

Analysing the Procedures and the Cost of Application of Relevant TQM Principles in Effective Delivery of Maintenance Cleaning Services in Nigerian Public Hospitals

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ABSTRACT: Maintenance cleaning services in Nigerian Public hospital have failed to performed efficiently over the years. The performance of maintenance cleaning services have been poor and ineffective interms of main parametres of cost, time and quality. These problems were enhanced due to other impending factors such as; inadequate and inexperienced staff of maintenance departments, poor access to formal training, low motivation, and lack of adequate management tools, like TQM. Therefore, this study aimed at analysing procedures of maintenance cleaning operations and the Cost of application of relevant TQM principles in effective delivery of maintenance cleaning services in public hospitals in Nigeria. The study adopted a survey design approach and stratified sampling technique for data administration and collection. With a response rate of 96.15%, the collected data were analysed using Mean Item Scores (MIS) and Relative Important Index (RII).

The study showed based on the findings that new practices for cleaning should be employed to reduce waste; hospital management understanding of the needs of both its patients and staff is most relevant in maintenance cleaning, coordination of information was effective from top to down level in the hospital and also the respondents agree very little cost will be needed to apply TQM principles. From findings, provided recommendations includes; stakeholders involvement in the decision making, cleaning services manual should be developed; innovation; organizational quality culture should not be static.

I. INTRODUCTION

The removal of dirt and unwanted impurities are done through a process called cleaning which can be subjectively described

differently depending on the industry in focus (Cleaning Services.org., 2018). Cleaning operations takes place in various contexts of commercial, industrial, environmental, and domestic and all are done in varying degrees. The main functions of cleaning health facilities like hospitals are two; surface cleaning and prevention of infection spread [11]. According to [4] cleaning operations are services carried out regularly or hence day to day activities. With the on going, failure in achieving effective cleaning operation can pose danger to people and environment [15].

Total Quality Management (TQM) emerged due to poor quality culture and the misconception of the main rationale behind quality. The most recent theories came in bridge the gaps with previous management theories [3]. In TQM organization, a collaborative and open culture must be adopted by senior management to enable employees at all levels feel the responsibility of achieving organizational goals and objectives [9]. TQM is an organizational strategy which requires wider management course to lead organizations to become efficient [10].

According to [12] & [2] the main purpose of any TQM programs in hospitals is the need to improve quality within a lower cost and customer satisfaction. This advancement will definitely come with some challenges of facility maintenance according to [17] such as supplier management, data availability and accuracy, appropriate vendors and team, asset management and cost reduction. The challenge however led health facilities managers to develop ways to successfully achieve and as well measure [5]. [6] highlighted that (TQM) is the best management tool to solve most of maintenance cleaning problems in health organisations. Public

maintenance cleaning services have been inefficient in terms of time, cost and quality. These problems are largely attributed to certain factors such as; lack of experienced staff, lack of training, poor motivation, and inadequate management tools, like TQM, which are essential elements in achieving effective maintenance cleaning services in public hospitals. Hence the aim of this research is to analyse the Cost of application of Total Quality Management (TQM) principles in delivery of effective maintenance cleaning services in Public Hospitals in Nigeria.

II. LITERATURE REVIEW

TQM is systematic approach to ensure all organizational activities are carried out according to specific plan to ensure customer satisfaction. TQM is also perceived as people focused management system that aims at continually increase in customer satisfaction at continually lower real cost [8]. Thus, the key principles of TQM are as follows: customer focus, best quality, long-term commitment, effective teamwork, continuous improvement systems, adequate training and education, unity of purpose and employee involvement, freedom through control and staff empowerment.

Cost of application of relevant TQM Principles in effective delivery of maintenance cleaning services

Key issues of TQM

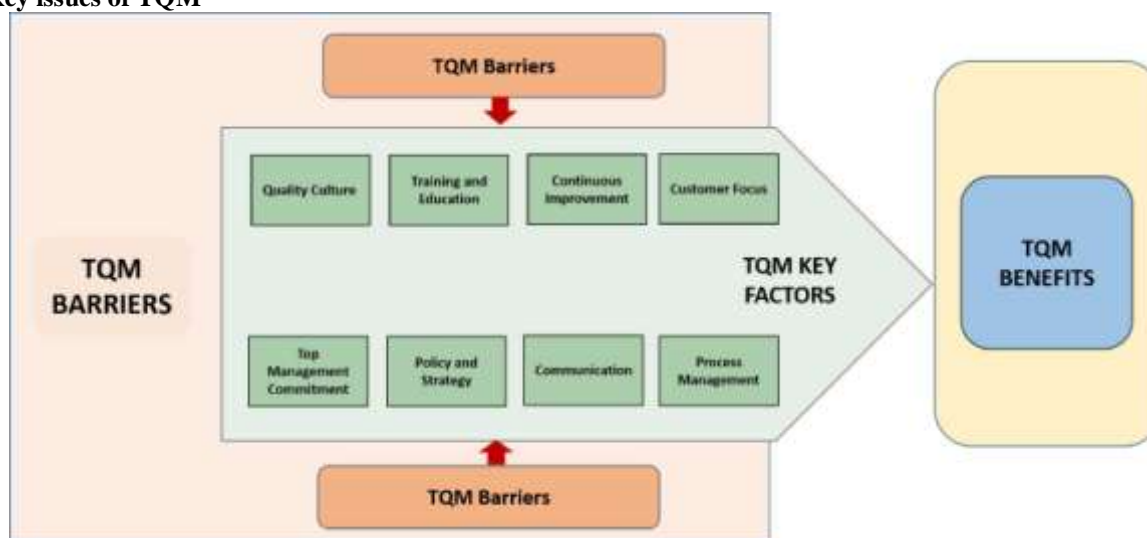


Fig 1 Key issues of TQM

(Source: Abdulhameed and Aletaiby 2018).

The most important TQM implementation barriers were identified by [14] as a lack of

Benchmarking have been highlighted by many studies as the best tool to test and measure the operational and maintenance costs in healthcare facilities; identifying proper staffing and its sourcing with significant influence on maintenance cost [17]. From the model developed by [18] for the operation and maintenance cost of hospitals has identified the source of financing and measured its impact on rising cost of maintenance in hospitals. The integral function of cleaning within the healthcare building in comparison to the other maintenance operations (mainly M&E, plumbing, security services etc.) cleaning services has been clearly expressed as the most costly within the breakdown of the maintenance and management estimated costing, [15].

Also, [3] identified the factors that affect the cost of maintenance in hospital facilities as 33 factors that influence maintenance costs in hospitals; these factors were categorized into seven subgroups with separate considerations for public and private hospitals and sub grouped into seven namely legal requirements, design phase requirements, construction phase requirements, maintenance requirements, projected budget for maintenance activities, expected maintenance performance, and the norms and benchmarks in the maintenance industry.

commitment, support, and poor leadership from the top management. Another study conducted by [17]

indicated that the major barriers to successful implementation of TQM were not only unsuitable company structure that did not support TQM implementation, but also lack of the resources, and lack of employee participation, awareness and commitment toward TQM implementation.

[13] analysed 54 TQM empirical studies conducted in 23 developed countries over the past 30 years, (1980-2010), of implementing TQM. The study found that inadequate training and education, lack of employee participation, lack of top management commitment, poor leadership, lack of financial support, insufficient resources, lack of Government support, lack of communication, poor of quality-oriented culture, poor delegation.

III. METHODOLOGY

The study adopted a well structured questionnaire designed and administered to examine the procedures of maintenance cleaning, and to examine the gaps in cost application of TQM to achieve effective delivery of maintenance cleaning services. Stratified data sampling technique was used to administer the instrument. management staff, contractor and supervisors (that is, 32 management staff, 42 supervisors and 1 contractor) were selected from total of 25 public hospitals. After accumulating the data from the respondents via the structured questionnaire, the data gathered were carefully analysed in relation to the stated objectives using descriptive statistical method (Relative Importance Index, Ranking Method and Mean Item Score) with the aids of Statistical Package for Social Science (SPSS) and Microsoft excel package. While deductive method of analysis was used to analyze the qualitative aspect of the research work. The analyzed data were presented in tables.

IV. DATA ANALYSIS AND DISCUSSTION

General characteristics of respondents

Table1 shows the result of the analysis of the respondents' general characteristics. Based on the category to which the respondents belong, more than half of them (57.33%) belong to hospital supervisors' category, 41.33% belonged to the management board, and only 1.33% of them belong to contractors. On their profession, Architects constitute 14.67%, Builders only 4.0%, engineers 22.67%, and Quantity surveyors 10.67%. Many of them (84.0%) belongs to other professions

In regards to their years of experience, 33.33% have up to 1-5 years' experience, 17.33% have 5-10 years' experience, 29.33% have 11-15 years' experience, 10.67% have 16-20 years experience, and 9.33% have experience of above 20 years. The average years of experience of the respondents are 8.96%. On academic qualifications, a sizeable proportion 28.0% and 29.33% of them have HND and B. Sc/B. Tech as their highest qualification respectively. About 14.677% of the respondents hold Postgraduate Diploma, 12.0% holds a Master's degree. This depicts that 100% of the respondents received a higher formal education, thereby qualified to provide relevant information for this research.

Their professional affiliation shows that, 53.33% as not a chartered member of their affiliate professions, the remaining 46.67% are corporate members of the bodies. This fact indicates that most of them had recognition with their respective professional bodies.

The result from this section shows that the respondents have the requisite academic qualification, industry experience and professional qualification to give reliable information on this research.

Table 1: Demographic characteristics of Respondents

Category	Classification	Freq.	Percent
Category in organization	Management board	31	41.33%
	Hospital supervisor	43	57.33%
	Contractor	1	1.33%
	TOTAL	75	100.00%
Respondents profession	Architects	11	14.67%
	Builders	3	4.00%
	Engineers	17	22.67%
	Quantity Surveyors	8	10.67%
	OTHERS	36	48.00%
	TOTAL	75	100.00%

Years of experience	1 – 5 years	25	33.33%
	5-10 years	13	17.33%
	11-15 years	22	29.33%
	16-20 years	8	10.67%
	above 20years	7	9.33%
	TOTAL	75	100.00%
Academic Qualification	ND	12	16.00%
	HND	21	28.00%
	PGD	11	14.67%
	B. Sc/B.tech	22	29.33%
	M. Sc/M. Tech	9	12.00%
	PhD	0	0.00%
	TOTAL	75	100.00%
professional affiliation	None	40	53.33%
	MNIA	5	6.67%
	MNIOB	2	2.67%
	MNSE	9	12.00%
	MNIQS	6	8.00%
	OTHERS	13	17.33%
	TOTAL	75	100.00%

Researcher analysis

The procedures of maintenance cleaning operations in public hospitals environment

Table 2 shows based on analysis of the data gathered on the procedures of maintenance cleaning operations in public hospital's built environment. On the overall, the major procedures are; Introduction of new cleaning practice that reduces waste in usage to be adopted (MIS=3.44), data for personnel are kept in record's room

(MIS=3.17), employees of cleaning services are in-house (MIS=3.05), cost of cleaning services are less in your hospital (MIS=2.97), and standard operating procedures are in use in your hospital for cleaning (MIS=2.89).

The result also shows that on key variables heads, operations are ranked highest, flowed by sourcing, communication and lastly purchasing.

Table 4. 2: Procedures of Maintenance Cleaning Operation

S/nr	Variables	MIS	RANK	Overall rank
Operations				
1	Introduction of new cleaning practice that reduces waste in usage to be adopted	3.44	1 st	1 st
2	Data for personnel is kept in records room	3.17	2 nd	2 nd
3	Standard operating procedures are in use in your hospital for cleaning	2.89	3 rd	5 th
4	Schedule for routine cleaning operations are used	2.81	4 th	6 th
5	Cleaning plans is made available to all personnel and clients	2.77	5 th	7 th
Communication				
6	Procedures for suggestions and comment on improvement should be established amongst cleaning employee	2.29	1 st	8 th
7	Names and contact numbers of cleaning service is available for public use	1.85	2 nd	11 th
8	Cleaning products list used in cleaning be made	1.79	3 rd	12 th

	public in print.			
	Purchasing			
9	All products used are environmentally preferable products	2.13	1 st	9 th
10	Hospitals in Niger State have certification marks for standards in cleaning services.	1.76	2 nd	13 th
11	Powered cleaning equipment are used for cleaning operations in your hospital	1.48	3 rd	14 th
	Sourcing			
12	Employees of cleaning services are in-house	3.05	1 st	3 rd
13	Cost of cleaning services is less in your hospital	2.97	2 nd	4 th
14	Employees of cleaning services are outsourced to a vendor or company	2.01	3 rd	10 th

Cost of Application of Relevant TQM Principles in Effective Delivery of Maintenance Cleaning Services

Table 3 and Table 4 shows the result of the analysis of the data collected on the cost of application of TQM principles in effective delivery maintenance cleaning services. It was revealed that the top TQM principles in terms of the cost of application are; coordination of information is effective from top to down level in the hospital (MIS=3.133), changing the old mind set on culture leads to a successful transition of TQM in hospitals (MIS=2.72), training is given on quality to maintenance supervisors and managers (MIS=2.35), resources are available to fund training needs and development of employees. (MIS=2.04), continuous demonstration of its commitment to quality (MIS=1.95).

The least in terms of cost of application are; measurements for key processes are in place by management, work plans, procedures and instructions is followed by hospital management,

employees have a mindset they are each responsible for quality improvement, hospital management encourages improvement to maintenance, the hospital management understands what is trending in the healthcare industry.

Based on the average MIS weighting of the key TQM principles, the top five (5) principles are communication; trainings and development; Quality culture; top management commitment and employee empowerment.

In terms of cost of application of the identified 26 key TQM principles, two of the principles have moderate cost of application and this fell within the range ₦501,000-₦1M. Nine of them fell within the little (low) cost range ₦101,000-₦500,000. Fifteen of them, which represent the majority of the key TQM principle have very little (low) cost of application, and this range from ₦1-₦100,000. Overall, the cost of application of relevant TQM principles in effective delivery of maintenance cleaning services is very low.

Table 3: Cost of Application of TQM principles

S/nr	Key TQM principles	MIS	RANK	OVERALL RANKING	DECISION
	Top Management Commitment				
1	Continuous demonstration of its commitment to quality	1.95	1 st	5 th	LC
2	Top management intends to fund the resources needed for quality	1.87	2 nd	7 th	LC
3	Uses of performance indicators to monitor adequate performance	1.28	3 rd	20 th	VLC
	Continuous improvement				
4	Employees have a mindset they are each responsible for quality improvement	1.15	1 st	25 th	VLC
5	Hospital management encourages improvement to maintenance	1.03	2 nd	26 th	VLC
	Process Management				
6	Measures to control and improve the cleaning services or delivery process by	1.40	1 st	16 th	VLC

7	the hospital is in place Measurements for major processes are structured by management	1.27	2 nd	22 nd	VLC
8	Work plans, procedures and instructions is followed by hospital management	1.25	3 rd	23 rd	VLC
Customer Focus					
9	The hospital management determines what they need now and requirements for the future.	1.36	1 st	17 th	VLC
10	The hospital management understands the needs of both its patients and staff well	1.28	2 nd	20 th	VLC
11	The hospital management understands what is trending in the healthcare industry.	1.16	3 rd	24 th	VLC
Training and Development					
12	Training is given on quality to maintenance supervisors and managers	2.35	1 st	3 rd	LC
13	Availability of resources to support the training needs and development of employees.	2.04	2 nd	4 th	LC
14	The hospital management evaluates the impact of trainings done on employees periodically	1.89	3 rd	6 th	LC
Quality Culture					
15	Changing the old mind set on culture leads to a successful transition of TQM in hospitals.	2.72	1 st	2 nd	MC
16	Using TQM culture enhances hospital management's growth in the hospitality sector.	1.81	2 nd	8 th	LC
17	A campaign has been launched among cleaning staff in hospitals.	1.41	3 rd	15 th	VLC
Policy and Strategy					
18	The mantra of quality is embedded in the mission statement of the hospital.	1.45	1 st	12 th	VLC
19	The hospital maintenance staffs are versatile on the subject of quality policies and strategies to achieve them.	1.43	2 nd	14 th	VLC
20	Hospital maintenance policy and strategy on quality management are adjusted periodically.	1.35	3 rd	18 th	VLC
Employee Empowerment					
21	Rights are given to employee o carry out prompt decisions when required.	1.71	1 st	11 th	LC
22	The hospital management employees are encouraged to create ideas, give suggestions on improvement in effective cleaning services delivery	1.45	2 nd	12 th	VLC
23	Top management carry along subordinates in taking decisions	1.33	3 rd	19 th	VLC
Communication					
24	Coordination of information is effective from top to down level in the hospital	3.13	1 st	1 st	MC
25	The hospital management information	1.81	2 nd	8 th	LC

26	requirements from sources (internal and external) is readily available The hospital management's flow is effective in all activities	1.75	3 rd	10 th	LC
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Researcher analysis

Table 4: Summary of cost of Application

SN	Cut-off Points for MIS	Cost	Decision	Freq.	Percent
1	4.50-5.00	5M-Above	Very High cost (VHC)	0	0.00%
2	3.50-4.49	1M - 5M	High cost (HC)	0	0.00%
3	2.50-3.49	501000-1M	Moderate Cost (MC)	2	7.69%
4	1.50-2.49	N101000-500,000	Little Cost (LC)	9	34.62%
5	0.1-1.49	N1-N100,000	Very Little Cost (VLC)	15	57.69%

CONCLUSION AND RECOMMENDATIONS

This study analyses the Cost of application of relevant TQM principles in effective delivery of maintenance cleaning services in Public Hospitals in Nigeria. The study was also able to ascertain the procedures of maintenance cleaning operations in public hospitals-built environment, and, the study was able to determine the cost of application of relevant TQM principles in effective delivery of maintenance cleaning services and thus reveals that the cost of application of relevant TQM principles in effective delivery of maintenance cleaning services is very low. Also the findings shows that the major procedures needed for maintenance cleaning operations in public hospitals projects are Waste reduction by employing new practices for cleaning, suggestions and comments by employees, using better products, preference to in-house employees and lastly a lack of understanding of use of technology were highlighted. The care on customers, employees and their relationship, quality of culture of the hospital and the management commitment to quality cannot be overemphasized as it was highly rated with the least being carrying out routine adjustments on policies and strategies regarding quality. From the above findings the following recommendations were made

- Incorporation of all stakeholders in the implementation decision of principles of TQM on the maintenance cleaning services projects.
- Cleaning services manual incorporating all the key areas requiring services and maintenance

should be developed for internal use and for the use in the hospitality industry.

- Innovation is what drives the way businesses succeed in any industry they operates. Organizational quality culture should not be static. It should be subject to regular update in line with the dynamics of the industry.
- Effective communication and top management commitment should be encouraged and emphasized.
- Strong emphasis should be placed on customers' needs and effective feedback system should be encouraged to ascertain changing states and fashion.

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