



Scope for Implementation Of Six Sigma into Management Institutions for Better Teaching Learning Experience

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ABSTRACT

Education plays a vital role in the development of any nation. Therefore, there is a premium on both quantity (increased access) and quality (relevance and excellence of academics programmes offered) of higher education, especially management institutions. Like in any other domain, the method to improve quality remains the same that is, finding and recognizing new needs and satisfying them with products and services of international standards.

KEYWORDS : Six Sigma, Management Education, Quality

1. INTRODUCTION

The second rung B-schools launched by hundreds of institutes across the country have become as shops for degrees and the quality standards have gone down over the years and poor quality standards are reflected in poor teaching faculty, poor research and consulting leading to poor placement of the students who pass out from such Institutes. The quality of these Institutes depend on critical factors like

- Quality of Faculty recruited
- Quality of Infrastructure provided
- Quality of Library and brainstorming discussion groups and seminars led by top Professional Management Gurus
- Last but not the least is the placement provided by the Institutes

As a result of these issues many B schools are shutting down. Latest figures released by the All India Council for Technical Education (AICTE) show that 147 standalone B-schools and MBA programmes offered by engineering institutions across the country closed down in the last academic year. The number of postgraduate diploma programmes in management institutes has also dropped from 606 to 600 in the same period. Maharashtra where 24 MBA colleges shut down and Tamil Nadu with 23 account for the largest number of closures followed by Andhra Pradesh with 19. (www.timesofindia.com)

Six Sigma methodologies provide the techniques and tools to improve the capability and reduce the defects in any process. Maximizing customer satisfaction leads to improved bottom-line performance and globally competitive positions. (Al Atiqi, 2009)

2. REVIEW OF LITERATURE

Ahemad (2013) studied the factors influencing service sector's performance management using six sigma. The paper explains the concept of Six Sigma in details and reviewed several studies to implement of Six sigma in service sector. As per author Six Sigma can be used in service sector for reducing processing time, processing errors, customer complaints, payment errors, invoicing errors, errors in inventory, inaccurate report of income, inaccurate report of cash flow, delay in service delivery, billing errors, waiting time. Kaushik and Khanduja (2010) reviewed the implications of applying Six Sigma methodology over a technical institute to increase the passing rate of students.

3. DATA ANALYSIS

H₀: Six Sigma can be applied to Academics to experience a better Teaching-learning atmosphere and improved management processes.

RESEARCH METHODOLOGY: Exploratory research: Experts in the field of certification of standardization were randomly selected for interviews purpose from Six Sigma to seek their opinion about imple-

mentation of these Certifications of standardization in academics for better Teaching-learning atmosphere and process improvement.

To prove this hypothesis, Cochran's Tests were conducted on keywords (words with more frequencies), based upon in-depth interviews of Six Sigma Experts.

STATISTICAL TEST: Cochran's Test

The respondents were asked to comment on implementation of Six Sigma into Management institutes for better Teaching-learning atmosphere and process improvement.

Keywords (Frequently used words while responding) from their responses of Six Sigma experts were noted, which are as follows:-

- Team formation (teachers and admin staff at various levels),
- Team members be experts in Six sigma (have different belts),
- Objectives Formation (Students Exam results improvement or Placements increase or Effective Library management),
- Risk Analysis FMEA (Failure mode & Effects analysis),
- Financial Estimates,
- Measure & Analyze CTQ (Critical To Quality),
- Verify (Results improved or Placements increased or library management efficiency enhanced)

H₁: Frequencies across activities (keywords) for implementing Six sigma into academics for better teaching, learning environment are uniform

H₂: Frequencies across activities (keywords) for implementing Six sigma into academics for better teaching, learning environment are different

Level of Significance $\alpha = 0.05$

Table no. 1 Frequencies (H₂)

	Value	
	0	1
Team formation (teachers and admin staff at various levels)	1	9
Team members be experts in Six sigma (have different belts)	0	10
Objectives Formation (Students Exam results improvement or Placements increase or Effective Library management)	1	9
Risk Analysis FMEA (Failure mode & Effects analysis)	2	8
Financial Estimates	2	8
Measure & Analyze CTQ (Critical To Quality)	0	10
Verify (Results improved or Placements increased or library management efficiency enhanced)	2	8

Table no. 2 Test Statistics (H₂)

N	10
Cochran's Q	5.368 ^a
Df	6
Asymp. Sig.	.498

Observation
Q(6) = 5.368 P = 0.498

CONCLUSION

Since p value (0.498) is more than level of significance (0.05), the null hypothesis is Accepted. Hence it is concluded that there is no difference in Frequency across activities.

Hence it can be concluded that Six Sigma Experts give equal importance to all keywords mentioned above while implementing Six Sigma into Management institute to experience better teaching learning environment.

(Jenicke, 2008)'s conclusion that it is possible to use Six sigma methodology for academic improvement. (Kaushik, 2010)'s conclusion that Six Sigma implementation in technical education yield a great value to academics, consultants, researchers. Both conclusions are in line with our findings as mentioned above.

Hence Hypothesis H₂ is accepted.

4. RECOMMENDATIONS

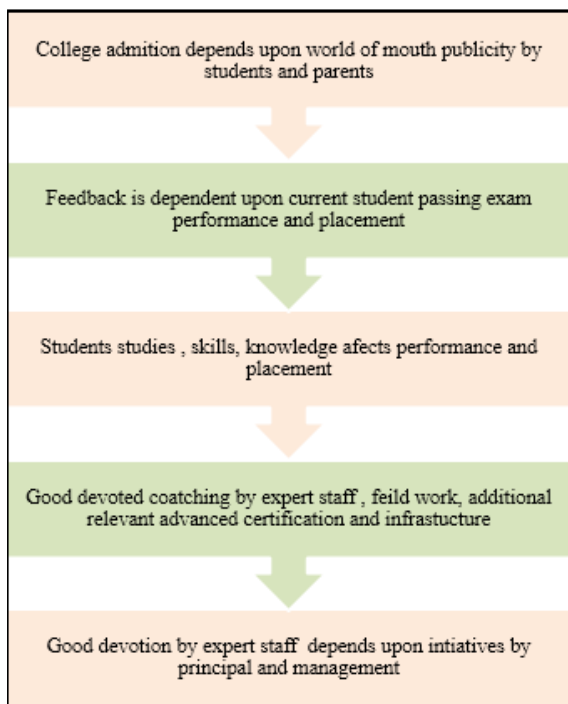


Fig no. 1 Chain of causation

Table no. 3 Six Sigma professionals in a management institute (Kaushik and Khanduja, 2010)

1	Governing body (Leadership group council Project sponsors and Champions)	Members of Executive Committee Prepare Six Sigma plan Sanction resources for the team
2	Director and Head of the department (Master Black Belt)	Communicate with management Deals with resistance to implement Six Sigma Help to resolve team and other conflicts Gathers and analyses data about team activities

3	Professor in charge (Black Belt)	Reviews/revises/clarifies the project. Works with team members. 3. Selects the project team members. 4. Identifies and finds resources for team 5. Documents final project results
4	Student advisory committee (Green Belt)	Carries out instructions for data collection and analysis Carries out assignments. Reviews the efforts of the team itself. Learns new data-driven ways to manage the operation
5	Process owner (Green Belt)	All faculty members and staff of the management institute. They are responsible for continuous improvement and maintenance of the same

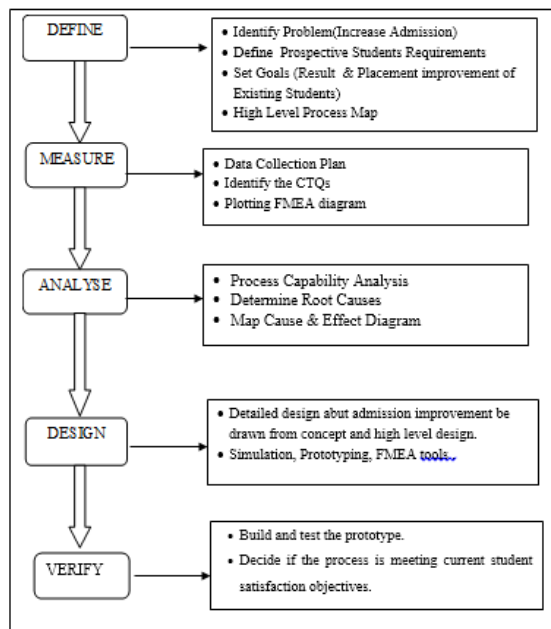


Fig no. 2 Application of Six Sigma DMADV Methodology in a Management Institute

A Six Sigma Program Implementation Team (SSPIT) from different disciplines should be formed as shown in Table no.3. The team members should regularly meet during the different stages of the project. A process flowchart is prepared to proceed in sequential manner and entire methodology to be adopted a management institute is shown in Figure no.2. The five-step DMADV cycle of Six Sigma can be successfully implemented in a management college to increase the admission of students. The five phases are discussed in detailed below.

1. Define:

The objective here is to increase admission of students. This require a review of the CTQs and KPIs such as process infrastructure, student skills as per industry and teaching as shown in Table no.4. In the define phase, a High Level Process Map- Supplier, Input, Process, Output Customer (SIPOC) diagram, can be drawn for admission scenario of student as shown in Figure 3.

Table no. 4 CTQs and KPIs

CTQs	KPIs
Teaching	University Exam Results
Student skills as per industry	No. of Placements in reputed companies and pay packages
Infrastructure	Teachers feedback by students

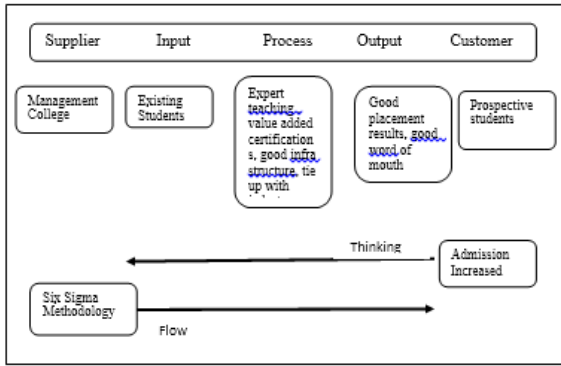


Fig no. 3 High level process map to improve admission scenario

2. Measure:

It could be understood more clearly by plotting a failure mode and effects analysis (FMEA) diagram as shown in Figure 4 where all the defects that occur are connected to the causes and effects to explain the relationship between the causes.

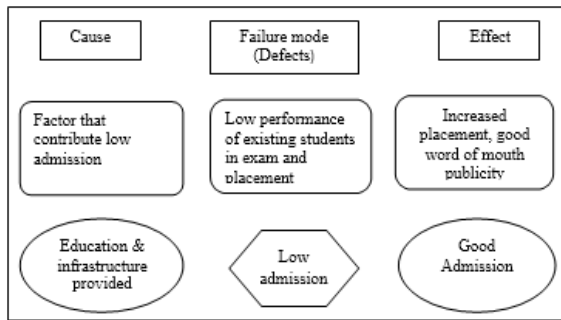


Fig no. 4 FMEA

3. Analysis:

Data is analyzed and the causes of the problem are discovered using various tools.

Run Chart (just like Fig. no.5) will show the changes in admission scenario in a process over time.

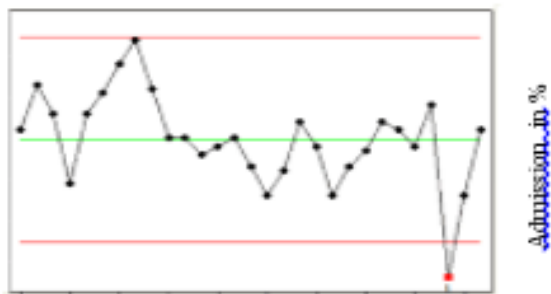


Fig no.5 Run Chart for Admission

Fish Bone Diagram:
Using the experiences of Principal, Head of department (HOD) of various branches, faculty members and views of senior students of the institute, a fish bone diagram can be drawn (Figure no.6) to find out the causes of less admission of students in management colleges. The brainstorming points (Critical Systems) with their key critical factors (KCF's) in the fish bone diagram as follows

Admission Scenario: Marketing campaign, Electronic and print media, Education fairs, Visit to undergraduate colleges.

Faculty: Performance based appraisal, Experts in domain, teaching feedback

Teaching pedagogy: Case study, field work, Assignment, Class, class test

Management: Scholarship, Control over administration, Provision for financial help to poor student, making good reputation of college, Provide sufficient power for principal and faculty knowledge level.

Infrastructure: Hostel facility, college building, sanitation, gymnasium.

Placement initiatives: Student inclusion into placement team, Contacting alumni, Constant communication with industry people, In campus placement interview held.

Information Technology: Online resources, Excel lab. Specialization software for practice. Communication Lab. Online Journals.

Value Added Certification: Tie up with TIE, Tie up with NSC, Tie up with various specialization organizations for training.

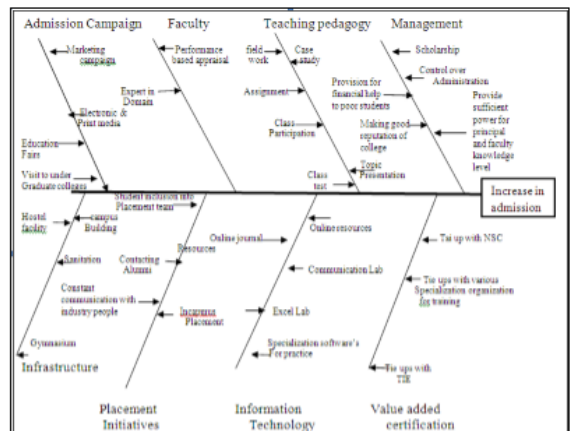


Fig no.6 Fish Bone Diagram

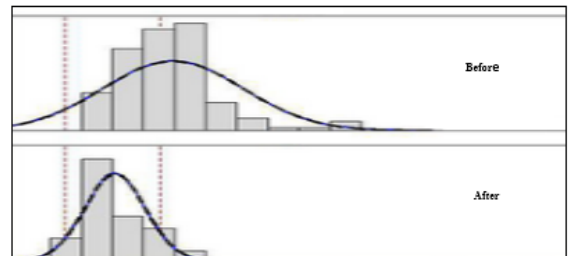


Fig no.7 Process capability analysis for admission of students before and after implementing DMADV methodology

Design:

Product (coarse material, teaching plan, academic calendar, value added certification, extensive training) can be designed with the designing phases. Simulation, FMEA, prototyping tools can be used.

Verify:

A prototype should be build and it should be tested. Decide whether the process is meeting current student satisfaction objectives or not. Testing should be carried out.

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