

LEADERSHIP QUALITY PRACTICES IN AUTONOMOUS POLYTECHNIC COLLEGES IN TAMIL NADU

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ABSTRACT

The leadership in educational institutions is widely recognized as having crucial importance for performance. Indeed, it is acknowledged as being second only to classroom teaching in terms of its influence on student learning with the greatest impact found in institutions where students' learning needs are the most acute. There is a wide range of issues relating to supporting and promoting the provision of effective leadership in educational institutions, including those around recruitment, roles and responsibilities, retention, succession planning, governance, continuing professional development and reward. . The faculties of autonomous polytechnic colleges have been selected by adopting random sampling and the data and information have been collected from 200 faculties and pertain to the year 2010-2011.

The foregoing analysis indicates that about more than two-third of faculties is males and more than half of the faculties to the age group of 41-50 years. The majority of the faculties are post graduates more than two-third of faculties to the engineering department and are lecturers. The CFA indicates that significant chi-square value, GFI and CFI are greater than 0.90 and RMR and RMSEA values are less than 0.1 indicate excellent fit. The values, faculty learning, innovation, safety, interest of faculty, quality and educational service discriminate best among three designations of the faculties in autonomous polytechnic colleges in Tamil Nadu. Based on the discriminant function, 86.50 per cent of the measures have been correctly classified.

Leaders in polytechnic colleges often have a space of action where it is possible to influence the inhibiting structures. In polytechnic colleges, which is characterized by internal responsiveness, the leaders are sensitive to the needs of the faculties and students and will change regulation when necessary and possible, in order to support and promote development. This requires measures where leaders develop their habits to listen to experiences made by faculties. This is important for all the efforts made by individual academic faculties to reach their full potential in terms of collaboration and mutual support.

Key Words: *Autonomous Polytechnic Colleges, Confirmatory Factor Analysis, Discriminant Analysis, Leadership Quality.*

1. INTRODUCTION

The quantitative expansion in the field of technical education in India necessitated qualitative assessment of leadership and its influence on performance results of institutions. There is great interest in educational leadership in the early part of the 21st century. This is because of the widespread belief that the quality of leadership makes a significant difference to institutions and student outcomes. In many parts of the world, including India, there is recognition that educational institutions require effective leaders and managers if they are to provide the best possible education for their learners. As the global economy gathers pace, more governments are realizing that their main assets are their people and that remaining, or becoming, competitive depends increasingly on the development of a highly skilled workforce. This requires trained and committed teachers but they, in turn, need the leadership of highly effective principals and the support of other senior and middle educational managers.

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acute. There is a wide range of issues relating to supporting and promoting the provision of effective leadership in educational institutions, including those around recruitment, roles and responsibilities, retention, succession planning, governance, continuing professional development and reward.

The way in which successful leaders apply leadership quality practices will be influenced by a number of factors, including their judgments about the conditions for teaching and learning in the institutions, the confidence and experience of their staff; and the behaviour, aspirations and attainment levels of the students. There is a strong association between leadership quality practices and performance of the educational institutions. The role of leaders in polytechnic educational institutions has changed in recent years, becoming increasingly complex and demanding. Polytechnic institutions are becoming more autonomous and are facing higher levels of accountability, while serving more diverse stakeholders and being confronted with a broad range of social issues. The polytechnic educational institutional leaders will require a broad range of skills and qualities in order to effectively discharge the roles and responsibilities in leading the polytechnic institutions.

The successful leadership quality practices improve students' outcomes through their values, virtues, dispositions, attributes and competences as well as what they do in terms of the strategies they select and the ways in which they adapt their leadership practices to their unique context in order to achieve the excellent performance. With this background, the present research is attempted to study the leadership quality practices in autonomous polytechnic colleges in Tamil Nadu.

2. METHODOLOGY

Among the polytechnic colleges in Tamil Nadu, the autonomous polytechnic colleges in Tamil Nadu have been purposively selected for the present study. The faculties of autonomous polytechnic colleges have been

selected by adopting random sampling technique through pre-tested, structured interview schedule through direct interview method. The data and information have been collected from 200 faculties and pertain to the year 2010-2011.

3. STATISTICAL TECHNIQUES

The frequency and percentage analyses were carried out to understand the characteristics of faculties. In order to identify the dimensions affecting the leadership quality practices, the confirmatory factor analysis has been employed. In order to discriminate the designation of the faculties in autonomous polytechnic colleges in Tamil Nadu based on the leadership quality practices, the discriminant analysis has been applied and the functional form of discriminant function is:

$$D = b_1 X_1 + b_2 X_2 + \dots + b_n X_n + c$$

Where,

D = Discriminant (dependent) Variable (Designation)

X_i=Discriminating (independent) Variables (Leadership Quality Practices)

b_i= Discriminant coefficients;

c = Constant

The Likert five point scale (strongly agree to strongly disagree) was used to measure the variables of leadership direction, organizational governance, organizational performance reviews and social responsibility and ethics.

4. RESULTS AND DISCUSSIONS

4.1 Characteristics of Faculties

The characteristics of faculties in autonomous polytechnic colleges were analyzed and the results are presented in **Table 1**. The results show that about 88.50 per cent of faculties are males while the rest of 11.50 per cent of faculties

are females. The results indicate that about 52.00 per cent of faculties of autonomous polytechnic colleges in Tamil Nadu belong to the age group of 41-50 years followed by 31-40 years (41.00 per cent), more than 50 years (5.50 per cent) and less than 30 years (1.50 per cent).

It is clear that about 68.00 per cent of faculties are post graduates followed by doctorates (23.50 per cent) and under graduates (8.50 per cent). It is observed that about 79.00 per cent of faculties belong to the engineering department, while, the rest of 21.00 per cent of faculties belong to the humanities department. It is apparent that about 72.50 per cent of faculties are lecturers followed by head of the departments (23.00 per cent) and principals (4.50 per cent).

Table 1. Characteristics of Faculties in Autonomous Polytechnic Colleges in Tamil Nadu

Variables with Category	Households(N=200)		Variables with Category	Households(N=200)	
	Number	Per Cent		Number	Per Cent
Gender			Department		
Male	177	88.50	Engineering	158	79.00
Female	23	11.50	Humanities	42	21.00
Age(Years)			Designation		
<30	3	1.50	Lecturer	145	72.50
31-40	82	41.00	Head of the Department	46	23.00
41-50	104	52.00	Principal	9	4.50
>50	11	5.50			
Educational Qualification					
UG	17	8.50			
PG	136	68.00			
Doctorate	47	23.50			

4.2 Confirmatory Factor Analysis (CFA) for Leadership Quality Practices

The confirmatory factor analysis (CFA) was carried out for each dimensions of leadership quality practices in autonomous polytechnic colleges in Tamil Nadu and the results are presented in **Table 2**.

Table 2. Confirmatory Factor Analysis (CFA) for Leadership Quality Practices

Leadership Quality Practices	Chi-Square Value	P-Value	GFI	CFI	RMR	RMSEA
Leadership Dimensions	4.824	0.684	0.99	1.00	0.07	0.04
Organizational Governance	4.656	0.486	0.97	0.98	0.06	0.02
Organizational Performance Review	5.261	0.472	0.98	1.00	0.04	0.03
Social Responsibility and Ethics	6.042	0.518	0.98	0.99	0.05	0.04

The leadership dimensions are presented by eleven items and based on results of the CFA. It indicates an excellent fit with chi-square statistic of 4.824 .The Goodness of Fit Index (GFI) is 0.99 and Comparative Fit Index (CFI) is 1.00. These GFI and CFI indicate perfect fit. The standardized Root Mean Residual (RMR) is 0.07 and Root Mean Square Error of Approximation (RMSEA) is 0.04 indicating excellent fit. The results of CFA for desired organizational governance indicate an excellent fit with chi-square value of 4.656 and GFI and CFI are greater than 0.90 and RMR and RMSEA values are less than 0.1 indicate excellent fit.

The results of CFA for organizational performance review indicate an excellent fit with chi-square value of 5.261 and GFI and CFI are greater than 0.90 and RMR and RMSEA values are less than 0.1 indicate excellent fit. The social responsibility and ethics are presented by six items and based on results of the CFA. It indicates an excellent fit with chi-square statistic of 6.042. The Goodness of Fit Index (GFI) is 0.98 and Comparative Fit Index (CFI) is 0.99. These GFI and CFI indicate perfect fit. The standardized Root Mean Residual (RMR) is 0.05 and Root Mean Square Error of Approximation (RMSEA) is 0.04 indicating excellent fit.

4.3 Convergent and Discriminant Validity for Leadership Quality Practices

In addition, the adequacy of the measurement model for leadership quality practices is also evaluated based on the criteria of Composite Reliability (CR), Average Variance Extracted (AVE) and Discriminant Validity (DV) of the constructs and the results are presented in **Table 3**.

Table 3. Construct Reliability for Leadership Quality Practices

Leadership Quality Practices	CR	AVE	DV
Leadership Dimensions	0.78	0.62	0.66
Organizational Governance	0.82	0.78	0.64
Organizational Performance Review	0.84	0.66	0.65
Social Responsibility and Ethics	0.78	0.74	0.62

The results show that composite reliability for leadership quality practices is above the cut off value of 0.70, average variance extracted is greater than the minimum value of 0.50 and discriminant validity is above 0.60 indicating that convergent validity is confirmed for leadership quality practices.

4.4 Reliability

The reliability test for dimensions affecting the leadership quality practices in autonomous polytechnic colleges in Tamil Nadu were measured using a five point scale and the reliability coefficients are presented in **Table 4**.

Table 4. Cronbach's Alpha -Reliability Coefficient

Leadership Quality Practices	No. of Items	Cronbanch Alpha
Leadership Dimensions	11	0.85
Organizational Governance	9	0.82
Organizational Performance Review	9	0.83
Social Responsibility and Ethics	6	0.78
Overall	35	0.86

Source: Computed Data

From the above table, it is clear that the Cronbach's alpha of the scale for overall leadership quality practices is 0.86 indicating acceptable level of internal consistency. The Cronbach's alpha is varying from 0.85 for leadership dimensions to 0.78 for social responsibility and ethics.

4.5 Discriminant Analysis for Leadership Quality Practices

In order to discriminate the designation of the faculties in autonomous polytechnic colleges in Tamil Nadu based on the leadership quality practices, the discriminant analysis has been applied and the results are hereunder discussed.

4.5.1 Selection of Discriminating Variables

In order to determine the leadership quality practices which significantly contribute to the differentiation of designation in autonomous polytechnic colleges in Tamil Nadu, F test is used for Wilks' Lambda. The ANOVA results are presented in **Table 5**. The F test is significant for ten variables of values,

faculty learning, institutional learning, innovation, safety, equity, interest of faculty, priority, quality and educational service.

4.5.2 Estimation of Discriminant Function

In this study, the discriminant analysis is carried out for three designation of the faculties in autonomous polytechnic colleges in Tamil Nadu in and it results two discriminant functions and consequently two eigen values and the results are presented in **Table 6**.

The highest value (0.84) corresponds to the first discriminant function, which shows that it has the strongest power of discrimination of the two functions. Also, the first function accounts in a ratio of 75.30 per cent for the dispersion of the group means, as compared to the second function accounts 24.70 per cent.

The canonical correlation coefficient, measuring the relation between discriminant factorial coordinates and the grouping variable show that 88.53 i.e. $(0.897)^2$ of the total variance accounts for the differences among for three designation of the faculties in autonomous polytechnic colleges in Tamil Nadu through the first discriminant function.

4.5.3 Standardized Canonical Discriminant Function Coefficients

The standardized coefficients for the discriminant function were calculated and the results are presented in **Table 7**. The discriminant function coefficients are used for calculating the discriminant score for each case in particular.

Table 5. Tests of Equality of Group Means

Leadership Quality Practices	Wilks' Lambda	F	df1	df2	Sig.
Values	.914	9.180	2	194	.001
Deployment	.911	9.493	2	194	.196
Communication	.970	2.968	2	194	.154
Value addition	.939	6.285	2	194	.102
Faculty learning	.920	8.434	2	194	.010
Institutional learning	.939	6.272	2	194	.002
Empowerment	.983	1.670	2	194	.191
Innovation	.931	7.147	2	194	.001
Safety	.931	7.228	2	194	.001
Equity	.964	3.660	2	194	.028
Agility	.930	7.252	2	194	.141
Principal's accountability	.965	3.568	2	194	.030
Faculty's accountability	.961	3.942	2	194	.321
Administrative staff's accountability	.958	4.231	2	194	.416
Principal's financial accountability	.999	.101	2	194	.904
HOD's financial accountability	.995	.494	2	194	.611
Financial audits	.998	.173	2	194	.841
Academic audits	.956	4.131	2	194	.414
Interest of students	.983	1.689	2	194	.187
Interest of faculty	.962	3.877	2	194	.022
Subject results	.996	.426	2	194	.653
Faculty's performance	.988	1.185	2	194	.308
Placement	.988	1.197	2	194	.304
Competitor's performance	.988	1.224	2	194	.296
Progress analysis	.985	1.509	2	194	.224

Future needs	.999	.117	2	194	.890
Priority	.979	2.045	2	194	.032
Opportunity	.997	.332	2	194	.718
Quality	.982	1.778	2	194	.022
Educational service	.971	2.880	2	194	.024
Initiatives	.974	2.614	2	194	.076
Public concerns	.999	.095	2	194	.910
Ethical behaviour	.988	1.186	2	194	.308
Communities	.998	.233	2	194	.792
Involvement	.999	.073	2	194	.929

Source: Primary & Computed Data

Table 6. Eigen Values

Function	Eigen Value	% of Variance	Cumulative %	Canonical Correlation
1	.842	75.30	75.30	.897
2	.142	24.70	10.00	.482

Source: Primary & Computed Data

Table 7. Standardized Canonical Discriminant Function Coefficients

Leadership Quality Practices	Function 1	Function 2
Values	.683	-.163
Deployment	-.123	-.361
Communication	.151	.515
Value addition	-.305	.899
Faculty learning	-.600	.412
Institutional learning	.129	.825
Empowerment	-.068	-.663
Innovation	-.743	-.410
Safety	-.731	.948
Equity	.191	-2.264

Agility	-.380	.205
Principal's accountability	-.344	-.798
Faculty's accountability	-.132	.626
Administrative staff's accountability	-.168	.416
Principal's financial accountability	.104	.693
HOD's financial accountability	.109	.184
Financial audits	.220	.233
Academic audits	.214	.321
Interest of students	.351	-.529
Interest of faculty	-.728	.691
Subject results	.430	-.453
Faculty's performance	.309	.282
Placement	.024	-.812
Competitor's performance	-.150	.816
Progress analysis	-.291	-.826
Future needs	.314	1.166
Priority	-.190	-.266
Opportunity	-.051	-.477
Quality	-.772	1.297
Educational service	.809	-.805
Initiatives	-.207	-.392
Public concerns	-.242	-.653
Ethical behaviour	-.200	-.363
Communities	.276	.037
Involvement	.167	.526

Source: Primary & Computed Data

Taking into the account that the first function has the highest discriminating power, the first discriminant function is:

$$Z = 0.683 Z_1 - 0.123 Z_2 + 0.151Z_3 - 0.305Z_4 - 0.600Z_5 + 0.129 Z_6 - 0.068Z_7 - 0.743Z_8 - 0.731Z_9 + 0.191 Z_{10} - 0.380Z_{11} - 0.344Z_{12} - 0.132 Z_{13} - 0.168Z_{14} + 0.104Z_{15} + 0.109Z_{16} + 0.220 Z_{17} + 0.214 Z_{18} + 0.351Z_{19} - 0.728 Z_{20} + 0.430 Z_{21} + 0.309 Z_{22} + 0.024Z_{23} - 0.150Z_{24} - 0.291 Z_{25} - 0.314Z_{26} - 0.190 Z_{27} - 0.051Z_{28} - 0.772Z_{29} + 0.809 Z_{30} - 0.207 Z_{31} - 0.242 Z_{32} - 0.200Z_{33} + 0.276Z_{34} + 0.167 Z_{35}$$

The Z_1 to Z_{35} are standardized X_1 to X_{35} variables.

The size of the coefficients indicates of values, faculty learning, innovation, safety, interest of faculty, quality and educational service discriminate best among three designations of the faculties in autonomous polytechnic colleges in Tamil Nadu

4.5.4 Structure Matrix

The structure matrix coefficients are presented in **Table 8**. From the table, the results indicate the correlation between each predictor measures and the discriminant function.

For the first discriminant function, it can be seen that correlation coefficients have high values for six measures *viz.*, values, faculty learning, innovation, interest of faculty, quality and educational service which means that these measures are strongly correlated with the first function. These measures would probably characterize best division of designations.

Table 8. Structure Matrix

Leadership Quality Practices	Function	
	1	2
Values	-.237*	.016
Faculty learning	-.203*	.048
Innovation	-.203*	.159
Interest of faculty	-.187*	.122
Quality	-.184*	.131

Educational service	-.196*	.136
Deployment	-.140	.181*
Safety	-.035	.186*
Principal's accountability	-.016	-.055*
Communication	.065	-.073*
Value addition	-.035	.050*
Financial audits	.013	.024*
Institutional learning	-.038	.175*
Empowerment	-.110	.148*
Competitor's performance	-.032	.134*
Progress analysis	.089	-.131*
Principal's financial accountability	.002	.054*
HOD's financial accountability	-.008	.044*
Public concerns	.010	.034*
Equity	-.033	-.182*
Agility	-.012	-.052*
Communities	-.002	.029*
Faculty's accountability	.022	-.083*
Administrative staff's accountability	-.039	.079*
Future needs	-.087	-.122*
Priority	.037	-.106*
Faculty's performance	-.108	.148*
Academic audits	-.012	.026*
Interest of students	-.160	.214*
Involvement	-.019	.019*
Subject results	-.102	.167*
Initiatives	-.028	.043*
Placement	.027	-.147*
Opportunity	-.075	.091*
Ethical behaviour	.022	.032*

Note: * indicates largest absolute correlation between measure and discriminant function

Source: Primary & Computed Data

For the second function, deployment, safety, principal's accountability, communication, value addition, financial audits, institutional learning, empowerment, competitor's performance, progress analysis, Principal's financial accountability, HOD's financial accountability, public concerns, equity, agility, communities, faculty's accountability, administrative staff's accountability, future needs, priority, faculty's performance, academic audits, interest of students, involvement, subject results, initiatives, placement, opportunity and ethical behaviour are strongly correlated. These measures would also probably characterize best division of designations.

4.5.5 Efficiency of Discriminant Function

The efficiency of discriminate function is presented in Table 4.6.5. Based on the discriminant function, 86.50 per cent of the measures have been correctly classified.

Table 9. Efficiency of Discriminant Function

Stress Level	Predicted Group Membership			Total
	Lecturer	HOD	Principal	
Count				
Lecturer	129	7	9	145
HOD	3	38	5	46
Principal	1	2	6	9
%				
Lecturer	88.96	4.83	6.21	100.00
HOD	6.52	82.61	10.87	100.00
Principal	11.11	22.22	66.67	100.00

Note: 86.50 % of original grouped cases correctly classified

Source: Primary & Computed Data

CONCLUSIONS

The foregoing analysis indicates that about more than two-third of faculties is males and more than half of the faculties to the age group of 41-50 years. The majority of the faculties are post graduates more than two-third of faculties to the engineering department and are lecturers.

The CFA indicates that significant chi-square value, GFI and CFI are greater than 0.90 and RMR and RMSEA values are less than 0.1 indicate excellent fit. The values, faculty learning, innovation, safety, interest of faculty, quality and educational service discriminate best among three designations of the faculties in autonomous polytechnic colleges in Tamil Nadu. Based on the discriminant function, 86.50 per cent of the measures have been correctly classified.

Leaders in polytechnic colleges often have a space of action where it is possible to influence the inhibiting structures. In polytechnic colleges, which is characterized by internal responsiveness, the leaders are sensitive to the needs of the faculties and students and will change regulation when necessary and possible, in order to support and promote development. This requires measures where leaders develop their habits to listen to experiences made by faculties. This is important for all the efforts made by individual academic faculties to reach their full potential in terms of collaboration and mutual support.

The other side of the coin is that leaders of polytechnic colleges often experience needs for institutional change before individual faculties experience these needs. This phenomenon points towards a need for developed strategies to formulate and implement change top-down. That is, to develop a leadership quality practices suitable to support the engagement shown by individual faculties, which has to be even more promoted and combined with top down initiatives. Only then can the institution get the most out of its support for student learning, performance and personal development. Improving learning

and performance outcomes require an approach to leadership development, which focuses on 'instructional leadership'. This means attempting to change the mind set of leaders to regard the processes of teaching and learning as central to their role rather than simply leaving such matters to educators.

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