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Relevance of total quality management practices in higher educational institutes in India

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Abstract
The quality of higher education is of utmost concern today. Various studies and report of commission at state and central level have recognized the same and given recommendations for its improvement. Government and other constitutional agencies are also taking necessary measures. But these alone will not serve the purpose unless higher educational institutions and faculty take proactive measures and initiatives. A threat of foreign institutions entering the system of Indian higher education is going to pose the challenge of even survival of the poor performing educational institutions. The benefits of Total Quality management cannot be undermined all over the world. Many organizations have achieved excellence and success by implementing TQM policy. Many principles of TQM can be widely implemented in the area of education and training. This paper highlights the role of TQM principles especially in higher educational institutions and explains how these can improve their quality by implementing TQM principles.

Keywords: Higher Education, Total Quality management, Quality dimensions, Product dimensions, Software quality Dimensions, Service Quality dimensions

1. Introduction
Pt. Jawaharlal Nehru has clearly emphasized on the role of higher education by his words that a university stands for humanism, tolerance, logic, reason, ideas and for search of the truth. He expressed that if the universities discharge their duties diligently and adequately it will be beneficial for the nation and its people and add up to the overall development of the nation. According to the report of UNESCO International Commission on Education, there are four main pillars of education which includes learning to know, learning to do, learning to live together and learning to be. It also states that higher education comprises of all the types of education, training and research which are provided by universities or other educational institutions which are approved by competent state authorities or other competent institutions of higher education.

2. Higher education in India
Higher education in India is undergoing considerable change. The consistent growth rate of India in last two decades has been attributed to the higher education system which has been able to generate skilled manpower for the rapid industrialization and knowledge based economy. With over 600 million people in India under 25 years old, the system is under tremendous pressure to expand. India's young population has a huge appetite for education and, as the growth in the size of the middle classes escalates, millions are increasingly able to pay for it. By 2020, India will have the largest tertiary-age population in the world and will have the second largest graduate talent pipeline globally, following China and ahead of the USA. There are three main types of tertiary institution in India: 1) universities and university-level institutions, 2) colleges and 3) diploma-awarding institutions.

Table 1: Higher Education status in India

HIGHER EDUCATION STATISTICS AT A GLANCE							
INDIA							
			2011-12	2012-13	2013-14	2014-15	2015-16
1	Number of Universities		642	667	723	760	799
2	Number of Colleges		34,852	35,525	36,634	38,498	39,071
3	Number of Stand Alone Institutions		11,157	11,565	11,664	12,276	11,923
4	Enrolment in Higher Education	Total	291,84,331	301,52,417	323,36,234	342,11,637	345,84,781
		Male	161,73,473	166,17,294	174,95,394	184,88,619	185,94,723
		Female	130,10,858	135,35,123	148,40,840	157,23,018	159,90,058
		% Female	45%	45%	46%	46%	46%
5	Gross Enrolment Ratio (GER)	All Categories	20.8	21.5	23	24.3	24.5
		Male	22.1	22.7	23.9	25.3	25.4
		Female	19.4	20.1	22	23.2	23.5
		SC	14.9	16	17.1	19.1	19.9
		Male	15.8	16.9	17.7	20.0	20.8
		Female	13.9	15	16.4	18.2	19.0
		ST	11.0	11.1	11.3	13.7	14.2
		Male	12.4	12.4	12.5	15.2	15.6
		Female	9.7	9.8	10.2	12.3	12.9
		All Categories	0.9	0.89	0.92	0.92	0.92

If there is one overall structure which defines Indian higher education, it is the affiliated college system. The vast bulk of students study at public and private colleges which are affiliated to state university. These colleges do not have their own degree awarding powers; they deliver the courses, curricula and examinations specified and regulated by their parent state university.

3. Role of higher education in the society

The role of higher education in society must give expression its key purposes of producing and disseminating knowledge and community engagement. Higher education is generally understood to cover teaching, research and extension. If we critically analyze the different concepts of higher education, we can list the various roles higher education plays in the society. Higher education must play at the following key roles in any society.

- To cultivate highly educated people.
- To contribute to forging a critical and democratic citizenship.
- To actively engage with the pressing development challenges of our society.
- To contribute to the intellectual and cultural development of the public as critical citizens, through informed social commentary and critique and public engagement around ideas.
- To creatively conduct different kinds of rigorous scholarship - discovery, integration, application and teaching - and rigorous research, which have different purposes (fundamental, applied, strategic, and developmental), aims and objects.

To analyse from the above it is concluded that today knowledge, technology and information play a critical role in economic development and are prized for the advantage they can confer on businesses and countries. This means that the knowledge takes on new and great worth. For this reason, writes Castells, 'If knowledge is the electricity of the new informational international economy, then institutions of higher education are the power sources on which a new development process must rely'.

4. Quality concepts in higher education

Quality in education is much discussed concept now-a-days. It is rather difficult to define the Quality in educational institutions. There are certain limitations in adopting the corporate methods of Quality management in education because educational institutes cannot be considered as industry and the products are not their students, but it is the education imparted to the students. Students, their parents, and their future employers are the customers of this product (education). In an educational institute, students directly receive the teaching services and hence are the customers of the teacher, whereas the faculty and the Institute's administrators are the suppliers of the services. The student's definition of a Quality experience can effectively be improved by linking joy of learning with teaching. Teachers need to discuss such questions with the students as: Why are you here? What are you trying to do? What does it mean to you to do it well? How the teacher can help you in doing it well? A teacher has to build up a consensus in a class regarding what constitutes a Quality experience. If an objective is mutually agreed upon, the Quality management concepts ensure that relevance of curriculum increases, overall education is improved, productivity as well as efficiency of teachers is enhanced, and teachers and students find greater joy and satisfaction in their work which enables them to make positive contributions to the society.

5. Dimensions of quality in higher education

Quality, as we know so far, was originally developed in the manufacturing and production units. In the area of higher education, the adoption of quality control has been superficial and diluted by the exercise of academic freedom (Largosen *et al.*, 2004). Extensive literature review was carried out to identify the key variables of service quality; various researchers have given different dimensions of quality used by different institutions. It is normally difficult to apply the features of quality to higher education considering the fact that quality requires teamwork (Boaden and Dale, 1992) [5, 8]. Even the indicators of quality differ widely between departments within the same institution. Students need quality information about the specific programme they wish to study. Notably, providers (funding bodies and the community at large), students, staff and employers of graduates are important (Srikanthan and Dalrymple, 2003). In this section, we will discuss quality from the perspective of three groups and distil a common framework for the dimensions of quality in higher education based on Owlia and Aspinwall (1996) [26]. The most commonly grouped dimensions of quality are product, software and service

Table 2: Most commonly used Dimensions of Quality in Higher education

Product dimensions	Software quality dimensions	Service quality dimensions
Performance	Correctness	Responsiveness
Features	Reliability	Reliability
Reliability	Efficiency	Understanding customers
Conformance	Integrity	Access
Durability	Usability	Competence
Serviceability	Maintainability	Courtesy
	Testability	Communication
	Expandability	Credibility
	Portability	Security
		Tangible
		Performance
		Completeness

Source: Owlia and Aspinwall (1996) [26]

5.1 Product Quality Dimensions

Garvin (1987) [12] proposed the eight dimensions for quality which he stated can define both product and service quality. These characteristics are related to higher education and include performance, features, reliability, conformance, durability, serviceability, aesthetics and perceived quality.
Owlia and Aspinwall (1996) [26] have applied these dimensions of quality to higher education which are explained in the following table.

Table 3: Product quality dimensions in higher education

Dimensions	Definition in higher education
Performance	Primary knowledge, abilities or skills required for graduates
Features	Secondary supplementary knowledge and skills that supplement basic performance.
Reliability	The degree to which knowledge or skills learned is correct, accurate and up to date
Conformance	The extent to which an institutional programme/course meets established standards or plans.
Durability	Depth of learning
Serviceability	Handling of complaints of students, staff and industry

Source: Owlia and Aspinwall (1996) [26]

5.2 Software Quality Dimensions

The characteristics of software as an intangible product are also considered well consistent with quality of higher education. According to Watts (1987), the software quality dimensions can be categorized as: reliability, efficiency, integrity, usability, maintainability, testability, expandability, portability. Owlia and Aspinwall (1996) [26] have applied these dimensions of quality to higher education which are explained in the following table.

Table 4: Software quality dimensions in higher education

Dimensions	Definition in higher education
Correctness	The degree to which the programme/course conforms with the specified requirements
Reliability	The degree to which knowledge/skills learned is correct, accurate and up to date
Efficiency	The extent to which knowledge/skills learned is applicable to the future career of graduates
Integrity	The extent to which personal information is secure from unauthorized Access
Usability	The ease of learning and communicativeness in the class room
Maintainability	The ability of handling complaints of students, staff and outsiders
Testability	Fairness of examination and assessment
Expandability	Flexibility of the course
Portability	The degree to which knowledge/skills which are learned are applicable to other fields

Source: Owlia and Aspinwall (1996) [26]

5.3 Service quality dimensions in higher education

The service dimension of quality is quite similar to education processes. Unlike physical products and services which are temporary as they can be consumed only as long as the activity continues, the service can't be stored and are perishable in nature. Thus, in higher education these dimensions are more applicable as teaching and learning conditions are akin to service. Parasuraman *et al.* (1995) has identified the following dimensions of service quality which are applicable to higher education.

Table 5: Service quality dimensions in higher education

Dimensions	Definition in higher education
Responsiveness	Willing and readiness of staff to help students
Reliability	The degree to which education is correct, accurate and up to date
Understanding customers	Understanding students and their needs
Access	The extent to which staff are available for guidance and advice
Competence	The theoretical and practical knowledge of staff and other presentation skills
Courtesy	Emotive and positive attitude towards students
Communication	How well the students and lecturers communicate in the class
Credibility	The degree of trustworthiness of institution
Security	Confidentiality of information
Tangible	State, sufficiency and availability of equipment and facilities
Performance	Primary knowledge/skills required for graduates
Completeness	Supplementary knowledge/skills, use of computer

Source: Owlia and Aspinwall (1996) [26]

No doubt, students are the primary customers of the process of education, but developing a quality model to measure the student's perception of quality is very complex and tedious task because service quality dimensions covers many areas. So, the overall purpose of this research was to determine faculty practices and perceptions of Total Quality Management and its acceptance and integration into university teaching practices. The research questions were;

1. Does the institution/college has a deliberate plan for applying TQM principles in the classroom?
2. To what extent do instructors apply TQM principles in the structure and delivery of classroom courses? 3. What TQM principles are applied to the structure and delivery of courses?
3. What measures can be used to evaluate the effectiveness of TQM in the classroom?

6. Research Methodology

The Data is collected through primary and secondary data sources. A sample of 186 respondents (faculty working in

Government and Private Higher Education Institutes) offering mainly four streams i.e. Commerce and Management, Science, Humanities and Computers were selected for the survey. As a research instrument structured questionnaires were used and likert-type questions on the faculty practice and perceptions of use of Total quality management in classroom teaching were asked. Data was collected on a scale from 1(strongly disagree) to 5 (strongly agree) from the subjects. Respondents completed and returned 186 out of 218 distributed making a response rate of 85.32 percent. As expected, most of the respondents were associated with commerce and management (33.33 percent) followed by humanities group (29.57 percent). Online databases were used to identify the articles and research papers published in various journals, magazines, reports and newspapers relevant to the objectives of the study.

7. Analysis and Interpretation

Table 6: Details of respondents

Characteristics	Govt.		Private		Total	
	No.	% age	No.	% age	No.	% age
Age (in Years)						
25-29	2	2.22	9	9.38	11	5.91
30-34	16	17.78	18	18.75	34	18.28
35-39	21	23.33	23	23.96	44	23.66
40-44	34	37.78	17	17.71	51	27.42
45 & Above	17	18.89	29	30.21	46	24.73
Total	90	100	96	100.00	186	100.00
Stream Wise						
Commerce & Management	28	31.11	34	35.42	62	33.33
Humanities	26	28.89	29	30.21	55	29.57
Science	20	22.22	22	22.92	42	22.58
Computers	16	17.78	11	11.46	27	14.52
Total	90	100.00	96	100.00	186	100.00
Monthly Income						
Up to 30000	22	24.44	27	28.13	49	26.34
30,000-50,000	34	37.78	40	41.67	74	39.78
> 50,000	34	37.78	29	30.21	63	33.87
Total	90	100.00	96	100.00	186	100.00
Work experience						
4 years and below	5	5.56	7	7.29	12	6.45
5 – 7 years	19	21.11	28	29.17	47	25.27
8 – 10 years	21	23.33	26	27.08	47	25.27
11 years and above	45	50.00	35	36.46	80	43.01
Total	90	100.00	96	100.00	186	100.00
Involvement in TQM						
3 years and below	43	47.78	55	57.29	98	52.69
4 – 6 years	21	23.33	18	18.75	39	20.97
7 – 9 years	18	20.00	14	14.58	32	17.20
10 years and above	8	8.89	9	9.38	17	9.14
Total	90	100.00	96	100	186	100.00

8. Results and Discussions

Respondents were asked to specify the extent to which their academic institutions had implemented any plan regarding TQM principles to the structure and delivery of all courses. Actions that faculty might take in applying TQM principles in their course were gathered from the literature and included in the survey instrument and subjects were asked to indicate which principle they would use in teaching their course. Table 7 presents the actions and faculty responses to these principles for effective teaching. The actions viewed most favorably as a means to apply TQM effectively in the classroom were improving teaching methodologies constantly (96%) followed by constant review and revision of the course content, structure, and delivery (92%). The least approved actions was providing more feedback to the parents (16%). Other course of actions suggested by the subjects included empowering students in course decision-making and using student teams for course evaluations.

Table 7: TQM Actions Applied in the Classroom for delivery of course

Sr. No.	Actions respondents would take in applying TQM principles to the structure and delivery of course taught.	Strongly agree/agree	Strongly disagree/disagree	Neither agree/disagree	Mean Score
1	Constantly revise/review course content, structure and delivery	92	03	05	4.19
2	Improve teaching methodology constantly (using reference materials, seminars, etc.)	96	02	02	4.43
3	Survey students for course improvements	89	9	02	3.70

4	Survey industry for course improvements	72	10	18	4.23
5	Act as class coach rather than as class boss	73	18	9	4.14
6	Use handouts that summarize lecture objectives	69	15	16	4.01
7	Increase feedback with more exams, quizzes, tutorial questions or homework	57	35	08	4.28
8	Give more attention to students by increasing consultation hours	52	36	12	4.30
9	Base most of student grade on group performance	38	47	15	4.35
10	Use student daily journal of progress and problems	31	38	31	4.31
11	Institute a general no-failure policy for the courses	15	76	09	3.92
12	Provide more feedback reports to parents	16	75	09	4.05

A number of tools that may be used to evaluate the success of TQM actions in the classroom were also suggested in the literature. These measures, along with the respondents' evaluations of them, are presented in Table 8. The respondents rated student performance on assignments and exams (88%) as the most effective measure of TQM success. Course drop rates (19%) were considered least effective. Other actions suggested by the respondents included surveying parents and faculty and measuring student team performance.

Table 8: Measures for Evaluating TQM Actions Used in Teaching (N = 186)

Measures respondents would use to determine the success of TQM actions in the classroom	Strongly agree/agree (%)	Strongly disagree/disagree (%)	Neither agree/disagree (%)	Mean Score
Student performance on assignments and exams	88	7	5	4.82
Student opinion surveys	76	10	14	4.41
Alumni surveys	58	18	24	3.75
Course pretest versus final test	52	22	26	4.65
Industry surveys of Interviews	50	22	28	4.02
Class average GPA compared with class average grade	26	48	26	3.87
Standardized tests	21	55	24	4.58
Course drop rate	19	53	28	4.25

9. Discussion

Respondents reported that few colleges and departments have formal plans for applying TQM principles in classroom teaching. Though many universities are adopting TQM in operations and even more are incorporating it into their curricula, few are planning its implementation in classroom teaching.

Planning at the college or department level for applying TQM in teaching may be infrequent for several reasons. First, business schools may be reluctant to plan the introduction of TQM principles to improve classroom teaching because they see no compelling reason to change (Fusco, 1994). Unlike business, education may not expect adversity in the future. A second reason for the dearth of planning for TQM applications in the classroom may be that faculty is expected to resist both planning and implementation. A third reason could be that governing bodies i.e. administrators are unaware of TQM. Some authors also believe that the philosophy which has developed for business may not be appropriate for service organisation like educational institutions. Rosa *et al.*, state that the terms such as product, client, empowerment or even strategy, reengineering do not easily correspond in higher education institution. As supported by the literature the biggest obstacle could be the commitment from the parties involved with the education system, especially the top management and the teachers. Brown *et al.*, noticed that the lack of the top management commitment affects TQM efforts negatively, which is one of the main reason of the failure of TQM. According to Massy, the extreme resistance to quality process improvement comes from professors who consider it is just another business-oriented craze; a typical mindset may undermine the effectiveness of TQM is education. The role of individual, particularly the teachers are often informal and less bureaucratic in traditional education system. On the other hand, Koch and Fisher observe that TQM approach seems to be more administrative and bureaucratic; there is a tendency to produce relentless meetings, generate enormous amounts of paper, and delay or escape critical decision making. A fourth possibility may be that administrators at the college and departmental levels believe that TQM has little to offer in improving classroom teaching. One explanation for this increased use of TQM principles in teaching may be that these methods are becoming more accepted as effective teaching practice. However, another explanation could be that we surveyed business school professors, who may be more familiar with TQM principles than the more general respondents of the other two surveys. Differing definitions of what constitutes TQM principles in classroom teaching may be yet another explanation. TQM theory is not yet developed to the point that specific actions or measures can be defined as constituting TQM practices in teaching.

Asked how they would apply TQM principles in teaching, more than 90% or almost 90 percent agreed that the actions they would take were to constantly review and revise course content, improve teaching, and survey students for course improvements. However, these findings must be interpreted carefully. The actions presented to the subjects in this survey were thought to represent TQM principles in teaching. But a set of definitive actions that relate to TQM in teaching cannot be developed because TQM theory has not been developed to the extent that specific classroom TQM actions have been defined. The respondents may have believed that these actions are simply good teaching practice, irrespective of TQM.

Respondents were asked to evaluate possible means to

determine the success of TQM methods in teaching. More than 85 percent agreed that student performance on assignments and exams and student opinion surveys were the most effective measures. However, the respondents were very concerned about measuring the effectiveness of TQM improvements, with about three fourths citing the difficulty of doing so as the most significant obstacle to applying TQM in the classroom. This concern with measuring the effectiveness of TQM applications may mean that the respondents believed that some of the measures would be applicable in any teaching environment.

10. Conclusion

Many business firms have adopted a TQM management philosophy as a means to survive and remain competitive, but the results of our study suggest that higher education institution does not feel this urgency. An increasing number of universities are integrating TQM into their curricula and operations, but few of the colleges affiliated to theses universities have formal plans to apply TQM to classroom teaching. Though business leaders have suggested a need for higher education institution to incorporate quality management concepts into their curricula, there seems to be little pressure on colleges to apply TQM formally in teaching. Faculty and university administrators have little incentive to change. If significant change is to occur, it is likely that outside entities, such as the business community and accrediting agencies, will have to press universities to change the current system. Pressure to adopt process improvement techniques such as TQM may increase as those agencies demand higher quality output from the university system in the form of better educated students who do not require extensive training upon employment.

Further defining the customer in field of education is itself very challenging. Education has multitude interested parties. In the case of elementary and high school level, it is relatively easy to define; parents are the customers and students are the consumers. Youssef *et al.* find that the customers of higher education are much more diverse and not so easily defined. This situation is complicated in the case of tertiary level of education. A student can be both the consumer and customers if he or she pays his or her tuition fees. In the job market, employer organizations are also the customers. In the case of scholarship students, sponsors are the customers. As a whole, the state is also a customer. According to Srivanci, without a precise definition of customer and a customer focus, quality efforts may be easily diffuse.

Seymour identifies a number of reasons for unsuccessful application of TQM in higher education, such as resistance to change; lacking of administration commitment; high time investment due to personal training; difficulty in applying TQM tools to higher education institutions; insufficient experience of team leaders and staff in teamwork; the anxieties of higher education institutions have with their own results not being sufficient enough. A few universities are working toward adapting the existing Malcolm Baldrige criteria to the administrative and operational levels of universities. Some states grant quality awards in education based on the Baldrige criteria, and the U.S. Department of Commerce has issued Malcolm Baldrige National Quality Award pilot criteria for higher education.

Although some progress is being made in applying TQM to education, more work is needed to define what TQM principles are appropriate for classroom teaching and how they should be applied and to develop standards and methods for evaluating their effectiveness in the university classroom.

However, in general, it can be said that in order to make TQM successful, it is essential to create a quality culture, i.e. a shift is needed from traditional management culture to a total quality culture. According to Deming, TQM is a management philosophy that requires a radical cultural change from traditional management to continuous improvement management style in an organization. A similar thought is also echoed by Sallis; he mentions that it (TQM) requires a change of culture; it requires a change of attitudes and working methods, as well as a change in institutional management. A quality culture is a system of shared values, beliefs, and norms that focuses on delighting customers and continuous- ly improving the quality of products and services. Quality culture can foster the TQM principles like continuous improvement, open communication, fact-based problem solving and decision making, etc. In addition, academic institutions should adopt a more customer oriented approach in dealing with their student. Conventional teacher- student relationship is no more value adding to anyone. It is necessary to spread professional management practices in the educational institutions. There is a wide range of tools and techniques available in TQM. Random selection of TQM tools, techniques and concepts shall not provide any meaningful benefit. Instead, it is wise to choose those tools and techniques which are consistent with an academic institution, a theoretical framework for TQM applications in university teaching needs to be developed. Research efforts are likely to remain fragmented until such a framework is available to define explicitly TQM concepts as they relate to classroom teaching and to provide theoretical underpinnings to guide the efforts of researchers.

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