

The Scale Construction and Validation of an Indigenous Measure of Effective Academic Leadership

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Effective leadership is a key to organizational success in all kinds of organizations (Meraku, 2017) including academia. In an attempt to measure effective academic leadership in Pakistani educational institutions, the researchers found a dearth of reliable indigenous tools. Thus, the current study was designed to develop and validate a reliable indigenous tool for measuring effective academic leadership for Pakistani academic institutes. The construct of effective leadership is essential for the progression of academic institutes and its quantification can further help in defining standards. All the steps of scale construction i.e. item generation, consulting subject matter experts, pilot study, reduction of items if necessary, data collection and finally conducting factor analysis were taken. After collecting a pool of essential qualities of effective academic leaders; (by enlisting of traits by the participants on a form) a 26-item scale was constructed. Subject matter experts were consulted throughout the scale construction process. After the judges' opinion and pilot study, 2 items were further discarded, and the remaining 24 items were retained. With a sample of 100 academic leaders (from randomly selected higher education institutes), exploratory factor analysis was computed which ended up in a uni-factor scale of effective academic leadership consisting of 19 items. Confirmatory factor analysis (CFA) (with a sample of 225 academic leaders) confirmed the existence of a uni-factor solution and provided a good model to the data with chi-square 436.34 ($df = 147, p < .01$), CFI = .95, GFI = .94, and RMSEA = .07. Reliability analysis of the tool indicated high reliability with Cronbach's alpha reliability coefficient .95. In order to find out the Convergent validity multifactor leadership questionnaire was used, and results indicated a significant direct relationship ($r = .32, p < .01$). The study has implications for selection of new leaders, evaluation of existing leaders and policy making regarding effective academic leadership

Keywords: Effective Academic Leadership, higher education institutes, validation, reliability¹

Introduction

Leadership is one of the most widely studied topics throughout the world yet not a single agreed-upon definition is available (Raffo & Clark, 2018). It is basically because the word leadership means different things to different people and in different situations it could be perceived differently. Despite the availability of 350 definitions of leadership (Daft & Lane, 2008) and the broad nature of the construct most researchers agreed that leadership is the process of influencing others (Kouzes & Posner (2017)) for the achievement of some common objectives (Rowe & Guerrero, 2018).

The concept of leadership can be traced back to the Greek era and in its conversion or transformation to modern leadership, it has gone through several perspectives or theories. Firstly, leadership was explained in terms of traits and was called the ‘Trait perspective of leadership’. It described leadership as a bunch of heritable traits which differentiate leaders from non-leaders (Galton & Eysenck, 1869; Zaccaro, 2007). Despite the emergence of other theories, trait theory always remained in the limelight and had a powerful comeback in 2011 when it was used to relate to effective leadership (Rowe & Guerrero, 2018).

The next perspective of leadership was the ‘Behavioral perspective’ which divided leadership into task-oriented leadership and people-oriented leadership paradigms (Stogdill, 1948; Issahaka & Lines, 2021) where leaders are either more concerned about tasks in hand or people are of primary focus. This theory is still in use and is often linked with gender differences in leadership. It is being claimed that female leaders are usually more people-oriented as compared to male leaders (Schneider & Bos, 2014).

The next perspective that emerged was “Situational Leadership” which claims that according to different situations, leaders change their

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leadership styles (Hersey & Blanchard, 1969; Thompson & Vecchio, 2009). This leadership style is considered a more dynamic phenomenon because of its diversity in different situations (Northouse, 2010). Situational leadership is related to lesser levels of stress and a higher level of effectiveness (Avery & Ryan, 2002). Leadership was also being studied in terms of 'directive, supportive, achievement-oriented participative leadership styles' which refers to 'Path goal theory of leadership' (Dixon & Hart, 2010; House, 2004).

The latest trend in leadership is the discussion of the 'Transformational and Transactional Perspective'. Transformational leadership is considered to be related with vision of leaders which they communicate to their team through modeling and inspire and motivate the employees to pursue that vision (McShane & Travaglione, 2004). Transactional leadership is usually practiced by a leader when he/she links rewards with accomplishment of current targets (Judge & Piccolo, 2004).

Because of the positive consequences of leadership for employees and organization several leadership types came into existence, for example, bureaucratic leadership (Schultz & Schultz, 1986, Arshad et al., 2021), self-leadership (Neck & Houghton, 2006), creative leadership (Guthrie & Venkatesh, 2012) etc. One of these leadership types is academic leadership (leadership being practiced in academic institutes).

Academic leadership is said to be directly related with teaching and research which are core functions of academia, and it is less related to managerial aspects like human resource and marketing (Bolden, et al., 2012). Usually vice chancellor, deans, directors and heads of departments (HODs) are considered academic leaders; the people in formal authority positions (Moore & Diamond, 2000). Academic leadership is considered to be related with leading the learning communities and focuses on establishing objectives, designing and improving curriculum, specifying resources for instructions and evaluation of faculty as well (Cherian & Daniel, 2008). As more of these things are related to faculty and student a comparatively new trend in academic leadership is induction of accountability (Eaker et al., 2002).

Effective leadership is essential for workplace productivity and growth of organization (Debowski & Blaké, 2004) and in educational settings effective leadership is necessary for quality education (Abdullah et al., 2012). Generally, in the whole world academic leadership is not as

effective as it should be (Scott et al., 2008) and Pakistan is no exception (Tufail, 2011; Rehman, 2011). The problem gets worsens when there is lack of empirical research on what effective leadership is and how it could be measured. In Pakistan there is scarcity of empirical research on academic leadership in general and specifically on effectiveness of academic leadership (Abdullah et al., 2012; Leithwood, et al., 2007) and there is no standardized tool available for measuring the effectiveness of academic leaders and even academia lacks role models to judge the standards of effective leadership (Rehman, 2011).

Literature Review

A number of researches highlighted the importance of academic leadership and clearly correlate effective academic leadership with the success of academic institute (Iqbal & Iqbal, 2011). It is so important that even competent faculty, up to the mark facilities and well-designed programs may fail to provide high performance in absence of effective academic leadership (Gandossy & Guarieri, 2008). Researchers also highlighted that in Pakistan effective academic leadership is scarce (Leithwood et al., 2007) and reasons for this are varied ranging from selection of ineffective academic leaders to political, technological and social issues (Abdullah, 2011; Altbach & Knight, 2007; Debrowksi & Blake, 2004) and this is not just restricted to Pakistani society, but leadership deficit is considered an attribute of South Asian social and organizational problems (Khan, 2011). We can conclude that to enhance the productivity, development and performance of academic institutes effective leadership is a vital contributor (Barrett & Breyer, 2014).

Effective academic leadership can instill many positive things in academic institutes and in people of academia for example job satisfaction (Shieh, et al., 2001), good decision making, self-motivation and motivation for others (Mintzberg, 2004), personal and professional autonomy (Bryman, 2007), committed faculty members, personal, professional and academic development of students and better image and strong culture of academic organizations (Siddique et al., 2011).

It is important to measure the effectiveness of all leaders (as it will lead to credibility and sustainability) and same is true for academic leaders, yet it is difficult to measure the effectiveness of academic leaders (Zetlin, 2013). Different approaches can be adopted to measure effectiveness of leadership for example organizational performance, behavioral changes of employees, organizational development or over all change in

organizational climate can be a direct measurement of leader effectiveness (LeMay & Ellis, 2008). Impact on job satisfaction and organizational commitment is also an indicator of leader effectiveness as supported by research (Bushra et al., 2011), subjective measures can also be used for this purpose for example critical incident technique and number based metrics etc. Yet rating scale (self-report and others) are best to measure leader effectiveness as it provides accurate picture of leaders' skills and attributes (Nielson, 2011).

Rationale of study

Keeping in view the importance of effective academic leadership for organization and employees it was intended to measure the phenomenon in Pakistani academic institutes. An absence of indigenous tool for measuring effective academic leadership made researchers to develop a tool and that is why this research project was designed. The aim was to develop a scale for measuring effectiveness of academic leaders. But before developing a tool it was necessary to have an indigenous perspective of effective academic leadership as perceived by people in Pakistani academia. The study was designed in two phases; in first phase characteristics of effective academic leaders were collected from academic leaders through interviews. Whereas faculty members and students enlisted traits on a form and ranked order those traits (Yasin et al., 2015). In second phase these characteristics were used to design a scale for measuring effectiveness of academic leadership. Researchers emphasize that effectiveness of a leader can be measured in terms of traits he/she possesses (Rowe & Guerrero, 2018) and more often when we ask people to define a leadership it is usually a list of roles and characteristics that describes a leader (Buller, 2008; Harris, 2005). That is why earlier a pool of effective academic leader characteristics was gathered and then it was used for scale construction.

Objectives of the study

1. To develop an indigenous scale for measuring the effectiveness of Pakistani academic leaders
2. To establish the psychometric properties of the said scale.

Methods

Phase I: Item Generation and Construction of Scale

On the basis of leader characteristics gathered in earlier stages of study a pool of 26 characteristics was collected. These were further

converted into items and were presented to subject matter experts for evaluation based on clarity, face validity, cultural relevance, comprehension and redundancy. 24 items were kept based on 80% agreement of judges. The changes of grammar and language were incorporated and the final scale of 24 items was measured on 10 points Likert Scale (10 = Strongly Agree, 5 = Neutral and 1 = strongly disagree) to get meaningful interpretation and precise measurement of results (Fakunmoju & Bammeke, 2013). So far as the scoring of scale is concerned; a higher cumulative score on the scale indicated effective academic leadership and low score reflected non-effective academic leadership.

Pilot Study

A pilot study with $n = 30$ academic leaders (with equal number of men and women) of higher education institutes was conducted for further evaluation and cleansing of items and feedback of the participants was incorporated in terms of grammar and language. Then the final study was conducted.

Sample of Final Study

A random sample of seven academic institutes (public and private colleges and universities of Lahore) was selected by hat method without replacement. 5 universities three private and two semi government were selected through this method and two public sector colleges were selected. A purposive sample of 100 academic leaders was recruited for data collection. There were 53 women and 47 men leaders, with age range 45 to 60 years and education was from Masters to post-doctorate level. Minimum 2 years of experience in a leadership position was inclusion criteria for participants' selection.

Procedure

After departmental permission, the academic leaders were contacted personally for data collection. 200 leaders were contacted for data collection. No interest was shown by 55 academic leaders. Whereas 45 forms were not dully filled so the final data ended up by 100 academic leaders. Even this number (100) was more than the minimum item-participant ratio (3 participants per item, Mundform et al., 2009) for EFA. Informed consent was taken after debriefing participants about the purpose of the study. The data were used for exploratory factor analysis (EFA) and for determining reliability and validity of Effective Academic Leadership Scale (EALS).

Results

Exploratory factor analysis (EFA) was conducted to explore factor structure and construct validity by using Principal component analysis and Varimax rotation. The initial screening results were as follows:

Sampling Adequacy: Bartlett's Test of Sphericity (Bartlett, 1954) and Kaiser-Meyer-Olkin (KMO, Kaiser, 1970) indicated data appropriateness ($p < .001$) and sampling adequacy ($r = .95$).

Data Screening: Correlation matrix yielded all correlations above .30 which showed suitable matrix for factoring (Coakes & Steed, 2003) except item 6, 7 and 8. So these were excluded.

Communalities: for majority of variables communality remained above .5 except item 22 and 24 so we excluded those items as well (Field, 2009) and final scale consisted of 19 items.

Initially PCA resulted in 3 factor solution, but it did not meet the criteria of retaining items i.e. Eigen value and number of items in a factor etc (Field, 2009) so we opted a uni-factor solution which provided best data fit in a simplest structure with minimum cross loadings of items. It explained a total variance of 53% and Eigen value of 12.68. Some items in this Uni factor solution resembled characteristics of transformational leadership (Ahuja, 1999; Hogg, 2012).

Factor loadings of 19 items of EALS in uni-factor solution obtained through Varimax rotation (n=100)

	Rotated Factor Loadings
	I
	Effective Academic Leadership
1. Communication skills is my strongest quality	0.77
2. People say that my best quality is intellectual ability	0.74
3. I value cooperation	0.85
4. Being confident is a necessary quality of a leader	0.70
5. People say that I possess and indicate Knowledge	0.71
9. A leader respects other's opinions who disagree	0.77
10. I find new and novel ways to get things done	0.79
11. I inspire and encourage others to excel	0.88
12. I am receptive to others	0.83
13. I try to stimulate others to follow along with me	0.82
14. I can anticipate the needs of others	0.86
15. Generally I am guided by a vision	0.38

16. I encourage others to participate when making decisions	0.85
17. I value the integrity in others and myself	0.88
18. I lead by setting an example	0.88
19. Successful leaders should be able to make good decisions	0.87
20. I believe that leaders should stand up to their decisions	0.77
21. I visualize and foresee before taking action	0.83
23. I believe and exert self-accountability	0.84

Reliability Analysis: Cronbach's Alpha of the scale indicated excellent reliability i.e., .95 (DeVellis, 1991).

Item Total Correlation: The item-total correlation verified our uni-factor solution and revealed significant correlations within the range of .68 - .87. The item retention criteria was .30 and above the correlation of each item with the total. It was acceptable for a sample 4 times greater than the number of items (Comrey & Lee, 1991).

Phase II: Confirmatory Factor Analysis (CFA)

Next, we attempted to determine construct validity of effective academic leadership scale by using CFA. It was an attempt to confirm the factor structure of EAL scale.

Sample: With $n=225$ women and $n=130$ men, total 335 participants were selected via purposive sampling technique. As participants were academic leaders so the minimum education was Masters which ranged till post doctorate. Age categories varied from 25 to 70 years old. Sample was adequate for computing CFA as a rule of thumb 300 participants are enough for CFA by AMOS (Anwar, 2018).

Instrument: Effective Academic Leadership Scale (EALS) was used for data collection (which we developed in phase 1). The scale consisted of 24 items being measured on 1-10 Likert type scale where 10 = Strongly Agree, 5 = Neutral and 1 = Strongly disagree. Cumulative score of all the

items can be computed, higher score indicative of high effective academic leadership and vice versa. Cronbach alpha reliability of the scale = .95.

Procedure: From the Punjab province four divisional headquarters were selected (i.e. Rawalpindi, Gujranwala, Faisalabad, and Lahore) for data collection. The names of all public and private universities and postgraduate colleges (higher education institutes) of these divisions were put in a hat and 10 educational institutes were randomly chosen without replacement. It resulted in a pool of 3 colleges (1 private and 2 public sector) and seven universities (4 private and 3 public sector). The participants (450 academic leaders; heads and academic deans) were then contacted personally and via email. With a response rate of 78.8 % we received 355 completely filled forms which were subjected to further analysis.

Analysis

AMOS 20 was used to run CFA. Literature reports different criteria and indices to assess the best model fit (McDonald & Ho, 2002). These indices include CFI, GFI and RMSEA.

Results

In order to confirm factor structure and assess model fit, following indices were used with an initial criterion of model fit i.e. factor loading $>.35$.

Table 2

Model Fit Indices of CFA for Effective Academic Leadership Scale (n = 355)

Indexes	Chi square	df	Sig	Chisquare/df	CFI	RMSEA	GFI
Model	436.34	147	.000	2.96	.95	.07	.94

The final scale consisted of one factor solution with item loadings ranged from .37 to .87. Results provided strong evidence for validation of single factor structure.

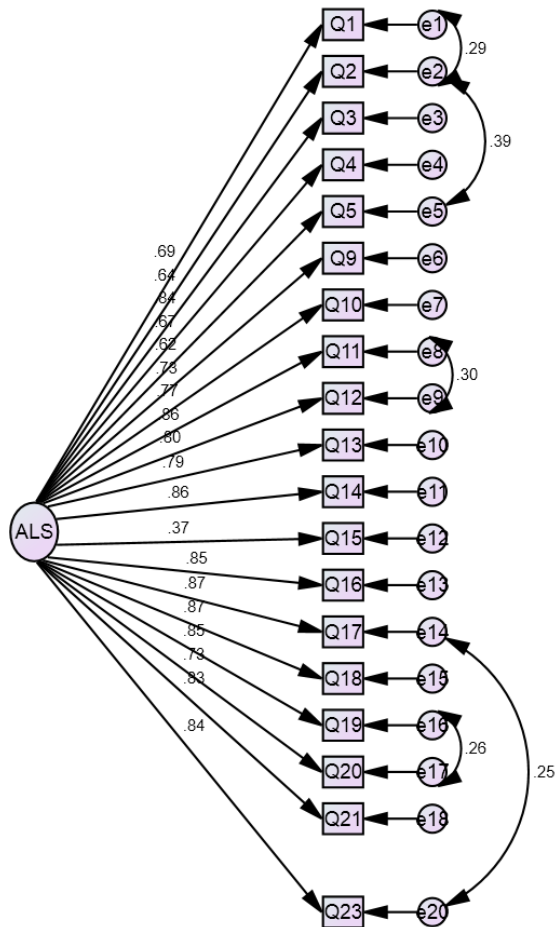


Figure 1. Model obtained through confirmatory factor analysis for EALS

Phase III: Convergent Validation of EALS

In order to find out the convergent validity of EALS we used Multifactor Leadership Questionnaire (MLQ) form 6-S. As EALS turned out to have components of transformational leadership so MLQ was best choice to calculate positive correlation of both scales.

Sample: A sample of 56 academic leaders (Men = 25 and Women= 31) was selected through purposive sampling. The age range of sample was 25 to 70 years and education spanned from masters to post doctorate. We ensured to include the heads who have at least 2 years of work experience in this position.

Instrument: Effective Academic Leadership Scale (EALS) and Multifactor Leadership Questionnaire (MLQ6S) were used. EALS is a 19-item indigenous scale to measure effectiveness of academic leaders. Cronbach alpha of scale is .92. MLQ (6S) is most frequently used tool to measure leadership styles developed by Bass and Avolio (1992). Several researchers attempted to give evidence of scale's reliability and validity (for example Bass & Avolio, 1992); Tejada, et al., 2001 etc.).

Procedure: First of all four universities of Lahore were randomly selected by using hat method without replacement for selecting sample. It resulted in 2 public and 2 private universities. After departmental permission we contacted 100 academic leaders in person and through mail and received a data of 56 academic leaders though informed consent was taken and confidentiality was assured.

Results

To calculate the convergent validity of EALS and MLQ 6-S Pearson correlation was used. Both the scales appeared to be significantly correlated and the correlation proved to be positive ($r = .32$, $**p < .01$). Thus, convergent validity was established.

Discussion

The current study attempted to develop a self-report measure of effective leadership in the context of Pakistani academic institutes based on characteristics of effective academic leaders. First of all, in order to explore the factor structure of 26-item EALS principle component analysis was applied. Eigenvalue of 1 was the criterion set for item retention along with item loading of .3 and above. A uni-factor solution with 19 items retained and variance of 52.83 % was the final product.

Further to confirm the outcomes of exploratory factor analysis, confirmatory factor analysis was calculated. Results confirmed the EFA. No item yielded factor loadings lower than .35. A good model fit was also indicated by results.

Further high internal consistency was apparent from Reliability analysis (Cronbach, 1984). All the items appeared to be positively correlated (.67 to .88 was range of values) with the total scale when we evaluated item-total correlation.

So far as the reliability results of our scale are concerned in relation to correlation value .88 is considered good reliability but it didn't fall in range of .90s. Concerned literature suggests that higher reliability (in the .90s) values are expected in academic placement, diagnostic and employment scales (DeVellis, 1991), further high reliability is observed in longer scales with more items (Crocket & Algina, 1986; Mehrens & Lehman, 1991; Gregory, 1992).

Both EFA and CFA of our scale yielded uni-factor solution. 19 items retained reflected the characteristics of effective leaders in academic settings. The qualities that appeared were in line with the studies of Ahuja (1999 i.e. honesty, communication skills and inspiration) and Hogg (2012 i.e. trust, creativity and inspiration) and also have components of transformational leadership (communication skills, vision and motivation). These qualities along with being likeable and bringing subordinates together also reflect the people centered approach of an effective leader further such leadership is essential for academic institutes so that learning culture can be promoted (DuFour & Mattos, 2016). Further such a leadership model is highly favorable and applicable in academia (Johnston & Westwood, 2007). The researchers further indicated that there is need for leadership development in academia rather than considering it a hierarchical activity; it would help motivating people in academia to become more professional in learning and teaching activities (Cowan & Heywood, 2001; Ramsden, 2003).

Moreover, significant positive relation between EALS and MLQ (scale containing items of transformational leadership) provided evidence of Convergent validity (Zhu, 2013).

Limitations and Future Suggestions

Not including the school leaders was the major limitation of this study. For more enriched findings this school leadership should be included in future research. Further the study is limited to Punjab province only, future studies may extend at national level. Calculating Divergent validity of the scale is our future aim.

Conclusion

Effective Academic Leadership Scale appeared to be a reliable and valid (convergent and concurrent) measure of academic leadership effectiveness though a couple of limitations were observed. The predictive strength of EALS was measured by using job satisfaction scale. Job satisfaction remained significant positive predictor of EALS. (Describing full results is not in scope of this article).

Academic leadership is comparatively a new concept in Pakistani context and there is a scarcity of reliable and valid tools for measuring effectiveness of academic leaders. Thus, the inability to measure the construct further leads to difficulty in research, practice and policy making relating leadership in academia. Hence, our attempt of scale development would be beneficial for future research.

Implications

This study has implications for academic institutes, leadership promoting agencies and leader selection committees and persons. This scale can also be used as a tool kit for evaluation and measurement of leader effectiveness. It will also help in national policy for academic organizations.

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