



A Qualitative Approach to Faculty Attrition Cost in Technical Institution

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ABSTRACT

In order to generate the most effective human resource for national development, quality education has become crucial. The attainment of this objective is entirely dependent on faculties who are the source for dissemination of effective knowledge and right skills. In this era of imbalance between faculty supply and demand, technical institutions are facing the problem of faculty attrition cost. Considering this fact, the analysis of these costs has become imperative for all the technical institutions. The current study attempts to understand the relationship between cost incurred by the institutions and faculty attrition. Exploratory Factor Analysis (EFA) was undertaken, followed by categorical regression. EFA was applied to develop the measurement tool for identifying factors of costs and brought forth three costs – direct, indirect and opportunity costs. To assess these costs of faculty attrition, categorical regression was applied with factors of direct, indirect and opportunity cost as dependent variables and four categories of attrition i.e. attrition less than 5%, 5%-less than 15%, 15%- less than 25%, and greater than 25% as independent variables. Direct cost was comprised of Recruitment Costs, Application Processing Cost, Interview Process Costs, Hiring Costs, Orientation and Training Costs, Professional Development and Ongoing Support

and Separation Costs, Indirect costs was explained through Productivity Costs and Cost of Morale and the components of Opportunity costs were Loss of Business, Loss of Students, Loss of Faculty/Adjuncts, Loss of Reputation. Further, through CATREG it was observed that higher the attrition, higher the direct, indirect and opportunity costs. This research can be an effective input to many technical institutions to reconsider their approach towards their faculties and seek cost effectiveness by reducing faculty attrition and its negative impact on institutions growth.

Keywords: Direct cost, Indirect cost, Opportunity cost, Faculty attrition, Technical institution.

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INTRODUCTION

The Department of Higher Education(2014) states that the Indian Higher Education sector has become largest in the world in terms of number of Institutions and second largest in terms of number of students. The sector is already educating nearly 28 million students in nearly 726 universities and 38,000 college still date. This massive expansion has brought forth number of developments as well as challenges. Every nation's development is dependent on the effective rearing of its youth. Students are the strategic source for gaining advantage for any nation. It's essential to provide these students with upgraded knowledge, right skill and attitude to build them as the future asset for national development. The 12th Five year Plan and progressive policies give a clear focus on higher education which has aided in the growth of educational institutions. With the increase in the number of institutions, quality has become an important concern. The quality of education is majorly dependent on faculties and their intellectual strength. Due to the imbalance between the demand and supply it has become more challenging for institutions to attract, retain and satisfy the right talent.

The major problem faced by most of the institutions is faculty attrition because of which institutes strike hard to sustain and disseminate quality education. Many a times the talent and acumen remain stored in a leaky bucket. Faculty attrition not only results in problem of deteriorating quality but also result in capital loss in terms of both human and financial. Institutes incur high costs in hiring and training faculty who leave before mastering the art of creating a cohesive learning culture for the students. Institutions invest in turning their faculties into knowledge assets by undertaking the costly process of training and development but faculties exit the system for a better opportunity resulting in expense to the Institute. Due to these problems the institutions are unable to provide the students with right aptitude and experienced faculty. The faculties hired in an unstable environment feel dissatisfied, unable to successfully meet the needs of the students and helplessly decide to quit the working place.

It's high time for the institutions to realise the problems of their faculty members and understand the reasons for attrition. The evaluation of trends in attrition enables them to eliminate the problem from the root and lower the associated costs of annual recruitments, training and hiring. The study tries to understand the costs incurred by institutions due to faculty attrition.



BACKGROUND FOR THE STUDY

Technical education is defined as programmes of education, research and training in engineering, technology, architecture, town planning, management, pharmacy, applied arts and crafts and such other programmes or areas as the Central Government may, in consultation with the Council, by notification in the official Gazette, declare. As per Ministry of Human Resource Development, the Gross Enrolment Ratio (GER) in higher education has increased to

20.4% from 13.5% resulting in the huge expansion in the education sector. This has also lead to an increase in the number of premier institutes like IITs, IIMs, NITs, and IISERs etc. According to the AICTE, the number of private investors in the area of technical education has also increased from 4, 491 in 2006-07 to 8,562 in 2012-13. Further, significant number of university level technical institutions, such as deemed universities and private universities established by the State legislatures, have also come into existence in recent years. This has also brought forth pertinent focus on modes of delivery of the programme, degree of regulation, creation and sustenance of talented faculty etc.

The National Knowledge Commission (2006-2009) in its 'Report to the Nation' also reiterates the high growth. It has been stated that evaluation of the institutions is largely dependent on the 'Intellectual Capital and Faculty' making it increasingly important to develop a mechanism to arrest, conserve, retrieve the intellectual capital of the management institutions (Doctor and Ramachandran, 2008). According to a University Grants Commission (UGC)2012 report, India currently possesses only half of the required strength and needs about 300,000 more faculties, revealing the extent of faculty crunch in India's higher education system. Ministry of Human Resource Development (MHRD) in a statement reveals that "establishment of a reliable database itself is a major hurdle in addition to the issue of faculty shortage". The report also states that India requires about 100,000 more teachers per year in next 10 years for its colleges. The Ministry has been urged by the task force take a stock of the situation, without which higher education policy projections for the 12th Year Five Plan (2012-17) cannot be met. Suneja. K. (2013) reiterates that 92% of the total institutions imparting technical education are unaided private institutions. It has become essential for the colleges to comprehend that a higher attrition rate results in declining quality, lowering prestige and decreasing capability in attracting students, all of them influencing the costs.



LITERATURE REVIEW

In current times the demand for teachers has grown while a shortage in supply due to attrition and mobility has further added to the imbalance. **Grissmer & Kirby (1987)** argued that attrition is something that results in the negative image of work place. **Calfee and Pessirilo (1980)** postulated that attrition fails to attract the right talent. This helped organizations accept the fact that attrition is an inevitable phenomenon. Some sound organizations consider it as an objectionable cost or wastage and have worked out strategies to boost staff retention. Every organization thus tries to calculate cost associated with attrition and reduce this cost by following different practices. HRA experts defined cost of attrition as a combination of two major components - direct and indirect costs.

Tziner and Birati (1996) recognized direct and indirect costs related to dysfunctional turnover and also suggested that such cost can be included in the calculation of cost of attrition due

to their potential contribution. **Morrell et al (2004)** identified direct and indirect costs of turnover as costs incurred on account of replacement, recruitment and selection, temporary staff, management time, low morale, pressure on remaining staffs, costs of learning, product or service quality, organizational memory, and the loss of social capital.

Rodgers (2005), Dooney (2002) stated that costs associated to attrition of online faculty ought to be grounded on predetermined measures related to costs established by an institution, based on direct, indirect and opportunity costs. **Brogden (1949), Cronbach and Gleser(1965)** suggested that the methods to calculate the cost were available for years but gained importance of researchers in mid-1970's. Further, lack of monetary relationship between the costs and the employee exit behavior made it difficult to compute these costs. Different views on qualitative and quantitative aspects of cost have made it even more difficult to define the parameters to be covered under the umbrella of total cost.

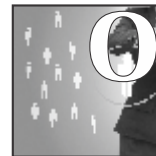
Collins and Smith(2006) opined that, most of the times this cost is general and directly associated with employee's recruitment and training costs. **O'Connel and Kung (2007)** proposed three main components of turnover costs-recruitment cost, potential loss of business and training and development cost. The total time spent for on-the-job training is also one of the costs incurred by the organizations, according to **Sorensen (1995)**. Searching, attracting and hiring new faculty amounts to an expensive deal. **Cascio & Aguinis(2005)** stated that the adopted recruitment methods involve cost of different sources such as a classified advertisement in a local newspaper to postings in regional, state, and national employment sources.

Hinkin and Tracey (2000) generated the opinion through the interviews of managers that indirect costs of turnover were high and an important component of turnover. **Cascio (2000)** projected a model for estimating turnover costs. The model used a mathematical approach to analyze the cost related to both the faculty leaving the organization and the new recruit. He described seven elements that signified the costs of replacing the left worker **Cascio (2000), Cascio & Ramos (1986)**. These elements include: advertising job availability, screening of applicants, entrance interviews, interview expenses, reference/ background checks, pre-employment testing/assessment procedures, and appointment procedures for a new hire. He further made a mention of different costs associated with meals and travel. These costs were unevenly dependent on the number of candidates, location and length of interview.

Cascio (2000) suggested that the sum of these training costs, separation costs, and replacement costs represent the total direct cost of employee turnover. **Betts and Sikorski (2008)** suggested that a university incurs indirect, opportunity and direct costs when faculty leaves an institution. Indirect cost is directly related to the productivity and morale. Opportunity cost amounts to lost resources negatively impacting faculty turnover while direct cost is the summation of fixed and

variable cost that goes into recruiting, retaining, and losing faculty members. This makes the total cost eventually hard to be quantified or itemized. Institutions are affected by indirect cost incurred on account of faculty attrition.

Latimer (2002) identified lost productivity as a major cost and depicted it in the form of (a) lost productivity of the leaving faculty member, (b) lost productivity in vacant position, (c) lost productivity in search committee members, (d) lost productivity of peers who take on displaced work, and (e) lessened productivity of a newly hired member while adjusting and going through new training. **Dee (2004)** also recognized that the costs of recruiting faculty and disruption of work significantly impact universities. Cost also escalates due to declining morale of the remaining faculty members on account of increased responsibilities **Wenger (2003)**. So it's vital for the institutions to arrest attrition and minimize cost associated with it.



OBJECTIVE OF THE STUDY

To identify and investigate the impact of faculty attrition costs in technical institutions.

RESEARCH DESIGN

A structured questionnaire was designed for the collection of data. The different factors that were crucial to define costs were identified through literature review and exploratory study. Exploratory factor analysis was applied to develop the measurement tool for identifying factors of costs. A total of 38 items were identified on the basis of literature review. The Cronbach alpha was 0.72. Cost was considered to be dependent variable and the level of faculty attrition was taken as an independent variable. Validity of the questionnaire was checked through face validity method and was found to be high. Items were rated on likert scale of five points where weight of 5 was indicated as "very high". To evaluate the cost of faculty attrition in the institutions, a total (summed) score was calculated for each respondent by summing across items.

Exploratory Factor Analysis (EFA) was undertaken, followed by categorical regression. EFA is applied to find the underlying relationship between the different factors resulting in faculty attrition cost.

Further to EFA, Categorical Regression was applied to study the relationship between cost and faculty attrition. Categorical regression quantifies categorical data by assigning numerical values to the categories resulting in an optimal linear regression equation for the transformed variables. It is also known by the acronym CATREG. To assess the cost of faculty attrition, categorical regression was applied with factors of cost as dependent variable and four categories of levels of attrition i.e. attrition less than 5%, 5%-less than 15%, 15%- less than 25%, and greater than 25% as independent variables.

SAMPLING AND DATA COLLECTION

A sample of 102 Technical institutions (approved by AICTE) in

the Delhi and NCR region was drawn using simple random sampling. Questionnaires were circulated in 102 institutions and 61 completely filled in questionnaires were received. The response rate was 59.80. The data on these items was collected through a sample of sixty one Directors/HODs of various technical institutions.

DATA ANALYSIS AND RESULTS

On applying Exploratory Factor Analysis, three factors which were identified and named as direct cost, indirect cost and

Indirect Cost was characterized by Productivity Costs and Cost of Morale and

Opportunity Cost comprised of Loss of Business, Loss of Students, Loss of Faculty/Adjunct and Loss of Reputation.

Individual mean scores of the variables and their factors were studied as depicted in Table 2.

In case of Direct Cost, “*Professional Development and Ongoing Support*” has the highest impact with mean value of

Table 1: Rotated Component Matrix and calculated Cronbach's KMO for Sampling Adequacy and Barlett's test of Sphericity Significance.

	Cost	Components	Cronbach's	KMO for Sampling Adequacy
(I)	Factor I Direct Cost			
1	Recruitment Costs	.51		
4	Application Processing Cost	.81		
8	Interview Process Costs	.84		
11	Hiring Costs	.57	0.66	
10	Orientation and Training Costs	.74		
6	Professional Development and Ongoing Support	.70		
7	Separation Costs	.80		
(II)	Factor II Indirect Cost			
12	Productivity Costs		.84	
9	Cost of Morale		.88	
(III)	Factor III Opportunity Cost			
2	Loss of Business			.80
5	Loss of Students			.78
13	Loss of Faculty/Adjuncts			.88
3	Loss of Reputation			.79

Barlett's test of Sphericity Significance= 0.00

opportunity cost. The split half reliability measure Cronbach's alpha values and KMO for sampling Adequacy was found to be acceptable in all the cases as shown in Table 1.

Direct Cost comprised of Recruitment Costs, Application Processing Cost, Interview Process Costs, Hiring Costs, Orientation and Training Costs, Professional Development & Ongoing Support and Separation Costs.

Table 2: Mean Scores of Direct, Indirect and Opportunity costs

Dependent	Mean Scores	Factors and Mean Scores
Recruitment Cost	3.24	
Application Process Cost	3.38	
Interview Process Cost	3.18	
Hiring Cost	2.91	
Orientation and Training Cost	2.84	
Professional Development and Ongoing Support	4.11	Direct Cost 3.13
Separation Costs	2.30	
Productivity Cost	2.96	Indirect Cost 3.08
Morale Cost	3.18	
Loss of Business	3.41	
Loss of Students	3.49	Opportunity Cost 3.40
Loss of Faculty/Adjuncts	3.51	
Loss of Reputation	3.22	

4.11 and “*Separation Cost*” has least impact with the mean value of 2.30. On analyzing the Indirect Cost it was found that “*Morale Cost*” (3.18) has a higher impact in comparison to “*Productivity Cost*” (2.96). Also, mean value of “*Loss of Faculty*” (3.51) contributed the most and “*Loss of Reputation*” (3.22), the least in case of Opportunity Cost. The overall analysis revealed that Opportunity Cost has the highest mean value (3.40) followed by Direct Cost (3.13) and Indirect Cost (3.08).

To assess the cost of faculty attrition categorical regression was applied with factors of cost as dependent variable and four categories of attrition i.e. attrition less than 5%, 5%-less than 15%, 15%- less than 25%, and greater than 25% as independent variables.

Results could not be achieved when all the four categories were taken together as it generated zero tolerance implying high collinearity between the independent variables. So results were generated by removing one of the independent variables every time. The level of tolerance of categories (nearing 1), have been considered for the study.

Further, mean of various items were taken to understand the variation across the attrition levels with respect to elements of costs.

DIRECT COST: In the case of direct cost (Table 3), the results

depicted in II case were considered. The results exhibited in II case show that the category greater than 25% has significant negative effect on direct cost. This means higher the attrition lower is the direct cost incurred. The result illustrates that in greater than 25% attrition category shows that 1 standard deviation change leads to .332 standard deviation decrease in

significant adverse effect on indirect cost. This means higher the attrition, lower is the indirect cost in case of attrition category 15% to less than 25% while in case of attrition greater than 25% the higher attrition leads to high indirect cost. The results show that with 1 standard deviation change in attrition rate between 15% to less than 25%, the indirect cost decreases

Table 3: Categorical Regression of Faculty Attrition Rate on Direct Cost

	Standardized Coefficients					Correlations				Tolerance	
R ² = .123	Beta	Std. Error	df	F	Sig.	Zero-Order	Partial	Part	Importance	After Transformation	Before Transformation
When IInd Independent Variable was removed											
Greater than 25%	-.332	.134	1	6.140	.017	-.291	-.328	-.325	.781	.958	.958

cost. Also the individual prediction power of attrition category greater than 25% is 10.89%. Looking at the importance of the predictors, the attrition category of greater than 25% attrition was the only important predictor.

The screening of mean scores of institutions on direct cost with respect to different attrition rates depict that the direct cost incurred by institution with low attrition rates is average(mean = 3.25), while the institutes with attrition greater than 25%, the cost is below average (mean = 2.8). This signifies that higher the attrition, lower is the direct cost incurred. The direct cost incurred by institution with low attrition rates is average while the institutions with attrition greater than 25%, incur average cost.

INDIRECT COST: The scrutiny of Table 4 shows that there is a significant effect of various attrition categories on indirect cost. In this case also the results depicted in I and II cases were considered. The results show that in I case the category of attrition greater than 25% has significant positive effect on indirect cost and in II case the category 15%-less than 25 % has

by 0.297 standard deviation. While in greater than 25% attrition category, 1 standard deviation change leads to .286 standard deviation increase in indirect cost. The prediction power of attrition category greater than 25% is 8.4%. Looking at the importance of the predictors, the attrition category of 15% to less than 25% attrition is most important predictor followed by attrition category of greater than 25%.

Screening of mean of institutions on indirect cost with respect to different attrition rates reveal that the indirect cost incurred is average in institutions with low attrition rates (mean=2.9) while it is above average in institutions with high attrition rates (mean = 3.4).

OPPORTUNITY COST: In the case of opportunity cost the results depicted in I and II cases were considered. The results show that both in I and II case the category greater than 25% has significant positive effect on opportunity costs. This means higher the attrition higher is the loss in opportunity costs. The results show that in greater than 25% attrition category 1 standard deviation change leads to .332 to .412

Table 4: Categorical Regression of Faculty Attrition Rate on Indirect Cost

	Standardized Coefficients					Correlations				Tolerance	
R ² = .161	Beta	Std. Error	df	F	Sig.	Zero-Order	Partial	Part	Importance	After Transformation	Before Transformation
When I Independent Variable was removed											
Greater than 25%	.286	.131	1	4.784	.003	.270	.293	.281	.481	.961	.961
When II Independent Variable was removed											
Greater than 25%	-.297	.133	1	4.941	.031	-.267	-.297	.285	.493	.924	.924

Table 5: Categorical Regression of Faculty Attrition Rate Opportunity Cost

	Standardized Coefficients					Correlations				Tolerance	
R ² = .189	Beta	Std. Error	df	F	Sig.	Zero-Order	Partial	Part	Importance	After Transformation	Before Transformation
When I Independent Variable was removed											
Greater than 25%	.412	.129	1	10.280	.002	.377	.410	.404	.823	.961	.961
When II Independent Variable was removed											
Greater than 25%	.332	.129	1	6.659	.013	.377	.340	.325	.663	.958	.958

standard deviation increase in opportunity cost. Also the individual prediction power of attrition category greater than 25% is 11.56% and 16.81%. Looking at the importance of the predictors, the attrition category of greater than 25% is the only predictor with an importance of 82% (Table 5).

The screening of mean score of institutions on opportunity cost with respect to different attrition rates show that opportunity cost incurred by institutions with low attrition rates is below average (mean = 2.03) and in case of institutions with attrition greater than 25% is average (mean = 3.39).



CONCLUDING OBSERVATIONS

The well-being of any institution depends on its ability to recruit and retain a talented professoriate. The present study was conducted to comprehend the impact of faculty attrition on various types of costs incurred by the technical institutions. It has become imperative for universities and institutions to build positive environment to build healthy relations with their faculty members by providing them learning experiences and opportunities.

According to the results of the current study it was found that opportunity cost is most affected by faculty attrition. This signifies that higher is the attrition higher is the loss of business cost, loss of student cost, faculty/adjuncts cost and reputation cost. Due to high attrition the institute starts losing its business because of lost faculties and students who move to

their competitors due to poor reputation of the Institute. As a result, there is decrease in student enrollment, faculty research and publications, student's placement opportunities, institutions reputation and sense of belongingness from faculties as well as students. Opportunity cost is followed by direct cost. On examination of direct cost it was observed that attrition has negative effect on it. The institution incurs expenditure of direct cost for the recruitment of the right talent and knowledge managers. Faculty attritions results in the failure of all the efforts put in by the institutions for selecting the right professoriate, training and developing them professionally, giving them learning and development opportunities. So it's very important for the institutions to manage the attrition rates so that attraction and retention of right candidature becomes most cost effective and value oriented. Indirect cost has the least impact on faculty attrition but the institutions still need to keep a check on morale of their faculty members and their productivity. Morale and productivity are directly related and an important area of concern for gainful retention.

Hence, the management ought to maintain a healthy working environment and focus on providing good infrastructure and facilities to their faculty members. Growth and development opportunities, fair and transparent institutional policies, regular appraisal, flexibility at work place can be some of the factors leading to effective faculty retention. The institutions will be able to lessen the problem of faculty attrition and also minimize the associated costs by focusing on internal factors.

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