Chapter 8: Conclusion and Recommendations

8.1 Conclusion
The study has concluded with confident and concrete outcome for the managements of newly started engineering institutes ( < 5 years age), especially in the rural area, that it is possible to offer quality technical education with the emphasis on teaching learning process even under the present constraints which will lead towards reducing the vacancy at the time of admission.

The research work concluded that,
1. Implementation of Key Performance Indicators (KPIs) leads towards effective teaching learning process.
2. Transparent recruitment process ensures identification of suitable and good quality teachers.
3. Induction training helps to motivate newly recruited teacher and affects positively on his/her academic performance.
4. Counselling, motivation, and corrective action by the management helps positively to improve Performance Index of a teacher
5. The academic growth of institute is completely dependent on the Performance Index of all teachers.
6. The student’s performance of university examination in a academic year is dependent on his/her attendance in class, class test performance, and performance index of a teacher.

8.2 Limitations of Study
- Since, management of newly established institutes in rural places are afraid about the experimentation, and reluctant to share data therefore, the sample size for experimentation is restricted to three institutes.
- Since, the monitoring mechanism is related with university examination results, it is time consuming process and one has to wait till the university result are available.
- In newly established institutes, retention ration of faculty is very poor which results into delay for stabilizing teaching learning process.
8.3 Recommendations and Guidelines to the management

Based on the conclusions of the research work, the researcher has suggested the guidelines to achieve the quality in teaching learning process which will lead towards better academic results and 100% admissions. With due respect to the guidelines given by NBA, AICTE, DTE and the respective university regarding norms and standards to be followed, the guidelines are for the engineering institutes established in rural area and having age less than five years.

The steps propose the following guidelines for the managements of self financed institutes, in general and those located in rural areas, in particular.

1. Association with reputed institute as a ‘Role Model’ institute:

2. Recruitment Process of faculty

3. Induction Training

4. Effective Teaching Learning Process and Academic Monitoring

5. Role of Management / Administration

1. Association with reputed institute as a ‘Role Model’ institute from management perspective.

Step I : Visit well performing institutes and institutes of higher learning in your area / state.

Step II : Identify any one institute which is willing to have frequent interaction with you.

Step III : Identify the institute which has an excellent academic performance and ready to spend time for development of new institute.

Step IV : Establish academic collaboration with such institutes, at least for five years, from the date of collaboration.

2. Recruitment Process of Faculty

Step I : Set up transparent faculty recruitment process to encourage recruitment of qualified and experienced faculty.

Step II: Identify and recruit senior faculty by reference.

Step III: Based on work load calculation, advertise the posts in reputed news papers at state level and regional level in English and regional language.
Step IV: The best period proposed for advertisement is: 15<sup>th</sup> Apr to 15<sup>th</sup> May. (This period is suitable to attract senior faculty, fresh M.Tech graduates and those who would like to switch over the jobs.)

Step V: Identify senior faculty from ‘Role Model’ institute to carry out interview process.

Step VI: Provide hospitality to the applicants at the time of recruitment (Transport, Tea, Snacks, care taking approach, etc)

Step VII: Conduct branch wise written examination based on ‘GATE’ examination pattern.

Step VIII: Conduct class room presentation for examining confidence, communication skill, attitude, pedagogy skills, and domain knowledge for the shortlisted candidates from written examination.

Step IX: Conduct HR interview of the shortlisted candidates from class room presentation, to understand willingness to work, family background, ambitions, future plans, salary expectations, etc.

Step X: Issue an offer letter on the same day, if not, at the most on the very next day.

Step XI: Identify the appropriate day and date between 15<sup>th</sup> May and 31<sup>st</sup> May as joining period for the newly recruited candidates.

Step XII: Assist the newly recruited faculty for stay, transport, working place, opening bank account, library and internet memberships, etc so as to make them comfortable and happy.

3. Induction Training

It is mandatory for all the newly recruited faculties to undergo induction training. The objective of the training is to know more about the institute and its culture as well as for one to one dialog with the management.

Step I: Invite experts to conduct induction training of all the teachers and nominate management representative to participate in induction training.

Step II: Participation of the Head of the Institute (Principal) is mandatory.

Step III: The preferred period for training will be 1<sup>st</sup> June to 15<sup>th</sup> June.

Step IV: The training will have focus on role of a teacher, quality in technical education, teaching learning process and the necessary preparations for the same.

Step V: Expectations of and from the teachers.
4. Effective Teaching Learning Process and Academic Monitoring

Set up an academic calendar inclusive of monthly tests and monthly student’s feedback to get effective results of steps mentioned below.

Step I : Understand important parameters for Teaching Learning Process :

A. Classroom teaching :
   1. How good is it?
   2. Punctuality, regularity, clarity on blackboard, communication skills – spoken, knowledge, qualification, interaction in the class.
   3. Lesson plan, time management.
   4. Understanding by the students, feedback by the teachers, assessment of students.
   5. Feedback of the teacher by the students, mentoring of students / teachers.

B. Hands on training :
   1. Conventional laboratory work, setting up proper experiments, lab manual.
   2. Innovative experimental set ups, assessment of students for skills of application.
   3. Mini, small, medium projects, full scale projects and its assessment.
   4. Industrial training / internship

C. Teaching outside curriculum (Value Added Input) :
   1. Gap analysis, courses to bridge the gap.
   2. Industrial visits
   3. Paper presentation, project competition.

Step II : Academic Monitoring

Implement the scheme to monitor the academic progress and review academic processes and teacher’s performance on a monthly basis.

Following are the points for consideration as Key Performance Indicators (KPI) during the initial stage.

- Lecture schedule – The Head of the Institute (HOI) is expected to issue a time table to all the students and staff right from the commencement of the semester. HOI is expected to keep the track of number of lectures scheduled against actually
engaged on a daily basis per class and on weekly basis per subject, course, staff
and class.

- Attendance – The HOI will organize to record the attendance of all the students
  attending lectures / practicals / term work. The record of the attendance for each
  subject and for every student is to be maintained on a daily, weekly and monthly
  basis.

- Lesson plans – All the faculty teaching various subjects / practicals / term work
  are supposed to prepare, submit and announce their lesson plan for the course
  work at the commencement of each semester. The HOI will organize to receive
  the success in terms of percentage of completion of the lesson plans for the
  individual subject and faculty on a weekly as well as monthly basis.

- Batch wise teaching: Categorize the subjects into Easy, Moderate and Difficult
  level. For difficult level subjects, prefer batch wise teaching.

- Class Test: Design a proper question bank for class test and circulate it to the
  students, well in advance. A class test be conducted, for each subject, after every
  two weeks in the first hour of the alternate day and the result be recorded. Weak
  students so identified should be provided with a remedial teaching on weekends.

- After completion of a semester and when the results of the previous university
  examinations are available then percentage result per course per faculty should be
  prepared.

- The performance evaluation of all faculties by the students will be considered as a
  mandatory requirement for all theory subjects. It should be carried out at the end
  of each month / four week period. Following are the points based on which this
  appraisal will be carried out, either in hard or soft form. The students will have to
  choose one of the options for each parameter monitored like Good (5) / Average
  (3) / Poor (1).
  a. Regularity.
  b. Punctuality.
  c. Presentation on blackboard.
  d. Interaction during the class.
  e. Effective communication for better understanding of the students.
  f. Satisfactory completion of lessons planned.
Step IV: Calculate performance Index (PI) of every teacher in every subject as follows:

\[
PI = \frac{\sum 5x + 3y + 1z + 0r}{5(\text{Strength of Class or Students on roll})} \times 100
\]

Where ‘x’ is the no. of students who have said (ticked) ‘yes/good’ (5 marks),
‘y’ is the no. of students who have ticked ‘No/Average’ (3 marks) and
‘z’ is the no. of students who have ticked ‘Don’t know/poor’ (1 mark)
‘r’ is the no. of students absent (0 Mark)

Step V: Analysis of Academic Monitoring
Perform the comparative study to understand the progress
- No. of lectures held against planned.
- No. of units completed against planned.
- Total attendance of students in the class.
- Performance of the students in the class test.
- Relation of class tests performance to their attendance per subject.
- Relation of internal and university examination results to their attendance.
- Relation of PI of a teacher with university result of respective subject.

Step VI: Attendance
Develop administrative mechanism to ensure attendance of all students in classes, for better performance of the students.

5. Role of Management / Administration
Step I: Provide support and infrastructure required to carry out suggested steps.
Step II: Take a cognizance of comparative analysis of academic monitoring in time and schedule remedial training for teachers with low performance index with a crystal clear understanding that PI is not for removal of the faculty but is to improve performance of the faculty.
Step III: Motivate the senior faculties to provide value added inputs beyond classroom teaching from employability perspective.
Step IV: Identify the senior faculty as a Training and Placement Officer (TPO) for improving Industry Institute Interaction.

Step V: Calculate Success Rate (Sr) of a particular batch in term of placements on the basis of

\[ Sr = \frac{\text{No. of Students Placed}}{\text{No. of Students Eligible for Placement Activity}} \]

Step VI: Organise mentoring for teachers to improve their performance index.

Step VII: Appreciate well appraised teachers in the annual public function.

The implementation of proposed model will ensure the improvement in teaching learning process in turn the quality of overall institute which will lead towards preparation for accreditation like NAAC, NBA as well as brand building.

8.4 Future Scope

The future scope for further research is to:

1. Identification of additional Key Performance Indicators of teaching learning process.
2. Identify additional and measurable parameters for calculating performance index of teacher and its methods of implementation.
3. Identify and to measure parameters of non-teaching / supporting staff in development of institute.
4. Identification of innovative training model to educate administrative management particularly newly established technical institutes to understand importance of various parameters that will ensure quality education in their institute.
5. To study, how to improve GER in engineering education and the reasons for declined trend of student towards engineering education especially in rural area.