A Study on Total Quality Management in Higher-Education Institutions

Celestin J. Robert

Assistant Professor-Statistics, SCMS School of Technology and Management, Muttom, Aluva, Ernakulam, Kerala, India
Email: *celestinrobert90[at]gmail.com*

Abstract: *Selecting a good quality institution by the parents for their children has become mandatory nowadays because, a plenty of institutions are being started every year in our country. More than that of considering the most ancient and well established institutions, people have started choosing the newly established institutions based on the quality level of the institution. Therefore, conducting the studies like this have become highly essential. This study is aiming at finding out the factors which help improving the quality of the institutions and also the factors which cause the depletion of the quality level. For achieving this, the data were collected from a set of faculty members from four different colleges, which offer arts, science, commerce, technical and management courses, in Ernakulam district of Kerala State. In this study, the sampling technique used is convenience sampling method and the data collection method adopted is questionnaire. Logistic regression model and Pareto analysis are the major analysis tools used in this study. The study could achieve identifying major factors which cause improvement and depletion of quality levels of higher education institutions.*

Keywords: Quality Control, Total Quality Management (TQM), Higher education, Quality Education

1. Introduction

Quality means how good or bad a product is. In manufacturing it means a state of being free from defects. Nowadays in every manufacturing and servicing, quality is very important and hence in education also. Moreover someone who gets quality education means he gets job under a top quality employer. Meaning a top quality employer are going to be ready to serve the state with a high quality service. In effect the long run of the state relies on quality education and that's why quality education becomes a necessity.

Total Quality Management may be a thanks to mitigate the defects of a product by the staff working for it continuously and efficiently so as to attain customer satisfaction. According to W. Edwards Deming, there are fourteen principles of TQM. They are
1) Create constancy of purpose for improving products and services.
2) Adopt the new philosophy.
3) Cease dependence on inspection to attain quality.
4) End the practice of awarding business on price alone; instead, minimize total cost by working with one supplier.
5) Improve constantly and forever every process for planning, production and repair.
6) Institute training on the work.
7) Adopt and institute leadership.
8) Drive out fear.
9) Break down barriers between staff areas.
10) Eliminate slogans, exhortations and targets for the workforce.
11) Eliminate numerical quotas for the workforce and numerical goals for management.
12) Remove barriers that rob people of pride of workmanship, and eliminate the annual rating or system.
13) Institute an active program of education and self-improvement for everybody.
14) Put everybody within the company to work accomplishing the transformation.

So it's obvious that quality is often achieved if these principles are adopted.

Sixteen factors which influence the standard of the institutions were considered during this study and also the responses on these factors from the faculty members of the colleges were collected employing a 5 point likert scale starting from strongly disagree to strongly agree. The factors were whether
1) Student admissions are done supported the merit list formed by the college/university.
2) Orientation programs are conducted for the newly joined students.
3) Proper Lesson planning is finished before the commencement of each semester.
4) Latest teaching methodologies are adopted by every members of the faculty within the institution.
5) Faculty meetings are conducted regularly to make sure that the college is functioning properly in every aspect.
6) Remedial coaching is conducted for weak students
7) Conducting such programs help improving the semester results.
8) Training and placement cell is active.
9) The college management is taking necessary steps to confirm that they make the industry satisfied by providing them the foremost updated candidates through placements.
10) The methodology adopted in every aspects of the functioning of the institution is up-to-date as per the necessities of the industry.
11) Faculty feedback, college feedback etc. are collected from every student a minimum of once in every semester.
12) Students are satisfied with every activities of the institution.
13) Parents' meets are conducted a minimum of once in every year.

14) Parents are informed with the scholar progress.
15) Parents and therefore the management are satisfied with the faculty members' approach and behaviour towards the scholar.
16) Overall rating on the satisfaction of the parents.

Problem Definition
The problem definitions of the study are as follows.
1) To study the demographic characteristics of the sample.
2) To do percentage analysis of the responses.
3) To identify which of the factors play vital roles in improving quality.
4) To identify which are the major causes of decreasing quality.

2. Methodology

This study is aiming at finding out the factors which help improving the quality of the institutions and also the factors which cause the depletion of the quality level. For achieving this, the data were collected from a sample of 100 faculty members from four different colleges, which offer arts, science, commerce, technical and management courses, in Ernakulam district of Kerala State. The sampling technique used is convenient sampling method and the data collection method adopted is questionnaire. Logistic regression model is used to identify the factors which improve quality and Pareto analysis is used to identify the factors which cause the depletion of quality.

3. Result and Discussion

The analysis is done in four parts. The first part is done to identify the demographic characteristics of the respondents. The second part is performing percentage analysis of the responses. The fourth part is drawing pareto chart. This is done in order to find which of the factors plays important role in reducing the level of quality, so that the college managements could improve quality. The fourth part of analysis is ordinal logistic regression, because all the variables are categorical. This is done to identify which are the factors which help in maintaining good quality.

1) Demographic characteristics of the respondents

Table 1: Gender distribution of respondents

Sl. No	Gender	No. of respondents	% of respondents
1.	Male	17	17
2.	Female	83	83

The majority of the respondents (83%) were female and 17% were male.

Table 2: Age distribution of respondents

Sl. No	Age Group	No. of respondents	% of respondents
1.	22-30	32	32
2.	31-40	58	58
3.	41-50	10	10
4.	51-60	0	0
5.	>60	0	0

The majority of the respondents were in the age group of 31-40 years consisting of 58 percent. It was followed by the age group of 22-30 years consisting of 32percent. Only 10 percent of the respondents were in the age group 41-50 and there were no respondents either from the age group 51-60 or above 60.

Table 3: Distribution of qualification of the respondents

S. No	Qualification	No. of respondents	% of respondents
1.	Post-Graduation	85	85
2.	MPhil	11	11
3.	PhD	4	4
4.	Others	0	0

As the respondents were the members of the faculty of the four colleges, It is seen that the qualification of majority of the respondents were Post Graduation(85%), while the qualification of 11% of the respondents were MPhil and only 4% of the respondents were PhD holders.

Table 4: Designation-wise distribution of respondents

S. No.	Designation	No. of respondents	% of respondents
1.	Lecturer	54	54
2.	Assistant Professor	45	45
3.	Associate Professor	0	0
4.	Others	1	1

It is seen that 54 percent of the respondents were Lecturers while 45% of them are assistant Professors, there were no Associate Professors and only one percent of respondents was from other category.

Table 5: Distribution of Nature of job

S. No.	Nature of job	No. of respondents	% of respondents
1.	Full time	92	92
2.	Part time	6	6
3.	On contract	2	2
4.	Others	0	0

It is seen that majority of the respondents (92%) were full time faculties, while a few of them were working in part time (6%) and very few of them were working on contract (2%).

Table 6: Distribution of salary

Sl. No.	Nature of job	No. of respondents	% of respondents
1.	<10000	0	0
2.	10000-25000	77	77
3.	25000-50000	23	23
4.	>50000	0	0

It is seen that 77% of the faculties were earning their salaries between Rs.10000 and Rs.25000 and 23% of them were earning between Rs.25000 and Rs.50000, while none of them earned either below Rs.10000 or above Rs.50000.

2) Percentage analysis
A five point likert scale (strongly agree, agree, neutral, disagree, strongly disagree) was used to rate each attributes of quality. A total of 100 respondents gave their responses in the ratios mentioned below.

Table 7: Percentage analysis of the respondents

| S. No	questions/variables	total no. of respondents	strongly agree	agree	neutral	disagree	strongly disagree	total
1	Admisn	100	54%	25%	17%	4%	0%	100%
2	Orientation	100	64%	36%	0%	0%	0%	100%
3	Lessonplan	100	43%	56%	1%	0%	0%	100%
4	teachingmethods	100	32%	54%	12%	2%	0%	100%
5	Meeting	100	23%	52%	12%	11%	2%	100%
6	Remedial	100	42%	46%	7%	5%	0%	100%
7	such-improv	100	36%	47%	17%	0%	0%	100%
8	placement	100	16%	66%	15%	3%	0%	100%
9	indus-satisf	100	6%	86%	8%	0%	0%	100%
10	method-uptodate	100	38%	50%	12%	0%	0%	100%
11	feedback	100	51%	38%	10%	1%	0%	100%
12	student-satisf	100	15%	48%	31%	6%	0%	100%
13	perents'meet	100	51%	43%	4%	1%	1%	100%
14	studentprogres	100	52%	31%	13%	3%	1%	100%
15	satisf-pa-col-facul	100	44%	50%	6%	0%	0%	100%
16	overal	100	18%	79%	3%	0%	0%	100%
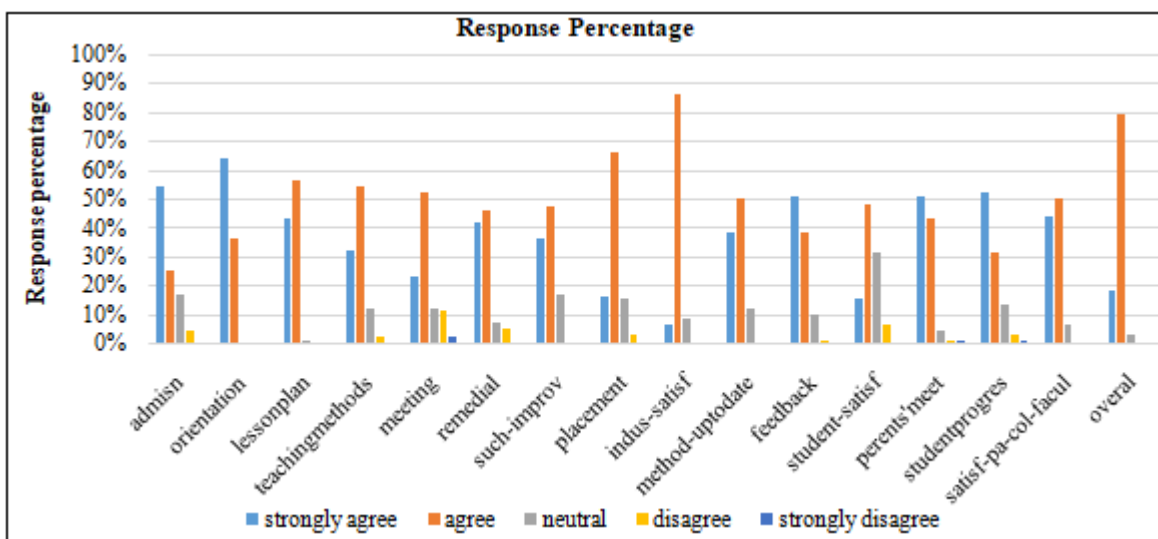
Chart 1: Histogram of Response percentage.

3) Pareto chart

Pareto analysis is based on the idea that 80% of a project's benefit can be achieved by doing 20% of the work or conversely 80% of problems are traced to 20% of the causes. In this study, the factors which contributes 80% to the lack of quality were identified using pareto analysis. For this purpose, the total number of responses 'neutral', 'disagree' and 'strongly disagree' were counted from each category of variables. Then its cumulative frequency were calculated and the pareto chart is plotted in MS Excel and the following result was obtained.
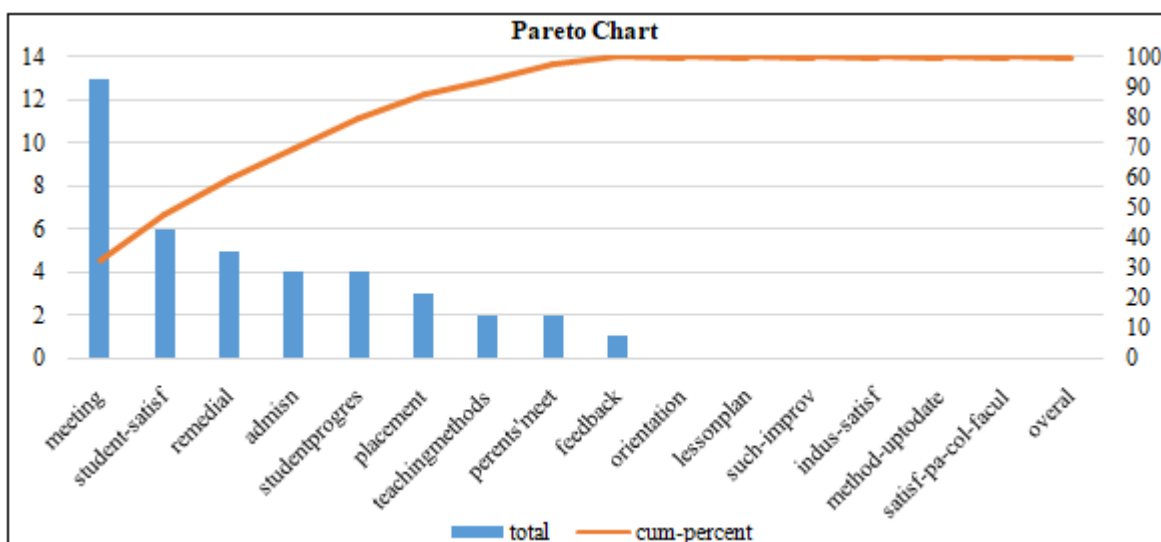

Chart 2: Pareto chart

It was observed that 80% lack of quality is caused by 20% of the factors, they are conducting faculty meeting, students' satisfaction, conducting remedial coaching and admission based on merit list. The result obtained from the pareto chart is that the college management needs to concentrate more on these factors rather than concentrating on all factors to improve quality.

4) Logistic regression

The responses made by the respondents were based on the level of quality in different criteria by each college. Hence the rating for the variable 'overall' is done based on the assessment of each respondent on all other criteria. Therefore this variable was considered as the dependant variable and all other variables as independent variable. The Logistic regression analysis is done using SPSS and the following outputs were obtained and the following interpretations were drawn from the outputs.

Table 8: Model Fitting Information

Model	Model Fitting Criteria	Likelihood Ratio Tests		
	-2 Log Likelihood	Chi-Square	Df	Sig.
Intercept Only	118.630			
Final	1.386	117.244	80	.004

Since the p-value is .004, which is less than 0.05, then the model fits the data significantly better than the null model.

Table 9: Likelihood Ratio Tests

Effect	Model Fitting Criteria	Likelihood Ratio Tests		
	-2 Log Likelihood of Reduced Model	Chi-Square	Df	Sig.
Intercept	1.386[a]	.000	0	.
Admisn	1.386[b]	.	6	.
Satisfpacolfacul	6.932[b]	5.545	4	.236
Perentsmeet	1.386[b]	.000	6	1.000
Student progress	1.386[b]	.000	8	1.000
Indussatisf	5.105[b]	3.718	4	.445
studentsatisf	106.167[c]	104.781	6	.000
Feedback	1.387[b]	.001	6	1.000
Method upto date	7.804[b]	6.418	4	.170
Orientation	1.386[d]	.000	2	1.000
Remedial	142.430[c]	141.044	6	.000
Placement	58.360[b]	56.974	6	.000
suchimprov	9.025[b]	7.638	4	.106
Lessonplan	6.932[b]	5.545	2	.063
Teaching methods	6.932[b]	5.545	6	.476
Meeting	6.932[b]	5.545	6	.476

Since the p values of the variables 'studentsatisf','remedial' and 'placement' are less than 0.05,these variables have a significant overall effect on the outcome. This states that factors
i) Are the students satisfied by every activity of the institution
ii) Is remedial coaching conducted for weak student
iii) Do the college offer enough placements

Plays vital roles in improving quality. Hence it could be concluded that these are the three area in which the college managements should make sure that the efforts are made for achieving improvements.

4. Conclusion

Pareto analysis is based on the idea that 80% of a project's benefit can be achieved by doing 20% of the work or conversely 80% of problems are traced to 20% of the causes. In this study, the factors which contributes 80% to the lack of quality were identified using pareto analysis. It was observed that 80% lack of quality is caused by 20% of the factors, they are conducting faculty meetings, student satisfaction, conducting remedial coaching and admissions are based on the merit list. Therefore it is concluded that the college management needs to concentrate more on these factors rather than concentrating on all factors to improve quality.

Logistic regression analysis was performed by considering the variable 'overall' as the dependant variable and all other variables as independent variable. It was observed that, the model fits the data significantly better than the null model.

It was also observed that the attributes corresponding to the statements
i) Are the students satisfied by every activity of the institution
ii) Is remedial coaching conducted for weak student
iii) Do the college offer enough placements

Plays vital roles in quality. This means that these are the factors which helps improving quality.

It is recommended that the managements of the colleges may concentrate more on the factors which were identified in the two analysis. The factors which help improving quality may be considered and working more on them will help maintaining a good quality level. In the same way, the factors which were identified as quality reducers may be seriously dealt with and try to reduce the number of such factors and this will help reducing the depletion of quality.

5. Future Scope

This study could be further extended on finding out new pathways on how to implement these factors to improve the quality. The managements may consider taking new decisions on improving the quality, by concentrating more on the factors which improve the quality level.

References

[1] Abdul Raheem, Zabadi M.A. *Implementing Total Quality Management (TQM) on the Higher Education Institutions – A ConceptualModel* ,Retrieved from http://www.todayscience.org/JFE/article/jfe.v1i1p42.pdf
[2] Al-KassemAmer Hani, In'airat Mohammed Hasan, *Total Quality Management in Higher Education: A Review,* Retrieved fromhttps://www.researchgate.net/publication/2663948 50_Total_Quality_Management_in_HigherEducation_ A_Review.
[3] HabibzadehPouya, NajafabadiHosseinNadali , SadeghiSanaz, *Total Quality Management in Higher Education-Case Study: Quality in Practice at University*

College of Borås , Retrieved from https://www.researchgate.net/publication/266394850_Total_Quality_Management_in_Higher_Education_A_Review

[4] Sudha T(2013 June) *Total Quality Management in Higher Education Institutions,* Retrieved from http://indianresearchjournals.com/pdf/ijssir/2013/june/11.pdf

Author Profile

Celestin J. Robert is the author of this research paper works as an Assistant Professor of Statistics, in the Department of Commerce, SCMS School of Technology and Management, Muttom, Ernakulam, Kerala, for the past 9 years. The author is an M.Phil graduate in Statistics from Bharathidasan University, Trichy, Tamil Nadu.