



## International Journal of Public Leadership

Organizational innovation: the role of leadership and organizational culture

Wenjing Li, Tahseen Ahmed Bhutto, Ali Reza Nasiri, Hamid Ali Shaikh, Fayaz Ali Samo,

### Article information:

To cite this document:

Wenjing Li, Tahseen Ahmed Bhutto, Ali Reza Nasiri, Hamid Ali Shaikh, Fayaz Ali Samo, (2017)

"Organizational innovation: the role of leadership and organizational culture", International Journal of Public Leadership, <https://doi.org/10.1108/IJPL-06-2017-0026>

Permanent link to this document:

<https://doi.org/10.1108/IJPL-06-2017-0026>

Downloaded on: 25 December 2017, At: 02:44 (PT)

References: this document contains references to 47 other documents.

To copy this document: [permissions@emeraldinsight.com](mailto:permissions@emeraldinsight.com)

The fulltext of this document has been downloaded 17 times since 2017\*



Access to this document was granted through an Emerald subscription provided by emerald-srm:425905 []

### For Authors

If you would like to write for this, or any other Emerald publication, then please use our Emerald for Authors service information about how to choose which publication to write for and submission guidelines are available for all. Please visit [www.emeraldinsight.com/authors](http://www.emeraldinsight.com/authors) for more information.

### About Emerald [www.emeraldinsight.com](http://www.emeraldinsight.com)

Emerald is a global publisher linking research and practice to the benefit of society. The company manages a portfolio of more than 290 journals and over 2,350 books and book series volumes, as well as providing an extensive range of online products and additional customer resources and services.

Emerald is both COUNTER 4 and TRANSFER compliant. The organization is a partner of the Committee on Publication Ethics (COPE) and also works with Portico and the LOCKSS initiative for digital archive preservation.

\*Related content and download information correct at time of download.

# Organizational innovation: the role of leadership and organizational culture

Organizational  
innovation

Wenjing Li

*School of Business Administration,  
Dongbei University of Finance and Economics, Dalian, China*

Tahseen Ahmed Bhutto

*School of Business Administration,  
Dongbei University of Finance and Economics, Dalian, China and  
School of Business Administration,  
Shaheed Benazir Bhutto University, Shaheed Benazirabad, Pakistan*

Ali Reza Nasiri

*Surrey International Institute,  
Dongbei University of Finance and Economics, Dalian, China*

Hamid Ali Shaikh

*Faculty of Business Administration,  
Sukkur Institute of Business Administration University, Sukkur, Pakistan, and*

Fayaz Ali Samo

*School of Business Administration,  
Dongbei University of Finance and Economics, Dalian, China*

Received 22 June 2017  
Revised 17 August 2017  
Accepted 28 October 2017

## Abstract

**Purpose** – The purpose of this paper is to approach the issue of how organizational innovation can be accelerated with the support of leadership structures and the organizational climate, specifically taking into account the top innovative universities of the world, which has not been found in previous empirical studies.

**Design/methodology/approach** – A survey, based on a deductive approach, is adopted since the questionnaire for organizational innovation is designed for organizations in order to measure organizational innovation, widely used by experienced employees from senior managers to all kind of employees (Caird *et al.*, 2013) facilitating the European Commission work, whereas for transformational leadership, a Multifactor Leadership Questionnaire (Bass and Avolio, 1994) is utilized. A complete online questionnaire was developed for collecting data, and the PLS-SEM statistical technique is used for analysis and results.

**Findings** – Top innovative universities of the world mostly have a transformational leadership style directly triggering organizational innovation which is consistent with the previous studies, while transactional leadership is having a positive relationship with organizational culture and innovation, but the results were statistically insignificant.

**Research limitations/implications** – Based on this research and other previous studies, it is suggested that universities across the world ought to imply transformational leadership traits and style which have fostered organizational innovation in the top-ranked innovative universities in developed nations, whereas more factors needed to be studied so that comprehensive guidelines should be provided to universities and research institutes where innovation is stagnant and passive.

**Practical implications** – The finding has practical implications, suggesting that universities and research institutes should draft and implement guidelines where leaders with certain traits and norms can play a role to nourish an environment where stakeholders think outside the box, with learning and knowledge creation, and proactive contribution beyond responsibilities, obligations, and compulsion.

**Social implications** – This study has suggested that less innovative universities should draft and design leadership and cultural enriching plans so that society, organizations, and commercial firms could foster innovation, ultimately benefiting general public and society.

**Originality/value** – Very few of the scholars have investigated from the perspective of innovative universities, where knowledge is created and flows into organizations, either governmental or private, and



society in general. As a result, this study aims to investigate how leadership has impacted the culture of knowledge creation and innovativeness in the top 100 innovative universities. So, this is among rare studies where universities are suggested to adopt innovation supporting culture and leadership.

**Keywords** Transformational leadership, Organizational culture, Transactional leadership, Organizational innovation, Top innovative universities

**Paper type** Research paper

## Introduction

### *Background*

Since the industrial revolution, pursuing globalization, digitalization, rapid technical changes in the markets, and free trade agreements, innovation has been pondered as a crucial element for coping with the challenges of uncertainty, strong competition, and acquiring competitive advantage so that survival and prosperity in the global market can be ensured (Vargas, 2015). Failing to innovate can raise the threat to sustainability; therefore, organizations, business firms, universities, and their leadership consider it overwhelmingly significant for nurturing a climate where innovation can be created among employees (Shanker *et al.*, 2017) urging the dire need of new learning procedures for creativity and innovation in academic and research institutes (Sutanto, 2017).

This study approaches the issue of how organizational innovation can be accelerated with the support of leadership structures and the organizational climate, specifically taking into account the top innovative universities of the world, which has not been found in previous empirical studies.

*Research questions.* This paper attempts to explain how leadership and organizational culture in top innovative universities foster organizational innovation in order to diffuse knowledge and creativity for growth and economic prosperity, which is rarely found in other empirical studies across the world. Therefore, the main research questions of this study are as follows:

- RQ1. How organizational culture mediates between transformational leadership, transactional leadership, and organizational innovation in top innovative universities?
- RQ2. Which leadership styles are highly related and interconnected with organizational culture mediating to foster innovation?
- RQ3. Can transformational leadership foster organizational innovation directly?

Finally, this study, based on research, will determine some guidelines for other non-innovative universities to begin being innovative.

## Literature review

Innovation is counted among the growth engines in the world that have accelerated growth with a double pace, as recorded during 1945-2001, in the high technology sector (Leary, 2002), and no doubt, innovation is pondered to be vital for competitiveness, prosperity, and economic growth. This is evident in the developed nations across the world, with the pace of change being swift enough that those technology-based firms that could not meet the innovation challenges were found creeping after reaping the benefits of their hegemony in the industry (Buekens, 2013).

In the rapidly changing world, one will fall behind if he/she is not innovative. Universities and research institutions are pondered to be the factories of innovation where scientific knowledge and creativity result in scientific advancement that ultimately leads to market and commercial success (Chen and Kenney, 2007). Research institutes in the USA and across the world played a crucial role in developing regions and they impact economic activities

---

with their contribution to innovation while creating and diffusing knowledge (Fritsch and Slavtchev, 2007).

The leaders need to be creative not only for survival but to compete in today's rapidly changing world; therefore, leadership plays an active role by influencing, adapting, moving first, and learning, in order to lead and innovate (Buekens, 2013; Vargas, 2015). Innovativeness, however, can be higher when the organizational culture urges and creates values such as learning, development, and participative decision making (Hurley and Hult, 1998).

### *Universities and innovation*

Universities and research institutions are critical in today's society, where change is permanent and every change is influenced by either innovation or leadership (Vlok, 2012; Fritsch and Slavtchev, 2007), while the economy can barely crawl if both are absent. As a result, institutions would shrink to death with their own passiveness. Nonetheless, universities should not be considered as machines where money is pumped into research and entrepreneurship, and in consequence the output would be innovation, economic development, and social progress (Viana-Baptista, 1999).

Organizational innovation focuses on the process of creating or editing an idea in order to produce products, services, processes, structures, and policies that are new to the organizations. Firms master those activities in a consistent manner so that new problems can be tackled with new solutions, new ideas, and new paradigms, where all followers work together for one reason, innovation (Read, 2000; Yang and Tao, 2012), which is the process where invention is transformed into a commercial product or service yielding profitability and revenue.

Innovation is indeed compulsory for industrial competitiveness and economic prosperity, that almost everybody would agree with, therefore organizations across the world are busy revealing how to achieve that secret but how, what, and who, are the puzzles mostly in Asia and partially in Europe to be explored (Viana-Baptista, 1999).

According to Ewalt (2016), Thomson Reuters in its report "The world's most innovative universities – 2016" proclaimed that Stanford University topped in innovation and intellectual property, decades after decades, following MIT and Harvard from the USA that, as usual, has captured the top slot, with the USA having 46 universities in the top 100 innovative universities across the world.

### *Global leadership*

According to Dolan (2017), there are 2,043 billionaires on the planet and their total worth is 7.67 trillion dollars, whereas out of those, 183 are tech billionaires barely accumulating one trillion dollars of net worth, and it is in the USA where tech fortunes are concentrated with 78 out of 183. These are leaders, innovators, and entrepreneurs who have changed the world of today and left only one option for us, either to innovate or die, stressing on innovation and signaling for new thinking and solutions (Vlok, 2012).

*Innovations in Stanford University.* According to Stanford Inventions (2017), university students innovated antibody therapies, bioplastics, data analytics, digital music, DSL, Google, optical fiber amplifier, and many more, not limited to this the faculty and alumni of this most innovative university, have been able to contribute in the creation of EBay, HP, Instagram, GAP, Goodreads, Cisco System, LinkedIn, Netflix, Nike, Yahoo, and many more. Innovators from this prestigious university have generated revenue of 2.7 trillion dollars annually, created almost 5.4 million jobs, with 39,900 companies proposing to be the tenth largest economy in the world based on these facts, while Silicon Valley's "academic architect" was also provost at the Stanford University.

*Leadership.* Leadership is defined by Langton *et al.* (2013, p. 368) as "the ability to influence a group toward the achievement of a vision or set of goals." Leadership was

further classified into two major components of leader's behavior: transformational and transactional.

*Transformational leadership.* Burns (1978) was the person who introduced transformational leadership theory and later many scholars contributed. Transformational leadership is the process in which leaders and followers exchange ideas and they both go to the level of higher motivation (Bass and Avolio, 1994).

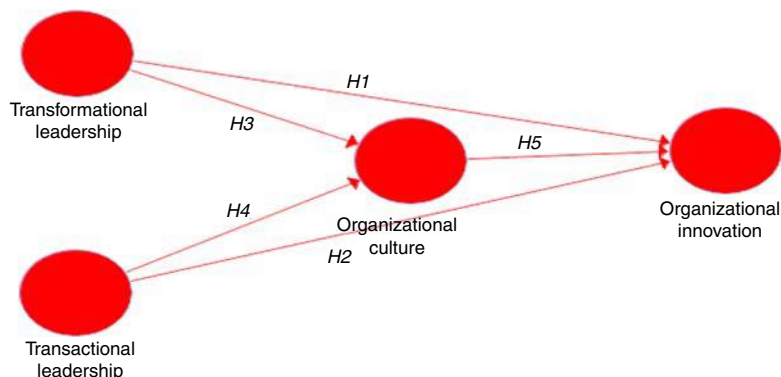
It was further elaborated by Bass and Avolio (1994) that transformational leadership is a tool to motivate the employees, and comprised of the following indicators: idealized influence, which calls for employees to work and sacrifice for the sake of the group; inspirational motivation, which inspires to go for the vision; intellectual stimulation, which involves employees to look at the problems with different approaches, and individual consideration, where the leader deals with everybody individually having considered their needs, abilities, and qualities.

*Transactional leadership.* This leadership style is described by Long *et al.* (2012) as leader-follower exchanges, where subordinates are expected to perform their responsibilities and duties as per instruction from the leader, while in return the followers expect positive benefits including compliments, praise, recognition, and other material benefits (Burns, 1978), so transactional leadership is the style in which followers exchange good performance against rewards.

#### *Organizational innovation*

According to Sutanto (2017), organizational innovation is the variable which is utilized for new ideas, behaviors, products, services, technologies, and administrative practices that stimulate processes and practices in an organization for innovation purpose. The organic lenient structures where formality is absent support more innovation, while flexible structures are more effective and efficient in comparison with mechanistic structures where it tends to be a less endorsing environment for creativity and innovation (Trott, 2008, p. 198).

Knowledge for innovation requires more than one way of communication, demanding the active need of interaction between researchers, stakeholders, and leaders, and as a result of which, new concepts, processes, and interaction can be transferred from one person or university to another for commercial benefit; (Melendez and Moreno, 2012) therefore, most leaders and managers in organizations and universities need to be aware of several ways of innovation which are yet to be equipped specifically in countries like China, Russia, India, and among others (Vlok, 2012) (Figure 1).



**Figure 1.**  
Research model

---

## Empirical model and research hypothesis

### Hypothesis

## Organizational innovation

---

*H1.* Transformational leadership can directly impact organizational innovation.

According to Makri and Scandura (2010), an influencing and effective leader is the person who can invent, develop, and commercialize, whereas he/she is able to develop human and social capital. Indeed, he/she can catalyze and exploit the talents working in organizations and universities in order to foster creativity and innovation (Samad, 2012; Vargas, 2015) but unfortunately, leaders who can achieve high performance with better strategic leadership styles are very scarce.

According to Jung *et al.* (2003), leaders can influence the followers' innovation process in both direct and indirect ways through motivation and higher level needs. Indirectly, they create a supportive environment to think out of the box without worrying about the negative outcomes. Transformational leadership has a positive and significant relationship with organizational innovation, whereas organizational climate as a mediating variable has supported knowledge creation and innovation:

*H2.* Transactional leadership can directly impact organizational innovation.

Transactional leaders try to exchange interests with employees, whether it is related to cost in the concept of exchange which implies that if employees perform better, they would receive conventional rewards, whereas if they perform below standards, they could receive punishments or fewer returns. According to Vargas (2015), both the leadership styles, transactional or transformational, and even a blend of both leaders, can highly influence creativity and innovation, whereas the transactional leadership style from a theoretical and empirical perspective promotes an organizational learning process, innovation, high performance, and competitiveness (Nelson, 2009):

*H3.* Transformational leadership is directly related to the organizational culture.

Positive cultural characteristics are pivotal for agility, innovation, and creativity. Keeping in consideration the vision, mission, and values of the firms, culture is drafted and implemented by the top leaders (Szczechowska-Woszczyna, 2015). In most of the universities in the USA, those that are innovative, there is a culture of lifelong learning and democratic leadership, and decision making is the base, policy making is shared, rich or cheap ideas are valued, commitment and dedication are pillars, whereas continuous achievement and perfection are the benchmarks designed and engrained by the top leadership.

If the organization is suppressed with an autocratic leadership, influence and impact goes from top to bottom, ideas are hampered with the walls of discrimination. If top management doors are closed for creativity and organizational innovation then, culture exists only as a name and cynicism prevails, which are indicators of discouraging change and exceptional performance (Jati *et al.*, 2015), whereas it is leadership that can reshape and impact culture:

*H4.* Transactional leadership is directly related to organizational culture.

If an organization is more task oriented, it urges a reward on an exchange philosophy concerned very excessively on performance that carefully and minutely monitors every day's outcomes against assigned targets; therefore, such a culture demands a transactional leadership style and it plays a significant role in negotiating agreements, bringing clarity in responsibilities and motivating followers to bring an optimum output (Giritli *et al.*, 2013).

In hierarchical and market cultures, the transactional leadership style was significantly correlated with organizational culture and the relationship was positive (Zehir *et al.*, 2011). Transactional leaders embrace the culture and perform in certain predesigned and plotted

areas, which are contrary to change, though this relationship is positive with that existing culture (Acar, 2012). If the organizational objectives, values, and vision misfit with this peculiar leadership style, then the result can be disappointing:

*H5. Organizational innovation can be fostered when organizational culture mediates.*

According to Shanker *et al.* (2017), organizational climate influences innovation when the behavior of employees is stimulated, whereas according to Hurley and Hult (1998), organizational culture, which is learning oriented, accompanies norms and values that would harvest a better performance and are inseparable (Sutanto, 2017). From diversity to freedom, respect to acknowledgment, wisdom to intuition, motivation to commitment, everything is embedded in the culture so we can elaborate that it refers to norms, values, artifacts, and behavioral patterns in organizations. Thus, this cultural process supports and triggers innovation significantly (Hogan and Coote, 2014).

Innovation is among the key factors counted integral for vision-oriented firms in an environment of competition, where organizational culture can either stimulate or stifle the innovation which in consequence can affect the overall performance of research institutes, universities, firms, organizations, and so on (Naranjo-Valencia *et al.*, 2016). An adhocratic culture could viably impact innovation and result in marginal performances and outcomes. According to Szczepańska-Woszczyzna (2015), employees in organizations are considered assets but they can be liabilities too. If the organizational culture is closed, hard, and tough to comply, impeding creative minds, resisting new thoughts, favoring nepotism for performance appraisal, and jeopardizing values set to foster innovation processes, it can be proved to be a disaster.

According to Gumusluoglu and Ilsev (2009), the followers' creativity and innovation is a function of the organizational culture, especially in developing countries. Organizations need to impart the culture that could strengthen the employees' empowerment and participative decision making, while the most successful firms generally have an open, collaborative, and supportive culture (Szczepańska-Woszczyzna, 2015).

## **Research methodology**

### *Survey method and data collection*

A survey, based on a deductive approach, is adopted since the questionnaire for organizational innovation is designed for organizations in order to measure organizational innovation, widely used by experienced employees from senior managers to all kind of employees (Caird *et al.*, 2013) facilitating the European Commission work, whereas for transformational leadership, a Multifactor Leadership Questionnaire (Bass and Avolio, 1994) is utilized. A complete online questionnaire was developed for collecting data for the convenience of the individuals.

The universities included in our study were mostly from the USA since it has the largest number of innovative universities followed by the universities from Japan, South Korea, Germany, and the UK. Out of ten universities, four universities were chosen from the USA, two from Japan, two from South Korea, one from the UK and one from Germany, considering the proportion in the top 100 innovative universities.

Taking advantage of a probability simple random sampling, a total of 800 respondents were approached from the top ten innovative universities out of a 100. The respondents were mostly faculty, researchers, professors, or relevant individuals with administration responsibilities in the universities. However, out of 800, merely 105 questionnaires were received and filled online, that is 13.12 percent and again out of 105 questionnaires, 98 were found correct, making 93.3 percent fit to proceed to the analysis.

Out of 98 respondents, 53.10 percent were male (mean value = 1.16, SD = 0.372) and females were 46.90 percent, whereas singles that participated in our study were

16.30 percent, married 63.30 percent (mean value = 1.78 and SD = 0.584), while divorced/separated were 19.40 percent and widows were only 1 percent, as shown in Figure 2.

Table I shows that experienced profile respondents, which is divided into four categories: one or below one year of experience; two to four years of experience; five to seven years of experience, and eight years and above, indicated through a mean value of 2.70 that most of the employees and faculty members participated in the survey had from two to seven years of experience, having a majority of two years and above of experience.

## Measures

### *Transformational leadership and transactional leadership*

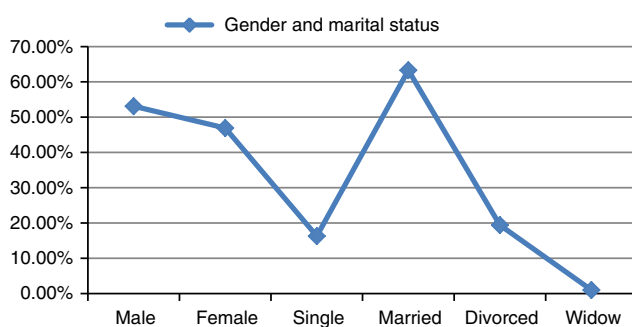
Transformational leaders are best defined as self-defining, internally directed, and change oriented, based on visions and values, and having considered long-term future perspectives (Avolio and Bass, 1995). Idealized influence, inspirational motivation, intellectual stimulation, and individual consideration are the indicators or reflecting virtues of inspirational and charismatic leaders known as transformational leaders.

In the transactional leadership style, followers are measured when leaders assign them tasks, goals, obligations, and guidelines in the certain timeline, if they perform better, they are rewarded and if not they are punished. Our questionnaire comprised indicators, such as contingent rewards and management by exception (when leaders only participate to avoid problems), that are taken in our empirical study (Avolio *et al.*, 1999).

For measuring transformational leadership indicators, the 5-point Likert scale is utilized in order to measure the qualities of leaders such as idealized influence, inspirational motivation, intellectual stimulation, and individual consideration ranging from “never” = 1 to always = 5. The respondents rationalized their answers based on their leadership style and the way they use their leadership style in universities, whereas for transactional leadership, 5-point Likert scale was utilized for measuring contingent rewards and management by exception indicators.

### *Organizational culture*

The study of Hogan and Coote (2014) suggested that values, artifacts, norms, and behavior design an organizational culture that mostly flows from top management to down at line



**Figure 2.**  
Gender and marital  
status of sample

	<i>n</i>	Range	Minimum	Maximum	Mean	SD
Experience	98	2	2	4	2.70	0.646
Marital Status	98	2	1	3	1.78	0.584
Sex	98	1	1	2	1.16	0.372

**Table I.**  
Descriptive statistics



managers who further disseminate and propagate cultural values into organization but (Hurley and Hult, 1998) there are some cultural characteristics that ultimately lead toward organizational culture for innovativeness which are: learning and development where individual learning creates new ideas for organization; participative decision making where information flows from all corners and more involvement nurtures venues of innovativeness; support and collaboration that mitigate fear of failure, entices risk taking, and encourages new ideas, and power sharing where status, authority, and politics are abandoned for the sake of collaboration on new ideas with overwhelming support in all concerns.

#### *Organizational innovation*

Organizational indicators include human resource, finance and support, organizational activities, linkage and entrepreneurship, throughput, innovation and economic effects. Caird *et al.* (2013) provide the basis for empirical measure for innovation where the key indicators are innovation enablers, organizational innovation activities, innovation outputs, and a self-rating for personal innovativeness. This model was also utilized in order to serve and measure organizational innovation performance of firms and organizations on the demand of a European framework.

For both of the above variables, organizational culture and organizational innovation, a 5-point scale (Likert scale) ranging from “strongly agree” = 1 to “strongly disagree” = 5 was utilized in order to collect responses from the faculty of top innovative universities.

#### *Indicators' mean, SD, p-values, and correlations*

In PLS-SEM, when reflective and formative constructs are used, there are no specific expectations from the indicators, no matter what correlations exist. However, results from Table II suggest that no correlation was found among the indicators since items were not related to each other either in transformational, transactional, organizational culture or organizational innovation as most of the values are below 0.5. Generally correlation values lie between  $-1$  and  $+1$ , but, in our analysis, correlation values have not exceeded more than 0.5 except in two cases where FS has  $p = 0.863$  with PS.

All indicators of transformational leadership and organizational innovation are statistically significant at 0.05 or 5 percent of error while contingent reward and management by exception which are indicators of transactional leadership are found insignificant since  $p$ -values are 0.665 and 0.820. Last but not the least, indicators of organizational culture including learning, participative decision making, support, and collaboration and power-sharing are found statistically insignificant as shown in Table II. Standard deviation values suggest that respondents did not exceed “SD = 0.7” value showing deviation in their choices of answers. Mean values suggest that respondents in transformational leadership scored higher, while prioritized lower transactional leadership and higher organizational innovation.

#### *Missing values, composite reliability, and validity*

Composite reliability better known in the PLS software as Dillon-Goldstein's  $\rho$  was measured in all indicators and found to be greater than 0.7 as indicated in Figure 3, i.e.  $\alpha > 0.7$  for all variables. For TFL,  $\alpha = 1$ , whereas, for TSL,  $\alpha = 1$ , OC = 1.000, and OI = 0.574 which is also known as the construct reliability and validity of the model as shown in Figure 3. Missing values were found nil in the data as suggested by Palant (2011, p. 211) but the missing values can alter the findings and results of research as many of the respondents sometimes find hard to answer all the questions so it is necessary to check for missing values in the data. The variance inflation factor (VIF) value indicates that all path coefficients have the VIF value of 1 approximately, which is a sign that multicollinearity

S.No.	Ind.	MN	SD	Skw.	PV	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	
1	II	3.694	0.645	-0.297	0.001																	
2	IM	3.724	0.697	0.256	0.004	0.107																
3	IS	3.929	0.773	-0.684	0.051	0.263	0.200															
4	IC	3.908	0.701	0.131	0.013	0.118	0.157	0.026														
5	CR	3.163	0.665	0.222	0.076	-0.026	-0.057	-0.037	0.142													
6	ME	2.980	0.820	0.714	0.067	-0.031	0.008	0.030	-0.021	0.174												
7	LRN	3.449	0.822	-0.114	0.120	0.182	0.216	0.002	0.072	0.127	0.044											
8	PDM	3.561	0.656	0.101	0.021	0.189	0.160	-0.022	0.179	0.211	0.078	0.233										
9	SC	3.827	0.743	-0.009	0.141	0.123	0.282	0.067	0.146	-0.046	0.011	0.395	0.095									
10	PS	3.714	0.700	0.104	0.089	0.032	0.257	0.151	0.154	-0.031	-0.046	0.117	0.060	0.042								
11	HR	3.561	0.729	-0.056	0.027	0.192	0.124	0.107	0.240	-0.063	0.070	0.141	-0.019	0.180	0.094							
12	FS	3.571	0.700	0.285	0.000	0.365	0.176	0.226	0.086	0.128	-0.033	0.210	0.280	0.053	0.863	0.011						
13	OA	3.755	0.743	0.283	0.014	0.078	0.284	0.112	0.251	-0.002	0.059	0.046	0.177	0.109	0.179	0.141	-0.064					
14	LE	3.765	0.780	-0.082	0.005	0.141	0.200	0.260	0.054	0.094	0.008	0.228	-0.002	0.194	0.083	0.070	0.283	-0.152				
14	TP	3.755	0.686	0.171	0.000	0.499	0.008	0.217	0.165	-0.002	-0.226	0.249	0.147	0.077	0.109	0.071	0.334	0.002	0.083			
16	INV	3.582	0.880	-0.162	0.004	0.188	0.278	0.046	0.235	0.064	0.073	0.034	0.159	0.201	0.071	0.159	0.289	0.218	0.348	0.118		
17	EE	3.622	0.802	-0.409	0.000	0.309	0.161	0.286	0.138	-0.018	-0.153	0.257	0.092	0.147	0.062	0.013	0.366	-0.052	0.283	0.500	0.051	

**Notes:** Ind, Indicator; MN, mean value; SD, standard deviation; SKW, skewness; PV, =  $\beta$ -value; II = idealized influence; IM, inspirational motivation; IS, intellectual stimulation; IC, individual consideration; CR, contingent reward; ME, management by exception; LRN, learning; PDM, participative decision making; SC, support and collaboration; PS, power sharing; HR, human resource; FS, finance and support; OA, organizational activities; LE, = linkage and entrepreneurship; TP, throughput; INV, innovation; EE, economic effects

Organizational  
innovation

**Table II.**  
Mean, standard  
deviation, skewness,  
and correlation

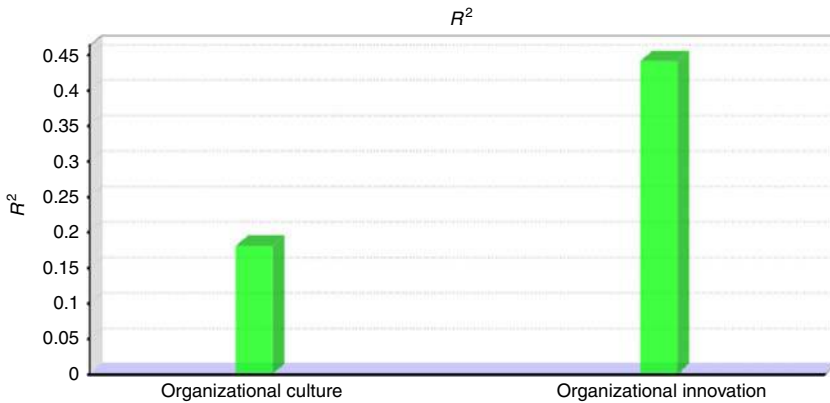
was not found in the model which can also be seen in the correlations; Table II indicates that there is nothing to be concerned for, since data seem to be normal, clear and meet all assumptions for further analysis.

#### *Path coefficient values and significance*

From Table III of path coefficients, organizational culture to organizational innovation has a value of 1.540 and the significance value is  $p=0.127$  indicating that although there is a positive relationship between organizational culture and organizational innovation, the results are insignificant. Transactional leadership also has a direct relationship with organizational culture and innovation, but again the results are insignificant ( $p=0.481$  and  $p=0.659$ , respectively), whereas transformational leadership style has a direct relationship with organizational culture and innovation as shown from the values 3.978 and 5.014, respectively, but in both cases, the results are significant as  $p$ -values are 0.000. Table III discloses information about VIF values of all path coefficients showing that there is no multicollinearity among variables as it is suggested that VIF in PLS-SEM should be lower than 5 ( $VIF < 5.00$ ); therefore, our model seems to be fit for proceeding further (Hair and Hult, 2016, p. 170).

PLS-SEM is performed to analyze the relationship between variables but before proceeding, it is important to understand the significance of path coefficient, the level of  $R^2$  value, and  $F^2$  effect size (Hair and Hult, 2016, p. 169).

The proceeding factor in our research from the model is the value of  $R^2$  for organizational innovation which is 0.441 indicating a moderate level of predictive accuracy with a significance value of 0.000 showing that the model is good enough since in social science studies, the  $R^2$  value is considered good enough for this value but for organizational culture,  $R^2$  value is 0.18, which is not very good, showing a lower level of predictive accuracy for the mediator (Figure 4).

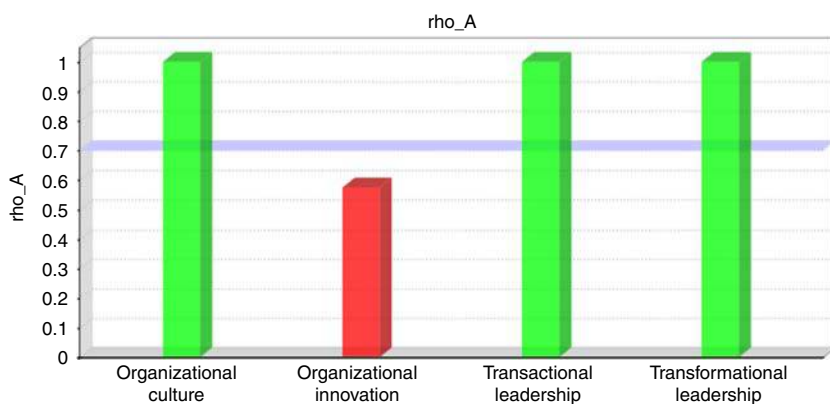


**Figure 3.**  
 $R^2$  value

Path coefficients	PC value	Sig. value	VIF value
Organizational culture to organizational innovation	1.540	0.127	1.220
Transactional leadership to organizational culture	0.708	0.481	1.000
Transactional leadership to organizational innovation	0.441	0.659	1.015
Transformational leadership to organizational culture	3.978	0.000	1.000
Transformational leadership to organizational innovation	5.014	0.000	1.205

**Notes:** PC, path coefficient; Sig, significant value

**Table III.**  
Path coefficient  
and VIF values

Organizational  
innovationFigure 4.  
 $\rho$  value

Another crucial factor in PLS-SEM is the  $F^2$  value which, for our latent variables, is summarized as 0.040 for organizational culture to organizational innovation showing a small size effect; transformational leadership to organizational culture has  $F^2$  value of 0.015 again showing a small size effect but transformational leadership to organizational culture has  $F^2$  value of 0.205 indicating a medium size effect and transformational leadership to organizational innovation has  $F^2$  value of 0.490 revealing a larger size effect compelling for further analysis of the model.

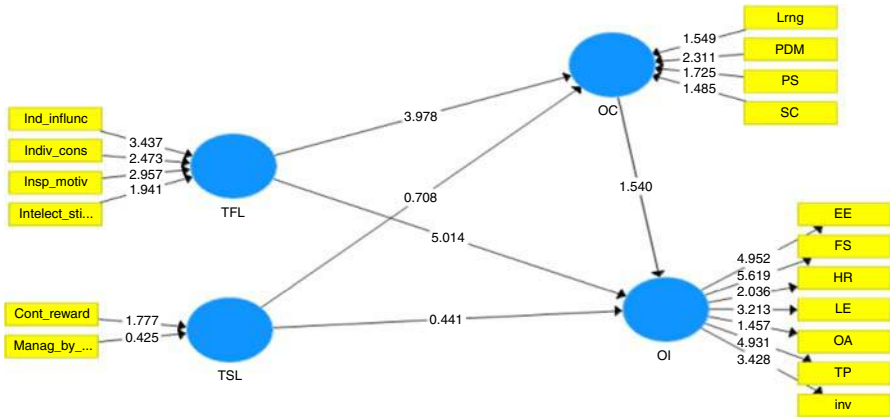
The variables included transformational leadership, transactional leadership that were independent variables and organizational innovation which is a dependent variable on the basis of sample ( $n = 98$ ), whereas organizational culture was included as a mediator; the model indicated that all predictors were having a direct relationship with mediator and dependent variable as path coefficient value from transformational leadership to organizational culture was 3.978 and from transformational leadership to organizational innovation was 5.014, whereas both relations are found statistically significant which means  $p < 0.001$ . The path coefficient value for transactional leadership to organizational culture was 0.708 but it was statistically found insignificant since  $p > 0.479$  and path coefficient value for transactional leadership to organizational innovation was 0.441 since  $p > 0.659$ , which indicated a weaker relationship statistically insignificant. Organizational culture was found insignificantly impacting organizational innovation since  $p > 0.127$  and path coefficient value was 1.540 as shown in Figure 5.

## Discussion

This study investigated the relationship between leadership and organizational innovation through PLS-SEM where organizational culture was mediating and it was found that top innovative universities of the world mostly have a transformational leadership style that directly triggers innovation which is consistent with previous studies (Zehir *et al.*, 2011; Jack *et al.*, 2012; Sutanto, 2017).

No doubt innovating universities extensively rely on middle- and lower-level management (Clark, 1995). Indeed many of the scholars agreed that leadership can play a crucial role in resolving paradoxes of innovation and it can boost innovation as well, which is also highly related with organizational culture though our research do not support for this mediation effect but theoretically many of studies have endorsed this notion (Buekens, 2013; Jack *et al.*, 2012; Sutanto, 2017; Szczepańska-Woszczyzna, 2015).

It is considered pivotal that universities should be highly encouraged for bridging the innovation gap which can be made possible only when stronger leadership is developed for



**Figure 5.**  
Research model  
with values

**Notes:** IC, idealized influence; IM, inspirational motivation; IS, intellectual stimulation; IC, individual consideration, contingent reward, management by exception; LRNG, learning; PDM, participative decision making; PS, power sharing; SC, support and collaboration; HR, human resource; FS, finance and support; OA, organizational activities; LE, linkage and entrepreneurship; TP, throughputs; Inv, innovation; EE, economic effects

facilitating innovative work environment where culture can engrain learning, participative decision making, and free communication, and integrate organizational activities (Montes *et al.*, 2005). Thus, transformational leaders can transform the goals of employees and actors working in firms, and universities toward common objectives that are innovation, competence, and creation of knowledge (Szczepańska-Woszczyzna, 2015).

### Implications

In the research, it is investigated that transformational leaders have high influence on environment in top innovative universities in the USA, UK, Japan, and Germany and indeed these are the developed nations of the world, so this research has provided some guidelines, theoretical notion, and a pragmatic approach that universities across the world ought to imply transformational leadership traits and styles which have fostered organizational innovation in the top-ranked innovative universities.

The notion that individualized consideration reinforces more on individual potential needs which drives interest from self to others, endorsing objective of group/team, whereas leader and follower are embedded in a stronger relation, creating culture of new norms and behavior (Avolio and Bass, 1995), significantly found in faculty and administration of innovative universities that demands implication in universities aspirant of organizational innovation. If a leader is at a higher rank or of top management such as CEOs, directors, and executives, who do not easily interact with bottom line managers, he/she needs to streamline policies which can strengthen the culture of these traits, norms, and values.

Inspirational motivation and intellectual stimulation enable followers for a broader vision, looking out of the box, resolving old puzzles with new solutions and perceiving from other paradigm. This leadership style drives the behavior in universities and research institutes toward a new direction where leader-follower relation can open space for new ideas, opportunities, and accomplishments (Zehir *et al.*, 2011), whereas transactional leadership style that is found having insignificant relation with organizational culture and innovation can be taken as a second priority in research institutes since a different environment demands a different strategy.

*Limitations and further research*

This research unlocks the doors for several opportunities since an understanding of strength can strengthen the competence; therefore, without understanding the leadership style, culture, and other factors in innovative universities, no one can compete. To compete and differentiate, universities and research institutes must learn the secret of competitive advantage and innovativeness. Since it is an extensive research, therefore it tends to involve a lot of variables affecting organizational innovation and those variables can be leadership, organizational culture, internal and external communication, flexible structures, technology adoption, continuous improvement, finance and funding, and many more (Read, 2000).

The limitation of this study is that it has chosen a small sample, whereas a large sample with other blended factors can provide a better picture of how to accelerate innovation in universities and research institutes whereas research may involve evaluating external environment at the macro level and this study untangles new areas such as process innovation in universities since universities and research institutes are under immense pressure to bring social innovation and change in society (Hurley and Hult, 1998), however the results of this study should be carefully used in generalization.

**References**

- Acar, A.Z. (2012), "Organizational culture, leadership styles and organizational commitment in Turkish logistics industry", *Procedia – Social and Behavioral Sciences*, Vol. 58, pp. 217-226.
- Avolio, B.J. and Bass, B.M. (1995), "Individual consideration viewed at multiple levels of analysis: a multi-level framework for examining the diffusion of transformational leadership", *The Leadership Quarterly*, Vol. 6 No. 2, pp. 199-218.
- Avolio, B.J., Bass, B.M. and Jung, D.I. (1999), "Re-examining the components of transformational and transactional leadership using the multifactor leadership", *Journal of Occupational and Organizational Psychology*, Vol. 72 No. 4, pp. 441-462.
- Bass, B.M. and Avolio, B.J. (1994), *Improving Organizational Effectiveness Through Transformational Leadership*, Sage.
- Buekens, W. (2013), "Coping with the innovation paradoxes: the challenge for a new game leadership", *Procedia Economics and Finance*, Vol. 6, pp. 205-212.
- Burns, J.M. (1978), *Leadership*, Harper & Row, New York, NY, p. 181.
- Caird, S., Hallett, S. and Potter, S. (2013), "The Open2-Innovation tool – a software tool for rating organisational innovation performance", *Technovation*, Vol. 33 No. 10, pp. 381-385.
- Chen, K. and Kenney, M. (2007), "Universities/research institutes and regional innovation systems: the cases of Beijing and Shenzhen", *World Development*, Vol. 35 No. 6, pp. 1056-1074.
- Clark, B.R. (1995), "Leadership and innovation in universities from theory to practice", *Tertiary Education & Management*, Vol. 1 No. 1, pp. 7-11.
- Dolan, K.A. (2017), "Forbes 2017 billionaires list: meet the richest people on the planet", *Forbes Billionaires*, March 3.
- Ewalt, D. (2016), "Reuters top 100: the world's most innovative universities – 2016", *Innovation and Intellectual Property*, available at: [www.reuters.com/news/archive/innovationIntellectualProperty](http://www.reuters.com/news/archive/innovationIntellectualProperty) (accessed May 21, 2017).
- Fritsch, M. and Slavtchev, V. (2007), "Universities and innovation in space", *Industry and Innovation*, Vol. 14 No. 2, pp. 201-218.
- Giritli, H., Öney-Yazıcı, E., Topçu-Oraz, G. and Acar, E. (2013), "The interplay between leadership and organizational culture in the Turkish construction sector", *International Journal of Project Management*, Vol. 31 No. 2, pp. 228-238.
- Gumusluoglu, L. and Ilsev, A. (2009), "Transformational leadership, creativity, and organizational innovation", *Journal of Business Research*, Vol. 62 No. 4, pp. 461-473.

- Hair, J.F. Jr and Hult, G.T.M. (2016), *A Primer on Partial Least Squares Structural Equation Modeling (PLS-SEM)*, Sage Publications.
- Hogan, S.J. and Coote, L.V. (2014), "Organizational culture, innovation, and performance: a test of Schein's model", *Journal of Business Research*, Vol. 67 No. 8, pp. 1609-1621.
- Hurley, R.F. and Hult, G.T.M. (1998), "Innovation, market orientation, and organizational learning: an integration and empirical examination", *The Journal of Marketing*, Vol. 62 No. 3, pp. 42-54.
- Jack, S., Mary Rose, P., Padilla-Meléndez, A. and Garrido-Moreno, A. (2012), "Open innovation in universities: what motivates researchers to engage in knowledge transfer exchanges?", *International Journal of Entrepreneurial Behavior & Research*, Vol. 18 No. 4, pp. 417-439.
- Jati, M.K.K., Hassan, S., Harman, M.H., Jabar, S.A. and Majid, M.A.A. (2015), "Transformational leadership and organizational culture: a case of MAHB", *Procedia Economics and Finance*, Vol. 31, pp. 425-435.
- Jung, D.I., Chow, C. and Wu, A. (2003), "The role of transformational leadership in enhancing organizational innovation: hypotheses and some preliminary findings", *The Leadership Quarterly*, Vol. 14 No. 4, pp. 525-544.
- Langton, N., Robbins, S.P. and Judge, T.A. (2013), *Fundamentals of Organizational Behaviour*, Pearson Education.
- Leary, W.E. (2002), "Secrets of 200 years of inventions in the most innovative country", *New York Times Online*, p. 6.
- Long, C.S., Thean, L.Y., Ismail, W.K.W. and Jusoh, A. (2012), "Leadership styles and employees' turnover intention: exploratory study of academic staff in a Malaysian college", *World Applied Sciences Journal*, Vol. 19 No. 4, pp. 575-581.
- Makri, M. and Scandura, T.A. (2010), "Exploring the effects of creative CEO leadership on innovation in high-technology firms", *The Leadership Quarterly*, Vol. 21 No. 1, pp. 75-88.
- Montes, F.J.L., Moreno, A.R. and Morales, V.G.a. (2005), "Influence of support leadership and teamwork cohesion on organizational learning, innovation and performance: an empirical examination", *Technovation*, Vol. 25 No. 10, pp. 1159-1172.
- Naranjo-Valencia, J.C., Jiménez-Jiménez, D. and Sanz-Valle, R. (2016), "Studying the links between organizational culture, innovation, and performance in Spanish companies", *Revista Latinoamericana de Psicología*, Vol. 48 No. 1, pp. 30-41.
- Nelson, A.J. (2009), "Measuring knowledge spillovers: what patents, licenses and publications reveal about innovation diffusion", *Research Policy*, Vol. 38 No. 6, pp. 994-1005.
- Read, A. (2000), "Determinants of successful organisational innovation: a review of current research", *Journal of Management Practice*, Vol. 3 No. 1, pp. 95-119.
- Samad, S. (2012), "The influence of innovation and transformational leadership on organizational performance", *Procedia – Social and Behavioral Sciences*, Vol. 57, pp. 486-493.
- Shanker, R., Bhanugopan, R., Van der Heijden, B.I. and Farrell, M. (2017), "Organizational climate for innovation and organizational performance: the mediating effect of innovative work behavior", *Journal of Vocational Behavior*, Vol. 100, pp. 67-77.
- Stanford Inventions (2017), "Stanford Facts", available at: <http://facts.stanford.edu/research/innovation> (accessed April 20, 2017).
- Sutanto, E.M. (2017), "The influence of organizational learning capability and organizational creativity on organizational innovation of universities in East Java, Indonesia", *Asia Pacific Management Review*, Vol. 22 No. 3, pp. 128-135.
- Szczepańska-Woszczyzna, K. (2015), "Leadership and organizational culture as the normative influence of top management on employee's behaviour in the innovation process", *Procedia Economics and Finance*, Vol. 34, pp. 396-402.
- Trott, P. (2008), *Innovation Management and New Product Development*, Pearson Education.
- Vargas, M.I.R. (2015), "Determinant factors for small business to achieve innovation, high performance and competitiveness: organizational learning and leadership style", *Procedia – Social and Behavioral Sciences*, Vol. 169, pp. 43-52.

- 
- Viana-Baptista, J. (1999), "Universities – engines of innovation in the information society", *Scientometrics*, Vol. 45 No. 3, pp. 547-550.
- Vlok, A. (2012), "A leadership competency profile for innovation leaders in a science-based research and innovation organization in South Africa", *Procedia-Social and Behavioral Sciences*, Vol. 41, pp. 209-226.
- Yang, P. and Tao, L. (2012), "Perspective: ranking of the world's top innovation management scholars and universities", *Journal of Product Innovation Management*, Vol. 29 No. 2, pp. 319-331.
- Zehir, C., Ertosun, Ö.G., Zehir, S. and Müceldili, B. (2011), "The effects of leadership styles and organizational culture over firm performance: multi-national companies in Istanbul", *Procedia – Social and Behavioral Sciences*, Vol. 24, pp. 1460-1474.

### Further reading

- Bhutto, T.A. and Shaikh, H.A. (2017), "Transformational leadership and its impact on employees' turnover intention, a study in private mid-growing banks in Pakistan".
- Birkinshaw, J., Hamel, G. and Mol, M.J. (2008), "Management innovation", *Academy of Management Review*, Vol. 33 No. 4, pp. 825-845.
- Brooks, C. (2014), *Introductory Econometrics for Finance*, Cambridge University Press.
- Dang, J. and Motohashi, K. (2015), "Patent statistics: a good indicator for innovation in China? Patent subsidy program impacts on patent quality", *China Economic Review*, Vol. 35, pp. 137-155.
- Elkins, T. and Keller, R.T. (2003), "Leadership in research and development organizations: a literature review and conceptual framework", *The Leadership Quarterly*, Vol. 14 No. 4, pp. 587-606.
- Pallant, J. (2013), *SPSS Survival Manual*, McGraw-Hill Education.
- Ruiz-Jiménez, J.M. and del Mar Fuentes-Fuentes, M. (2016), "Management capabilities, innovation, and gender diversity in the top management team: an empirical analysis in technology-based SMEs", *BRQ Business Research Quarterly*, Vol. 19 No. 2, pp. 107-121.
- Saunders, M.L., Lewis, P. and Thornhill, A. (2009), "Research methods for business students", p. 4.

### Corresponding author

Tahseen Ahmed Bhutto can be contacted at: [tahseen\\_a\\_bhutto@yahoo.com](mailto:tahseen_a_bhutto@yahoo.com)