

Total Quality Management (TQM) Factors: An Empirical Study of Kwara State Government Hospitals

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ABSTRACT The decay and paralysis in Nigerian's health care delivery system has been a source of concern to government and citizenry. The attitude of medical personnel (employees) at all levels of health care delivery to patients and the bureaucracy associated with the workings of public health institutions is inimical to quality health delivery. This paper investigates how Total Quality Management (TQM) – a value-chain model can help identify the point of breakages in the chain resulting in poor quality of health and also to determine the dominant factors in TQM implementation.

INTRODUCTION

Health Care Systems throughout the world are undergoing significant changes. These changes are due to acknowledgment of either medical errors or system errors (Ruiz and Simon 2004).

Other factors responsible for these changes include: Legal obligation for quality management in some countries such as Germany (Moeller et al. 2000), assessment of service quality provision (Wisniewski 2005), the sophistication of medical care and increasing costs of health care (Ramanathan 2005).

As a consequence, the quality of care and quality of service provided to patients have become a first priority in various nation's (Naves and Storn 2005).

The management of public health care system in Nigeria is laden with intractable problems that call for holistic approach to its management. There is the shortage of manpower requirement in public health sector because of the unattractiveness of the salary and this made the Doctor-Patient ratio to be low when compared to World Health Organization standard of one doctor to 2,500 patients. This poor state of the health care delivery system is reflected in the declining standards and facilities at the Federal, State and Local government levels.

The frustration experienced by patients from hospital employees' nonchalant attitude has been a source of discouragement to them from patronizing public health care service providers. Rosen (2001) said positive experience will induce a customer (patient) to tell three people about it,

while a negative experience will induce a customer to tell seven other people about it.

This hostile attitude of hospital employees has created a boom in the market for private hospitals and alternative medicine with the attendant dangers. Olujide and Badmus (1999) in a study of primary health care centres in Ilorin supported the findings about dissatisfaction of patients with the attitude of the nurses, length of waiting time for services and the frustration of patients for having to see different doctors at each appointment. The total quality management (TQM) is therefore seen as a system approach that is aimed to continuously improve the organizational processes and the systems in which all the employees of the public health institutions can be involved in delivering quality health. If employees' involvement is crucial to TQM implementation, then, there must be a change in the attitude of the health workers.

Literature Review

A World Bank Development Report (1996) affirmed that the health of Nigeria's population is poor, as is the quality of most of the health services it receives. The report further stated that the health care delivery system needs to be revitalized through a more equitable distribution of health care delivery resource input and a more efficient utilization of those resources. Given this position of the World Bank on the quality of health of Nigerians, there is the need to have a model through which the health care delivery system would be revitalized. The TQM option is considered as a way from poor quality service.

Plek (1998) described TQM as a cooperative form of doing business which relied on the talents and capabilities of both labor and management to improve quality and productivity continually using teams. Embodied in this definition are three ingredients necessary for TQM to flourish in any service sector:

- (a) Participative management
- (b) Continuous process improvement, and
- (c) The use of teams.

If every hospital employee sees himself or herself as crucial to the quality of health service delivered, the attitude of the health workers (employees) will change significantly from the hostility perspective.

Yang (1997) identified the following components of TQM:

- (a) *Customer Focus*: This implies that there is proper understanding of the requirement of customers proactively and to take proper actions to fulfill the needs of the customers. This is adopted as patients focus for this study.

- (b) *Continuous Improvement*: This refers to the continuous discovery of the problem analysis of the critical root causes and thereby eliminating those barriers completely.
- (c) *Employees' Participation*: Every employee is accountable for quality service and must be committed to quality service of the organization.
- (d) Team Work.
- (e) Process Focus.
- (f) Systematization.
- (g) Empowerment.
- (h) Leadership.

Mohanty et al. (1996) identified five factors as crucial to TQM implementation. These are:

- (a) Organizational factors,
- (b) Interpersonal factors,
- (c) Environmental factors,
- (d) Facilities factors,
- (e) Economic factors.

Adeoti (2008) identified the key variables to be considered under each of the factors as shown in Figure 1.

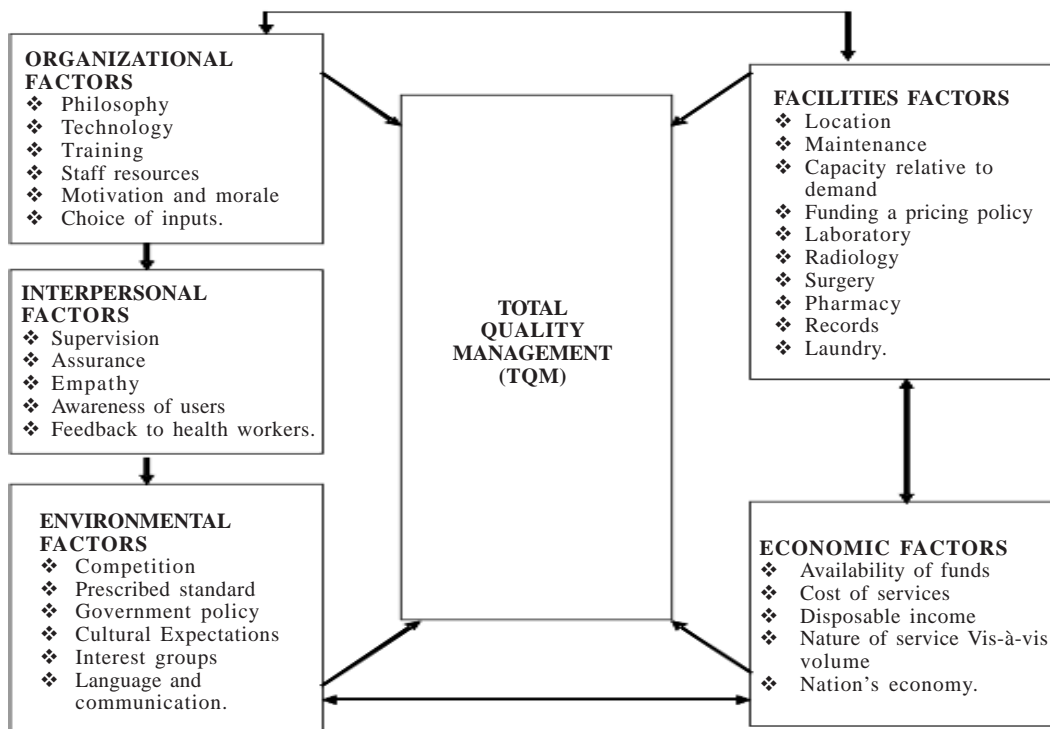


Fig. 1. TQM determinants schema
Sources: Researcher's Initiative

MATERIAL AND METHODS

Study Area

The choice of Kwara State for the empirical investigation of TQM factors is informed by the following reasons:

- It is one of the first twelve states created in Nigeria in 1968.
- It is a gateway state between the Northern and the southern Nigeria.
- It is a mini Nigeria in the sense of heterogeneity of tribes.

This study investigates the implementation of Total Quality Management (TQM) in the sixteen local government areas of the State in 2005 and 2006.

The samples for this research were drawn from three populations, namely:

- Management staff of the state and local government hospitals.

- Hospital employees at the state and local government hospitals.

- Patients who patronize the hospitals.

Fifty doctors or doctor designates at different levels of hospitals were purposively selected to answer the management questionnaires. A total of 150 employees were randomly selected from 712 nurses and midwives available in the state. Total samples of 666 patients were randomly selected from 16 local government areas of the state. Factor analysis was used to condense the 30 variables into eight.

The questionnaire was in four sections: the first section was on the bio-data of all the respondents, the second section was a management staff questionnaire that was aimed at testing the commitment of management to the implementation of TQM. The section three of the questionnaire focused on hospital employees as per whether there was sufficient motivation that engenders

Table 1: Extraction methods, total variance explained

		<i>Initial</i>	<i>Extraction</i>
v11-	The management is committed to the philosophy of TQM.	1.000	.711
v12-	The hospital has the state of the art technology.	1.000	.788
v13-	There is a conscious effort by the management to training of staff on TQM.	1.000	.486
v14-	The staff resources of the hospital are adequate to support TQM initiative.	1.000	.785
v15-	The management has a motivational programme for the staff of the hospital that supports TQM.	1.000	.773
v16-	The location of the hospital is not far away from the patients.	1.000	.797
v17-	The facilities of the hospital aid the achievement of TQM.	1.000	.777
v18-	The pharmacy is well stocked with latest drugs.	1.000	.738
v19-	The record department is computerized.	1.000	.802
v20-	The laundry department of the hospital is functional.	1.000	.778
v21-	The hospital conforms to prescribed standard.	1.000	.668
v22-	Administration of drugs to patient is influenced by language and communication.	1.000	.667
v23-	There is sufficient supervision of the employees by the management on the health of the patients.	1.000	.685
v24-	There is a method of feedback for ensuring that quality goals are achieved.	1.000	.755
v25-	There is adequate funding and pricing by the government.	1.000	.736
v26-	The capacity of the hospital relative to demand for service is adequate.	1.000	.764
v27-	Quality goals are written and communicated to staff.	1.000	.581
v28-	Variance in patients' expectation and actual service delivered are communicated to employees.	1.000	.814
v29-	There is sufficient stimulation in the hospital to generate ideas on quality improvement.	1.000	.815
v30-	Management is open to suggestion and ideas of patients.	1.000	.656
v31-	How would you describe your service with the public?	1.000	.590
v32-	How would you describe your staff courtesy?	1.000	.773
v33-	How would you rate the competence of your employees?	1.000	.668
v34-	How would you rate the quality of your personnel?	1.000	.826
v35-	How would you rate your information system?	1.000	.783
v36-	How would you rate your employees' attitude to work?	1.000	.839
v37-	How would you rate staff awareness to organization's objective?	1.000	.855
v38-	How would you rate the participation of employees in decision making in your hospital?	1.000	.784
v39-	How would you describe the organization's level of motivation of staff?	1.000	.692
v40-	What is the patient rating about your service time?	1.000	.675

Extraction Method: Principal Component Analysis

the staff commitment. Section four of the questionnaire was for the patients who were the recipients of the service. They were considered as pertinent in the assessment of the service quality of the hospitals.

RESULTS AND DISCUSSION

The implication of the Principal Component Analysis (PCA) result presented in table 2 is that eight group of components will affect the successes of TQM in the study area. The component defining variables are employee's involvement and funding, environmental factors, organizational factors, organizational components, adequate facilities, extent of interpersonal contact, inventory of drugs, information technology and personnel ratings; all these components together explained 58.6% of the variance. This quite suggests that 41.4% of the component addressing TQM in Kwara State Ministry of Health should be sourced outside these eight components.

Table 2: Extraction method: Principal component analysis

Initial component	Eigen values		
	Total	% of Variance	Cumulative %
1	4.158	13.860	13.860
2	3.053	10.177	24.038
3	2.653	8.843	32.881
4	2.346	7.818	40.699
5	1.865	6.216	46.915
6	1.617	5.391	52.306
7	1.440	4.801	57.107
8	1.403	4.677	61.784
9	1.303	4.344	66.128
10	1.179	3.928	70.057
11	1.043	3.475	73.532
12	.941	3.136	76.668
13	.875	2.917	79.585
14	.818	2.726	82.311
15	.806	2.688	84.999
16	.732	2.439	87.439
17	.587	1.957	89.395
18	.481	1.603	90.998
19	.422	1.405	92.403
20	.417	1.391	93.795
21	.372	1.239	95.033
22	.293	.976	96.009
23	.280	.935	96.944
24	.231	.771	97.715
25	.211	.703	98.418
26	.144	.479	98.897
27	.116	.386	99.282
28	.106	.352	99.634
29	7.179E-02	.239	99.874
30	3.786E-02	.126	100.000

Extraction Method: Principal Component Analysis

However, the 11% contribution to the total explanation by employee involvement and funding is expected as this component is vital to the success of any organization. For example, in an organization where employees are allowed to participate in decision making, pragmatism and result is achieved. Lawler (1992), Bals (1992) and Daily and Bishop (2003) have reputed that employees participation and adequate funding is central to the success of TQM in separate studies.

The role of environmental factors in the success of TQM strategy cannot be over flogged. When the political will is available, then commitment will also be available. Commitment and passion is what will drive TQM. Bercies and Hegyi (2001) have equally identified this problem.

The contribution of 7% by organizational factor is expected. The success of TQM depends on the level of supervision of employees by management, efficient drug administration, stimulation by the hospital management, etc. This submission agrees with Bercies and Heygi (2001).

TQM will not be successful without the facilities being on ground. Its success deepened on the capacities of the hospitals, location of these hospitals, man power resources. In a related study Carver et al. (2004) observed that availability of adequate facilities contributed to the success of TQM in the recreational industries.

Computerization is an important tool in TQM. This is because several data are involved in TQM administration. Further programs are also involved. All these would only be done with the help of computerization (Fisher et al. 1992; Johnson and Sherwin 1995).

Other factors such as interpersonal, drug auditing, and personnel assessments are also relevant to TQM.

The communalities show the proportion of the variance by the common factors. The communalities are in the range of 0 and 1. A zero commonality indicates that the common factors (extracted) explained none of the variances in the variable and 1 indicates that the common factors explain all the variance in the variables. It could also be expressed as a percentage. For instance, commitment of management to the philosophy of TQM is 0.711 which indicates that 71.1% of the variances in commitment of management to the philosophy of TQM were accounted for by the common factors while the remaining 28.9% is accounted for by unique factors that are not

Table 3: Rotated component matrix by quartimax

Variables	Factor1	Factor2	Factor3	Factor4	Factor5	Factor6	Factor7	Factor8
V28	0.730							
V38	0.729							
V12	0.634							
V17	0.608							
V24	0.602							
V31	0.547							
V33	0.527							
V25	0.505							
V20		0.658						
V11		0.631						
V21		0.608						
V36		0.562						
V15		0.453						
V23			0.534					
V22			0.518					
V29			0.450					
V40			0.411					
V39								
V14				0.611				
V16				0.479				
V30				0.448				
V26				0.431				
V13								
V35					0.497			
V37					0.493			
V18						0.411		
V19							0.537	
V34								0.468

explained. The initial commonalities are always 1.000 before the extraction of factors because at that initial stage, every variable is regarded as a factor with a mean of zero and standard deviation of 1.

Factor Extraction

The 30 experimental variables that influence TQM were subjected to factor extraction by principal component. The output of the analysis contains the initial component matrix which was subjected to rotation in order to fine-tune the loadings on each factor. The initial Eigen values, the percentages variable explained and the rotation sum of squares loadings are presented in the table 2.

The following rotation methods were explored: Varimax, promax, equamax, Quartimax and direct oblimin. Quartimax which is an orthogonal rotation method was adopted based on the fact that it produced more meaningful loadings and also because the rotation converged after 17 interactions which happens to be the least. Therefore, the Quartimax rotation is considered the most appropriate for interpretation as shown table 3.

Factor 1 (Employees Involvement and Funding)

- V28 Variance in patients' expectation and actual service delivered communicated to employees.
- V38 Participation of employees in decision making.
- V12 The state of the art technology.
- V17 Facilities in the hospital leads to achievement of TQM.
- V24 Method of feedback to ensure quality grades are achieved.
- V31 Description of service with the public.
- V33 Competence of employees.
- V25 Adequate funding and pricing by government.

Factor 2 (Environmental Factors)

- V20 Functional laundry department.
- V11 Management commitment to philosophy of TQM.
- V21 Conformity to standard.
- V36 Employees attitude to work.
- V15 Management motivational program for the staff.

Factor 3 (Organizational Factor)

- V23 Supervision of employees by the management.
- V22 Administration of drugs.
- V29 Sufficient stimulation of the hospital to generate ideas on quality management.
- V40 Patients rating of service time.

Factor 4 (Facilities)

- V14 Adequacy of staff resources in support of TQM.
 - V16 Location of the hospitals.
 - V30 Management openness to suggestions and ideas.
 - V26 Capacity of the hospitals.
- Factor 5 (Interpersonal)
- V35 Ratings of information system.
 - V37 Staff awareness to organization objectives.

Factor 6 (Inventory of Drugs)

- V18 Pharmacy well stocked with latest drug.

Factor 7 (Information Technology)

- V19 Computerization of records.

Factor 8 (Personal Ratings)

- V34 Personal quality

Factor 9, 10 and 11 are discordant factors because they do not produce any meaningful loadings.

The implication of these results is that, there are more factors that determine TQM than the five categories identified by Mohanty et al. (1996). The eight factors accounted for 58.6% of TQM determination while the remaining 41.4% is not explained within the model (Table 4). They are accounted for by extraneous factors which are unique to the variables and other variables outside the control of the research. From these results, the inventory of drugs, the information technology put in place in the hospitals and the quality of personnel in the hospitals are additional factors that must be considered for effective implementation of total quality management in Kwara State Hospitals. The availability of drugs in the hospitals will determine to a great extent

the survival of a patient in critical condition. The bureaucracy of searching for patients cards manually can be replaced with computerization of patients' information. The quality of personnel employed in the hospitals also determines the overall quality of the service rendered by the hospitals.

Table 4: Total variance explained

Factors	Variable Explained	Percentages
Factor 1	Employee involvement and funding	11.2
Factor 2	Environmental factors	9.6
Factor 3	Organizational factors	7.0
Factor 4	Facilities factors	6.8
Factor 5	Interpersonal factors	6.4
Factor 6	Inventory of drugs	6.0
Factor 7	Information Technology	6.0
Factor 8	Personnel quality	5.6
Total		58.6

CONCLUSION

This paper has been able to identify three additional factors that are crucial to TQM implementation in health care delivery system. They are the inventory of drug factors, information technology factors. The economic factors were redundant because financial status does not determine treatment in government hospitals. Employees' involvement and funding appears to be the dominant factors out of the eight. The implication of this result is that, if the government gives adequate funding and the employee involvement is superb, then the quality of health service delivered in the state government hospital would be significantly enhanced and efficient.

REFERENCES

- Adebola Samuel 2001. *Variation in Financial Resources Utilization Efficiency in the Health Care Delivery System of Lagos State*. Ph.D. Thesis, Unpublished. Ilorin: University of Ilorin.
- Adeoti Johnson 2008. *Application of Total Quality Management to Health Care Delivery Systems in Kwara State, Nigeria*. Ph.D Thesis, Unpublished. Ilorin: University of Ilorin.
- Aggarwal AK, Zairi M 1997. The role of Total Quality Management in enabling a primary health care orientation. *Total Quality Management*, 8(6): 347-59.
- Daily BF, Bishop JW 2003. TQM Workforce factors and employee involvement: The pivotal role of teamwork. *Journal of Management Issues*. 15(4): 393-142.
- Bahls JE 1992. Managing for total quality: Practitioners must inspire employee involvement. *Public Relation Journal*, 48(4): 16-20.
- Bercedes R, Hegyi Z 2001. TQM and organizational de-

- velopment. *Periodical Polytechnic a Ser Soc Man Sc*, 9(2): 117-126.
- Carnar MM, Kirtlana KA, Evans MH, Wilson DK, Williams JE, Mixon GM, Henderson K 2004. Evaluating the quality of recreation facilities: Development of an assessment tool. *Journal of Park and Recreation Administration*, 22(1).
- Daily BF, Bishop JW 2003. TQM workforce factors and employee involvement: The pivotal role of teamwork. *Journal of Management Issues*. 15(4): 393-142.
- Dale BG, Lascelles 1994. Total Quality Management: An overview. In: BG Dale (Ed.): *Managing Quality*. New York: Prentice-Hall, pp. 3-40.
- Dale BG, Lascelles 1997. Total Quality Management adoption: Revisiting the levels. *The TQM Magazine*, 9: 818-828.
- Fisher WW, Reel LB, Alliant H 1992. TQM in a hospital library: Identifying service benchmarks. *Bullentine Medical Library Association*, 8(4).
- Jonsson P, Sherwin DJ 1995. TQM, Maintenance and plant availability: Present trends and future needs. In: Gopal K Kanji (Ed.): *TQM: Proceedings of the First World Congress*. London: Chapman and Hall. Practice Hall, pp. 364-366.
- Lawler EE 1992. *TQM and Employee Involvement: Similarities Differences and Future Directions*. Centre for Effective Organizations. University of Southern California U.S.A.:CEO Publication G92-16(219).
- Mejabi Veronica 2006. *Consumer Focused Study of Hospital Service Quality. A Case Study of Two Nigerian Teaching Hospitals*. Ph.D Thesis, Unpublished. Ilorin: University of Ilorin.
- Moeller Berinlinger, O'Reilly J, Elser J 2000. Quality management in German health care - the EFQM excellence model. *International Journal of Health Care Quality Assurance*, 13: 254-258.
- Mohanty RP, Santhi K, Haripriya C 1996. A model for evaluating TQM effectiveness in health-care systems. *TQM Magazine*, 45: 14-17.
- Naveh E, Stern Z 2005 How quality improvement programme can affect general hospital performance. *International Journal of Health Care Quality Assurance*, 8: 249-271.
- Olujide JO, Badmus L 1998. *Enhancing Patient Satisfaction through Adequate Medical Care. Advances in Management*. A Publication of Business Administration Department, University of Ilorin. 3: 14-17.
- Plek PE 1995. Techniques for managing quality. *Hospital and Health Services Administration*, 40: 118-201.
- Ramanathan R 2005. Operational assessment in hospitals in Sultanate of Oman. *International Journal of Operations Production Management*, 125: 39-54.
- Rosen E 2001. *The Anatomy of Buzz: How to Create Word of Mouth Marketing*. New York: Doubleday/currency.
- Ruiz U, Simon J 2004 Quality management in health care: A 20-year journey. *International Journal of Health Care Quality Assurance*, 17: 23-33.
- Yang CC 1997. *Quality is the Best Strategy in Competition*. Taiwan: APEX International Management Consulting Co.
- Zabada CR, Munchus G 1998. Obstacles to the application of total quality management in health care organizations. *Total Quality Management*, 9: 57-66.