Dimensional analysis and cluster of transformational leadership on public and private organizations

Adi Indrayanto

Faculty of Economics and Business, Universitas Jenderal Soedirman, Purwokerto, Indonesia
Email of corresponding author: adiindrayanto@gmail.com

Abstract

Purpose: The research aims to investigate and examine the dimension of transformational leadership on the private and public organization.
Methodology: Total number of mailed questionnaires was 150, and the total number of returned questionnaires was 110, but there were only 100 complete questionnaires; thus, the response rate is 73.3%. Confirmatory and cluster is performed for data analysis purpose.
Findings: The result shows that all transformational leadership dimensions are confirmed loading on the right places. The result provides an account in establishing a dimension of transformational leadership that will give more evidence of MLQ questionnaire can adopted on public and private organization. The result also showed that the private and public have differences on transformational leadership dimension that has more important.
Keywords: transformational leadership, confirmatory analysis, cluster analysis, private organization, public organization.

Abstrak

Tujuan: *Penelitian ini bertujuan untuk menyelidiki dan menguji dimensi kepemimpinan transformasional pada organisasi swasta dan publik.*
Metodologi: *Jumlah total kuisioner yang dikirim adalah 150, dan jumlah kuisioner yang dikembalikan adalah 110, tetapi hanya ada 100 kuisioner yang lengkap; dengan demikian, tingkat respons adalah 73,3%. Konfirmatori dan klaster dilakukan untuk tujuan analisis data.*
Hasil: *Hasilnya menunjukkan bahwa semua dimensi kepemimpinan transformasional dikonfirmasi ada di tempat yang tepat. Hasilnya memberikan masukan dalam membangun dimensi kepemimpinan transformasional yang akan memberikan lebih banyak bukti kuesioner MLQ yang dapat diadopsi pada organisasi publik dan swasta. Hasilnya juga menunjukkan bahwa swasta dan publik memiliki perbedaan dimensi kepemimpinan transformasional yang lebih penting.*
Keywords: *kepemimpinan transformasional, analisis konfirmasi, analisis klaster, organisasi swasta, organisasi publik.*

INTRODUCTION

The development of research in the area of human resource management and organizational behavior is currently growing rapidly. Interest in the study of leadership in developing employees ability to have an initiative attitude, take risks, to stimulate innovation and overcome the uncertainty is getting higher (Spreitzer, 1995). In carrying out the work recently it's highly required leaders who are able to delegate his competency so that subordinates are empowered maximally, which in turn will have an impact on performance (Gronn, 2000).

The research on leadership has been conducted oftenly by experts. Based on the results of meta-analysis conducted by Lowe *et al.* (1996) quoted by Bass *et al.* (2003), says that there is a positive relationship between transformational leadership with different dependent variables. The results of Jung and Avolio (2000) research also showed that transformational leadership has an influence on performance, with trust as the variables of relationship mediator.

Reviewed from the location and respondents, research conducted in various themes of leadership, it is known that most of the researches conducted using private organizations employees as sample, such as research of Batram and Casimir (2007) using call center employees as respondents. Besides, several researches conducted in other organizations such as the military (Bass *et al.*, 2003), students (Jung and Avolio, 2000), as well as the government-owned hospitals (Laschinger *et al.*, 2002). Table 1 shows some of the researches that have been conducted with various types of respondents:

Table 1. Reseach and sample

No.	Title	Author	Sample	Description
1	Transformational leadership and job behaviors: the mediating role of core job characteristics	Piccolo, F. Ronald; Colquitt, Jason A. (2006)	Private	Various jobs
2	Leader-member exchange as mediator of the relationship between transformational leadership and followers' performance and organizational citizenship behavior	Wang, H.; Law, K. S.; Hackett, R. D.; Wang, D.; & Chen, Z. X. (2005)	Various organizations	Big cities in China
3	Predicting unit performance by assessing transformational and transactional leadership	Bass, B. M.; Avolio, B. J.; Jung, D. I.; Berson, Y. (2003)	Military	United States
4	Opening the black box: an experimental investigation of mediating effects of trust and value congruence on transformational and transactional leadership	Jung, D. I.; Avolio, B. J. (2000)	Students of government university	United States
5	Fairness perceptions and trust as mediators for transformational and transactional leadership: a two-sample study	Pillai, R.; Schreisheim, C.; Williams, E. (1999)	Students and private	Studies with 2 samples
6	Effects of leadership style and followers' cultural orientation on performance in group and individual task conditions	Jung, D. I.; Avolio, B. J. (1999)	Students	Experimentally research
7	The impact of workplace empowerment and organizational trust on staff nurses' work satisfaction and organizational commitment	Laschinger, H.; Finegan, J.; Shamian, J. (2002)	Public	Nurses of Canadian hospital
8	Executive leadership roles in the Australian public service	Wyse, Alison; Vilkinas T. (2004)	Public	Australia
9	Leadership and followership in public libraries: transnational perspectives	Mullins, John.; Linehan, M. (2005)	Public	Irish library

Table 1 shows that the researches have been conducted mostly engaged with public or private organizations, which also includes the military and health care organizations. From the introduction above it's obviously that the study of leadership, especially transformational leadership has been widely applied in various organizations, therefore it needs a special discussion on the suitability of measurement of transformational leadership in various organizations. This research aim to confirm the measurement of transformational leadership in public and private organizations using the MLQ, besides this research also aim to examine the transformational leadership characteristics on private and public organizations. This study will try to answer two problems, first, whether the measurement MLQ transformational leadership can be used in private and public organizations. Secondly, how do the characteristics of transformational leadership in private and public organizations.

RESEARCH METHOD

The design of this research study is by hypothesis examination with survey method. The research instrument applied was questionnaire distributed to the public sector within local government officials and the private sector within retail companies. This research was conducted at the local government officials and employees of retail companies in Banyumas, Pemalang, and Purbalingga Regency. To determine the sample to be applied will be based on convenience sampling technique. Meanwhile, according to Hair *et al.* (2006) to obtain a sample with power of 0.8 with alpha researchers assumed at 5%, the planned sample in this study were as many as 130 samples.

Transformational leadership is the ability of a leader to inspire the employees to generate creation and presentation of optimistic and enthusiastic future vision. Additionally, to generate a sacrificial attitude, inspirator, and capable in creating high standards for his subordinates. Then able to provide support, encouragement, to subordinates, and able to raise awareness to the problem, and able to look at issues in a new point of view. Transformational leadership will be measured by 4 indicators consisting of inspirational motivation (4 items), idealized influence (8 items), individualized consideration (4 items), intellectual stimulation (4 items) adopted from the MLQ Form 5X-Short (Bass and Avolio, 1995). Measurement scales applied to measure these variables is by applying Likert scale of 1 to 5, with a range of 1 (strongly disagree) and 5 (strongly agree). As an illustration, the following are examples of statements that will be used in measuring the variables: to measure the inspirational motivation; leaders describes optimistic overview about the organization's future, Idealized influence; leaders show high level of confidence, Individualized consideration; leaders capable in developing the skills to get better, Intellectual stimulation; Looking for a different point of view when solving problems.

To test the first problem, will be conducted factor analysis using confirmatory factor analysis. For each leadership dimension is expected the loading on the dimensions meets the expectations. To obtain good results on analysis factor, Hair *et al.* (2006) suggested that the rule of thumb that is usually applied to make a preliminary examination from matrix factor is ± 0.30 to be considered has reached the minimum level, for loading ± 0.40 is considered better and for loading ≥ 0, is considered to be practically significant.

To test the second issue will be conducted cluster analysis by using hierarchical cluster. Cluster analysis is an interdependence test so that in this analysis there is no independent variables nor the dependent variables. Cluster analysis principally applied to classify objects (respondents, consumers, products and others), or a process to summarize a number of objects becomes less and named it as a cluster. Basic grouping applied in cluster analysis is the similarity (similarity) or distance (distance). Objects in a cluster similar compared to the objects in other cluster. Cluster analysis is also often referred to as classification analysis (classification analysis).

RESULT

Characteristics of respondents

The analysis unit in this study is the individual, ie the employees of private and public organizations in several districts which include, Banyumas, Pemalang, and Purbalingga Regency. Out of 150 questionnaires distributed (each district 50 questionnaire) in all three districts 110 questionnaires were returned (response rate 73.3%). Out of 110 questionnaires that were returned, there were only 100 that can be processed for further because the rest are incomplete questionnaires. The characteristics of the 100 samples in this study are shown in Table 2.

Table 2. Characteristics of Respondents

No.	Characteristics	Number
1	Male	61
	Female	39
2	< 30 years old	28
	30-40 years old	27
	> 40 years old	45
3	Junior high school	11
	Senior high school	23
	Diploma/Undergraduate	45
	Postgraduate	21
4	< 5 years old	33
	5-10 years old	14
	> 10 years old	53
5	Private	53
	Public	47

Source: Processed raw data

The calculation result of the frequency distribution indicates that the majority of respondents are male, since the sampling organization in this study is a government organization and retail companies. Meanwhile, based on the age distribution of respondents it's found that the majority of respondents aged over 40 years old, this indicates that the respondents are mostly senior officers who have adequate experience and knowledge that support the research issues of leadership. Based on the level of education it's found that most of the respondents were bachelor's degree graduates. The calculation result of the frequency distribution of respondents working period indicates that the selection of the respondents is very precisely, this is because most of the respondents have been in the organization more than 10 years. This condition indicates that the respondents were obtained for this study is the proper respondent to determine the issue of research on transformational leadership. Meanwhile, the number of respondents from private organizations as much as 53 respondents, while from public organizations by 47 respondents.

Descriptive statistic

Table 3 shows the descriptive statistics consisting of mean, standard deviation, and correlation coefficient between variables. The results of the descriptive statistical analysis shows that the average value for each dimension of respondents' answers ranged from 3.07 to 4.39. The score indicates that the assessment of each variable has a great average. This means that transformational leadership in the organization is quite high. Table 3 also shows that the correlation coefficient between the dimensions of the study showed a significant value. Meanwhile, based on the

standard deviation data it's known that the deviation occurs in the data is not obvious, this means that the data are normally distributed.

Table 3. Descriptive statistic

No.	Variable	Mean	s.d.	1	2	3	4
1	Idealized Influence	4.12	0.46	1			
2	Inspirational motivation	4.39	0.56	0.27**	1		
3	Individualized consideration	3.98	0.72	0.28**	0.40**	1	
4	Intellectual stimulation	3.07	0.53	0.33**	0.55**	0.43**	1

*Sig. < 0.05, **Sig. < 0.01

Results of factor analysis

To obtain good results for analysis factor, Hair *et al.* (2006) suggested that the rule of thumb that is usually applied to set a preliminary examination of the matrix factor is $\pm$ 0.30 to be considered has met the minimum level, for loading ± 0.40 is considered better and for loading $\geq$ 0. 50 is considered significant practically. Thus, the higher the value of loading factor, the more important the role of loading in interpreting the matrix factor.

The following are the test results of analysis factor as confirmatory factor analysis against the variables measuring dimensions of transformational leadership:

Determinant of Correlation Matrix 0.000000000759, this matrix determinant value is close to zero, this means that there is a reasonable correlation between variables. Determinant value of the correlation matrix whose elements resemble the identity matrix will have determinant value as big as one. Wherein the identity matrix is the matrix without correlation between variables since this matrix's diagonal value is equal to one while other value is equal to 0. Thus correlation matrix considered having sufficient inter-relevated level between variables if the determinant value is approaching 0. The term of approaching here become subjective because when the determinant value to be said approaching while the definitive limit values are not available, therefore it needs to be continued with the Bartlett test.

Value of Kaiser-Meyer-Olkin Measure of Sampling Adequacy (KMO) is a distance comparison index between the correlation coefficient with its partial correlation coefficient. If the sum of squared up partial correlation coefficients among all pairs of variables has less value compared to the sum of squared up correlation coefficient, then the KMO value will be approaching 1. A small KMO value indicates that factor analysis is not appropriate to be applied. KMO value considered sufficient when it's bigger or equal to 0.5. Based on above output KMO value at 0.703 and thus KMO value Measure of Sampling Adequacy > 0.5.

Barlerlett's test showed a value of 1921.403, with a significance of 0,000. This value is used to test the hypothesis whether the correlation matrix is the identity matrix or not. Because the value of significance is smaller to α then Ho is rejected, which means that the correlation matrix tested is not an identity matrix. By looking at the determinant value, KMO value and Bartlett test value then its worth to do factor analysis on the correlation matrix.

Table 4. Loading factor

	Idealized influence	Inspirational motivation	Individualized consideration	Intellectual stimulation
KT1	.762			
KT2	.640			
KT3	.516			
KT4	.755			
KT5	.808			
KT6	.703			
KT7	.708			
KT8	.773			
KT9		.633		
KT10		.846		
KT11		.642		
KT12		.893		
KT13			.845	
KT14			.906	
KT15			.760	
KT16			.854	
KT17				.787
KT18				.709
KT19				.781
KT20				.899

Anti image testing results also show that some numbers forming diagonal (marked 'a') which indicates MSA value of a variable. MSA value has the same meaning as the KMO value, it just partially (each item/variable). For items/variables with MSA values less than 0.5, then this variable will be removed from the variable selection, the results of analysis showed that all items/variables exceeds 0.5 so factor analysis can be proceed.

The calculation result of factor analysis against transformational leadership instrument with four dimensions that includes Inspirational Motivation, Idealized influence, Individualized consideration, and Intellectual stimulation within 20 measuring items showed that all measuring items have loading factor in accordance with the expectation which is above 0.5 and loading on each factor in line with expectations.

Results of cluster analysis

Hierarchy Cluster attempts to agglomerate cases based on its similarities found on (the perception of) respondents, by comparing each pair of cases, for a certain number of respondents with a few member of it. But for many different cases, this will complicate the clustering process.

The agglomeration table is a table that shows the process of clustering formation one by one. Most individuals with similarities will be grouped first. The level of similarity between individuals indicated by the value of the coefficients, the smaller the coefficients value the more similar the two individual/object. According to the angglomeration table highest known difference occurs in stages 99 and 98 Thus, it is known that the optimal number of clusters is as much as 2 clusters only.

Based on this output, it shows that the first cluster consisted of 71 respondents and cluster 2 consisted of 29 people. The analysis result also showed that the first cluster is an entirely respondents from public and private organizations, while the second cluster consists of respondents from private organizations only.

Here will be presented a table of clustering summary result based on analysis result:

Table 5. Result of clustering summary

Cluster		Idealized influence	Inspirational motivation	Individualized consideration	Intellectual stimulation
1	Mean	4.25	4.64	4.22	3.32
	n	71	71	71	71
2	Mean	3.81	3.77	3.41	2.59
	n	29	29	29	29

Based on the results of analysis it's known that cluster 1 is composed of 71 people, the characteristic of respondents in this group can be identified as of having idealized influence, inspirational motivation, individualized consideration. Whereas in cluster 2 comprised 29 people, characterized by high idealized influence, inspirational motivation. Obvious differences within the two clusters is that the perception of the respondents in cluster 1 was higher than in cluster 2.

DISCUSSION

Transformational leadership is a style of leadership that is currently become an important issue to encourage a subordinate to become a leader for themselves. This becomes very important when an organization requiring its employees to improve his performance.

The most dominant factor in the known dimensions of idealized influence is the awareness of subordinates that his leader always applying appropriate methods in every action that will lead subordinates becoming more respectful on him (KT5). Meanwhile, on the dimensions of inspirational motivation the most dominant factor is a leader's conviction upon succession in achieving its objectives (KT12). Individualized consideration dimension indicates that the dominant factor in this study is the ability of a leader who is capable looking at a problem from different point of view (KT14). On Intellectual stimulation dimensions the dominant contributor is a leader's ability in developing subordinates expertise (KT20).

Transformational leadership in this study was expanded which consists of idealized influence, inspirational motivation, individualized consideration and Intellectual stimulation. Many previous studies showed mixed results regardless the characteristics of the organization that became the object of the research.

This study provides empirical evidence that each organization has different characteristics in applying transformational leadership. Research Piccolo *et al.* (2006) conducted in private organizations demonstrate the value of transformational leadership is quite large. This is consistent with the findings in this study. Besides, this study also supports the findings of Pillai *et al.* (1999). However, in this study it is known that transformational

leadership in public organizations relatively small compared to private organizations. This is somewhat different from the results of research Laschinger *et al*. (2002), however, if we examine further will be found the difference that causes this to happen, where the research conducted by Laschinger *et al*. (2002) by applying to a public organization which is a hospital that already applies a basic service standard. Besides, the study was also conducted in European countries where the understanding to the responsibility is very high. In contrary to the study conducted in public organizations such as government officials in Indonesia who are relatively more difficult in developing transformational leadership.

CONCLUSION

The analysis showed that the testing which states that every dimension of transformational leadership entirely in accordance with the proper loading has been demonstrated in this study. The analysis result showed that there are two clusters that showed two characteristics of the respondents, ie clusters with the view of high transformational leadership and low transformational leadership. In private organization high dimensions of transformational leadership are idealized influence and inspirational motivation idealized influence, while on the public and some private organizations show dimensions of idealized influence, inspirational motivation, individualized consideration. The results of this study showed supportive and contradictive results to the previous studies. Theoretically, these results reconfirm the previous findings by Piccolo *et al*. (2006) conducted in private organizations. Beside supporting the findings, this study also generated different findings or in contrary to the previous studies which is finding of Laschinger *et al*. (2002).

REFERENCES

Bass, B.M. and Avolio, B.J. (1995). *MLQ multifactor leadership questionnaire for research*. Reedwood City, CA: Mind Garden.

Bass, B.M., Avolio, B.J., Jung, D.I., Berson, Y. (2003). Predicting unit performance by assesing transformational and transactional leadership. *Journal of Applied Psychology*, *88*(2), 207-18.

Batram, T. and Casimir, G. (2007). The relationship between leadership and follower in-role performance and satisfaction with the leader the mediating effects of empowerment and trust in the leader. *Leadership & Organization Development Journal*, *28*(1), 4-19.

Gronn, P. (2000). Distributed properties: A new architecture for leadership. *Educational Management Administration and Leadership*, *28*(2).

Hair, J.F. Jr., Black, W.C., Babin, B.J., Anderson, R.O., and Tatham, R.L. (2006). *Multivariat data analysis.* New Jersey: Pearson Prentice Hall.

Jung, D.I. and Avolio, B.J. (1999). Effects of leadership style and followers' cultural orientation on performance in group and individual task conditions. *The Academy of Management Journal*, *42*(2), 208-218.

Jung, D.I. and Avolio, B.J. (2000). Opening the black box: An experimental investigation of mediating effects of trust and value congruence on transformational and transactional leadership. *Journal of Organizational Behavior*, *21*(8), 949-964.

Laschinger, H., Finegan, J., and Shamian, J. (2002). The impact of workplace empowerment and organizational trust on staff nurses' work satisfaction and organizational commitment. *Book Series: Advances in Health Care Management*, *3*, 59-85.

Lowe, K., Kroeck, K., and Sivasubramaniam, N. (1996). Effectiveness correlates of transformational and transactional leadership: A meta-analytic review of the MLQ literature. *The Leadership Quarterly*, *7*(3), 385-425.

Mullins, J. and Linehan, M. (2005). Leadership and followership in public libraries: Transnational perspectives. *International Journal of Public Sector Management*, *18*(7), 641-647.

Piccolo, F., Ronald, C., and Jason A. (2006). Transformational leadership and job behaviors: The mediating role of core job characteristics. *Academy of Management Journal, 49*(2).

Pillai, R., Schreisheim, C. and Williams, E. (1999). Fairness perceptions and trust as mediators for transformational and transactional leadership: A two-sample study. *Journal of Management*, *25*(6), 897-933.

Spreitzer, G. (1995). Psychological empowerment in the workplace: Dimensions, measurement, and validation. *The Academy of Management Journal*, *38*(5), 1442-1465.

Wang, H., Law, K.S., Hackett, R.D., Wang, D., and Chen, Z.X. (2005). Leader-member exchange as mediator of the relationship between transformational leadership and followers' performance and organizational citizenship behavior. *The Academy of Management Journal, 48*(3), 420-432.

Wyse, A. and Vilkinas, T. (2004). Executive leadership roles in the Australian public service. *Women in Management Review*, *19*(4), 205-211.