.*, 1997; Abstein *et al.*, 2014; Fan *et al.*, 2017). In such a situation, innovative behavior within the organizations is deemed to be the vital force for realizing competitive edge and out-running the counterparts (Willoughby *et al.*, 2013; Ashkan, 2017). Several studies investigated and identified that innovation, inherited or bred by its creative staffs, is the best opportunity an organization has to withstand the competitive journey (Galvin, 2010; Fan *et al.*, 2017; Strobel and Kratzer, 2017). However, innovation requires employees' creative process engagement (CPE), which refers to the utilization of employees' talents and creative ingenuity that inherently necessitates their psychological engagement to work (Rejeb *et al.*, 2008).

An employee's decision to engage in a creative task depends on his/her level of self-confidence regarding creative talents and aptitudes (Thundiyil *et al.*, 2016). Studies, for example, Bilal and Mariam (2018) and Jaiswal and Dhar (2015), have confirmed that transformational leadership (TL) is the most dominant contextual factor that stimulates the employees' creative self-belief on their capacity and instigates creative engagement in the workplace. TL refers to a leadership approach in which a leader influences his/her followers by "broadening and elevating followers' goals and providing them with confidence to perform beyond the expectations specified in the implicit or explicit exchange agreement" (Dvir *et al.*, 2002).

Several studies, including, Farmer *et al.* (2003), Hass *et al.* (2016), and Jaussi *et al.* (2007), revealed that the creative self-efficacy (CSE) positively influenced creative performance. CSE is defined as 'the belief that one has the ability to produce creative outcomes' (Tierney and Farmer, 2002, p. 1138). It is derived from Bandura's (1997) more general concept of self-efficacy, and he recognized a likely relationship between self-efficacy and creative performance (Bandura, 1997). Individuals under the TL have trust in their leader and are more likely to be sufficiently empowered (Jain and Duggal, 2018; Loon *et al.*, 2012). They are not expected to be concerned about the adverse outcome of their potential behaviors. In such a case, employees are not intimidated regarding their efficacious belief to put them into action because of their trustworthy leader who cares for them and encourages them to engage in creative activities that are often risky, ill-defined and less structured (Bilal and Mariam, 2018).

The context of the study is confined to the information and communication technology (ICT) firms in Bangladesh, in which innovative behavior is crucial to survive (Stare *et al.*, 2006). Currently, the situation demands consistent innovative behavior to navigate the business world, and failing to do so is more likely to lead to the extinction (Uddin *et al.*, 2017a; Fan *et al.*, 2017). Because of shorter product life cycle and rapid changes in customers' requirements, the employees in information and communication technology firms either have to be creative in their way of doing or risk their survival in the competition (Sigala and Kyriakidou, 2015). Although the growing importance of creative engagement is virtually identical everywhere, ironically, very few studies have examined the information and communication technology field (Gupta *et al.*, 2017; Uddin *et al.*, 2018b). Prasad and Junni (2017) suggested that the leadership style of managers significantly influences employee innovativeness, especially in small and medium enterprises dealing in information and communication technology. It is also evident from prior studies that highly technological firms with skilled labor force along with their supportive contextual environment make the difference between the innovative and non-innovative firms. Thus, keeping the gravity of the relationship among leadership (Gupta and Singh, 2012), employee self-efficacy and employee creative behavior in the context of information and communication technology firms, the present study attempts to address the following two research questions:

*RQ1.* Does TL influence employee engagement in the creative process?

*RQ2.* Is there any mediating role of CSE on the relationship between TL and CPE?

This paper makes four essential contributions. First, even though there are a considerable number of studies (Gong *et al.*, 2009; Mittal and Dhar, 2015) on the influence of TL on creativity as an outcome, they mainly focus on the end result of the creativity, such as the attainment of the creative performance and innovation. The direct influence of TL as a dominant factor to the engagement in the creative processes, such as problem identification, information searching and encoding, idea generation, etc. has not been adequately explored so far (Du *et al.*, 2016; Costa *et al.*, 2018). Second, most of the studies investigated promotional focus (extrinsic motivation) (Henker *et al.*, 2015), shyness (Tan *et al.*, 2018b), anger (negative modes) (Costa *et al.*, 2018) and psychological empowerment (Zhang, 2007) as the antecedents of creative engagement in the workplace. Zhang (2007) and Zhang and Bartol (2010b) highlighted the role of self-efficacy in the underlying mechanism of the relationships between leadership and creative process engagement. However, surprisingly, no research is observed to test the role of creative self-efficacy as a determinant of creative engagement.

Third, the generalizability of the previous findings is impaired because of either self-report response (Du *et al.*, 2016; Tan *et al.*, 2018a, 2018b, Moreno *et al.*, 2013) or data collection from a single organization, which results in over-inflated and incomplete outcomes (Zhang, 2007; Zhang and Bartol, 2010b; Zhang and Bartol, 2010a). To rule out these limitations, Zhang and Bartol (2010b) advocated the use of multiple firms instead of a single one, and Gupta *et al.* (2017) and Podsakoff *et al.* (2012) advised to replace self-report with the simultaneous use of both other-report and self-report survey for preventing the response bias and causality problems, as well as for yielding a complete picture. Thus, in this study, we covered multiple firms and collected pair-responses instead of relying solely on self-report. Finally, little is known about the predictor of creative involvement in developing countries and countries scoring low at innovation, entrepreneurship and competitiveness indices (Mahmood *et al.*, 2018). This empirical study examines how

### Conceptual background and the development of hypotheses

#### *Transformational leadership and creative process engagement*

There is an exponential growth of TL-related studies in the past few decades since its inception from the ideation by Burns (1978), which was later widely circulated from the conception conceived in Bass (1985). It conceptualizes a wide range of behavior, which sheds light not only on personalized behavior but also on a shared vision epitomizing an organizational planned development (Jain and Duggal, 2018; Howladar *et al.*, 2018). TL is the ability to encourage, push and motivate the followers to a higher level of epitome and goals (Bilal and Mariam, 2018; Markus *et al.*, 2018). It describes how the leader articulates the employees' vision and gains trust and admiration through the personalized supports. TL diverts the followers' cognition of challenges into a new way of obtaining higher expectation (Burns, 1978; Bass, 1990; Markus *et al.*, 2018; Uddin *et al.*, 2017b).

On the other hand, creative process engagement captures the extent to which the employees cognitively, attitudinally and behaviorally dedicate their attention to identify potential problems, search for information and generate new or alternative approaches to problem-solving (Harris *et al.*, 2014). Thus, CPE can be described as the employee's emotional as well as physical involvement in activities that are often novel and unconventional but contributing to the organizational goals (Du *et al.*, 2016; Zhang and Bartol, 2010b).

Extant literature pays considerable attention to innovation and creativity (Shin *et al.*, 2017; Sharma, 2017; Montani *et al.*, 2017; Masood and Afsar, 2017; Gupta *et al.*, 2017). Although many studies shed light on innovative behaviors, little is known about CPE, which is an input to innovative behavior (Carmeli and Schaubroeck, 2007; Zhang, 2007; Tan *et al.*, 2018b). West and Altink (1996) suggested that individual innovation essentially follows two central doctrines:

- (1) The individual must be sufficiently motivated to explore the environment creatively.
- (2) The individual needs to have a sense of psychological safety, free from any sort of intimidation.

In a situation in which there is an appropriate level of stimulation and adequate security, human beings explore and manipulate their environments in creative and adaptive ways (Hrncir and MacTurk, 1990). Accordingly, the contextual supports from the leader are essential for the employees to engage in a creative process that helps to perform activities in a way that is seemingly non-routinized, unconventional and less formal (Zhang and Bartol, 2010b; Tan *et al.*, 2018a; Tan *et al.*, 2018b). Because there is hardly any reason to perceive the essence of CPE, such as defining and constructing problems, identifying and generating facts to solve the problems, and generating and realizing creative ideas, when the task is structured, traditional, and routine.

TL theory suggests that the contextual supports from the leader drive out the psychological fear of social alienation and disintegration of the followers by displaying their trust on them that, in turn, pushes them to engage in the creative process. The extant literature explored that contextual supports from TL bind the followers into a mutual relationship that stimulates them to participate in positive behaviors, including creative activities within the workplace (Gong *et al.*, 2009; Jaiswal and Dhar, 2015; Mittal and Dhar, 2015; Wang *et al.*, 2014). This particular issue is explained in the leader-member exchange

theory that focuses on the two-way relationship between leaders and followers (Graen and Uhl-Bien, 1995). It suggests that leaders develop a reciprocal relationship with each of their subordinates, based on trust and respect. The relationship is often emotional and goes beyond the scope of the employment. Quality of such relationships influences subordinates' responsibility and performance (Liden *et al.*, 1997).

TL contributes to enhancement of psychological empowerment reflecting the active motivational cognitions of competence, self-determination, meaning and impact when one goes through the tasks (Spreitzer, 1995), which, in turn, raises employees' belief of psychological safety toward their creative engagement (Carmeli *et al.*, 2013; Henker *et al.*, 2015; To *et al.*, 2015). More vibrantly and specifically, TL displays its paramount support by emphasizing on independence, flexibility, proactivity and empowerment of employees because their contribution is worthy and impactful for the organization. Hence, employees' full potential is achieved through transforming their aspirations and values into a meaningful conclusion (Jauhari *et al.*, 2017; Avolio *et al.*, 2004).

Following the tenet of the self-determination theory, this kind of association between TL and creative genius enhances the employees' sense of relatedness and security. In consequence, it fuels up their self-determination and competence level (Ryan and Deci, 2000). The essence of self-determination theory highlights that human being possesses a compelling psychological aspiration for autonomy, competence and relatedness from their tasks, which feeds individual's task motivation for being creative (Chirkov *et al.*, 2003). Henceforth, the support from TL transcends their self-interest for seeking fresh insights to resolve the preceived issues (Jauhari *et al.*, 2017). Apart from inspiring and motivating them to engage in the creative process, TL actively shapes psychological safety, facilitates reflexivity and provides support and feedback for growing and succeeding. Thus, it facilitates the conditions for enhancing CPE (Carmeli *et al.*, 2013) and leads us to consider the following hypothesis:

- H1. Transformational leadership has a significant impact on creative process engagement.

#### *Mediating effect*

Self-efficacy asserts that individuals not only know what capacities they have but also understand how to apply them in a given context (Bandura, 1982). Efficacy that leads to creative performance is referred to as creative self-efficacy (Gong *et al.*, 2009). Such efficacy fosters an individual's self-confidence and level of competence regarding novelty, which, in turn, contributes to engagement in creative tasks (Jaiswal and Dhar, 2015; Mittal and Dhar, 2015; Richter *et al.*, 2012). Tierney and Farmer (2002) and Jaussi *et al.* (2007) revealed that creative self-efficacy enhances both CPE and creative performance.

Tierney and Farmer (2002) found that leadership support from the supervisors, in the form of role model and verbal persuasion, acts as one of the significant predictors of innovation success for both white-collar and blue-collar workers. Amabile and Gryskiewicz (1987) considered "role modeling" by supervisors, particularly for complex and challenging activities, a primary contextual factor for creativity. Also, the communication of creative potentiality of the employees by their supervisor through the verbal expression of trust, confidence and appreciation may influence creativity-related efficacy beliefs (Deci and Ryan, 1985; Tierney and Farmer, 2002).

Creativity is primarily driven by intrinsic motivation, which is excelled by competence, autonomy and a sense of security and relatedness (Ryan and Deci, 2000). Ryan and Deci (2000) suggested that optimal challenges, efficacy-promoting feedback and freedom from

demeaning evaluations facilitate intrinsic motivation. Cognitive evaluation theory of [Deci and Ryan \(1985\)](#) has specified, and empirical studies have revealed ([Ryan, 1982](#); [Fisher, 1978](#)), that intrinsic motivation is governed by the feeling of competence and internal perceived *locus* of causality. Once people feel that they have adequate control over the course of their actions, they spontaneously engage themselves in work. Thus the immediate contextual supports for autonomy and competence mobilize the inner resources of the employees, which are the key ingredients for generating creative ideas ([Dewett, 2007](#); [Deci, 1972](#); [Puente-Diaz, 2016](#)).

[Puente-Diaz \(2016\)](#) demonstrated that individual factors and organizational factors stimulated creative self-efficacy. He further emphasized effective leadership and the quality of the relationship with the work teams for enhancing creative self-efficacy. Supervisory style makes a significant difference in building employees' creative self-efficacy, which, as a consequence, influences the latter's creative behavior ([Gu et al., 2017](#)). There are discrepant studies on the kind of leadership affecting CSE. Most of the studies refer to TL as a contextual variable affecting CSE ([Mittal and Dhar, 2015](#); [Gumusluoglu and Ilsev, 2009](#); [Gong et al., 2009](#); [Wang et al., 2014](#)).

TL, both theoretically and empirically, has a remarkable effect on building employees' CSE belief, which, in turn, leads them to engage in the creative process ([Bilal and Mariam, 2018](#); [Puente-Diaz, 2016](#)). TL elevates employee motivation, boosts their confidence and strengthens psychological safety through the leader's idealized influence, inspirational motivation, individualized consideration and intellectual stimulation ([Wang et al., 2014](#); [Mittal and Dhar, 2015](#); [Noruzy et al., 2013](#); [Podsakoff et al., 1996](#)).

Self-efficacy is a dominant internal sustaining force for engagement in the creative process ([Zhang, 2007](#); [Zhang and Bartol, 2010b](#)). Employees with perceived personal accomplishment history at their disposal develop a sense of self-efficacy and are likely to engage in divergent thinking ([Puente-Diaz and Cavazos-Arroyo, 2017](#)) and creative endeavors ([Bang and Reio, 2017](#)). Divergent thinking is vital when the problem is ill-defined and might have multiple solutions. Divergent thinking, notably multiplicity, flexibility and unconventionalities in responses for an opened-ended question, explores different perspectives for a given object ([Huang et al., 2017](#)).

A creative solution requires the problem to be well-defined, the right information is identified and the relevant data are encoded and decoded correctly ([Zhang, 2007](#)). The employees with efficacious belief are likely to sustain the challenge related to engagement in the creative process ([Tierney and Farmer, 2002](#)). Positive outcomes of the creative engagement reinforce the process to continue ([Puente-Diaz, 2016](#)). Thus, there is a plausible relationship between creative self-efficacy and creative process engagement. Based on the abovementioned arguments, the study hypothesizes the mediating relationship of CSE in between TL and CPE.

*H2. Creative self-efficacy mediates the association between transformational leadership and creative process engagement.*

#### *Research framework*

[Figure 1](#) represents the conceptual framework of the research. It demonstrates the link between transformational leadership and creative process engagement through the mediating effect of creative self-efficacy. The theoretical basis of the study is grounded on the transformational leadership theory ([Bass, 1990](#)), self-determination theory ([Deci et al., 1989](#)) and self-efficacy theory ([Bandura, 1977](#)).



## Methods and materials

### *Research setting*

The research was conducted in the context of information and communication technology small and medium enterprises of Bangladesh. Most of the information and communication technology firms are located in Dhaka, the capital city of Bangladesh, and Chittagong, the commercial capital and financial hub of Bangladesh. Therefore, the study purposefully chooses these two regions for administering the survey.

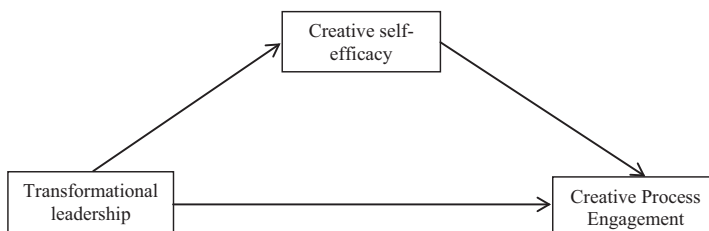
### *Questionnaire development*

To assess the model and test the hypotheses, the latent measures were extracted from some prior studies, and some obligatory modifications were made to the items during their back-translation procedure for making them suitable for the research context. It was required to ensure the exact meaning of the original English version of the items. The scales for transformational leadership (five items), creative self-efficacy (three items) and creative process engagement (11 items) were adopted from the works of Podsakoff *et al.* (1996); Jaiswal and Dhar (2015), and Zhang and Bartol (2010b), respectively. Thus, the questionnaire consisted of 19 items (Appendix) along with four demographic questions about the informants. Demographic variables of the employees, such as age, gender, education and tenure were included in the questionnaire as control variables. Previous studies reported that these variables are associated with employees' creative behavior (Du *et al.*, 2016; Bouckennooghe and Menguç, 2018; Zhang and Bartol, 2010b; Mittal and Dhar, 2015). The scale questions were framed on Likert-type scales with response options ranging from 1 (strongly agree) to 5 (strongly disagree).

The questionnaire was originally developed in English. However, to ensure easy comprehension by the respondents, it was translated into Bangla by a panel of experts from management studies, Bangla (native language), and English, following the back-translation procedure as recommended by Brislin (1970). The Bangla version of the questionnaire was pretested with a group of ten persons working in different information and communication technology firms. The final questionnaire was refined based on the feedback from the respondents in the pilot test (Matzler *et al.*, 2008).

### *Data collection procedure*

In line with the guideline by Gupta *et al.* (2017) and Podsakoff *et al.* (2012), we envisioned both other-report and self-report survey instead of the only self-report survey. We collected a pair of responses from each information communication technology firm, and each firm is treated as a unit of response. The informants comprised chief executive officers/managers and information technology professionals in information and communication technology small and medium enterprises. Accordingly, two sets of questionnaires were developed. One set is for information technology professionals to rate their manager's or chief executive



**Figure 1.**  
Conceptual  
framework

officer's leadership style along with their own CSE. The other set is for manager or chief executive officers to evaluate their subordinate's engagement in the creative process.

Data were collected using the list of information and communication technology small and medium enterprises registered with the Bangladesh Association of Software and Information Services. Using the addresses of the corporate offices, a total of 244 firms located in Dhaka (Uttara) and Chittagong were approached by two co-researchers along with research assistants based on ease of transportation. From each firm, one manager (he/she may be chief executive officer also) and one subordinate information communication technology professional were selected as the respondents. The information communication technology professional was chosen based on his/her willingness to take part in the research. Choosing only one subordinate instead of many subordinates under each manager was due to the fact that the manager was asked to respond to the CPE of his/her subordinate. In this situation, it is conceivable that a manager can quickly focus on a particular subordinate's CPE rather than that of all subordinates at a time. Therefore, it promises better comprehension of actual behavior.

Each firm was presented with a cover letter and two separate sets of questionnaires, one for the CEO/managers and the other for IT professionals working under that CEO/manager. In the cover letter, the respondents were assured that the data were collected for academic purpose and would be kept strictly confidential. It was also assured that the respondent's identity would be kept anonymous in every stage of the research. Of the 244 firms, 202 firms responded to the requests and filled both sets of the questionnaires, indicating a response rate of 82.79 per cent, which is above the average response in similar contexts (Tajasom *et al.*, 2015; Ruiz-Jiménez and Fuentes-Fuentes, 2016). The greater cooperation from the respondents may be attributed to our pledge of maintaining confidentiality of the data, anonymity of the respondents and face-to-face contact to the respondents. Finally, 194 responses were utilized for data analysis. Only eight replies were eliminated from the sample because of their incompleteness or errors.

#### *Data analysis procedure*

SmartPLS2 and SPSS-21 were used to analyze the survey data. Of them, SmartPLS2 is the most useful tool for applying structural equation modeling (Caniëls *et al.*, 2018; Mahmood *et al.*, 2018; Uddin *et al.*, 2018a). It is a second-generation regression model that involves both a measurement model (through confirmatory factor analysis) and a structural model (path analysis) to estimate the results (Hair *et al.*, 2014; Henseler and Sarstedt, 2012; Souto, 2015). The bootstrapping results of 5,000 sample cases were utilized to estimate the *t* statistics for measuring the path significance.

#### *Response bias*

We took several measures to limit the potential response bias. First, the content validity was ensured through the use of already validated and tested scales to measure the selected variables. It was also ensured by using the backward-forward translation of the questionnaire by a panel of experts. Second, we assured the anonymity of the informants' identity and also used both other-report and self-report survey instead of merely self-report replies (Podsakoff *et al.*, 2012, 2003, Gupta *et al.*, 2017). Finally, the study also examined the correlation matrix among the constructs. It is observed that the highest correlation (*r*) between the two constructs (CPE and CSE) is 0.602 (<0.90) (Pavlou *et al.*, 2007; Spector and Brannick, 2010). Thus, it was ensured that there were no method bias issues in the study.



### Non-response bias

Non-response bias is a concern that prevents causal inference and questions the generalizability of the findings. Following the procedure of [Armstrong and Overton \(1977\)](#), we run the independent  $t$  test for unequal variances between the first 10 per cent and last 10 per cent respondents. The estimated result showed that the difference between the replies of TL ( $p > 0.137$ ), creative self-efficacy ( $p > 0.281$ ) and creative process engagement ( $p > 0.409$ ) are insignificant ( $p > 0.05$ ). Therefore, the dataset used for the study indicates that non-response was not a significant concern ([Lindner et al., 2001](#); [Armstrong and Overton, 1977](#)).

## Results

### Sample descriptions

[Table I](#) demonstrates the estimates of the demographic variables. Of the 194 respondents, a dominance of male (74 per cent) over female (26 per cent) is reflected in this survey. Over half (51 per cent) of the respondents were between the age range of 25 to 35 years. A total of 102 respondents (52 per cent) have tenure of 5 to 10 years. Their education profile reported that 72 per cent (142 respondents) completed their master's degree, 15 per cent (29 respondents) hold bachelor degree, and the remaining are either postgraduate diploma or Ph.D. holders.

### Measurement model evaluation

In the two-step procedure under the SmartPLS2, first, we evaluated the measurement model. Here, each item's suitability was checked through their cross-loading (factor loading) to represent a construct. The calculated result in [Table II](#) shows that each item of a construct scores highest in their respective factor loading than in another factor. However, one item from CPE (CPE1) was dropped because of its reduced factor loading. Further, the convergent and discriminant validity were also estimated for confirming the validity and reliability of the measures. The calculated results from 0.70 to 0.80 for composite reliability, and 0.80 and above for Cronbach's alpha are considered to have excellent reliability ([Zikmund and Babin, 2007](#)). Any estimated value of average variance extracted above 0.50 reveals that the convergent validity is good. [Table III](#) reports that the minimum composite reliability is 0.92 ( $>0.80$ ),  $\alpha$  is 0.869 ( $>0.80$ ) and average variance extracted is 0.664, which are above the threshold limit ([Hair et al., 2014](#); [Urbach and Ahlemann, 2010](#); [Zikmund and Babin, 2007](#)).

Demographic variable	No. and percentage
<i>Gender</i>	
Male	146 (74%)
Female	50 (26%)
<i>Education</i>	
Graduate	29 (15%)
Master	142 (72%)
<i>Age</i>	
Below 35 years	113 (58%)
Above 35 years	83 (42%)
<i>Experience</i>	
Below 5 years	51 (26%)
Above 5 years	145 (64%)
Others	25 (13%)

**Table I.**  
Estimates of the  
demographic  
variables

MRR  
42,7

846

Items	CPE	CSE	TL
tl1	0.443	0.471	<i>0.855</i>
tl2	0.491	0.445	<i>0.859</i>
tl3	0.410	0.490	<i>0.832</i>
tl4	0.494	0.507	<i>0.873</i>
fl5	0.485	0.472	<i>0.871</i>
cse1	0.542	<i>0.894</i>	0.514
cse2	0.514	<i>0.884</i>	0.459
cse3	0.550	<i>0.892</i>	0.509
cpe2	<i>0.816</i>	0.448	0.458
cpe3	<i>0.804</i>	0.482	0.491
cpe4	<i>0.803</i>	0.467	0.427
cpe5	<i>0.846</i>	0.506	0.446
cpe6	<i>0.805</i>	0.491	0.417
cpe7	<i>0.789</i>	0.518	0.478
cpe8	<i>0.823</i>	0.518	0.446
cpe9	<i>0.837</i>	0.509	0.424
cpe10	<i>0.813</i>	0.535	0.440
cpe11	<i>0.811</i>	0.410	0.377

**Table II.**  
Cross loading in the  
construct

**Notes:** TL: Transformational leadership; CSE: creative self-efficacy; CPE: creative process engagement; highly loaded to their own construct are italicized

**Table III.**  
Reliability and  
validity test

	Age	Gender	Education	Tenure	TL	CSE	CPE	Mean	SD
<i>Control variables</i>									
1. Age	1.000							2.439	0.752
2. Gender	−0.296**	1.000						1.255	0.437
3. Education	0.442**	−0.162*	1.000					2.638	0.789
4. Tenure	0.695**	−0.224**	0.336**	1.000				2.005	0.801
<i>Latent variables</i>									
5. TL	−0.064	0.144*	0.053	0.013	<i>0.858</i>			1.931	0.724
6. CSE	−0.023	0.019	0.070	0.028	0.556**	<i>0.890</i>		1.956	0.761
7. CPE	−0.148*	0.189**	0.013	−0.054	0.542**	0.602**	<i>0.815</i>	2.042	0.664
AVE					0.737	0.792	0.664		
CR					0.933	0.920	0.952		
α					190.911	0.869	0.944		
R <sup>2</sup>					−	0.309	0.425		

**Notes:** LV: Latent variable; AVE and communality represent the same; TL: transformational leadership; CSE: creative self-efficacy; CPE: creative process engagement; SD: standard deviation. \*\*Correlation is significant at the 0.01 level (two-tailed); \*correlation is significant at the 0.05 level (two-tailed); square root of the corresponding variable's AVE is displayed in the diagonal line and italicized

Thus, the scores of composite reliability, Cronbach’s alpha and average variance extracted indicate that the scales are quite reliable and valid.

The estimated result shows that the square root of the average variance extracted of each construct is higher than the construct’s correlation with any other construct in the same study (Hair *et al.*, 2014). From the results reported in Table III, it is observed that the correlation with different constructs ranges from 0.542 to 0.602, whereas the analysis also

presents that the minimum square root of the average variance extracted is 0.815. The discriminant validity is good because the correlation score (square root of the average variance extracted) between the same constructs in their diagonal matrix is higher than their correlations with other constructs.

### Structural model evaluation

The second step under Smart PLS includes evaluation of structural model. Figure 2 represents beta-coefficient ( $\beta$ ),  $t$  statistics ( $p$  value) and coefficient of determination ( $R^2$ ). We applied multiple criteria to assess the structural model rather than solely relying on beta coefficient,  $t$  statistics and  $R^2$ . The predictive power and significance of  $R^2$ , recommended by Cohen (1977), were also examined. Cohen (1977) reported that  $R^2$  value in the range of 0 to 0.13, 0.13 to 0.26, and 0.26 and above represent *not significant*, *tangent*, and *significant*, respectively. Table III (also Figure 2) exhibits that minimum  $R^2$  (CSE) is 0.309, which is substantial.

The study further investigates the goodness of fit of the model to estimate the effect size of the model as shown in the following Equation (1). The goodness of fit is determined by drawing square root over the product of the average commonalities of all constructs and the average  $R^2$  of all endogenous variables.

$$\text{Goodness of fit} = \sqrt{\text{Average commonality} * \text{average } R^2} \quad (1)$$

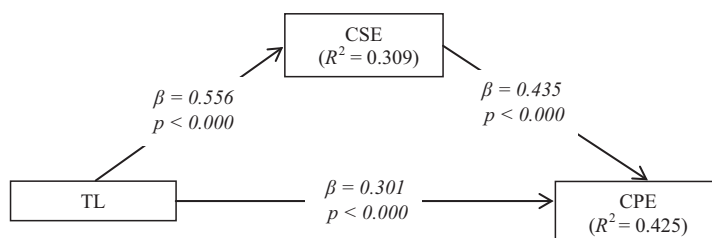
$$\text{Goodness of fit} = \sqrt{0.731 * 0.367}$$

$$\text{Goodness of fit} = 0.518$$

The calculated value of 0.1, 0.25, and 0.36 for goodness of fit is represented to be small, medium, and large effect size, respectively, upon the condition that average commonality must be above 0.50 (Wetzels *et al.*, 2009; Cohen, 1988; Fornell and Larcker, 1981). The result in Equation (1) reported that goodness of fit = 0.518, which is significantly large, and it is found that the minimum commonality value of any measure is 0.664.

### Testing hypotheses

We estimated the result of the hypothesis testing through the evaluation of the direct effect before and after adding the mediating variables. Table IV exhibits the direct effect of TL



**Notes:** TL: Transformational leadership; CSE: Creative self-efficacy; CPE: Creative process engagement

**Figure 2.**  
Path structural model

before and after adding mediator variable (CSE). This table reported the score of 0.545, 0.297 and 0.000, for  $\beta$ ,  $R^2$  and  $p$  values, respectively, when there was no mediator variable. It implies that TL has a significant impact on CPE. Therefore, the *H1* regarding the influence of transformational leadership on creative process engagement is supported. In addition, the necessary condition for existing mediation effect is to have a significant correlation among variables (independent, mediator and dependent variables) under consideration. There are also other two sufficient requirements to have a mediation effect. First, the independent variable (TL) must have a significant direct effect ( $c$ ) on the dependent variables (CPE) before adding the mediating variable (CSE). Second, after using the mediator variable, the direct effect ( $c'$ ) must be insignificant for full mediation or disappear (reduced significantly) for partial mediation (Chou and Yeh, 2013; Hayes, 2013; Baron and Kenny, 1986). Figure 3 mirrors the mechanism underlying the mediation effect.

Table IV also reported the direct effect ( $c'$ ) after using mediator variable, indirect effect ( $a$ ) from TL to CSE, and indirect effect ( $b$ ) from CSE to CPE along with their beta coefficients,  $t$  statistics and  $p$  values. The estimated results show that  $c'$  remains significant. However,  $\beta$  is reduced from 0.545 ( $c$ ) to 0.301 ( $c'$ ) after adding mediator variables. Thus partial mediation is found because  $\beta$  is decreased significantly (Chou and Yeh, 2013; Hayes, 2013; Baron and Kenny, 1986). The Sobel (1982) test is also used to assess the significance of the indirect effect. The result is determined by using the online tool developed by Soper (2017), and the result is found significant at  $p < 0.004$ . Therefore, the results represented in Table IV support *H2* to the fact that CSE mediates the relationship between TL and CPE.

Discussion

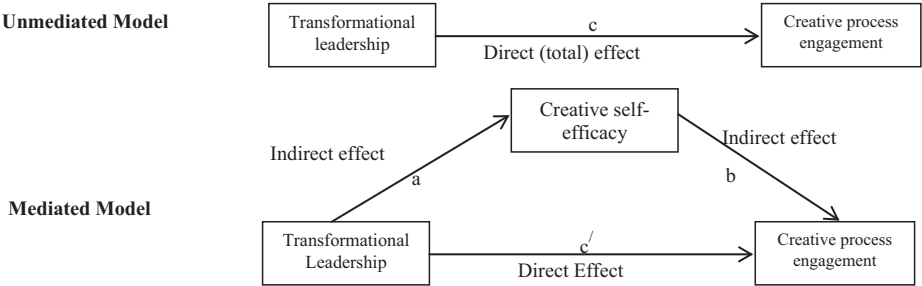
Notwithstanding many studies in innovation and creativity fields, there are but a handful of studies that include the contextual factors of implementing creative and innovative

Table IV.  
Direct effect (TL) and  
indirect effect (CSE)  
on CPE

Hypothesis	Path	Beta-coefficient	Standard error	<i>t</i>	<i>p</i>	Sobel test
<i>H1</i>	TL → CPE ( <i>c</i> )	0.545	0.061	8.955	0.000	
<i>H2</i>	TL → CPE ( <i>c</i> )	0.545	0.061	8.955	0.000	<i>z</i> = 2.900
	TL → CSE ( <i>a</i> )	0.556	0.100	5.548	0.000	<i>p</i> < 0.004
	CSE → CPE ( <i>b</i> )	0.435	0.128	3.388	0.001	
	TL → CPE ( <i>c'</i> )	0.301 <sup>PM</sup>	0.119	2.518	0.013	

Notes: TL: Transformational leadership; CSE: creative self-efficacy; CPE: creative process engagement; PM: partial mediation

Figure 3.  
Mediated and  
un-mediated model



behavior. TL is found to be the most dominating kind of leadership style having a compelling impact on followers' engagement in creative processes and innovative pursuits (Mittal and Dhar, 2015; Jaussi and Dionne, 2003). The statistical outcomes of this study point out that TL positively influences CPE, and creative self-efficacy partially mediates the relationship between TL and employees' CPE. Employees feel psychological security to engage in creative activities when they observe their supervisor personally involves himself or herself and guides, coaches inspires, and provides them with constructive feedback on their unconventional activities (Markus *et al.*, 2018; Kark *et al.*, 2018). These supports from TL strengthen their self-efficacy belief and lead them to get more involved in creative activities (Wang *et al.*, 2014; Mittal and Dhar, 2015; Suifan *et al.*, 2018).

TL both directly and indirectly through the mediator (i.e. CSE) influences employee involvement in the creative process. Notably, TL explains employee CPE by 29.70 per cent ( $R^2$ ) directly. It sheds light on TL influence, which demonstrates that TL by its motivational mechanism and other forces such as idealized influence, intellectual stimulation and individualized consideration can attract employees to innovative pursuits (Podsakoff *et al.*, 1996; Politis, 2004; Gumusluoglu and Ilsev, 2009; Henker *et al.*, 2015). Extant literature shows that creative engagement in the information and communication technology tasks looks for employees who are proactive, unconventional, non-routinized and less formal (Zhang and Bartol, 2010b; Tan *et al.*, 2018a, 2018b). TL is proactive and expects the same from its followers in the form of self-initiative and proactive creative engagement (Bilal and Mariam, 2018).

The fear of social and professional alienation, crisis of self-image, and the perception of negative consequences for taking risks or non-compliant behavior are likely to impede and inhibit employees' inclination to engage in the creative process (Edmondson and Lei, 2014; Edmondson and Mogelof, 2006). Crisis of self-image or low self-esteem emanates from negative feedback, lack of support and excessive pressure for compliance. TL can root out the psychological fear to get involved in creative activities by providing supports as well as entrusting the employees with more responsibility and autonomy to solve problems creatively (Jaiswal and Dhar, 2015; Wang *et al.*, 2014; Kark *et al.*, 2018).

The estimated result also confirms that TL explains CPE better through building employees' CSE than it does alone. Figure 2 and Table IV represented that  $R^2$  increases from 0.297 to 0.425, after using CSE as the mediator. The findings can be attributed to the fact that the employees tend to contribute to CPE when they perceive a high level of CSE because of the encouragement they receive from their TL to assume more responsibility and autonomy (Gong *et al.*, 2009). The result is consistent with prior empirical investigations of Gong *et al.*, 2009; Wang *et al.*, 2014; Jaiswal and Dhar, 2015; and Mittal and Dhar, 2015. The study also advances and broadens the current knowledge of TL's influence on CPE through facilitating employees' CPE based on the tenet of self-determination theory. Self-determination theory framework feeds that employees' autonomous regulation, which is shaped by the constant supports and feedbacks from TL, driven from the contentment of competence, autonomy, and relatedness, facilitates their behavioral and psychological engagement in tasks (Meyer and Gagné, 2015). In light of self-determination theory, empowered employees, being supported by their TL, tend to feel competent, determined and secure, which enhances their self-efficacy belief to engage in the creative process.

## Conclusion and implications

The study is an attempt to observe the potential impact of TL on CPE. Further, it aims to reveal the mediation effect of CSE on the assumed relationship. The results uncover that TL significantly impacts CPE, and also there is a partial mediation effect of CSE on the TL–CPE

relationship. The empirical findings of the study have several critical managerial implications. First, managers or chief executive officers in the small and medium enterprises should exhibit TL attributes by displaying their role behavior in designing a supportive organizational climate, so that it can inspire employees to discharge creative activities. Second, TL should facilitate employees with enough latitude in the workplace, so that they feel free to engage in creative activities without having a psychological fear of social and professional alienation or losing their jobs. Third, as gaining confidence in the self-efficacy is a critical element for producing creative results (Mittal and Dhar, 2015), the managers should maintain and nurture an intimate relationship with their subordinates in the form of mentoring, counseling and verbal persuasion to enhance their perceived self-efficacy. Fourth, TL-driven, value-based support, innovative behavior through the employee CPE withstand workplace harmony among the various interest groups in the firms. This ownership of the workplace harmony due to the perceived value-based support from TL tends to marshal their sense of social inclusion and identity with their firms. Finally, the organization should prioritize the needs for employees' CPE on a real-time basis and provide amenity accordingly. Henceforth, the organizations should conduct regular studies to exhibit the current status of employees' CPE, which might feed the organizations for yielding sustainable performance.

#### *Limitations and directions for future research*

This research is expected to stimulate researchers to uncover insights regarding transformational leadership adoption for employees involved in the creative process via creative self-efficacy. Meanwhile, no satisfactory evidence was found to explain the creative self-efficacy that connects TL and CPE. This exploration may be the maiden attempt in this regard. However, despite the theoretical and managerial contribution, this study is not free from limitations. First, the study observes that the current structural equation modeling explains only 42.50 per cent ( $R^2$ ) in creative process engagement, which implies that other predictor variables are likely to influence CPE. Most importantly, factors such as intrinsic motivation, creative role identity, proactive behavior, and psychological safety, and other contextual supports from the organization, such as, support for innovation, creative climate, and task characteristics were excluded in this pursuit, which were also found to be significant predictors of multi-level creative behavior in prior studies (Hass *et al.*, 2016; Leung and Lin, 2018; Caniels *et al.*, 2018; Finkel *et al.*, 2017; Gong *et al.*, 2012). Thus the future study would instead focus on moderated mediation effects rather than merely on the mediated model. Second, the study is a cross-sectional survey in nature, which denotes that the respondents were surveyed just once. Unlike experimental and longitudinal data, statistical inference or causal inference is prevented from the analysis. Finally, the estimated result predicted the impact of transformational leadership on creative process engagement through the data collected from small and medium enterprises of the information and communication technology industry. Therefore, the effects cannot be linked to other industrial settings, which prevents its generalizability. The future research is warranted to employ the informant from multiple industries for potential generalizability of the findings.

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Appendix

Constructs	Measured items
Transformational leadership (Podsakoff <i>et al.</i> , 1996)	TL1-The firm's management is always on the lookout for new opportunities for the organization TL2-The firm's management has a clear view of its final aims TL3-The firm's management succeeds in motivating the rest of the company TL4-The firm's management always acts as the organization's leading force TL5-The organization has leaders who are capable of motivating and guiding their colleagues on the job
Creative self-efficacy Jaiswal and Dhar (2015)	CSE1-I have confidence in my ability to solve problems creatively CSE2-I feel that I am good at generating novel ideas CSE3-I have a knack for further developing the ideas of others
Creative process engagement (Zhang and Bartol, 2010b)	CPE2- Employees think about the problem from multiple perspectives. CPE3- Employees decompose a difficult problem/assignment into parts to obtain a greater understanding. CPE4- Employees consult a wide variety of information. CPE5- Employees search for information from multiple sources (e.g., personal memories, others' experience, documentation, the Internet, etc.) CPE6- Employees retain large amounts of detailed information in their area of expertise for future use. CPE7- Employees consider diverse sources of information in generating new ideas. CPE8- Employees look for connections with solutions used in seeming diverse areas. CPE9- Employees generate a significant number of alternatives to the same problem before they choose the final solution. CPE10- Employees try to devise potential solutions that move away from established ways of doing things. CPE11- Employees spend considerable time shifting through information that helps to generate new ideas

**Table AI.**  
Measurement tools,  
their sources and  
measured items

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