

Assuring Total Quality Management across Educational Institutions: Evidence from Oman

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Abstract - To survive in this rapidly changing competitive service industry, service companies nowadays face a serious challenge to lead and keep upbeat with this dynamic environment. As education industry is a part of this service industry with students as its customers thus to reach high quality standards in this education commerce, we need concrete plans to counter this rapid changes. Therefore the Total Quality Management (TQM) tool comes into picture which will provide required quality to ensure business success. This research highlights imperative measures of TQM followed presently in higher institution of Oman and law makers has to invent viable education in Oman. Descriptive research design is adopted in this study help to know which variable is key for success in TQM implementation in teaching learning. The primary data was collected with structured questionnaire. In first part of questions related to demographic factors, secondly stakeholder's efforts to implement TQM principles in educational institutions and finally dimensions of total quality management like top management commitment, customer focus, employee involvement and continuous process improvement (CPI). Based on the pilot study performed on 10 faculties from ministry colleges and 5 from private institutions, the questionnaires were administered. 300 respondents were selected based on the proportionate random sampling and 238 samples were considered for further analysis. Finally concluded that the faculty perception on successful implementation of total quality management principles in educational institutions is majorly influenced through providing of adequate resources for improving quality of education and encourages continuous improvement of curriculum, value added courses, teaching learning methodology and technology.

Keywords: Total quality management, Educational institution, attitude, top level commitment and change management.

I. INTRODUCTION

Brocka and Brocka [1] mentioned that TQM is a management method which is continuous in nature and involves fair amount of discussions at every level of operation to improve investment and resource performance by appropriate management. According to Toremén, Karakus and Yasan [2] organisations have well-defined intents and goals and thus they are integral part of other business sectors. Therefore they also need to observe every process of their organization to remain competitive and to accomplish best quality output. Thus to guarantee these aims and enhanced performance, adaptation of TQM tool becomes important [3]. Many studies reflect importance of TQM practices in manufacturing and service sectors. These TQM practices are called by different names such as “elements” by Waldman [4], “techniques” by Hellsten and Kelfsjo [5], “principles” by Sitkin et al. [6].

Higher educational institutions of western world is already using the TQM and adoption of this tool ensures them enhanced quality which directly helps in student intake from abroad as well as domestic which accounted for high profits through intake of foreign students [7]. Therefore this huge prospective of education industry has added great values benefiting the economic profits of western and other countries. However Malaysia is one country whose satisfactoriness as a global target is yet come although excellent tutoring are imparted in many countries globally. Therefore teachers' observation towards the present

situation of TQM performance in Malaysian education organization to recognize the current obstacles which has gone unnoticed by the scholars till now has to be inspected [8].

II. TOTAL QUALITY MANAGEMENT IN EDUCATION INDUSTRY

According to Munoz [9], TQM can be used effectively in educational institutes having sole focus on increasing customer base. Recent researches mention that using TQM as modern education management approach brings improvements and transformation in educational organizations [10]. Sallis [11] stated that reforms become a continuous process while applying these principles. TQM Processes are indistinguishable to the principles used by global finest schools [12]. Hamedoglu [13] and Sallis [11] mentioned that TQM is used differently in average & finest schools. One uses it as standpoint and other to eradicate the difficulties. In same lines Thiagarajan [14] noted that TQM is becoming respected quality pointer to measure quality of an educational institute.

A. Attitude towards Implementation

Lack of principles and modified approach toward execution of tasks by employees, is the concern area of educational organisations [15]. Difficult for the educational organisations to maintain and improvise the development process due to lack of proper documentations. Students are the end product in the education industry and as well the personnel gratification [10]. According to studies [16] [17] [18] lack of resources & comprehension, the approach and leadership commitment had made the implementation of TQM difficult.

B. Top Management Commitment

According to Sisman & Turan [19], as strong management and obligation to use best industry practices is significant for any organisation, thus the need to use TQM principles at respective level of organization is desired. Because of its human centric approach, TQM can assist in betterment of education quality and development of educational establishments [20]. Hashmi [16] mentioned that without satisfaction of human beings it is not viable to guarantee efficiency of educational establishments as human beings are products of these educational organizations and also key performers at all levels and all processes of these institutes. According to Lezotte [21], if organization aims to achieve high quality in education system, the basic level of human beings should be considered. Thus the people in higher management positions should be dedicated towards their personnel [19].

C. Employee Participation

It's a known fact that employees are the most important segment of the organization performing tasks and work in reality. Thus according to Chapman & Al-Khawaldeh [22], employees participation in decision making process should be considered as they know things from root level. Also this will benefit in evading confusions between top management and employees. Apart from these, every increasing customers' demands poses serious issue. This makes it actually difficult to meet both the deadlines and quality output [23]. Therefore according to Guimaraes [24], to archive higher efficiency, we need to recognize employees' necessities. In similar lines Dahlgaard and Dahlgaard [25] noted that it is the responsibility of top management to decide what process & policies to include, what tasks are to be done and how to operate and organise business. Thus as they used to say in early days, to achieve successful business everyone should do what the top management decide.

D. Change Management

Absence of knowledge and abilities and amendments among teachers and managers required to implement TQM successfully [26][27]. According to Hamedoglu [13], the obstacles towards the effective TQM applications are educational, traditional,

supervisory, mental and methodical. However the educational organisations have the motives and means to improve and eradicate these issues by taking necessary measures. Removing these obstacles will increase the efficiency of educational organisations and subsequently whole education system. Thus to achieve this target it is required to continuously check and control quality processes [28].

III. RESEARCH METHODOLOGY

Descriptive research design is adopted in this study help to know which variable is key for success in TQM implementation in teaching learning. The primary data was collected with structured questionnaire. In first part of questions related to demographic factors, secondly stakeholder’s efforts to implement TQM principles in educational institutions and finally dimensions of total quality management like top management commitment, customer focus, employee involvement and continuous process improvement (CPI). In this study, the scale was used from previous work [2][24][29] five point likert scale for measurement of items. Respondents were asked to reveal their agreeableness and disagreeableness for the statement whereas 1= Strongly Disagree, 2=Disagree, 3= Neutral, 4= Agree, 5= Strongly Agree.

Based on the pilot study performed on 10 faculties from ministry colleges and 5 from private institutions, the questionnaires were administered. 300 respondents were selected based on the proportionate random sampling and 238 samples were considered for further analysis.

Oman is divided into eleven governorates and these governorates are considered as different strata for the study. From these strata, the sample respondents were selected on a proportionate basis. Researcher took care while selecting the sample, so that there was a proportionate representation from each governorate. After arriving at the number of sample from each strata, the researcher applied random sampling method for selecting the sample. Researcher approached both Engineering and management colleges in each governorate on convenience sampling method.

IV. FACTOR ANALYSIS ON VARIABLES IMPLEMENTING TOTAL QUALITY MANAGEMENT

A. Testing of Hypothesis

Hypothesis 1: H_0 - Attributes are uncorrelated with implement TQM

Hypothesis 2: H_1 - Attributes are correlated with implement TQM

In order to identify the key factors which affect implementing TQM (H_1), exploratory factor analysis was performed and the results are shown in Table no. 1.

B. Kaiser-Mayer-Olkin (KMO) Measure of Sampling Adequacy

The KMO measures of sampling adequacy is an index used to examine the appropriateness of factor analysis. 0.50 was considered acceptable threshold for the study [29][30][32].

For our factor analysis, the KMO (table no.1) measure of sampling adequacy is 0.546, which is greater than the permissible value of 0.5. This also signifies that the scales of all the variables of the questionnaire were properly understood by all respondents and they have correctly answered to the scale. Additionally, the Bartlett’s Test of Sphericity has a high chi-square value and the significance is 0.000, which is less than 0.5. Hence the null hypothesis is rejected and H_1 is accepted, as the factors are correlated with each other.

TABLE NO. 1 - KMO and Bartlett’s test for variables

Kaiser-Mayer-Olkin (KMO) Measure of Sampling Adequacy		0.546
Bartlett’s Test of Sphericity	Approx. Chi-square	1216.541
	Degree of freedom	325

	Significance level	0.000
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The inter-item consistency reliability of these 26 variables was tested before factor analysis was carried out. The result for Cronbach’s Alpha test was 0.546 and no item deletion significantly increased the result. The closer the reliability co-efficient gets to the value of 1.0, the Bartlett is the reliability of the measures [31]. This scale can be considered to be good. Moreover, the result of both KMO and Bartlett’s test of Sphericity, i.e., significance value 0.000, also indicate that it was appropriate to apply the exploratory factor analysis techniques to this dataset. Result from the factor analysis shows that 68.024 percentage of variance was explained by these 26 extracted variables (table no.2).

TABLE NO. 2 Component Matrix

	Component										
	1	2	3	4	5	6	7	8	9	10	11
Top management communication	-.512	.209	.189	-.117	.068	.243	-.263	-.107	.231	.111	.134
Top mgmt. anticipation	.128	.243	.257	.007	.157	-.252	-.372	-.561	.016	.081	.298
Adequate resources	.263	.065	.654	.147	-.170	.164	-.089	.117	.046	.105	.037
Quality is important	.158	.280	-.466	.262	-.260	-.175	-.300	.141	.044	-.111	.043
Evaluate Quality based faculty	-.399	.243	-.024	.358	-.041	.166	.306	-.185	-.247	.001	.108
Ensuring quality by HOD	-.307	.034	.094	-.651	-.155	.199	.197	.123	.009	.191	.170
Curriculum based on industry need	.071	-.581	.050	.048	.198	.158	-.176	.005	-.163	-.026	.003
Mechanism used to identify customer needs	-.254	-.283	.156	.461	.129	.376	.085	.210	.011	-.289	.168
Requirements through focus group	.251	.271	.021	-.210	.479	.138	.408	-.078	.231	.038	-.170
Content delivery emphasis customer	-.613	-.190	.101	.115	-.175	-.105	.030	-.173	.248	.040	-.203
Measures customer satisfaction	.353	.290	.185	.340	.268	.137	-.215	.018	-.192	.273	-.397
Encourage customer relationship	.228	.366	.450	-.007	.229	.016	.047	-.164	.008	-.531	.020
Quality career development programmes	.469	-.104	-.058	-.330	-.450	-.076	.004	.041	.055	.025	-.142
Quality activities	-.359	.245	-.287	-.076	.404	-.219	-.213	.275	-.011	.157	-.187
Allow suggestion on quality	.430	-.115	-.323	-.036	-.029	-.031	.514	-.342	.171	-.023	.253
Effective appraisal system	-.072	-.038	.352	.232	-.062	-.392	.188	.443	-.052	.300	.301
Encourage team work	.120	.382	.154	-.296	-.367	-.099	.105	.120	-.181	.005	-.287
Lack of knowledge to implement	-.005	.203	-.412	.298	-.418	.278	-.059	-.225	-.259	.279	.191
Education system barrier	-.160	.288	-.209	-.433	.268	.466	-.063	.200	.025	.080	.202
Economic and cultural barriers	.070	-.396	-.323	-.089	.205	-.135	-.360	-.166	.368	.061	-.020
Potential for facing issues	.016	-.729	.091	-.033	-.005	.146	.112	-.001	-.083	.051	-.221

Standardized documents	.101	.189	-.289	.375	-.025	.518	.165	-.005	.275	.099	-.263
Continuous process improvement system	.479	-.136	.300	.011	-.017	.340	-.158	-.004	.219	.453	.156
Measures students quality	.471	-.066	-.316	-.034	.334	.056	-.080	.350	-.303	-.113	.271
Measures teaching quality	-.011	.028	-.042	.256	.366	-.447	.402	-.008	.085	.378	.026
Measures stakeholders satisfaction	.124	.185	-.012	.238	-.217	-.064	-.028	.388	.645	-.173	.117
Note: Extraction method: Principal component analysis; Rotation method: Varimax with kaiser Normalization; Rotation covered in 22 iteration											

TABLE NO. 3 Rotated component matrix

	Component											Comm unality
	Facto r 1	Facto r 2	Facto r 3	Facto r 4	Facto r 5	Facto r 6	Facto r 7	Facto r 8	Facto r 9	Facto r 10	Facto r 11	
Adequate resources	.702											0.615
Continuous process improvement system	.792											0.756
Measures students quality		.846										0.749
Mechanism used to identify customer needs			.758									0.702
Ensuring quality by HOD				.738								0.711
Education system barrier				.742								0.721
Economic and cultural barriers					.782							0.630
Lack of knowledge to implement						.849						0.787
Top mgmt. anticipation							.845					0.778
Requirements through focus group								.594				0.686
Standardized documents								.699				0.721
Allow suggestion on quality									.806			0.781
Measures stakeholders satisfaction										.839		0.769
Effective appraisal system											.603	0.757
Measures teaching quality											.806	0.715

Note: Extraction method: Principal component analysis; Rotation method: Varimax with kaiser Normalization; Rotation covered in 22 iteration

V. DISCUSSION

From the rotated component analysis (table no.2 &3) there are eight major variables are loaded while applying the Extraction method in the Principal component analysis. In the analysis Varimax with Kaiser Normalization method is used to identify the result in the 22 iteration. The detail results are discussed as follows.

Factor 1 loaded on first two variables. This can be labeled as “resource and improvement” as these two variables revealed the implementation of TQM principles and concepts in Oman educational institutions that allocate resources adequately for improving quality of education and continuous process improvement of curriculum, value added courses, teaching learning methodology and technology. Factor 2 correlated most highly with variable 3 i.e., measures the students quality through academic and non-academic performance.

Factor 3 correlated with variety of mechanism are used for seeking and learning customers’ needs and expectations. Factor 4 labeled as “Quality Education system”, based on head of the department ensures quality in all stages of work and educational system barrier in implementing TQM principles.

Factor 5 named as economic and cultural barriers, factor 6 named as lack of knowledge and skill is barrier to implement TQM effectively and factor 7 is loaded in top management anticipate future changes in industry and make plan to accommodate those changes in the institutions.

Factor 8 is labeled as customer identification and documentations, based on key customer requirements are identified through focus group discussion, industry institute interaction, industry visit and customer survey is one of the deciding factors for implementing TQM principles in Oman educational institution. And the standardized procedure for documentation in the institution is also a key deciding factor to implement TQM.

Other factors for implementing TQM in educational institutions are faculty participation in designing curriculum, steps to measure the stakeholders satisfaction, appraisal system for resigning and rewarding faculty, and finally measuring teaching learning quality.

VI. CONCLUSION

Finally concluded that the faculty perception on successful implementation of total quality management principles in educational institutions is majorly influenced through providing of adequate resources for improving quality of education and encourages continuous improvement of curriculum, value added courses, teaching learning methodology and technology.

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