

## The Nature of Leadership in the Knowledge Era: A Study of Indian Knowledge Organizations

Mohnish Kumar

### Abstract

The main purpose of this paper is to figure out the nature, prevalence and distribution of Leadership as perceived by the 204 Knowledge workers in the six selected Knowledge Organizations and how the leadership behaviors, incorporated by Likert and Likert (1976) to classify System 1 to 4, are re-classified and re-categorized into perceived leadership role and perceived behavioral attributes of leadership and how they vary across these six Knowledge Organizations on the sectoral lines as well as in the perception of different genders. This empirical research study derived four new categories of behaviors or practices or actions. One perceived leadership role of Expressive Environment Facilitator and three perceived behavioral attribute of Non-Bossy leadership, Democratic leadership and Expectancy leadership are derived for Knowledge Organizations. The positive perceived leadership behavioral components are significantly more prevalent in IT sector than power sector. The negative leadership behavioral component is significantly less prevalent in IT sector than power sector. There is no significant difference in the perceived leadership role and behavioral components.

**Keywords:** Expressive environment facilitator, Non-Bossy Leadership, Democratic Leadership, Expectancy Leadership, Knowledge Organization, Knowledge Worker.

### Introduction

Kaiser et al. (2008) reviewed research papers on leadership theory and reached to the simple but pragmatic conclusion that the leaders are influential in determining the fate of their organizations through their decisions, strategies, and influence on others. Leadership is the core of any organization- be it profit or nonprofit organization, be it traditional or knowledge organization.

The inception, growth or maturation of any organization happens under the overall control and management of a leader or a group of leaders or levels of leaders. Dinh et al. (2014) conducted an extensive qualitative review of the leadership theories across 10 top-tier academic publishing outlets and suggested that leadership is a complex phenomenon that operates across multiple levels of analysis, involves multiple mediating and moderating factors, takes place over substantial periods of time, and can produce both top-down and bottom-up emergent outcomes at higher and lower levels of analysis

### **Knowledge Era**

Halal & Taylor (1999) pointed out that the Knowledge Era is driven by globalization, technology, deregulation, and democratization. The Knowledge Era poses new and multiple challenges at the multiple fronts that make a very dynamic environment for the firms and their leaders (Schneider, 2002). The firms can only sustain and excel in this dynamic environment by promoting faster learning (Child & McGrath, 2001), in which leadership and top management has very crucial role to play.

Every new age creates new kinds of challenges for organizations and their leaders (Berkema et al., 2002). During the Industrial Era, the efficient and effective management of physical assets were the main source of competitive advantage and excellence (Boisot, 1998). During the Post-Industrial Era, the efficient and effective management of social assets- its corporate IQ (Zohar, 1997). In the Knowledge Era, the ability to cultivate, protect, and use difficult to imitate knowledge assets provide competitive advantages (Boisot, 1998; Nonaka&Nishiguchi, 2001).

The Knowledge Era leadership requires a change in their thinking as well as action (Uhl-Bien, et al., 2007). The thoughts and actions or practices, that had been useful till date, will not be useful and sometimes detrimental to the organizations in the Knowledge Era. A new kind of leaders are required to sustain and excel in the Knowledge Era as the limitations of the current leadership theory is holding out new potentialities to fructify. There seem to be a contradiction between the needs and requirements of the knowledge Era and previous time, which the leadership theory has not addressed and the Knowledge Era calls for a new leadership paradigm (Uhl-Bien, et al., 2007). This empirical research paper is the endeavour in such directions.

### **Review of Literature**

During the past 25-30 years, the number of new leadership theories has grown exponentially. These new theories have been coded and categorised by the review articles in the varieties of ways. Dinh et al. (2014) has coded and categorized the leadership theories on the basis of theme into 66 different leadership theory domains including some novel perspectives to enrich our knowledge of leadership. Dinh et al. (2014) also argued that because of different leadership theories emphasized different outcomes (from how leaders are perceived to how leaders affect unit performance); focused on different level of analysis viz., event, individual, dyad, group, organization, and political systems; focussed on immediate or delayed effects; and incorporated contextual differences, there is no unified theory of leadership.

Dinh et al. (2014) in his review paper also concluded that since the start of the new millennium, there has been growth in the emerging leadership theories such as neurological perspectives on leadership, and the continued proliferation of theories relating to leading for creativity and innovation, toxic/dark leadership, and strategic leadership. Nonaka, Von Krogh & Voelpel (2006) argued

for fundamentally revisiting the nature and role of leadership in the various dimensions of Knowledge Management process and further development of Organizational Knowledge Creation theory as well as Knowledge organizations.

### **Knowledge Leadership**

There has been very little explicit discussion of leadership models for the Knowledge Era (Uhl-Bien, Marion & McKelvey, 2007). Davenport (2001) questioned the relevance of old models of leadership which deal with different set of issues in different circumstances in different era i.e., Industrial Era and its application into Knowledge Era. Marion & Uhl-Bien (2001) argued for developing a framework for leadership in the fast-paced, volatile context of Knowledge Era. As time changes, the individual and organizational goals also change. And, Barnard (1938) listed the role of leadership is to align the individual preferences with rational organizational goals. Osborn, Hunt, & Jauch (2002) argued for the radical change in the perspective about the leadership due to the fact that traditionally accepted views cannot operate in the radically different and diverse circumstances. This empirical research paper is an endeavour to focus on the Knowledge Leadership in Indian organizations and contribute in the direction.

### **Research Method**

This research study is non-experimental research design with exploratory elements. A self-administered questionnaire based survey has been conducted in 6 Knowledge organizations to figure out the perception of 204 Knowledge workers regarding the leadership's actions, practices or behaviors.

### **Objective**

The main objective of this paper is to figure out the nature, prevalence and distribution of Leadership as perceived by Knowledge workers and how the leadership behaviors, incorporated by Likert and Likert (1976) to classify System 1 to 4, are re-classified and re-categorized into perceived leadership role and perceived behavioral attributes of leadership and to figure out their variability across these six Knowledge Organizations on the sectoral lines as well as in the perception of different genders.

### **Sampling Design**

All the six Knowledge Organizations has been selected randomly out of the population of all the Organizations that openly profess and practice Knowledge Management. To assure the confidentiality of the organization, these organizations are described only symbolically as follows:

**Organization A:** This is the base organization that works in the power sector and one of the largest power company in India. It uses Knowledge management to match global standards.

**Organization B:** It is one of the most well diversified technology and manufacturing Multinational company. It belongs to top 100 Knowledge organizations of the world.

**Organization C:** It is a global consulting, technology, training, and outsourcing company. It focuses exclusively in providing IT Services and Products. It practices Knowledge Management in its perimeter and provides consultancy for Knowledge Management for others.

**Organization D:** It is a top ten global steel maker and the world's second most geographically diversified steel producer. It is an Indian Multinational Company that has won several India's Most Admired Knowledge Enterprise (MAKE) Awards for sustained excellence in field of Knowledge Management.

**Organization E:** It is India's listed Multinational Oil Company in the public sector that covers entire hydrocarbon value chain – from refining, pipeline transportation, and marketing of petroleum products to exploration & production of crude oil & gas, marketing of natural gas and petrochemicals.

**Organization F:** It is one of the oldest technology Multinational company that operates the entire portfolio of research, consulting, solutions, services, systems, and software, uniquely distinguishes it from other companies in the industry. It could be said to be the pioneer of Knowledge Management in the industry.

### Measures and Data Collection

The data has been collected through a self-administered questionnaire. The questionnaire consists of 26 items of leadership from Likert and Likert (1976) along with background and demographic questions. The random sample of 204 Knowledge Workers from the above six Knowledge Organizations have been collected. The respondents from all the six Knowledge Organizations are assured of the confidentiality of identity and their responses.

### Data Analysis, Results and Discussion

The data collected through the questionnaire was statistically analysed using SPSS. The technique of Principal Component Analysis was used to reduce the data of 26 items, without much data-loss, into leadership variables or Principal Components. These Principal Components are further analyzed using Multiple Regression Analysis with dummy variables to highlight the dynamics of sectoral and gender differentiation.

In the Table No#1, two dummy variables named “dumvar sec 1” and “dumvar sec 2” were created for the calculation of sectoral differences. The variable named “dumvar sec 1” stands for the three IT sector organizations and the variable “dumvar sec 2” stands for two infrastructure sector organizations except power. The base organization operates in the power sector.

**Table 1. Dummy variables for Sector-wise distribution of organizations**

	dumvar sec 1- IT Sector	dumvar sec 2- Infra. Sector except power	No. of responses	Remarks
Organization- A	0	0	100	Base- Power
Organization- B	1	0	38	IT Org.
Organization- C	1	0	30	IT Org.
Organization- D	0	1	25	Infrastructure
Organization- E	0	1	8	Infrastructure
Organization- F	1	0	3	IT Org.
TOTAL	71	33	204	

For calculation of gender differences, a dummy variable named “dumvar gender” was created which has two values of “0” and “1”. “0” stands for male and “1” stands for female in Table No#2.

**Table 2. Dummy variable for gender**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0-Male	171	83.8	83.8	83.8
	1-Female	33	16.2	16.2	100.0
	Total	204	100.0	100.0	

### Principal Component Analysis

To get the abstraction of the leadership actions or practices or behaviors, all the 26 items or variables of the leadership questionnaire were analyzed through the Principal Component Analysis technique. To avoid the extreme multicollinearity as well as data reduction without significant loss from the collected data, all 26 items or variables were divided into two groups and then PCA was applied on both the groups. These two groups of variables produced two principal components each without very high multicollinearity.

### Principal Component Analysis:- 1

On the twelve (12) items of leadership questionnaire with the following item-wise mean, standard deviation, etc., in Table No# 3, the Principal Component Analysis technique was applied with direct oblimin method of oblique rotation.

**Table 3. -Descriptive Statistics**

To what extent do you feel your leader:	Mean	Std. Deviation	Analysis N	Missing N
Q1.Is friendly and easy to talk to	5.50	1.903	204	0
Q2.Listens well to you and others whether he agrees or	5.46	1.855	204	0
Q3.States your point of view as well or better	5.25	1.725	204	0
Q4.Encourages you and others to express ideas fully	5.38	1.886	204	0
Q5.Encourages you and others to express feelings frankly	5.38	1.876	204	0
Q9.Expects a high quality job from herself or himself	5.87	1.707	204	0
Q14.Avoids treating you and others in condescending manner	5.02	1.538	204	0
Q15.Avoids being impatient with the progress being made	5.00	1.778	204	0
Q16.Avoids dominating the discussion	4.83	1.823	204	0
Q17.Avoids pontificating	4.74	1.584	204	0
Q18.Avoids stating his views dogmatically	4.89	1.682	204	0
Q26.Presents own contribution tentatively or as questions	5.04	1.655	204	0

**Table 4. KMO and Bartlett's Test**

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.	.928	
Bartlett's Test of Sphericity	Approx. Chi-Square	2126.757
	Df	66.000
	Sig.	.000

As long as a person is not schizophrenic, all the actions and practices will have positive correlation with each other. Same argument applies for a leader's behaviors and that's why direct oblimin method of oblique rotation was selected for further analysis.

The Kaiser-Meyer-Olkin (KMO) Measure of Sampling Adequacy in Table no#4, is 0.928 which suggests that the data is superb and there is no need to collect more data or inclusion or exclusion of any more variables. A value close to 1 of the Kaiser-Meyer-Olkin (KMO) Measure of Sampling Adequacy indicates that patterns of correlations are relatively compact. So we are confident that Principal

Component Analysis is appropriate for these data and will yield distinct and reliable Principal Components.

The Bartlett's test examines whether the population correlation matrix (as shown in Table no#4) resembles an identity matrix (i.e., it tests whether the off-diagonal components are zero) (Field, 2000). For Principal Component Analysis to work, we need some relationship between variables and if the R-matrix were an identity matrix then all correlation coefficients would be zero. Therefore, we want this test to be significant. A significant test tells us that the R-matrix is not an identity matrix; therefore, there are some relationships between the variables we hope to include in the analysis (Field, 2000). For this data, Bartlett's test is highly significant ( $p < 0.001$ ), and, therefore, the Principal Component Analysis is appropriate.

**Component Extraction:** The SPSS uses Kaiser's criterion of retaining factors with eigenvalues greater than 1. The "Table no#5 -Total Variance Explained" lists the eigenvalues associated with each linear component before extraction, after extraction and after rotation. Leaving the first two Principal Components, subsequent PCs explain only small amount of variance. The SPSS then extracts all principal components with eigenvalues greater than 1, which leaves us with two Principal Components.

The Table 6 shows Communalities before and after extraction. Communality is the proportion of common variance within a variable.

**Table 5. Total Variance Explained**

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings <sup>a</sup>
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total
1	7.448	62.065	62.065	7.448	62.065	62.065	6.777
2	1.471	12.260	74.325	1.471	12.260	74.325	5.874
3	.590	4.915	79.240				
4	.501	4.173	83.413				
5	.432	3.598	87.010				
6	.366	3.053	90.063				
7	.319	2.657	92.721				
8	.232	1.937	94.658				
9	.212	1.769	96.427				
10	.184	1.534	97.961				
11	.138	1.148	99.110				
12	.107	.890	100.000				

Extraction Method: Principal Component Analysis.

a. When components are correlated, sums of squared loadings cannot be added to obtain a total variance.

**Table 6. Communalities**

<b>Where a leader-</b>	<b>Initial</b>	<b>Extraction</b>
Q1.Is friendly and easy to talk to	1.000	.745
Q2.Listens well to you and others whether he agrees or disagrees	1.000	.835
Q3.States your point of view as well or better than you can, even he disagrees	1.000	.787
Q4.Encourages you and others to express your ideas fully and frankly	1.000	.867
Q5.Encourages you and others to express your feelings frankly	1.000	.848
Q9.Expects a high quality job from herself or himself	1.000	.601
Q14.Avoids treating you and others in a condescending manner	1.000	.727
Q15.Avoids being impatient with the progress being made	1.000	.679
Q16.Avoids dominating the discussion	1.000	.725
Q17.Avoids pontificating	1.000	.777
Q18.Avoids stating her or his views dogmatically	1.000	.772
Q26.Presents own contribution tentatively or as questions	1.000	.555

Extraction Method: Principal Component Analysis.

The Table 7- *Pattern matrix* contains the component loadings for each variable onto each factor after rotation. In the *Pattern matrix*, component loading below 0.4 have been suppressed. The content of questions that load onto the same component refers to some common theme.

Table 7. -Pattern Matrix<sup>a</sup>

	Component	
	1	2
<b>Where a leader-</b>		
Q4.Encourages you and others to express your ideas fully	.966	
Q2.Listens well to you and others whether she or he agrees or	.940	
Q1.Is friendly and easy to talk to	.903	
Q5.Encourages you and others to express your feelings frankly	.883	
Q3.States your point of view as well or better than you	.868	
Q9.Expects a high quality job from herself or himself	.754	
Q26.Presents own contribution tentatively or a questions	.595	
Q18.Avoids stating her or his views dogmatically		.922
Q17.Avoids pontificating		.863
Q15.Avoids being impatient with the progress being made		.855
Q16.Avoids dominating the discussion		.811
Q14.Avoids treating you and others in a condescending manner		.750
Eigen values	6.777	5.874

Extraction Method: Principal Component Analysis.

Rotation Method: Oblimin with Kaiser Normalization.

a. Rotation converged in 4 iterations.

## Results

The first PCA threw up two principal components, which are saved as two separate variables into the original dataset for further sectoral and gender analysis. These variables/PCs have been named and labeled as “*Leadership1\_1*” and “*Leadership1\_2*” in the original dataset. The first Principal Component “*Leadership1\_1*” shows the common theme of perceived leadership role which is and, thus, can be entitled as “*Expressive Environment Facilitator*” with the following items:

Where the leader in the organization-

Q4. Encourages you and others to express your ideas fully and frankly
Q2. Listens well to you and others whether she or he agrees or disagrees
Q1. Is friendly and easy to talk to
Q5. Encourages you and others to express your feelings frankly
Q3. States your point of view as well or better than you can, even though she or he disagrees
Q9. Expects a high quality job from herself or himself
Q26. Presents own contribution tentatively or as questions

The second Principal Component "*Leadership1\_2*" shows the common theme of perceived behavioral attribute of leadership which is and, thus, can be entitled as "*Non-Bossy Leadership*" with the following items:

Where the leader in the organization-

Q18. Avoids stating her or his views dogmatically
Q17. Avoids pontificating
Q15. Avoids being impatient with the progress being made by the group
Q16. Avoids dominating the discussion
Q14. Avoids treating you and others in a condescending manner

#### **Principal Component Analysis:-2**

On the remaining twelve (14) items of leadership questionnaire with the following item-wise descriptive statistics viz., mean, standard deviation, etc., in Table No# 8, the Principal Component Analysis was applied with direct oblimin method of oblique rotation.

**Table 8. Descriptive Statistics**

To what extent do you feel your leader:	Mean	Std. Deviation	Analysis N	Missing N
Q6. Displays confidence and trust in you and others	5.42	1.739	204	0
Q7. Shares information frankly	5.42	1.827	204	0
Q8. Expects each member to do his very best	6.07	1.649	204	0
Q10. Thinks what he or he and group are doing is important	5.86	1.700	204	0
Q11. Encourages innovative and creative ideas	5.52	1.799	204	0
Q12. Is willing to take risks	4.94	1.853	204	0
Q13. Is not defensive when criticized	4.98	1.773	204	0
Q19. Encourages group to work through disagreements	4.94	1.661	204	0
Q20. Uses "we" and "our" rather than "I" or "my"	5.41	1.827	204	0
Q21. Shows no favorites treats all members equally	4.89	1.940	204	0
Q22. Gives credit and recognition generously	5.15	1.832	204	0
Q23. Accepts more blame than may be warranted	4.78	1.701	204	0
Q24. Avoids imposing a decision upon group	5.01	1.647	204	0
Q25. Waits until members of group have stated their positions	5.11	1.650	204	0

The Kaiser-Meyer-Olkin (KMO) Measure of Sampling Adequacy is 0.902 shown in Table no#9, which suggests that the data is superb. The Bartlett's test is highly significant ( $p < 0.001$ ), and, therefore, the Principal Component analysis is appropriate.

**Table 9. KMO and Bartlett's Test**

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.902
Bartlett's Test of Sphericity	Approx. Chi-Square	1976.578
	Df	91.000
	Sig.	.000

**COMPONENT EXTRACTION:**

The SPSS uses Kaiser's criterion of retaining factors with eigenvalues greater than 1. The output "Table no#10-Total Variance Explained" leaves us with two PCs.

**Table 10. Total Variance Explained**

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings <sup>a</sup>
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total
1	7.746	55.325	55.325	7.746	55.325	55.325	6.869
2	1.366	9.754	65.079	1.366	9.754	65.079	5.714
3	.817	5.833	70.912				
4	.680	4.857	75.769				
5	.567	4.048	79.817				
6	.505	3.610	83.427				
7	.455	3.248	86.675				
8	.411	2.939	89.614				
9	.375	2.675	92.289				
10	.310	2.213	94.502				
11	.239	1.705	96.208				
12	.224	1.598	97.806				
13	.176	1.257	99.063				
14	.131	.937	100.000				

Extraction Method: Principal Component Analysis.

a. When components are correlated, sums of squared loadings cannot be added to obtain a total variance.

The Table 11- Communalities shows before and after extraction. Communality is the proportion of common variance within a variable.

**Table 11. Communalities**

<b>To what extent do you feel your leader:</b>	<b>Initial</b>	<b>Extraction</b>
Q6.Displays confidence and trust in you and others	1.000	.782
Q7.Shares information frankly	1.000	.675
Q8.Expects each member to do her or his very best	1.000	.764
Q10. Thinks what she or he and the group are doing is important	1.000	.768
Q11.Encourages innovative and creative ideas	1.000	.732
Q12.Is willing to take risks	1.000	.644
Q13.Is not defensive when criticized	1.000	.503
Q19.Encourages group to work through disagreements not suppress	1.000	.579
Q20.Uses "we" and "our" rather than "I" or "my"	1.000	.601
Q21.Shows no favorites treats all members equally	1.000	.567
Q22.Gives credit and recognition generously	1.000	.570
Q23.Accepts more blame than may be warranted for any failure	1.000	.589
Q24.Avoids imposing a decision upon the group	1.000	.677
Q25.Waits until members of the group have stated their positions	1.000	.660

**Table 12. Pattern Matrix<sup>a</sup>**

To what extent do you feel your leader:	Component	
	1	2
Q24.Avoids imposing a decision upon the group	.894	
Q25.Waits until members of the group have stated their positions	.887	
Q23.Accepts more blame than may be warranted for any failure or	.813	
Q20.Uses "we" and "our" rather than "I" or "my"	.666	
Q13.Is not defensive when criticized	.660	
Q19.Encourages group to work through disagreements not suppress	.637	
Q12.Is willing to take risks	.633	
Q22.Gives credit and recognition generously	.627	
Q21.Shows no favorites treats all members equally	.564	
Q8.Expects each member to do her or his very best		-.938
Q10.Thinks what she or he and the group are doing is important		-.891
Q11.Encourages innovative and creative ideas		-.688
Q6.Displays confidence and trust in you and others		-.635
Q7.Shares information frankly		-.634
Eigenvalues	6.869	5.714

Extraction Method: Principal Component Analysis. Rotation Method: Oblimin with Kaiser Normalization.

a. Rotation converged in 7 iterations.

The *pattern matrix* in Table No#12 contains the factor loadings for each variable onto each PC after rotation. In the *Pattern matrix*, the loading below 0.4 have been suppressed. Steven (1992) suggested the suppression for interpretative purposes (i.e., loadings greater than 0.4 represent substantive values). The variables are being sorted by size. The rotation of the component structure has clarified things considerably: there are two PCs and variables load very highly onto only one of them. The content of questions that load onto the same factor refers to some common theme. If the mathematical component produced by the analysis represents some real-world construct then common themes among highly loading questions can help us identify what the construct might be.

## Results

The two principal components, so derived out of second Principal Component Analysis on 14 items, have been saved as variables for further sectoral and gender analysis into the original dataset. These variables have been named and labeled as “Leadership2\_1” and “Leadership2\_2”.

The first principal component “Leadership2\_1” shows or indicates the common theme of perceived behavioral attribute of leadership which is and, thus, can be entitled as “Democratic Leadership” with the following items:

Where a Leader-

Q24. Avoids imposing a decision upon the group
Q25. Waits until members of the group have stated their positions before stating hers or his
Q23. Accepts more blame than may be warranted for any failure or
Q20. Uses “we” and “our” rather than “I” or “my”
Q13. Is not defensive when criticized
Q19. Encourages group to work through disagreements not suppress them
Q12. Is willing to take risks
Q22. Gives credit and recognition generously
Q21. Shows no favorites; treats all members equally

The second Principal Component “Leadership2\_2” shows the common theme of perceived behavioral attribute of leadership which is and, thus, can be entitled as “Expectancy Leadership” with the following items:

Where a leader-

Q8. Expects each member to do her or his very best
Q10. Thinks what she or he and the group are doing is important
Q11. Encourages innovative and creative ideas
Q6. Displays confidence and trust in you and others whether or no
Q7. Shares information frankly

The above found four Principal Components or leadership behavioral components could be analyzed as four simple variables as in Table no#13.

**Table 13. Descriptive Statistics of Leadership Principal Components**

		<b>Leadership1_1- Expressive Environment Facilitator</b>	<b>Leadership1_2- Non-Bossy Leadership</b>	<b>Leadership2_1- Democratic Leadership</b>	<b>Leadership2_2- Expectancy Leadership</b>
N	Valid	204	204	204	204
	Missing	0	0	0	0
	Mean	.0000000	.0000000	.0000000	.0000000
	Std. Error of Mean	.07001400	.07001400	.07001400	.07001400
	Std. Deviation	1.00000000	1.00000000	1.00000000	1.00000000
	Skewness	-.442	-.016	-.118	.982
	Std. Error of Skewness	.170	.170	.170	.170
	Kurtosis	-.547	-.724	-.755	.982
	Std. Error of Kurtosis	.339	.339	.339	.339
	Minimum	-2.35505	-2.51615	-2.32203	-1.76986
	Maximum	1.65929	2.18170	2.20142	3.95297
	Cronbach's Alpha	0.942	0.907	0.910	0.907

While calculating Principal Component Scores of all the above four Principal Components, the Anderson-Rubin method was used which supposedly gave uncorrelated and standardized Principal Component scores. As shown in the above table, the descriptive statistics of all the four Principal Components including the mean and standard deviation of all the four Principal Components are zero (0) and one (1) respectively. The Cronbach's Alpha of the whole questionnaire of Leadership, having 26 items, is 0.968 and all the four Principal Components has Cronbach's Alpha as shown in the above Table No#13. All the Cronbach's Alpha are above 0.9, which suggest that not only the whole questionnaire but all the four Principal Components of perceived leadership role and perceived leadership behavioral attribute are highly reliable.

### Sectoral Differences

The dummy variables were introduced in the multiple regression analysis to find out any sectoral difference among the organizations belonging to different sectors. On the Expressive Environment Facilitator perceived role (Leadership 1\_1 dimension) in Table No#14, the t-value of the organizations belonging to sector 1 i.e., IT sectors is positive and statistically significant at 5% level of significance. Though, the prevalence of Expressive Environment Facilitator (Leadership 1\_1) role of a leader in IT sector is statistically different than the base organization which belongs to Power sector, and the positive beta suggests that

the Expressive Environment Facilitator (leadership1\_1) is more prevalent in IT sector than the power sector. The t-value of the organizations belonging to infrastructure sector organizations is negative but not significant even at 10% level of significance. The negative beta suggests that the role of a leader as an Expressive Environment Facilitator (leadership1\_1) is less prevalent in the infrastructure sector organizations but it is not significantly different than the base Power sector Organization.

**Table 14. Coefficients of Dummy variable for Sectoral Differences**

Coefficients <sup>a</sup>								
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95% Confidence Interval for B	
		B	Std. Error	Beta			Lower Bound	Upper Bound
1	(Constant)	-.102	.099		-1.031	.304	-.296	.093
	dum var sec 1	.359	.153	.171	2.346	.020	.057	.660
	dum var sec 2	-.144	.198	-.053	-.725	.469	-.534	.247

a. Dependent Variable: Leadership1\_1

Similarly, on the Non-Bossy Leadership behavioral attribute (Leadership 1\_2 dimension), the t values of “dumvar sec 1” is positive and statistically significant at 5% of level of significance. This suggests that the Non-Bossy behavioral attribute of a leader (Leadership1\_2) is statistically more prevalent in the IT sector than the base- power sector. The t value of “dumvar sec 2” (shown in Table No #15) is very small and is not significant even at 10% level of significance. This suggests that the Non-Bossy behavioral attribute of a leader (Leadership1\_2) is equally prevalent in the power sector as well as in the infrastructure sector organizations.

**Table 15. Coefficients of Dummy variable for Sectoral Differences**

Coefficients <sup>a</sup>								
		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95% Confidence Interval for B	
		B	Std. Error	Beta			Lower Bound	Upper Bound
1	(Constant)	-.116	.099		-1.173	.242	-.312	.079
	dum var sec 1	.346	.154	.165	2.252	.025	.043	.649
	dum var sec 2	-.265E-02	.199	-.010	-.133	.894	-.419	.366

a. Dependent Variable: Leadership1\_2

It is visible from the Table No# 16, in case of the Democratic Leadership behavioral attribute (Leadership 2\_1 dimension), the t values of “dumvar sec 1” is positive and statistically significant at 5% of level of significance. This suggests that the Democratic behavioral attribute (Leadership2\_1) of a leader is significantly more prevalent in the IT sector than the base- power sector. The t value of “dumvar sec 2” (shown in Table No #16) is negative and is not significant even at 10% level of significance. The negative beta for infrastructure sector organizations suggests that the Democratic behavioral attribute (Leadership2\_1) of a leader is less

prevalent, but not significantly, in the infrastructure sector organizations than power sector.

**Table 16. Coefficients of Dummy variable for Sectoral Differences**

Coefficients <sup>a</sup>								
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95% Confidence Interval for B	
		B	Std. Error	Beta			Lower Bound	Upper Bound
1	(Constant)	-7.62E-02	.098		-.777	.438	-.270	.117
	dum var sec 1	.343	.152	.164	2.253	.025	.043	.643
	dum var sec 2	-.267	.197	-.099	-1.355	.177	-.655	.121

a. Dependent Variable: Leadership2\_1

In the case of Expectancy Leadership behavioral attribute (Leadership 2\_2 dimension) in Table No#17, the t-value of the organizations belonging to sector 1 i.e., IT sectors is negative as well as statistically significant at 1% level of significance. This suggest that the Expectancy behavioral attribute (Leadership 2\_2) of a leader is quite less prevalent in the IT sector organizations than the base organization which belongs to Power sector and this difference is even statistically significant. The t-value of the organizations belonging to infrastructure organizations is positive and significant at 5% level of significance. The positive beta suggests that the Expectancy behavioral attribute (Leadership2\_2) of a leader is statistically more prevalent in the infrastructure sector organizations than the power sector organization, which is statistically significant.

**Table 17. Coefficients of Dummy variable for Sectoral Differences**

Coefficients <sup>a</sup>								
		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95% Confidence Interval for B	
		B	Std. Error	Beta			Lower Bound	Upper Bound
1	(Constant)	7.860E-02	.096		.820	.413	-.110	.268
	dum var sec 1	-.432	.149	-.206	-2.902	.004	-.725	-.138
	dum var sec 2	.443	.192	.163	2.300	.022	.063	.822

a. Dependent Variable: Leadership2\_2

### Gender Differences

Expectancy Environment Facilitator (Leadership1\_1)

The t value of the variable "dumvar gender" (shown in Table No #18), which stands for gender, is not significant even at 10% level of significance. This suggests that both male and female knowledge workers perceive almost same about the role of a leader as Expectancy Environment Facilitator (Leadership1\_1) and its prevalence in their organizations.

**Table 18. Coefficients of Dummy variable for Gender Differences**

Coefficients <sup>a</sup>								
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95% Confidence Interval for B	
		B	Std. Error	Beta			Lower Bound	Upper Bound
1	(Constant)	-2.28E-02	.077		-.297	.767	-.174	.128
	dum var gender	.141	.190	.052	.739	.461	-.235	.516

a. Dependent Variable: Leadership1\_1

#### Non-Bossy Leadership (Leadership1\_2)

The t value of the variable “dumvar gender” (shown in Table No #19) is not significant even at 10% level of significance. This suggests that both male and female knowledge workers perceive almost same about the Non-Bossy behavioral attribute (Leadership1\_2) of a leader and its prevalence in their organizations.

**Table 19. Coefficients of Dummy variable for Gender Differences**

Coefficients <sup>a</sup>								
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95% Confidence Interval for B	
		B	Std. Error	Beta			Lower Bound	Upper Bound
1	(Constant)	-3.97E-02	.076		-.520	.604	-.190	.111
	dum var gender	.245	.190	.091	1.292	.198	-.129	.620

a. Dependent Variable: Leadership1\_2

#### Democratic Leadership (Leadership2\_1)

The t value of the variable “dumvar gender” (shown in Table No #20) is not significant even at 10% level of significance. This suggests that both male and female knowledge workers perceive almost same about the Democratic behavioral attribute (Leadership 2\_1) of a leader and its prevalence in their organization.

**Table 20. Coefficients of Dummy variable for Gender Differences**

Coefficients <sup>a</sup>								
		Unstandardized Coefficients		Standardized Coefficients			95% Confidence Interval for B	
		B	Std. Error				Lower Bound	Upper Bound
Model				Beta	t	Sig.		
1	(Constant)	-3.53E-02	.076		-.462	.644	-.186	.115
	dum var gender	.218	.190	.081	1.149	.252	-.156	.593

a. Dependent Variable: Leadership2\_1

#### Expectancy Leadership (Leadership2\_2)

The t value of the variable “dumvar gender” (shown in Table No #21) is not significant even at 10% level of significance. This suggests that both male and female Knowledge Worker perceive almost same about the Expectancy

behavioral attribute (Leadership2\_2) of a leader and its prevalence in their organizations.

**Table 21. Coefficients of Dummy variable for Gender Differences**

Coefficients <sup>a</sup>								
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95% Confidence Interval for B	
		B	Std. Error	Beta			Lower Bound	Upper Bound
1	(Constant)	5.995E-03	.077		.078	.938	-.145	.157
	dum var gender	-3.71E-02	.191	-.014	-.194	.846	-.413	.339

a. Dependent Variable: Leadership2\_2

Thus, we can say that there is no difference in the perception about the leadership role and the behavioral attributes among male and female knowledge workers.

### Discussion and Conclusion

As it can be seen from the two Principal Component Analyses, a leader behaviors or actions or practices has been divided into four behavioral components. These behavioral components can be described as *categories of behaviors*. Bedeian and Glueck (1983) defined leadership as *categories of behaviors* and is a dynamic process in which a leader behaves in a certain manner thereby influencing others to follow to achieve enterprise goals. The above derived four behavioral components are basically *perceived behavioral characteristics of leadership* (Conger and Kanungo, 1994). Conger and Kanungo (1987, 1988, 1992, 1994) argued about *perceived leader behavior* and defined leadership as an attribution based on followers' perceptions of their leader's behavior. Conger and Kanungo (1987, 1988, 1992, 1994) also argued that any measurement of leadership must be based on follower's perceptions of the specific behavioral attributes of the leader and perceived leadership role.

Bowers and Seashore (1966) defined leadership as behaviors by one member of a group towards another member or members of the group for achieving group goal and suggested that leadership consists of behaviors and made up of a large aggregation of separate behaviors, which can be grouped or classified in a great variety of ways. There are several classification systems of these behaviors from the several researches.

Likert (1961, 1967) pointed out five conditions for effective supervisory behavior-principle of supportive relations, group methods of supervision, high performance goals, technical knowledge, and coordinating, scheduling, planning. Bowers and Seashore (1966) summarized several studies to suggest the basic structure of leadership into four categories of leadership behaviors (leader support, interaction facilitation, goal emphasis, and work facilitation) are related to effective group performance and argued that these four dimensions are capable of further reclassification or recategorization according to some regularity of occurrence in social situations or according to the conceptual preferences of the investigators.

Similarly, this empirical research paper suggests the reclassification and recategorization of those Likert and Likert's (1976) leadership behaviors as a large aggregation of separate behaviors suggesting perceived leadership role or specific behavioral attribute or components for the Knowledge Organizations in the Knowledge Era. The perceived leadership role of Expressive Environment Facilitator has come out as the first Leader's Behavioral Component out of first Principal Component Analysis of the data. The other three Leader's Behavioral components are three different behavioral attributes identified as Non-Bossy leadership, Democratic leadership and Expectancy leadership.

Since, none of the dummy variables of gender is significant in the four multiple regression equation having four Leadership Behavioral Components as dependent variable, it suggests that both male and female Knowledge Workers don't perceive differently about any categories of behaviours incorporated into four Leadership Behavioral Components derived from 26 Leadership items.

These perceived leadership role and perceived behavioral attribute of leadership should not be confused with the different systems of leadership (System 1 to System 4) as argued by Likert (1961). The Democratic system is different from the perceived behavioral attribute of Democratic Leadership. These four leadership behavioral components are prevalent in all the four systems but whose variability brings about change in the system itself. For example, the Non-Bossy Leadership will be highly present in the System 4 but will be absent in the System 1. The systems are the vertical divisions that are characteristically different and separated from one another, but these leadership behavioral components varies from almost nil to the highest to bring about change in the system itself.

The prevalence of all the four leadership behavioral components in IT sector organizations are significantly different than the base power sector organization. In case of perceived leadership role of Expressive Environment Facilitator, it is more highly prevalent in IT sector organizations than power sector organization. In case of two perceived behavioral attribute of leadership, viz., Non-Bossy Leadership and Democratic Leadership, they are more prevalent in the IT sector organizations than power sector organizations. However, the unique case of perceived behavioral attribute of Expectancy Leadership, it is significantly less prevalent in the IT sector organization but significantly more prevalent in the other infrastructure sector organizations than the base power sector organizations. Since, the IT sector organizations are more Knowledge centric and the base power sector organization is more knowledge centric than other infrastructure sector organizations, it can be safely said that the expectancy leadership is not so appreciated and connotes a negative perception about this behavioral attribute of the leadership in the Knowledge Era.

### **Limitations of the Study**

There are several other perspectives to study leadership and out of them one has been chosen for this study. Application and replication of this empirical research study face uphill task in other cultural regions unlike India and other

organizations which are not similar to Knowledge Organizations studied here. The Survey-Questionnaire technique has its own critical issues that may cause some limitation of this study viz., socially desirable responses, etc. Regardless of the above limitations, this empirical research study tries to initiate the research work in the new paradigm of Leadership theory to deal with the situations and contingencies in the Knowledge Era.

### References

- Barkema, H. G., Baum, J. A., & Mannix, E. A. (2002). Management challenges in a new time. *Academy of Management Journal*, 45(5), 916-930.
- Barnard, C. I. (1938). *The functions of the executive*. Cambridge, Massachusetts: Harvard University.
- Bedeian, A. G., & Glueck, W. F. (1983). *Management*. New York: CBS College Publishing.
- Boisot, M. H. (1998). *Knowledge assets: Securing competitive advantage in the information economy*. OUP Oxford.
- Bowers, D. G., & Seashore, S. E. (1966). Predicting organizational effectiveness with a four-factor theory of leadership. *Administrative Science Quarterly*, 238-263.
- Child, J., & McGrath, R. G. (2001). Organizations unfettered: Organizational form in an information-intensive economy. *Academy of management journal*, 44(6), 1135-1148.
- Conger, J. A., & Kanungo, R. N. (1987). Toward a behavioral theory of charismatic leadership in organizational settings. *Academy of management review*, 12(4), 637-647.
- Conger, J. A., & Kanungo, R. N. (1988). Behavioral dimensions of charismatic leadership. In J. A. Conger and R. N. Kanungo (1998). *Charismatic leadership*. (pp. 78-97). San Francisco: Jossey Bass Inc.
- Conger, J. A., & Kanungo, R. N. (1992). Perceived behavioural attributes of charismatic leadership. *Canadian Journal of Behavioural Science*. 24(1), 86.
- Conger, J. A., & Kanungo, R. N. (1994). Charismatic leadership in organizations: Perceived behavioral attributes and their measurement. *Journal of organizational behavior*, 15(5), 439-452.
- Davenport, T. H. (2001). Knowledge work and the future of management. In W. G. Bennis, G. M. Spreitzer & T. G. Cummings (Eds.), *The future of leadership: Today's top leadership thinkers speak to tomorrow's*, 41-58. San Francisco: Jossey-Bass.
- Dinh, J. E., Lord, R. G., Gardner, W. L., Meuser, J. D., Liden, R. C., & Hu, J. (2014). Leadership theory and research in the new millennium: Current theoretical trends and changing perspectives. *The Leadership Quarterly*, 25(1), 36-62.

- Field, A. (2000). *Discovering statistics using SPSS for Windows: Advanced techniques for beginners*. London. Sage Publications.
- Halal, W. E., & Taylor, K. B. (Eds.). (1999). *21st century economics: Perspectives of socioeconomics for a changing world*. Macmillan.
- Kaiser, R. B., Hogan, R., & Craig, S. B. (2008). Leadership and the fate of organizations. *American Psychologist*, 63(2), 96.
- Likert, R., & Likert, J. G. (1976). *New ways of managing conflict*. McGraw-Hill.
- Likert, R. (1961). *New patterns of management*. New York: McGraw-Hill.
- Likert, R. (1967). *The human organization*. New York: McGraw-Hill.
- Marion, R., & Uhl-Bien, M. (2001). Leadership in complex organizations. *The Leadership Quarterly*, 12(4), 389-418.
- Nonaka, I., & Nishiguchi, T. (2001). *Knowledge emergence: Social, technical, and evolutionary dimensions of knowledge creation*. Oxford University Press.
- Nonaka, I., Von Krogh, G., & Voelpel, S. (2006). Organizational knowledge creation theory: Evolutionary paths and future advances. *Organization studies*, 27(8), 1179-1208.
- Osborn, R. N., Hunt, J. G., & Jauch, L. R. (2002). Toward a contextual theory of leadership. *The Leadership Quarterly*, 13(6), 797-837.
- Schneider, M. (2002). A stakeholder model of organizational leadership. *Organization Science*, 13(2), 209-220.
- Steven, J. P. (1992). *Applied multivariate statistics for the social sciences* (2nd edition). Hillsdale, NJ: Erlbaum.
- Uhl-Bien, M., Marion, R., & McKelvey, B. (2007). Complexity leadership theory: Shifting leadership from the industrial age to the knowledge era. *The leadership quarterly*, 18(4), 298-318.
- Zohar, D. (1997). *Rewiring the corporate brain: Using the new science to rethink how we structure and lead organizations*. Berrett-Koehler Publishers.