CHAPTER-6

TQM FRAMEWORK AND QUALITY ASSURANCE MECHANISM IN MANAGEMENT INSTITUTES

6.1 Introduction:

This chapter presents the post strategic analysis activities of implementing TQM. The formulation of TQM framework draws information from the literature on TQM, TQM models of educational system, critical analysis of various aspects of TQM, and environment scanning through gap analysis carried out in the study. The framework arrives at micro-level design of operational planning, which helps to enhance successful implementation of TQM. The model is called as “Management Education Quality Management (MEQM)”. Here attempt is made to suggest operational framework for implementation (figure 7.1) and dynamic model by identifying appropriate indicators of measurements.

6.2 TQM Framework for Quality assurance:

The management institutions are concerned with the creation and transmission of the knowledge is only one aspect within a wider spectrum of the nature and purpose of the education. The basis of this framework is “Input-Process-Output” concept. As already stated, educational institution has varied customers and stakeholders. Steps involved in MEQM implementation are as follows;

1. Institutions need to scan environment and identify needs of customers and stakeholders. Identify critical ones (though everyone is important) for period whom institution wishes to take up by prioritization.
2. After that, assess institute status and culture on the basis of outcomes and feedbacks from stakeholders and redefine Institute Vision-Mission and Quality Policy.
3. Then design inputs as per the requirements and needs of customers and stakeholders on the basis of institution Vision-Mission, Quality Policy and Total Management Commitment.
4. Set-up strategic quality plan with Total Management Commitment (TMC) for TQM Processes and Practices and designed inputs to develop Continuous Improvement (CI) and measures of institutional outcomes.
Fig. 6.1: Framework for MQM

- External Environment Scanning
- Identify needs of Customers & Stakeholders
  - Design Inputs (ID)
    - Students Quality (QS)
    - Faculty Quality (FQ)
    - Infrastructure Quality (IFQ)
    - Finances (FIN)
  - Institution
    - Vision & Mission
    - Quality Policy
    - Status & Culture
- Strategic Quality Plan
- Total management Commitment (TMC)
- TQM Processes (Hard Practices)
- TQM Practices (Soft Practices)
- Outcomes & Assessment
  - Students Output Quality (OQs)
  - Employee Performance (EP)
  - Service Quality (SQ)
  - Stakeholders Satisfaction (STK-SAT)
  - Employee Satisfaction (EMP-SAT)
  - Placements of Students (PLS)
  - Student Satisfaction (SS)
  - Research and Consultancy (RC)
  - Total Revenue (TR)

- Continuous Improvement (CI)
- Are Outcomes Satisfactory?
  - NO
    - Go for ISO-Certifications, Accreditations, Quality Awards (CII, MBNQA etc.)
  - YES
5. Develop the indicators based on the needs and expectations of customers and stakeholders.

6. Assess the outcomes, if outcomes are not satisfactory, revise strategic quality plan and or reassess status and culture and or redefine institution Vision-Mission.

7. After every assessment, prepare report comprising of institutional performance, action plan and shortfalls observed.

8. If outcomes report is satisfactory, go for ISO-certification, Accreditation and apply for quality awards which help to build up image and institution reputation in the society.

9. Continue the process again with periodic review and assessment as per the changed needs and requirements of customers and stakeholders.

6.3. Management Education Quality Management (MEQM)-Model:

Management Education Quality Management (MEQM) - Model presents the strategic analysis of management education system. From review of literature it is seen that Top Management Commitment (TMC) is critical to activate and sustain a successful process of Continuous Improvement (CI) and Self improvement (SI). The dynamics of intangible events effects on tangible evidences are to be represented so that motivational drive for improvement is not abandon. The institutions are susceptible to fall into the trap of vicious cycle of decline in quality vacant seats, failure to maintain recognition; revenue crunch etc. leads to natural death. Hence for dynamic analysis of the educational system, MEQM-Model will be helpful to assess different strategies of changing TMC and SI. MEQM-model system dynamics enables to understand how things changes through time.

In social systems relationships between its parts strongly influence human behavior. A social system strongly confines the behavior of individual people, and they are substantially responsive to their changing environment.

Forrestor (1961) pioneered the work in system dynamics. He stated that the system dynamics is a theory of structure and behavior of systems. It helps to analyze and represent, graphically and mathematically the interactions governing the dynamic behavior of complex socio-economic system. System Dynamic models are
constructed from internal non-linear structure of the system. The models are able to generate new modes of behavior that have not observed but occur at some future time (Forrester, 1976). System Dynamics is an approach, which takes a causal view of reality, and uses quantitative means to investigate dynamic behavior of socio-economic system and their response to policy. Policy analysis helps to determine if certain behavior modes persist in the face of different policies, and if certain policies are more affected by changes in the sensitive parameters, which forms the basis for subsequent recommendations. (Anderson and Richardson, 1980)

7.3.1 Model Description:

Quality of any educational system can be expressed/measured by quality of outgoing students i.e. their knowledge gain. This may also called as quality of services provided (teaching, infrastructure etc.). The purpose of these services is that, the student learns and gain knowledge. But the quality of outgoing students are also depends on incoming quality i.e. the quality of his knowledge while entering the institute. In order to enhance the service quality, many researchers have suggested adopting TQM in the institute.

Educational Service quality basically depends on quality of faculty/staff, infrastructural quality and Funds availability. Funds availability depends on the total revenue to the institute. Total revenue comes from student fees, donors (alumni, employers, industry, society, govt. etc.). However this is directly depends on satisfaction of students, satisfaction of employer, satisfaction of stakeholders. Satisfaction of students is largely depends upon the service quality whereas, employer and stakeholders satisfaction is depends on quality of outgoing students which leads to placements. Satisfaction of Stakeholders, Employers and students leads to enhance the credibility of the institute. Credibility of the institute helps to attract quality students i.e. incoming quality. The above entire system becomes positive causal loop with TQM as growth driver. Figure 7.3.1 shows the Causal Loop and supply chain of MEQM-Model.
Fig. 6.3.1: Causal Loop and supply chain of MEQM-Model
The system is modeled using the following variables with their nomenclature.

### Table 6.3.1: MEQM-Model Variable with Nomenclature

<table>
<thead>
<tr>
<th>S. N.</th>
<th>Variable / Label</th>
<th>Variable Name/ Description</th>
<th>S.N.</th>
<th>Variable / Label</th>
<th>Variable Name/ Description</th>
</tr>
</thead>
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<tr>
<td>1</td>
<td>TQM</td>
<td>Total Quality Management</td>
<td>15</td>
<td>STK-SAT</td>
<td>Stakeholders satisfaction</td>
</tr>
<tr>
<td>2</td>
<td>TMC</td>
<td>Total Management Commitment</td>
<td>16</td>
<td>EMP-SAT</td>
<td>Employee Satisfaction</td>
</tr>
<tr>
<td>3</td>
<td>CI</td>
<td>Continuous Improvement</td>
<td>17</td>
<td>SS</td>
<td>Student Satisfaction</td>
</tr>
<tr>
<td>4</td>
<td>SI</td>
<td>Self Improvement</td>
<td>18</td>
<td>RC</td>
<td>Research &amp; Consultancy</td>
</tr>
<tr>
<td>5</td>
<td>IQ</td>
<td>Input Quality</td>
<td>19</td>
<td>EP</td>
<td>Employee Performance</td>
</tr>
<tr>
<td>6</td>
<td>QS</td>
<td>Student Quality</td>
<td>20</td>
<td>ES</td>
<td>Employer Satisfaction</td>
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<tr>
<td>7</td>
<td>FQ</td>
<td>Faculty Quality</td>
<td>21</td>
<td>SOC-SAT</td>
<td>Society Satisfaction</td>
</tr>
<tr>
<td>8</td>
<td>IFQ</td>
<td>Infrastructure Quality</td>
<td>22</td>
<td>SF</td>
<td>Student Fees</td>
</tr>
<tr>
<td>9</td>
<td>FIN</td>
<td>Finances</td>
<td>23</td>
<td>DF</td>
<td>Donations</td>
</tr>
<tr>
<td>10</td>
<td>TR</td>
<td>Total Revenue</td>
<td>24</td>
<td>RCF</td>
<td>Research and Consultancy Fees</td>
</tr>
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<td>11</td>
<td>SQ</td>
<td>Service Quality</td>
<td>25</td>
<td>ME</td>
<td>Motivational Environment</td>
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<td>12</td>
<td>OQ</td>
<td>Outgoing Quality</td>
<td>26</td>
<td>FD</td>
<td>Faculty development</td>
</tr>
<tr>
<td>13</td>
<td>PLS</td>
<td>Placement of Students</td>
<td>27</td>
<td>FEX</td>
<td>Faculty Experience</td>
</tr>
<tr>
<td>14</td>
<td>PS</td>
<td>Placement Services</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### 6.3.1.1 Input Quality (IQ):

General Input quality for educational institute is the quality of incoming students (QS) expressed in terms of entrance examination and qualifying examination and marks obtained. And choice to select an institution is with students on the basis of merit at the institution. A student while taking admission select the institution based on his/her perception of Faculty quality (FQ), Infrastructure quality (IFQ), Placement of students (PLS) and Student Satisfaction (SS). Student quality is a multiplier effect of these variables. The constant is merit of the student i.e. Student quality (QS) for admission. Input quality should be greater than or equal to design inputs (ID) i.e. $IQ \geq ID$. Design inputs are student quality (QS), Faculty quality (FQ),...
Infrastructure Quality (IFQ) and Finances (FIN). Therefore, input quality can be expressed as;

\[
IQ = QS*f (FQ*IFQ*PLS*SS) \quad \ldots \ldots \ldots \ldots (1)
\]

### 6.3.1.2 Service Quality (SQ):

Service quality (SQ), as perceived here is the integrated factor of all services provided in the institution. Service quality is depends on Infrastructure Quality (IFQ) and Faculty Quality (FQ). Therefore Service Quality is multiplier effect of FQ and IFQ accumulated over the period of time through addition of infrastructure and faculty improvement.

Therefore,

\[
SQ(t) = SQ(t-dt) + \{(1- SQ) * [(FQ/FQ_i)^* (SQ/SQ_i)] * [(IFQ/ IFQ_i) *(SQ/SQ_i)]\} \times dt \quad \ldots \ldots (2)
\]

Where,

- \( SQ(t) \) = Service Quality of the year \( t \)
- \( SQ(t-dt) \) = Service quality of \( (t-dt) \) years
- \( t \) = time in year
- \( dt \) = Delay time in year (in 2 years full time mgt. program \( dt=1 \))
- \( SQ_i \) = Initial value of service quality
- \( FQ_i \) = Initial Value of Faculty quality (FQ)
- \( IFQ_i \) = Initial value of Infrastructure Quality (IFQ)

### 6.3.1.3 Outgoing Quality (OQ):

The outgoing quality (OQ) is a function of both input quality (IQ) and Service quality (SQ). As SQ depends on FQ and IFQ and accounted directly. The equation is;

\[
OQ = f (IQ, SQ) \quad \ldots \ldots \ldots \ldots \ldots \ldots \ldots (3)
\]
6.3.1.4 Infrastructure Quality (IFQ):

Infrastructure quality is an accumulating variable and depends upon the respective multipliers from the institutional finances (FIN) and Top Management Commitment (TMC). The corresponding equations are:

\[
IFQ_{(t)}=IFO_{(t-dt)}+\left\{ (1-IFQ) \right\} \frac{FIN_i}{FIN_i} \frac{IFQ}{IFQ_i} \frac{FIN_i}{FIN_i} \frac{TMC}{TMC_i} IFQ_i - IFQ_d \right\} \right\} dt \dots (4)
\]

Where,
- \( IFQ_{(t)} \) = Infrastructure quality of the year \( t \)
- \( IFO_{(t-dt)} \) = Infrastructure quality of the year \( (t-dt) \)
- \( dIFQ_t = (1-IFQ) \times (IFQ/IFQ_i - IFQ_d) \times (FIN/FIN_i) \times (TMC/TMC_i) \)
- \( IFQ_d \) = depreciation of Infrastructure = \( R_d \times IFQ \)
- \( R_d \) = Rate of depreciation
- \( FIN_i \) = Initial institutional Finances
- \( TMC_i \) = Initial Top Management Commitment.

6.3.1.5 Self Improvement (SI):

Self improvement is an essential component in an institution and is an important driver to enhance the faculty quality and for continuous improvement.

\[
SI_{(t)} = SI_t \times f(IFQ \times ME) \ldots \ldots (5)
\]

Where,
- \( SI_t \) = Self Improvement at that time \( t \).
- \( ME \) = Motivational Environment.

6.3.1.6 Continuous Improvement (CI):

In TQM practices and processes, continuous improvement (CI) plays an important role. It is being driven by motivational environment (ME) in the institute, self improvement (SI) and Infrastructure Quality (IFQ). CI is a multiplier function of IFQ, ME and SI. The equation is:

\[
CI = CI_t \times f(IFQ \times ME \times SI) \ldots \ldots (6)
\]

Where,
- \( CI \) = Continuous improvement
- \( CI_t \) = Continuous improvement at time \( t \)
6.3.1.7 Faculty Quality (FQ):

Faculty quality is a multiplier function of continuous improvement (CI), Faculty development (FD), Self improvement (SI) and faculty experience (FEX). The equation is:

\[
FQ = FQ_t \cdot f(FEX \cdot FD \cdot CI \cdot SI) \quad \ldots \ldots \quad (7)
\]

Where,

- \(FQ\) = Faculty Quality
- \(FQ_t\) = Faculty Quality at time \(t\)

6.3.1.8 Student Satisfaction (SS):

Student satisfaction level is an important parameter to decide upon the status of an institution. Student satisfaction level accumulated over the period of time and depends upon the service quality (SQ). Student satisfaction leads to pay for fees which contribute towards total revenue (TR) of an institution.

\[
SS_t = SS_{(t-dt)} + \{1-SS\} \cdot [(SS/SS_i)^* (SQ/SQ_i)] \cdot dt \quad \ldots \ldots \quad (8)
\]

Where,

- \(SS_t\) = Students Satisfaction at time \(t\)
- \(SS_{(t-dt)}\) = Students Satisfaction at \((t\cdot dt)\) years
- \(SS_i\) = Initial student satisfaction level
- \(SQ_i\) = Initial Service quality

6.3.1.9 Employers Satisfaction (ES):

One of the important customers of an institution is the employer. Institutions are also depends upon the employer for placement of students (PLS). Employer satisfaction accumulated over the period of time. Employer satisfaction depends on outgoing quality (OQ) and is a multiplier function of outgoing quality. Employer satisfaction leads to donations which contribute towards total revenue (TR) of an institution.
ES\(t\) = ES\((t-dt)\) + \{(1-ES)^* [(OQ/OQ_i)^* (ES/ES_i)]\} * dt ........... (9)

Where,
ES\(_t\) = Employee satisfaction at time t
ES\((t-dt)\) = Employer satisfaction of the year \((t-dt)\)
ES\(_i\) = Initial Employer satisfaction level
OQ\(_i\) = Initial outgoing quality

6.3 1.10 Placement of students (PLS):
Institutional assessment by the parents and students are based on Placement of students (PLS). Hence this parameter plays a crucial role. It is a multiplier function of employer satisfaction (ES) and Placement services (PS).

PLS = PLS\(_t\) * \(f\) (ES * PS) ................. (10)

Where;
PLS= Placement services
PLS\(_t\) = Placement services at time t
PS = Placement Services

6.3.11 Institutional Total Revenue (TR):
All drivers, Top Management Commitment, Infrastructure quality, Service quality are all governed by financial strength (FIN) of an institution. Here total revenue is multiplier function of initial finances, student fees (SF), donations (DF), Research and Consultancy fees (RCF). The equation is;

TR = TR\(_t\) * \(f\) (FIN) ............. (11)

Where,
TR\(_t\) = Total revenue at time t
FIN = (1-FIN\(_i\) ) * SF *DF *RCF
FIN\(_i\) = Initial Financial Status.
SF = Student fees
DF = Donations & development fund
RCF = Research and Consultancy fees
The above suggested framework for TQM in management education and model MEQM developed with various TQM constructs and dimension will be helpful for scanning the external as well as internal environment of the institutes. It can estimate various input and output quality factors at particular period of time, thereby helpful in benchmarking various practices and processes and effective strategic planning. It also guide how to enhance outgoing and service quality, thereby satisfaction of employees and stakeholders. This helps in enhancing credibility of the institution. The model and framework can be applied to other educational settings.

Testing and validation of model is out of scope of this study and therefore, recommended for further research.

References:

