IMPACT OF TRANSFORMATIONAL LEADERSHIP OF ENGINEERS WORKING IN AUTOMOBILE SECTOR IN INDIA ON THEIR OWN CREATIVITY

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ABSTRACT

To create competitive advantage, leaders must commit to bringing all members in an organization into a true partnership in the innovation process. Those who have studied creative process understand that latent abilities are present in an individual. Children usually pick their own team leaders naturally and almost all of them show creativity in one form or another. Leadership is about the ability to lead. It is about creating the vision, structures, systems, trust and clarity that inspire people in the organization to achieve its strategy and apply their creativity to the things they do in their work.

Creative thinking and Leadership are in such high demand in business today that we need a clear understanding of how they are related. We need to discover the latent factors playing important roles in creative leadership. This paper is an empirical study of engineers in automobile sector to understand the latent factors which predominantly reflect leadership traits represented by Charismatic, Inspirational, Intellectual Stimulation & Individual Consideration and creativity traits represented by Idea Fluency, Originality, Creative Flexibility & Problem Sensitivity.

Keywords - Creativity, Transformational leadership, factors, Automobile Industry

1. INTRODUCTION

Organizations, especially technologically-driven ones, need to be more creative and innovative than before to survive, to compete, to grow, and to lead (Jung et al., 2003; Tierney et al., 1999).[1] To create competitive advantage, leaders must commit to bringing all members in an organization into a true partnership in the innovation process. Those who have studied creative process understand that latent abilities are present in an individual. Children usually pick their own team leaders naturally and almost all of them show creativity in one form or another. Leadership is about the ability to lead. It is about creating the vision, structures, systems, trust and clarity that inspire people in the organization to achieve its strategy and apply their creativity to the things they do in their work.

1.1 Literature Survey

Considerable evidence indicate that employee creativity can fundamentally contribute to organization and innovation, effectiveness and survival (Ambalie 1988, Madjar, Oldham & Pratt, 2002, Shally, Gilson & Blum, 2000, Zhou & Shally, 2003)[2]

Many organizations rely on employee creativity for competitive advantage, adaptation and survival (Nonaka, 1991; Zhou, 2003).[3] Not surprisingly then, understanding the dynamics of creativity in organizations is a high priority for research in organizational behavior. [Zhou & Shalley 2008] [4]

Some researchers believe that employee creativity will flourish when a supervisor provides transformational leadership (Shin & Zhou, 2003)[5] and when employees have a learning orientation (Redmond, Mumford, & Tech, 1993).[6]

Jaussi and Dionne (2003) found little empirical support for the notion that transformational leadership positively influence creativity in a laboratory study with student subjects. However, in the first field study of transformational leadership and employee creativity, Shin and Zhou (2003) reported that the two related positively. [7]

Researchers have studied the effect of transformational leadership on the performance of followers and organizations in the past decade (e.g., Dvir et al, 2002, Howell and Avolio, 1993; Lowe et al, 1996).[8] Several studies report that transformational leaders empower their followers (e.g. Jung and Sosik,2002)[9] and establish an innovative climate (Jung et al, 2003).

Literature survey suggests that most of the Researchers are interested in finding influence of various leadership style on followers creativity rather than investigating relation between leadership style and creativity of same individual. This study investigates the impact of transformational leadership of Engineers working in automobile sector in India on

their own creativity. However, available research does not examine the effect of components of transformational leadership on creativity of Individual.

1.2 Transformational Leadership

Transformational Leadership involves anticipating future trends, inspiring followers to understand and embrace a new vision of possibilities, developing other to be Leader or better leader, and building the organization or group into a community of challenged and rewarded learners. [10] Gibson et. al (1997) defines Transformation Leadership as a leader that motivate followers to work for transcendental goals instead of short term self interest and for achievements and self actualization instead of security.[11] The employee's reward is internal the leader's vision provides the follower with motivation for hard worn that is self rewarding. The transformational leader overhaul the entire philosophy, system and culture of the organizations.

Burns (1978) introduces the transformational leadership theory. Bass and Avolio (1995) further developed the theory.[12] Transformational leadership has four components; Idealized Influence, inspirational motivation, intellectual stimulation and individualized consideration.

1.2.1 Inspirational Motivation (L1)

This Involves behaviors and communication that guide followers by providing them with a sense of meaning and challenges. Transformational leaders displays great enthusiasm and optimism, which carries over into the lies of followers and fosters a sense of team spirit. Inspirational motivation is about motivating the entire organization to follow a new idea.[13]

1.2.2 Intellectual Stimulation (L2)

Intellectual Stimulation is the encouragement given to followers to be innovative and creative. Transformational leaders urge followers to question assumption, explore new ideas and methods and approach old situation with new perspectives.[13]Intellectual stimulation involves responding to the specific, unique needs of followers to ensure they are included in the transformation process of the organization.[14']

1.2.3 Idealized Influence(L3)

Transformational leaders demonstrate the behaviors that followers strive to mirror. Followers typically admire, respect and trust such leaders. Idealized Influence is about building confidence and trust and providing a role model that followers seek to emulate [15]

1.2.4 Individualized consideration (L4)

Individual consideration involves responding to the specific ,unique needs of followers to ensure they are included in the transformation process of the organization [16]

1.3 Creativity

The literature includes several definitions of creativity and innovation. A widely accepted definition states that creativity is the production of novel and useful ideas, and innovation is the successful implementation of creative ideas within an organization (Amabile, 1983, 1998; Amabile et al., 1996) [17] Thus, creativity is at the individual level, while innovation is at the organizational level (Oldham and Cummings, 1996).

The cognitive components of design creativity have been defined based on Treffinger's creative learning model .The cognitive aspects in Treffinger's creative learning model are fluency, flexibility, originality, elaboration, and cognition and memory. We replaced cognition and memory with problem sensitivity, and identified four components of creativity such as Idea fluency, Creative flexibility, Originality, and problem sensitivity [18]

1.3.1 Idea Fluency (C1)

This term simply means that a person can pile up a large number of alternative solutions to a given problem in a given time. The value of this lies in the fact that the more ideas you have, the greater your chances of finding a usable one; the more plentiful your opportunities to get out of the same old ways of doing things. Idea fluency depends largely upon personal mental habits. It is an attribute that can be developed or improved by nearly every person who will consciously apply himself to it.[19]. Fluency is an ability to make multiple answers to the same given information in a limited time[20] and quantity of meaningful solutions.[21]

1.3.2 Originality (C2)

The originality required of the business executive is more likely to be that of finding new ways to vary existing conditions, or new ways to adapt existing ideas to new conditions or a new modification of something that will fit in an

existing condition. The creative attribute of originality can also be developed, or at least simulated, to the point where it meets the requirements of successful business operation. The secret is in the systematic use of questions.[19] Originality is rarity in the population to which the individual belongs; its probability of occurrence is very low [20,21].

1.3.3 Creative Flexibility (C3)

The quality of creative flexibility is largely that of being willing to consider a wide variety of approaches to a problem. This, in turn, is largely a matter of attitude. Rather than confining onto one particular idea, or a single approach to a problem, the flexible person starts out by remembering that if one solution won't work, he can always approach the problem from another angle. This is also called "creative expectancy" - meaning, the creative person just plain expects to solve the problem, no matter how many failure temporarily delay the solution.[19]

Creative Flexibility is an adaptability to change instructions, freedom from inertia of thought and spontaneous shift of set [20]. That is the mode changing categories[21]

1.3.4 Problem Sensitivity (C4)

This dimension depicts the ability to understand & recognize an existing problem. This ability enables a person to identify the root causes of problem like misunderstanding, misconception, lack of facts, or any other obscuring cause[19] Problem Sensitivity is an ability to find problems and to aware needs for change or for new devices or methods [20].

1.4 Research methodology

The research methodology was based upon Questionnaire administration to Engineers working in automobile sector of India and thereafter detailed statistical analysis using SPSS software.

1.4.1 Questionnaire Administration

Approximately 500 set of questionnaires were sent to various organizations of Automobile sector to get the response of Engineers working in those organizations. We have received total 169 responses from Engineers.

1.4.2 Measuring instrument

Measuring Instruments consists of set of questionnaire out of 81 items for leadership style & 50 items for creativity measurement. Transformation leadership was measured using the multifactor leadership questionnaire. The four behavioral components of transformative leadership were measured by 81 items rated on a five point Likert Scale, with possible answer ranging from '1 = strongly disagree', '2 = disagree', 3' = neither agree, nor disagree, '4=agree, ''5 = strongly agree'.

Creativity was measured using four dimensions i.e. Problem sensitivity, Idea Fluency, Originality, Creative Flexibility, with the help of 50 set of questions rated on a five point Likert Scale, and were rated ranging from '1 = strongly disagree to '5 = strongly agree'.

1.5 Statistical analysis

Factor Analysis (Maximum likelihood method with varimax rotation) was applied to the eight components of transformational leadership (L1, L2, L3, L4) & Creativity. (C1, C2, C3, C4) defining the leadership and creativity as defined above. The purpose was to find the latent factors representing the eight factors so listed in the study, specifically for employees in the automobile sector.

Table 1 : Descriptive Statistics

	Mean	Std. Deviation	Analysis N
C1	2.2544	.45184	169
C2	2.3680	.56985	169
C3	2.3592	.58293	169
C4	2.1787	.49403	169
L1	2.1285	.38303	169
L2	2.1248	.44234	169
L3	1.9555	.33092	169
L4	2.1750	.43057	169

Descriptive statistics shows that the average has been overing around 1.9 to 2.5 .The highest trait observed as per the means (Table 1) is that of C2, i.e. originality which means the employees have a lot of original ideas or possible solutions for their day-to day problems. The minimum trait observed was of L3(Intellectual Stimulation) i.e. questioning the assumptions which implies that though creativity is there but there is a tendency of accepting whatever has been believed earlier and we embark on new idea based on those assumptions.

Table 2: Correlation Matrix

		C1	C2	C3	C4	L1	L2	L3	L4
Correlation	C1	1.000	.941	.975	.967	-.146	-.171	-.044	-.069
	C2	.941	1.000	.982	.970	-.109	-.112	-.036	-.076
	C3	.975	.982	1.000	.982	-.129	-.142	-.049	-.075
	C4	.967	.970	.982	1.000	-.104	-.135	-.061	-.049
	L1	-.146	-.109	-.129	-.104	1.000	.398	.343	.076
	L2	-.171	-.112	-.142	-.135	.398	1.000	.188	-.022
	L3	-.044	-.036	-.049	-.061	.343	.188	1.000	-.035
	L4	-.069	-.076	-.075	-.049	.076	-.022	-.035	1.000
Sig. (1-tailed)	C1		.000	.000	.000	.029	.013	.287	.185
	C2	.000		.000	.000	.078	.073	.321	.164
	C3	.000	.000		.000	.047	.033	.266	.166
	C4	.000	.000	.000		.088	.040	.214	.263
	L1	.029	.078	.047	.088		.000	.000	.162
	L2	.013	.073	.033	.040	.000		.007	.386
	L3	.287	.321	.266	.214	.000	.007		.327
	L4	.185	.164	.166	.263	.162	.386	.327	

From the correlation matrix (Table2) we observed that at 0.01 level of significance correlation among the leadership traits (L1, L2, L3, L4) is low (less then 0.45) while correlation among creativity traits (C1, C2, C3, C4) are exceptionally high(above 0.9).Which means all traits of creativity are highly interrelated with each other.

Table 3 : KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.787
Bartlett's Test of Sphericity	Approx. Chi-Square	1708.646
	Df	28.000
	Sig.	.000

The Kaiser Meyer Olkin Measures of sampling adequacy and Bartlett's test of spherecity confirm that the sample is adequate and we can proceed for analysis.

Table 4 : Communalities

	Initial	Extraction
C1	.962	.984
C2	.971	.990
C3	.988	.993

C4	.971	.973
L1	.267	1.000
L2	.190	.190
L3	.150	.118
L4	.033	.011
Extraction Method: Maximum Likelihood.		

From table 4, we infer that all the traits C1, C2, C3, C4 & L1 barring L3 & L4 are explained well by the factors considered initially and after the extraction also. In fact the leadership trait L1, Inspirational motivation is completely explained by extracted factors.

Table 5 : Total Variance Explained

	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
Factor	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	3.976	49.699	49.699	1.362	17.024	17.024	3.862	48.269	48.269
2	1.572	19.656	69.355	3.825	47.811	64.836	1.321	16.519	64.788
3	1.010	12.629	81.984	.072	.902	65.738	.076	.950	65.738
4	.810	10.121	92.105						
5	.544	6.794	98.899						
6	.057	.717	99.617						
7	.022	.273	99.889						
8	.009	.111	100.000						
Extraction Method: Maximum Likelihood.									

From table 5, we infer that there are only three latent factors that explain the eight variables taken into consideration and are explaining 82% of the variance observed in the behavior of the sample of automobile industry. On extraction the factors could explain 65% of the total behavior and can be considered significant to retain these three factors only.

Table 6 : Factor Matrix[a]

	Factor		
	1	2	3
L1	1.000	.018	.000
L2	.399	-.083	.154
L3	.344	.003	-.003
L4	.077	-.062	-.035
C3	-.147	.985	-.011
C4	-.122	.979	-.025
C2	-.127	.979	.129
C1	-.163	.963	-.173
Extraction Method: Maximum Likelihood.			

From the tables 6&7 & we infer that the three factors so identified had typical characteristics. The factor F1 was a good fit for all the creativity traits and instead of mentioning the traits separately we can mention creativity only. The Factor F2 was a good fit on only one factor of leadership and that is L1 and the Factor F3 was not a good fit on any of the factors and is insignificant also.

Table 7: Factor Transformation Matrix

	Factor			
	1	2	3	
1	-.035	.993	-.112	
2	.998	.039	.040	
3	-.044	.111	.993	
Extraction Method: Maximum Likelihood. Rotation Method: Varimax with Kaiser Normalization.				

Table 8 : Rotated Factor Matrix[a]

	Factor			
	1	2	3	
C3	**.989**	-.109	.045	
C4	**.982**	-.085	.028	
C2	**.976**	-.073	.181	
C1	**.975**	-.143	-.116	
L1	-.017	**.993**	-.112	
L2	-.103	.410	.104	
L3	-.008	.341	-.041	
L4	-.063	.071	-.046	
Extraction Method: Maximum Likelihood. Rotation Method: Varimax with Kaiser Normalization.				
a. Rotation converged in 4 iterations.				

Table 8 depicts that only two factors are important in defining creativity & leadership among the engineers of automobile sector ,they are four components of creativity i.e. Idea Fluency, Originality, Creative Flexibility& Problem sensitivity and other is Inspirational motivation(L1)

1.6 CONCLUSION

Among all traits of Creativity the highest trait observed as per the means is originality(C2) which means the employees have a lot of original ideas or possible solutions for their day-to day problems. we also observe that there is high correlation among the traits of creativity .This study reveals that though eight traits have been analyzed of creativity and leadership, we discover that only Two latent factors of Transformational Leadership & Creativity shows strong interdependency with each other. We can conclude in another way that the Inspirational motivation (component of transformational leadership style) has major impact on all four creativity traits i.e Idea Fluency, Originality, Creative Flexibility& problem sensitivity.

REFERENCES

1. Jung DI,Chowc,wu A.The role of Transformational Leadership leadership in enhancing organizational leadership in enhancing organizational innovation hypothesis and some preliminary finding, leadership Quarterly 2003; 14:525-4 Tierny p,Farmer sm graen gb. An Examinationof leadershipand employee Creativity: The relevance of traits and relationship's: personnal psychology 1999;52:591-620
2. Zhou,j.(2003). When the presence of creative coworkers is related to creativity : Role of supervisor's close monitoring, development feedback, and creative personality. Journal of applied psychology, 88, 413-422
3. Hirst Gites, Dicu Rolfran, Knippenberg, Dgan Van A social identity perspective on leadership and employee creativity, journal of organization behavior, Vol 30, 30, P-963-982, 2009
4. Zhou, J., & Shalley, C.E. (2008). Expanding the scope and impact of organization creativity research. In J. Zhou, & C.E. Shalley, (Eds.), Handbook of organization creativity (pp, 347-368). New York: Lawrence Erlbaum.
5. Shin, S.J., & Zhou, J. 2003. Transformational leadership, conservation, and creativity: Evidence from Korea. Academy of Management Journal, 46: 703-714.

6. Redmond, M.R, Mumford, M.D., & Teach, R. 1993. Putting creativity in work: Effects of leader behavior on subordinate creativity, organization behavior and Human Decision Process. 55: 120-151

7. Gong. Yaping, Hunag. Jia-chi,, Farh, Jung-Lin Employee Learning orientation, Transformational Leadership, and employee creativity: The mediating role of employee creativity self-efficiency.

8. Dvir. T, Eden D, Avolio BJ, Shamir B, Impact of transformational leadership on follower development and performance: a field experiment Academy of Management Journal 2002; 45 (4): 735-44

10. Anderson, T.D. Transforming Leadership; Equipping yourself and challenging others to build the leadership organization, 2nd ed Boca Raton, FL: CRC Press, 1998.

11. Gibson,J.L.,J.M. Donnely, J.H.(1997).Organizations: Behavior,Structure,Process.usa: Rob Zwetter,pp.315-319

12. Burns JM. Leadership, New York: Harper & Row 1978, Bass BM, Avolio BJ. MLQ, Multifactor Leadership Questionnaire, 2nd ed Redwood City, CA. Mind Garden; 1995.

13. Avolio, B.E. Full Leadership Development: Building the Vital Forces in Organizations, Thousand Oaks, CA: Sage Publication, 1999, 43-49; Bass, B.M. Transformational Leadership: Industry, Military, and Educational Impact. Mahawah, NJ: Lawrence Erlbaum Associates, 1998

14 Kelly,,M.L.(2003) Academic advisers as transformational leaders.The mentor.Retrieved August 3 2006 from http://www.psu.edu/dus/mentor/3010

15 Bono,J.E. &Judge,T.A.(2004).Personality and Transformational and Transactional leadership :a meta analysis.Journal of Applied psychology,89(5),pp901-910

16 Simic,I.(1998)Transformational leadership-the key to successful management of transformational organization changes.Facta University,1(6),pp.49-55

17 Amabile TM. How to win creativity? Harvard Business Review 1998; 76 (J): 7787, Amabite TM, Cotir, Coon H, Lazenby J, Herron M. Assessing the environment For creativity, Academy of Management Journal 1996; 9 (5) 1154-84.

18 Treffinger, D. J. (1980) Encouraging Creative Learning for the Gifted and Talented, Ventura County Schools/LTI, Ventura, CA.

19 Timple A.Dale (2005)"Creativity"Jaico Publishing House,pp.13,16,17

20 Guiford,J.P.and Hoepfner,R.The analysis of Intelligence,McGrawHill,NewYork.

21 Urban,K.K.(1995) Creativity :A component Approach Model. In Proceedings of the world conference on the Education for the Gifted and Talented, Hong Kong.