International Journal of Innovations & Research Analysis (IJIRA)
ISSN :2583-0295, Impact Factor: 6.238, Volume 04, No. 04(I), October- December, 2024, pp 129-136

IMPACT OF TOTAL QUALITY MANAGEMENT ON THE OVERALL ORGANIZATIONAL PERFORMANCE OF HOSPITALS

Pushpam J. Chundamalail*
Dr. Roy C. Mathew**
Dr. Jai Laxmi Sharma***
Dr. Chanchala Jain****

ABSTRACT

Total Quality Management has been embraced as a competitive strategy by both private and government hospitals in Kerala for strengthening their quality of healthcare. TQM, a comprehensive management approach focusing on quality enhancement through employee empowerment and continuous improvement, aims to meet customer expectations and achieve long-term success. The study revealed that Total Quality Management has significant impact in boosting the overall organizational performance of these entities.

Keywords: *Total Quality Management, Organizational Performance, Healthcare Management, Quality Enhancement.*

Introduction

Total quality Management (TQM) is a business approach to quality empowering and training employees to enable continuous improvement across every function within an organization.

TQM is an organizational philosophy based on principles that consistent delivery of customer expectation. TQM aims at achieving success and customer satisfaction by embedding awareness of quality all way through an organizational by planning and feedback.

TQM has been the buzzword of today's organization. TQM is the process of instilling quality throughout an organization and its organizational processes.

The system TQM intended to achieve success and customer satisfaction by embedding awareness of quality all the way in the organization. It is a system of activities directed at activity achieving delighted customers, empowered employees higher revenue and lower cost.

International Organization for Standardization (180) has defined TQM as a management approach which centred on quality, based on participation of all its members and aiming at long TQM success through customers satisfaction and benefits to all members of organization and society. Even though TQM is a relative new approach to management in health care industry, all hospitals provide same type of service, but they don't provide the same quality of service.

To active excellence, hospitals must strive for zero defects retaining every customer that they can profitably serve Zero defects require continuous improvement of quality of service delivery system.

The goal of TQM is to provide health care professionals and patient with sufficient.

The health care sector is one of the world's biggest and fast developing sector consuming more than 12% of the GDP of most developed countries. Health care industry in India comprises hospitals, medical devices, clinical trials, out sourcing and tele medicine, medical tourism, health insurance and medical equipment.

* Research Scholar, Department of Management, Mansarovar Global University, Bhopal, M.P., India.
** Professor & Dean (Retd.), Mahatma Gandhi University, Kerala, India.
*** Assistant Professor, School of Management & Commerce, Sanskriti University, Mathura, U.P., India.
**** Assistant Professor, Prestige Institute on Management and Research, Indore, M.P., India

Methodology

Research Design

The research design is descriptive cum analytical

Universe

All the TQM implemented government and private hospitals in the state constitute the universe of the study.

Sampling Design

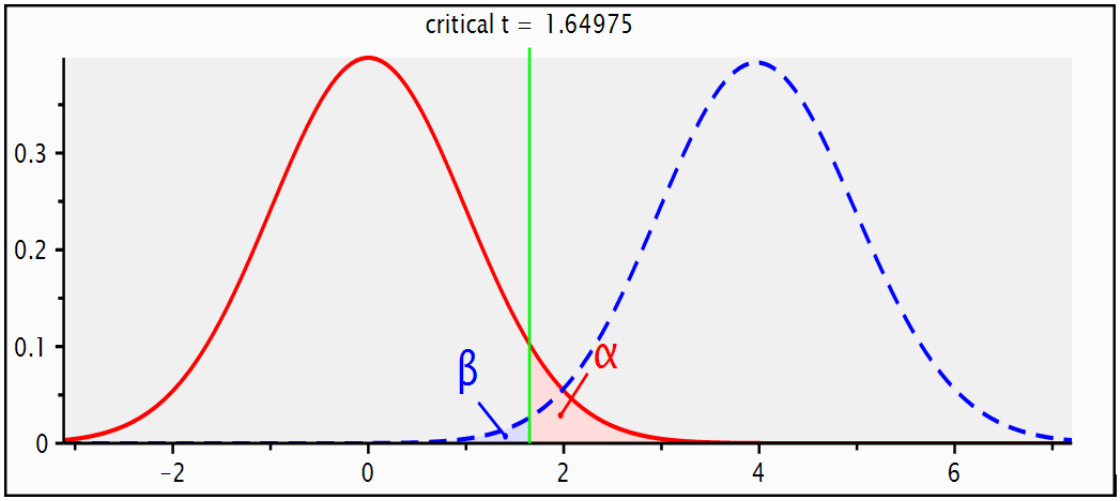
Probability sampling techniques namely, both stratified random sampling and simple random sampling designs were used to select the samples for the study. The procedure is detailed as follows:

The TQM implemented Government and Private hospitals in the state and hospitals where TQM is not implemented were identified first and segmented or stratified into three groups. Then from each groups the required number of hospitals were drawn by way of simple random sampling lottery method.

Sample Size Estimation

In order to estimate the minimum sample size for the research study 'G Power' analysis was done in the G. power software with an effect size of 0.05 and 99% confidence interval. The details are furnished here under:

Figure 1: Central and no central distributions protocol of Power analysis



Test family statistical test t test V Linear multiple regression fixed model, single regression coefficient

Type of Power analysis

A priori compute required sample size- given & Power and effect size

Input Parameters		Output Parameters	
Tails	one V	Non centrality & Parameter	: 3.9812058
Determine = > Effect size f^2	: 0.05	Critical t	: 1.6497251
& error prob	: 0.05	Df	: 312
Power (1-Berrpr Prob)	: 0.99	Total sample Size	: 317
Number of Predictors	: 4	Actual Power	: 0.9900360

As per the 'G Power analysis the minimum sample size for the study is 317. However, the researcher wishes to have higher sample size in order to minimize error percentage and for ensuring more precision in the analysis.

Accordingly proportion test was applied for estimating a higher sample size. Since the population is finite i.e. 4800 the formula used to estimate the sample size is :

$$N = \frac{Z^2 \times p \times q \times N}{e^2(N-1) + Z^2 \times p \times q}$$

Where Z^2 = Square of the Critical value corresponding to 5% level of significance or 95% confidence interval which is 1.96 and is rounded of as 2.

P = proportion of those agreed to the affirmative that TQM has a definite impact for improving the healthcare endeavourers of a hospital or organizational performance

Q = 1-p

N= Population size

e^2 = Square of the margin of error

Here N = 4800

Z = 2

P = 0.8

q = 0.2

Margin of error = 4%

Margin of safety = 20

Accordingly the sample size : n= $\frac{2^2\times0.8\times0.2\times4800}{(0.04)^2(4800-1+4\times.8\times.2}$

(i.e.) n = $\frac{3072}{7.6784+0.64}$

= $\frac{3072}{7.7424}$ = 396

n = 396+ 20 (Margin of safety)

= 416

However there were 10 unengaged responses and the actual sample size was fixed as 406

Tool of Data Collection

- Questionnaire – 5 point Likert Scale statements

Both descriptive and inferential statistical tools were used for the data analysis. The descriptive statistical techniques include: averages, frequency tables, standard deviations, cross tabulation besides Skewness and Kurtosis. This enables the researcher to understand the nature of the data collected.

The parametric statistical techniques such as Mean-Value analysis, one sample t-test, paired t-Test and Independent samples t-Test, One Way ANOVA, Regression Analysis, Correlation Analysis, Confirmatory Factor Analysis and Structural Equation Model (SEM) were administered for the analysis and interpretation of the data.

Statistical Techniques Used

- Multiple Regressions Analysis
- Paired t-test

Objectives of the Study

- To understand the difference in outpatient and inpatient treated in the hospitals before and after implementing total quality management (TQM)
- To find out the significant difference in the number of deliveries conducted in the hospitals and number of surgical procedures performed in the hospital before and after total quality management implementation
- To ascertain the annual income generated before and after implementation of Total Quality Management (TQM)

Hypotheses

H_1: There is a significant difference in the number of outpatients per day in the hospitals in Kerala before and after implementing TQM

H_2: There is a significant difference in the number of in patients in the hospitals in Kerala before and after implementing TQM

H_3 : There is a significant difference in the number of deliveries conducted in the hospitals in Kerala per month before and after implementing TQM.

H_4: There is a significant difference between the number of surgeries performed per month in Hospitals in Kerala before and after implementing TQM.

H_5: There is a significant difference in the Annual Revenue generated in hospitals in Kerala before implementing TQM and after implementing TQM.

Pilot Study

In order to check the feasibility of the Questionnaire and Likert Scale, a pilot study was conducted. Accordingly these instruments were applied among as many as 30 respondents. The results so obtained were meticulously examined and necessary changes were done wherever it was required and the questionnaire and measurement scale were finalized.

Analysis and Interpretation

Table 1: Statistical Details Connected with the Parameters of the Overall Performance of the Hospitals chosen for the study before / after TQM Implementation

Details of the hospitals	Out- patients before TQM/day	Out- patients after TQM/day	In - patients before TQM/day	In - patients after TQM/day	No. of deliveries before TQM/Month	No. of deliveries after TQM/month	No. of Surgical Procedures before TOM/month	No. of Surgical Procedures after TOM/month	Annual Income before TQM	Annual Income after TQM
Govt. Medical College Kozhikode	3650	5240	410	645	1210	1615	648	892	2485	3985
Govt. Medical College Kottayam	2800	3500	275	390	420	576	410	546	1640	82148
District Hospital Kottayam	1390	2440	210	249	175	198	216	342	574	849
St. Thomas Hospital Chethipuzha	1500	1800	200	255	130	245	200	390	680	895
Carithas Hospital Kottayam	1900	2250	284	356	148	159	285	496	900	1645
Bharath Hospital Kottayam	1380	1490	198	246	36	54	189	246	750	1234
Matha Hospital Thellakom	910	1150	129	148	132	146	171	216	595	1430
St,. James Hospital Chalakudy	1490	1896	181	242	37	152	190	248	795	1287
Daya Hospital Chalakudy	985	1219	110	164	127	138	114	169	640	7780
IQRA hospital Kozhikode	998	1316	124	159	131	142	126	164	710	1289
PVS Sunrise Hospital Kozhikode	991	1321	162	219	134	159	134	172	756	1312
Baby Memorial hospital Kozhikode	1112	1439	219	256	146	254	180	246	916	1444
MIMS Hospital Kozhikode	1498	1711	229	256	149	154	219	258	780	1256
SH Medical Centre Kottayam	800	1150	120	165	250	325	1200	1650	500	985
Total										

Paired 't' test

The Paired t- test is a statistical tool used to test whether the mean difference between pairs of measurements is zero or not

- **Number of out-patients**

`Hypothesis H_1: There is a significant difference in the number of outpatients per day in the hospitals in Kerala before and after implementing TQM

Table 2 : Paired 't' test for significant difference in the number of out-patients pert day in the hospitals in Kerala before and after implementing TQM

Out Patients	Mean	SD	T value	P Value
Before TQM	1529	796. 743	4.363	<0.001
After TQM	1994	1133.283		

Since P value is less than 0.01, the hypothesis is accepted at 1% level. So there is a significant difference in the number of out-patients in the hospitals in Kerala per day before and after implementing TQM.

Based on mean score the number of outpatients before implementing TQM was 1529 while it was 1994 after implementing TQM. Thus it can be concluded that TQM has significant influence in attracting patients to the hospitals

Number of in-Patients

Hypothesis H_2: There is a significant difference in the number of in patients in the hospitals in Kerala before and after implementing TQM in these hospitals.

Table 3: Paired t test on the number of in patients admitted in the hospital before and after implementing TQM

In Patients	Mean	SD	T value	P Value
Before TQM	203.64	80.874	4.424	<0.001
After TQM	267.86	129.152		

Since P value is less than 0.01 the hypothesis accepted at 1% level of significance. Hence it can be inferred that there is a significant difference in the number of inpatients before and after implementing TQM in hospitals in Kerala.

Based on mean score the number of in patients treated per day in hospitals in Kerala was 203 before implementing TQM while it was 267 after implementing TQM.

This implies that TQM has significant influence in attracting patients to the hospitals

Number of Deliveries Conducted

Hypothesis H_3 : There is a significant difference in the number of deliveries conducted in the hospitals in Kerala per month before and after implementing TQM.

Table 4: Paired 't' test on the number of deliveries conducted in the hospital per month before and after implementing TQM

Number of Deliveries	Mean	SD	T value	P value
Before	231	296.644	2.683	0.019
After	308	396.339		

Since P value is less than 0.05 the alternative hypothesis is accepted at 5 % level. Hence it can be concluded that there is a significant difference between the number of deliveries conducted per month in the hospitals in Kerala before implementing TQM and after implementing TQM.

Based on mean score the number of deliveries conducted in hospitals in Kerala per month before Implementing TQM was 231 while after implementing TQM it was 308.

This points to the fact that TQM has significant influence in attracting patients to the hospitals in Kerala.

Number of surgeries performed

Hypothesis H_4 : There is a significant difference between the number of surgeries performed per month in Hospitals in Kerala before and after implementing TQM.

Table 5: Paired "t" test for significant difference between the number of surgical procedures performed per month before and after TQM implemented in Hospitals in Kerala

Surgeries Performed per month	Mean	SD	't' Value	P Value
Before TQM	306	292.792	4.004	<0.001
After TQM	430	402.935		

Since P value is less than 0.01 the alternative hypothesis is accepted at 1% level with respect to the number of surgical procedures performed in the hospitals in Kerala per month before and after implementing TQM.

Based on mean score the number of surgeries performed in the hospitals per month before implementing TQM was 306 while 431 after implementing TQM.

This implies that TQM has significant impact in attracting patients to the hospitals.

Annual Revenue Generated

Hypothesis H_5 : There is a significant difference in the Annual Revenue generated in hospitals in Kerala before implementing TQM and after implementing TQM.

Table 6: Paired 't' test for significant difference in Annual Income generated in hospitals in Kerala before and after implementing TQM

Annual Income	Mean	SD	't' Value	P Value
Before TQM	908.64	529.085	2.229	0.044
After TQM	1967.07	1846.989		

Since the P value is less than 0.05 the alternative hypothesis is accepted at 5% level of significance. Hence it can be concluded that there is a significant difference in the Annual Income generated in the hospitals before and after implementing TQM.

Based on mean score the Annual Income before TQM was 908.64 lakhs while it was 1967.07 lakhs after implementing TQM.

The above analysis reveals that the implementation of TQM significantly improved the overall efficiency of the hospitals in Kerala.

Multiple Regression Analysis of the impact of TQM on Organizational Performance in Hospitals is Kerala.

Dependent Variable: Impact of TQM on organizational Performance (Y)

Independent Variables: (1) Customer Management (X1)
(2) Organizational performance (X2)
(3) Top Management Leadership (X3)
(4) Cost Leadership and Continuous Improvement (X4)

Multiple R value : 0.947

R square Value : 0.896

F Value : 866.046

P Value : <0.001**

Table 7: Multiple Regression Analysis of the impact of TQM on organizational performance in Hospitals is Kerala

Variables	Unstandardized coefficient (B)	SE of B	standardized coefficient (B)	T value	P Value
Constant	3.870	0.770		5.028	<0.001**
X1	1.132	0.048	0.390	23.714	<0.001**
X2	1..55	0.047	0.405	24.449	<0.001**
X3	1.228	0.066	0.314	18.664	<0.001**
X4	0.961	0.034	0464	28.331	<0.001**

The Multiple correlation coefficient is 0.947, measures the degree of relationship between the actual values and the predicted values of the impact of TQM on Organizational Performance in Hospitals, because the predicted values are obtained as a linear combination of Customer Management, Organizational Performance. Top Management Leadership and Cost Leadership and Continuous Improvement, the coefficient value of 0.947 indicates that the relationship between the impact of TQM and the four independent variables is quite strong and positive.

The Coefficient of Determination R square measures the Goodness of fit of the estimated Sample Regression Plane (SRP) in terms of the proportion of the variation in the dependent variables explained by the fitted sample regression equation thus, the value of R square is 0.896 simply measures

that 89. 6% of the variation in the impact of TQM on Organizational Performance is explained by the estimated SRP that uses the Customer Management, Organizational Performance, Top Management Leadership and Cost Leadership and Continuous Improvement as the independent variables and the R square is significant at 1% level.

The multiple Regression equation is:

$Y = 3.870 + 1.132 X1 + 1.155 X2 + 1.228 X3 + 0.961 X4$

Here the coefficient of X1 is 1.132 represents the partial effect of Customer Management on TQM holding the other three variables as constant. The estimated positive sign implies that such effect is positive that the impact of TQM on Overall Organizational Performance would increase by 1.132 for every unit increase in Customer Management and this coefficient value is significant at 1% level. The coefficient of X2 is 1.55 represents the partial effect of Organizational Performance on the impact of TQM on the Overall Organizational Performance of Hospitals holding the other three variables as constant The estimated positive sign implies that such effect is positive that the impact of TQM would increase by 1.155 for every unit increase in Organizational Performance and this coefficient value is significant at 1% level. The coefficient value of X3 is 1.228 represents the partial effect of Top Management Leadership on the impact of TQM on Overall Organizational Performance in Hospitals, holding the other Variables as constant. The estimated positive sign implies that such effect is positive that the impact of TQM would increase by 1.228 for every unit increase in Top Management Leadership and this coefficient value is significant at 1% level.

The coefficient value of X4 is 0.961 represents the partial effect of Cost Leadership and Continues Improvement on the impact of TQM in Organizational Performance holding the other three variables as constant. The estimated positive sign implies that such effect is positive that the impact of TQM on Organizational Performance would increase by 0.961 for every unit increase in Cost Leadership and Continuous Improvement and this coefficient value is significant at 1% level.

Based on standardized coefficient Cost Leadership and Continuous improvement (0.464) is the most important factor to extract the impact of TQM on the Overall Organizational Performance followed by Organizational Performance (0.405)

The aforesaid Multiple Regression Analysis revealed the fact that Total Quality Management has significant impact on improving the Overall Organizational Performance of Hospitals in Kerala.

Findings

- The mean score of the number of outpatients before implementing TQM was 1529 while it was 1994 per day after implementing TQM in the Hospitals in Kerala. So it can be concluded that TQM has significant influence in attracting patients to the hospitals.
- It was found that the mean score of the inpatients treated per day in hospitals in Kerala was 203 before implementing TQM and 267 after implementing TQM.
- Based on the mean score on the number of deliveries conducted in hospitals in Kerala per month before implementing TQM was 231 while it was 308 after implementing TQM. This points to the fact that TQM has significant influence in attracting patients to the hospitals.
- Based on the mean score the number of surgeries performed in hospitals in Kerala before implementing TQM was 306 per month while it was 431 after implementing TQM. This points out that TQM has significant influence in attracting patients to the hospitals.
- Based on the mean score of the Annual Income generated in hospitals in Kerala before implementing TQM was 908.64 lakhs and it was 1967.07 lakhs after implementing TQM. So it can be concluded that TQM has significant influence in improving the Overall Efficiency and Prosperity of the hospitals in Kerala.
- Based on Multiple Regression Analysis on the impact of TQM on the Overall Organizational Performance of the hospitals in Kerala it was found that Organizational Performance would increase by 1.132 for every unit increase in Customer Management.
- It was inferred that the impact of TQM would increase by 1.155 for every unit increase in the Organizational Performance.
- It was found that impact of TQM would increase by 1.228 for every unit increase is Top Management Leadership.
- It was concluded that the impact of TQM on the Overall Organizational Performance would increase by 0.961 for every unit increase in Cost Leadership and Continuous Improvement.

References

1. Ahamd Aburayya, Dhoha Alwadhi and Manal Taryan (2019). A conceptual frame work for implementing TQM in the primary health care centers and examining its impact on patient satisfaction. *International Journal of Advanced Research* (IJAR) Dol: 10.21474/IJA Rol/8735. ISSN No. 2320- 5407
2. Anders Fundin, Johanlilja, Yvonne Lagrosen and Bjarne Bergquist (2020) Qulaity 2030: Quality Management for the future. *Total Quality Managhement and Buisness Excellence*. DOI:10.10801/1483363. 2020.1863778
3. Biju, A. P. , Vijayan, S., Anil, R. & Sajan, M.P. (2020). TQM Implementation practices and performance outcomes of Indian hospitals: Exploratory finings. *The TQM Journal* ISSN : 1754-2731, Vol. 33, No. 6pp 1325- 1346
4. Cemal Zehir, Busra Muceldilli (2012). Total quality management practices. Effect on quality performance and innovative performance. *Procedia Social and Behavioral Science*, volume 41, pp 273- 280
5. Faisal Babu and Sam Thomas (2020) The relationship between total quality management practices and organizational carriage in the hospital industry all empirical examination. *International Journal of Productivity and Quality Management*, Vol. 29.No. Dol. 10.1504/IJPGM 2020. 10026183
6. Gourav Puri S Hari Babu Rahul Sharma (2019). Total quality management implementation in health care sector, 115 impact on performance of hospitals. *International Journal of Recent Technology and Engineering* ISSN: 2277- 3878 Vol. 8 issue 4.

□❍□