

# Determining Factors Influencing Faculty Feedback using Data Mining Technique

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*Abstract: Faculty is a major stakeholder in an education institute. Quality of faculty reflects the quality of youth, the future nation builders. Based on the vision of honorable management, an attempt has been made to gather the feedback of faculty reflecting their current state of work. Data have been collected initially via open-ended questionnaire. Faculties serving renowned institutes in the states of Punjab and Haryana have been approached to gather information. Attributes have been identified from the literature review and using an appropriate measurement scale. Only the willing respondents and their responses have been taken into consideration. The responses gathered using 5-point Likert-Scale was then factor analyzed. The attributes converged mainly on six dimensions- recognition, sense of belongingness, working environment, basic need fulfillment, self-respect, and contribution to society. These dimensions have been discussed keeping in view the current scenario in the education sector. The study also provides insights into future research.*

*Index Terms: Faculty, Higher Education, Factor Analysis and Satisfaction*

## I. INTRODUCTION

Highlight a section that you want to designate with a certain style, and then select the appropriate name on the style menu. The style will adjust your fonts and line spacing. **Do not change the font sizes or line spacing to squeeze more text into a limited number of pages.** Use italics for emphasis; do not underline.

As per well-regarded QS World University Rankings for 2019, only six Indian Institutes of Technology (IITs) and the Indian Institute of Science (IISc), Bengaluru succeeded in fetching ranking among the top 400 universities (M, Ahmad, University World News, 08 February 2019). The major areas of concern are quality of teaching and research, the pressure to publish, leadership, quality of student intake, and faculty-student ratio. Quality of faculty, as well as students, is the clear reflection of teaching and research in any university or institute.

The Indian government is promoting higher education by creating awareness among youth belonging to various sections in the society. With 36.64 million student enrollment for higher education in 39,050 colleges and 903 universities in India in 2017-18, the Gross Enrolment Ratio in higher education reached 25.8 percent in 2017-18 (India Brand Equity Foundation Report, April 2019). The private sector is equally taking interest in investing in the Indian education

sector. As a result, the share of the state private universities as part of total universities increased from 3.43 percent in 2008-09 to 34.82 percent as of April 2018. At present, there are 384 state universities, 123 deemed to be universities, 47 central universities, and 296 private universities in India. Still there exists an additional requirement of two lakhs schools, thirty five thousand colleges, seven hundred universities and forty million seats in the vocational training centers.

Teachers are the pillars of our nation. 'Mentor India' campaign launched by Niti Aayog in August 2017 (India Brand Equity Foundation Report, June 2018). Keeping this in view, institutions have been taking feedback from their faculty to identify the factors on the basis of which appropriate and timely action may be taken to take necessary action contributing to faculty satisfaction.

*The Objective of the study*

The objective of the study undertaken is:

"To determine how various factors rate on faculty evaluation towards satisfaction for imparting better higher education".

## II. REVIEW OF LITERATURE

C. M. Calkins (2018) explored faculty motivation to teach via the theoretical framework of teacher efficacy, achievement goals, and task values. The researcher also employed constructs of work life, satisfaction, and perceptions of student motivation. It has been observed that factors such as perceptions of student motivation had a positive impact on motivation to teach, whereas factors such as research requirements had a negative impact on motivation to teach. V. Ramachandran, M. Pal, Dr. S. Jain, S. Shekar, J. Sharma (2005) proposed a study on teacher motivation in India. They reviewed secondary data such as published material on India, policy documents and government data. They collected primary data by surveying schools in Tonk District, Rajasthan. They also interviewed stakeholders in Rajasthan. They observed that motivating teachers is highly complex owing to the lack of incentive for teachers who put in extra efforts beyond duty hours and give liberty to students to learn and succeed in life. The more depressing fact is teachers with political connections and links with local bureaucrats are getting benefitted in terms of suitable postings and teachers' awards. Z. Ozguner and M. Ozguner (June 2014) conducted literature research with the aim to investigate the relationship between Maslow's hierarchy of needs, and Herzberg's dual factor theory. M. I.

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Rasheed, A. A. Humayon, U. Awan and A-ud-D. Ahmed (2016) explored various issues of teachers’ motivation by conducting surveys and interviews in the well known public sector higher education universities in Pakistan. They found factors like job design, performance management system, working environment, and training and development are also of high significance besides monetary incentives and compensation packages. S. Munyengabe, H. Haiyan, Z. Yiyi and S. Jiefei (2017) aimed to correlate and investigate the levels and factors affecting lecturers’ motivation and job satisfaction in the university located in Beijing, China. They found the motivational level of lecturers satisfactory, resting on Incentives & promotions and salary. The job satisfaction level was affected by financial reward. They found a significant correlation relationship between lecturers’ motivation and job satisfaction. World Development Report (2018) also stated that teachers must teach effectively for making students learn. For this, we must focus on motivating teachers and teachers’ skills. J. Han and H. Yin (2016) identified research areas with reference to teacher motivation. Accordingly, they proposed directions for future research, which formed the basis of study undertaken.

III. RESEARCH METHODOLOGY

The research has been conducted based on the view of finding the realistic factors influencing feedback of faculty teaching in higher educational institutions. For this, faculty members teaching in various programs in higher education have been asked to mention their expectations from the college via an open-ended questionnaire. Qualitative analysis of this data helped to determine the extent to which the empirical items adequately capture college faculty members' feedback, leading to their salient motivations. Also, literature has been reviewed and attributes contributing to faculty feedback have been identified. The researchers approached faculty members based on their convenience and judgment. Government initiatives at various levels have also been referred.

**Measures:** The major focus of the study is finding the major factors impacting higher education institutions’ faculty. The questions related to respondents demographics were based on research conducted by H. U. Amin and A. R. Khan (2009). *The instrument that was used to determine the teachers’ motivational needs was prepared based on the scales developed by Shoura and Singh (1998) and Everard and Morris (1996), mentioned in the research conducted by F. Gokce (2010).* The scale consisted of 29 items, with high reliability, and more predictive validity.

	Statements
1	I have a job in which I can easily meet all my physiological needs water, etc.)
2	The institution where I work is not exposed to any danger that cause health problems.
3	I have job security at the institution where I work.
4	My superiors do not try to block my advancement.
5	My peers do not try to damage my career.
6	I have lots of friends at the institution where I work.
7	The institution where I work contributes to my recognition.
8	My peers help each other in the workplace.

9	I respect myself for having the profession of teaching.
10	People respect me because I am a teacher.
11	I am popular in my institution because of my professional and competence.
12	I feel at home in the workplace.
13	I consider myself equipped for teaching.
14	The institution where I work provides me with sufficient resources do my job better.
15	Teaching is an ideal job for me.
16	I can use my creativity in the institution where I work.
17	Teaching makes my life more meaningful.
18	My job gives me freedom and power.
19	My job contributes to the development of society and the state.
20	I have a job which is in harmony with the expectations of people.
21	I have opportunities to broaden my professional knowledge.
22	I think I am doing my job properly.
23	The people in my institution know me as a successful worker.
24	The institution where I work aids continuous learning.
25	My institution gives me the opportunity to know whether I do my well or not.
26	I hear new ideas in the institution where I work.
27	I have a job which helps me to achieve my goals in life.
28	My institution gives a quality education based on learning.
29	My institution adopts a democratic and participatory approach towards management and supervision.

The survey included the following sections:

- Questions related to faculty demographics- Age, Gender, Education, and Program of Teaching;
- 29 items to measure the motivational needs of teachers teaching in higher educational institutions.

For data collection, relative to faculty feedback leading to faculty motivation, the respondents were asked to indicate their degree of satisfaction or dissatisfaction with each statement. The attribute items were measured on a 5-point Likert type scale of importance with 5 as ‘Strongly Agree’ to 1 as ‘Strongly Disagree’.

**Sampling Design:** The Universe of the study comprised all faculty members teaching in institutions of higher education in India. The Survey (Target) Population included all faculty members teaching in the Sahibzada Ajit Singh Nagar (Mohali) District, Punjab State, India who were willing to respond to the questionnaire and could be contacted on the days when the schedule was administered.

The Sampling design employed was non-probability Judgment and Convenience sampling and only the faculty members who were willing to respond were requested to respond to the questionnaire. 150 respondents comprised the final sample.

- **Description of Sample:** For the research, the data were collected by researchers from higher education institution faculty members. To obtain a profile of the respondents they were requested to complete questions regarding the following descriptive:
- **Demographics:** Gender, Age, Occupation (Profession), Education & Income. The final sample consisted of 150 respondents.



**Table 1: Overall Faculty Sample Frequencies**

Descriptive	Frequency	Percentage
<i>Age (in years)</i>		
Young (up to 35 years)	88	59
Middle (36-60 years)	62	41
Total	150	
<i>Gender</i>		
Male	48	32
Female	102	68
Total	150	
<i>Education Level</i>		
Post-graduation	122	81
Doctorate	28	19
Total	150	
<i>Program</i>		
Business Management	37	25
Engineering	70	47
Hotel Management	26	17
Education	17	11
Total	150	

Respondents for the survey included only those faculty members who were teaching in institutions imparting higher education. The area covered was Sahibzada Ajit Singh Nagar (Mohali) District, Punjab State, India. The combined sample consisted of most of the respondents in the young age group (up to 35 years) i.e. 59%; remaining 41% of the respondents surveyed fell in the Middle age group (36-60) years. Nearly two-thirds (68%) of the respondents were females; whereas remaining one-third (32%) were males. In response to the question on educational qualifications, maximum respondents gained education maximum up to post-graduation (81%), only 19% obtained a doctorate degree. Majority of the respondents (47%) were imparting higher education in Engineering program, followed by one-fourth (25%) teaching Business Management, followed by Hotel Management faculty (17%), and least by Education Department faculty (11%).

In summary, the typical sample respondent profile can be described as follows:

*The faculty members surveyed were mainly young, female, post-graduate imparting higher education in engineering and management program.*

#### FINDINGS OF THE STUDY

Factor Analysis technique based on the Principal Component Analysis (PCA) method has been applied to find major dimensions influencing higher education faculty feedback. The statistical significance was set (if not stated otherwise) at a level of 0.05. Only factors with latent roots or Eigenvalues greater than 1 were included. Items with loadings greater than or equal to 0.45 were retained. The factors so formed were labeled as per variables with higher factor loadings.

#### Factor Analysis of Attributes Influencing Faculty Feedback and Motivation

The result of the factor analysis with Kaiser Normalization is given as per Table 2. The procedure short-listed 29 attributes influencing faculty feedback and motivation to move on to the next stage. The KMO score is above .50 (.835) and the Bartlett's test is significant ( $\chi^2 = 2997.555$ ,  $df = 406$ ). Thus, factor analysis is suitable for this research (Malhotra & Dash, 2009). The factors with an Eigenvalue more than 1 were retained. Six factors explaining 71.776% (accounting for more than 50% of the total variance, Malhotra & Dash, 2009) of the total variance were taken into consideration.

**Table 2: Factors Influencing Faculty Feedback and Motivation**

	Loading	Eigen value	% of Variance
<b>Factor 1: Recognition</b>			
Institution_contributes_to_my_recognition	0.907	6.822	21.156
Popular_for_professional_knowledge_and_competence	0.888		
People_respect_me_being_a_teacher	0.86		
Job_is_in_harmony_with_expectations_of_people	0.891		
Have_opportunities_to_broaden_professional_knowledge	0.844		
People_in_institution_know_me_as_a_successful_worker	0.87		
Job_helps_me_to_achieve_goals_in_life	0.885		
Institution_gives_a_quality_education_based_on_learning	0.801		
<b>Factor 2: Sense of Belongingness</b>			
Lots_of_friends_at_institution	0.872	5.423	20.398
Peers_help_each_other	0.857		
Feel_at_home_in_workplace	0.866		
Can_use_creativity_in_institution	0.885		
Think_of_doing_job_properly	0.852		
Institution_gives_opportunity_to_know_whether_I_do_job_well	0.865		
Hear_new_ideas_in_institution	0.851		
Institution_adopt_democratic_participatory_approach	0.784		
<b>Factor 3: Working Environment</b>			
Superiors_do_not_try_to_block_advancement	0.699	3.497	9.781
Peers_do_not_try_to_damage_career	0.79		
Consider_myself_equipped_for_teaching	0.625		
Not_exposed_to_any_danger_of_health	0.719		
Job_security	0.704		
<b>Factor 4: Basic Need Fulfilment</b>			
Meet_physiological_needs	0.825	2.132	9.746
Institution_provides_sufficient_resources_to_do_job_better	0.663		
Institution_aids_continuous_learning	0.834		
<b>Factor 5: Self Respect</b>			
Respect_myself_for_profession_of_teaching	0.727	1.846	6.788
Teaching_is_an_ideal_job_for_me	0.623		
Teaching_makes_my_life_more_meaningful	0.888		

Job_gives_me_freedom_and_power	0.863		
<b>Factor 6: Contribution to Society</b>			
Job_contributes_to_development_of_society_and_state	0.925	<b>1.095</b>	<b>3.906</b>

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 5 iterations.

Based on these dimensions, innovative ways such as motivating faculty members to learn business skills to manage teaching profession-related activities economically and effectively i.e. faculty feedback and motivation has been analyzed.

#### IV. ANALYSIS AND DISCUSSIONS

In higher education faculty feedback and motivation, reforms in education, psychological fulfilment and well-being of teachers and teaching practice also play crucial role (J. Han and H. Yin, 2016) Keeping this in view ‘Happy Teachers, Better Students’, the ‘Ways to Increase Teacher Motivation’ (Catchbox) have been mentioned below:

1. Give Teachers Autonomy
2. Allow Collaboration
3. Offer Recognition and Respect

Some commonality of attributes between faculty feedback and motivation is observed. The major attributes influencing faculty feedback and motivation that have emerged from this study (Table 2) helped in determining the attitude of faculty towards satisfaction for imparting better higher education. The evaluation of measured attitude of faculty ultimately converged into six major Dimensions of Recognition, Sense of Belongingness, Working Environment, Basic Need Fulfillment, Self Respect and Contribution to Society for imparting better higher education.

Here, a brief overview of select factors influencing faculty satisfaction is given based on the findings of the research:

Important Factors Influencing Faculty Satisfaction:

##### 1. Recognition:

To be an effective faculty, the first question is ‘which factors motivate to maximum?’ Being high risk involved, a person must seek mentorship from experienced dignitaries in the field. They will provide insight into carrying out activities in most effective ways. They will also provide guidance about inculcating various skills. Faculty members strive for recognition. They work much beyond Institution Hours, work from home, work at home, contribute passionately, but their efforts remain unrewarded or unrecognized. An appreciation for a person’s job leads to a positive or pleasant emotional state i.e. job satisfaction (Z. Demirtas, 2010).

##### 2. Sense of Belongingness:

One-third of the day is spent by faculty at the workplace. They consider the workplace their second home and work selflessly and heartily. Both public and private sector universities and colleges should be kept free from political interference (M, Ahmad, University World News, 08 February 2019).

##### 3. Working Environment:

Teachers need a high level of concentration so as to gain knowledge and plan to deliver it in a way that it goes straight in the minds of the learners in the same way as has been desired. Some balance has to be maintained by increasing the fund allocation (M, Ahmad, University World News, 08 February 2019). The efforts put in by a teacher for preparation of an effective lesson plan will get reflected in the personality of each and every student he/ she has come across.

##### 4. Basic Need Fulfillment:

The major trauma for faculty members, especially the head of the families is lack of job security despite working for decades in a particular institute in private sector. "Quality of many universities and colleges and the standard of education they provide are far from satisfactory" (National Education Policy Draft Report by TSR Subramanian). An estimated 40% of college teachers work on a non-permanent, ad hoc basis and are designated variously as temporary, contractual, ad hoc and guest faculty. (M, Ahmad, University World News, 08 February 2019).

##### 5. Self Respect

As mentioned above, Autonomy must be given to teachers. But, for the sake of promotion, even the older and experienced faculty members are bound to publish a minimum number of papers every year. The emphasis is more on publishing papers than on teaching. As a result, they focus on publishing papers in journals but not on high-quality journals. Also, some colleges lack basic and high-end research facilities (M, Ahmad, University World News, 08 February 2019).

##### 6. Contribution to Society

- o My job contributes to the development of society and the state.

For effective contribution towards society, parents of students must also be imparted education. In India, the basis of choosing a particular program is the expected attractive high package, rather than area of interest. Some colleges even do not have basic facilities and are like teaching workshops for postgraduate students (M, Ahmad, University World News, 08 February 2019)

We need to focus only on universities with faculty of high standing out of numerous universities (M, Ahmad, University World News, 08 February 2019).

#### V. CONCLUSION

Ultimately, positive feedback of faculty leads to higher and continuous motivational levels, which will contribute to developing bright students in the future. The respondents include only those faculty members who were willing to respond. The exploratory study was conducted in Mohali, Punjab, India; the faculty’ perceptions and attitude might vary in other regions. The findings of the study provide the basis for further research to be carried out in the same field with larger sample size, larger area, might be expanded across the boundaries.



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