

AN ASSESSMENT OF TOTAL QUALITY MANAGEMENT PRACTICES ON CONSTRUCTION PROJECTS IN OSUN STATE

Adeosun, J. O:

Department Of Building Technology, Osun State College Of Tech., Esa Oke.

ABSTRACT

The study assessed the effects total quality management practices on construction projects in Osun State, Nigeria. With a view to determine the causes of project failure. The various techniques of quality assurance and management control being adopted by construction firms in Osun state were evaluated. The professionals from ministry of works and housing, the contractors and the direct users of the projects in the study area were duly considered. The population of the study is five hundred and thirty four (534). To comprehensively undertake the research; one hundred and forty eight (148) copies of questionnaire were administered by using Yaro Yamani method of sample size determination. The total number of usable responses received for the analyses was ninety two (92), making 62%. The data was analyzed using descriptive and inferential statistics. The study revealed that failure to adopt total quality management practices measures increases project failure. Application and entrenchment of quality management technique has been recommended for managers of various construction firms to enhance the quality of projects

Keywords: Assessment, total quality management, practices measures

INTRODUCTION

Since independence, the Nigerian government has continued to make concerted efforts in the area of quantitative (but not qualitative) supply of mass housing through huge budgetary and policy provisions but surprisingly, the rate at which existing ones are collapsing calls for urgent attention. In recent times, there has been an upsurge in the incidences of building collapse thereby raising the issue of ensuring safety in construction of buildings. There is sufficient evidence to show that a growing number of people are involved in the activities of the industry. Construction process requires a sufficient quality management that would yield a better quality assurance from the industry. Total quality management is a holistic approach to managing a project. It includes continuous improvement, customer's satisfaction, and top management support, defect-free product at first attempt, and elimination of reworks, cost effectiveness training and re-training of staff. Total quality management consists of all activities that managers perform to improve their quality and policy such as quality planning, quality control, quality assurance and quality improvement, (Harris & Mc Caffer, 2001). Olatunji, Abimbola and Nureni (2012) reiterated that the term quality management is all encompassing and embedded in the phenomenon itself are concept such as quality control, quality assurance, quality improvement, quality standard and so on.

Kanji and Wong (1998) as cited in Hoonakker, Carayon and Loushine (2010) advanced the view that quality management has increasingly been adopted by construction companies as an initiative to solve quality problems and to meet the needs of the final

consumer. As suggested by Oakland and Aldridge (1995) cited in Hoonakker, et al (2010), if ever an industry needed to take up the concept of total quality management it is the construction industry. Quality has remained in the forefront among factors used to determine the degree of success or failure of a project. This long term development has made it imperative for all parties involved in construction projects to strive at all times to produce commendable structures (Atkinson 2005).

Total Quality Management (TQM)

Total Quality Management (TQM) is a philosophy that involves everyone in an organization in continual efforts to improve quality and achieve customers' satisfaction. Continuous improvement is the philosophy that seeks to make never ending improvements to the process of converting inputs into outputs. Total Quality Management (TQM), has also been defined as: harnessing everyone's effort to achieve zero defects at lowest cost and continually satisfying customer requirements (Turner, 1994).

The aim and objective of the building industry is to provide suitable accommodation for the whole community, of the quality that can be appreciated by the community, at the cost that the community can afford, within the time required by the community and within the capacity of the building industry (Akindoyeni, 2002). However, it could be deduced that the ultimate goal for any building projects is for such projects to be delivered within the shortest possible time at the lowest possible cost, within the highest possible quality so as to minimize the problem and the burden of future maintenance and building collapse, in order for construction clients and end users of completed facilities to realize best value,

the concept of quality management must be stressed in the industry to improve the quality of product and services (Idrus & Sodangi, 2010). Quality and efficiency have been identified as the major imperatives lacking in Nigeria's construction industry. From a general knowledge, a number of construction firms in Nigeria underpay their workers, with this poor salary package. Construction labours tend to focus more on the number of hours worked and quantity of work done rather than the quality of work executed. (Ayinnuola & Olalusi, 2004). Total Quality Management has the potential to improve business results, greater customer orientation and satisfaction, worker involvement and fulfillment, team working and better management of workers within companies, however, construction firms have been continually struggling with its implementation (Haupt & Whiteman, 2004). The implementation of a Total quality management philosophy within the organization requires a cultural change (Summerville, Stocks & Robertson, 1999) and its being recognized as an important aspect of total quality management development (Battikha, 2002). A cultural and behavioral shift in the mind-set of all participants in the construction process especially top or senior management officers is necessary if the construction industry is to improve its performance (Kanji & Wong, 1998; Haupt & Whiteman, 2004).

Building Collapse

A building is said to have collapsed when its structural and component states have failed and are not only unserviceable requiring some level of maintenance, but unable to adequately support intended loads or lacks stability due to excessive deformation. In this situation, it has gone beyond the failure of either material or structure, or both (Iyaba, 2005, Ogunsemi, 2002; Odunlani, 2002). Such a building is no longer safe as a structure to live in and therefore a nuisance (Jambol, 2012.). Akindoyeni, (2002) stated that a collapsed structure, anywhere in the world is a nightmare because of the time, energy resources wasted and possible loss of lives. The failure can be of various kinds and can occur during, immediately after the construction or later in its design life span.

Quality Management Systems

According to Satterfield (2005), quality systems involve internal and external aspects. An internal quality system covers activities aimed at providing confidence to the management of an organization that the

intended quality is being achieved. This is called a "quality management system". Quality management systems provide a vehicle for achieving quality (i.e. conformance to established requirements). As defined by ANSI, a quality system is "the organizational structure, responsibilities, procedures, processes, and resources for implementing quality management" (Arnold, 1994) cited in Battikha, (2002). In other words, Quality management systems refers to the set of quality activities involved in producing a product, process, or service, and encompasses prevention and appraisal (Chase & Federle, 1998)

Quality Control in Construction Projects

Quality control involves monitoring specific project results to determine if they comply with relevant quality standards or identifying ways to eliminate causes of unsatisfactory results. It should be performed throughout the project. Project results include both product result such as delivered and management results, such as cost and schedule performance. (Low & Peh, 1996)

The project management team should have a working knowledge of statistical quality control, especially sampling and to help them to evaluate quality control outputs. Among other subjects, they should know the difference between:

- i) Prevention (keeping errors out of process) and inspection (keeping errors out of the hands of workers)
- ii) Attribute sampling (the result conforms or it does not) and variable sampling (the result is rated on a continuous scale that measures the degree of conformity).
- iii.) Special causes (unusual events) and random causes (normal process variation).
- iv.) Tolerance (the result is acceptable if it falls within the range specified by tolerance) and control limits (the process is in control if the results falls within the control limits).

Federie. 1998). It is "a management discipline concerned with preventing problems from occurring by creating the attitudes and controls that make prevention possible" (Crosby, 1979) cited in Battikha, (2002). Quality activities include the determination of the quality policy, objectives, and responsibilities and implementing them through quality planning, quality control, quality assurance, and quality improvement, within the quality system (ASQC, 1997) cited in Battikha, (2002).

The importance of Quality Assurance is based on the principles of getting things right first time (Shofoluwe, 2013) By implementing, maintaining, reviewing and continually improving a Quality Assurance System, a construction company can achieve and reap the benefits of having such a system in place. A Quality System is designed to provide an assurance to clients, which can be supported through documented records, that all contracts will be completed in accordance with the agreed time, cost and specification. It should also further ensure that the company personnel, sub-contractors and key suppliers are aware of customer requirements and that they are fully met. Conformance with requirements of the detailed procedures developed in accordance with the Quality Manual has to be mandatory for all staff employed in the company. It is essential to the system that encouragement is given to each employee to develop and maintain an attitude of continuing quality improvement and customer satisfaction. Quality Assurance is concerned with developing and planning the necessary technical and managerial competence to achieve desired results. It is also about attitudes, both of management and of all those for whom they are responsible. (Shofoluwe, Ofori-Boadu, Waller, & Bock-Hyeng, 2013)

METHODOLOGY

The study was carried out in Osogbo, Osun State capital. The study design was based on survey method which accommodates the use of questionnaire to elicit information from the respondents involved in the study area. Questionnaire was subsequently designed as the main research instrument to elicit information from the professionals, contractors, and direct users of the projects within the study area. The target population of the study comprises the professionals in the Ministry of Works and Housing, Contractors and direct users of the projects in selected area in Osun state with a population size of 534. Using Yaro Yamani's method of size determination, one hundred and forty eight (148) copies of questionnaire were administered; random sampling technique was adopted. ninety two (92) were properly completed and returned. The ninety two (92) respondents' opinions were sampled. The results of the study was analysed using both descriptive and inferential statistical techniques. The mean of 2.50 was used as decision point for every questionnaire item. Consequently, any item with mean responses of 2.50 and above was considered to be agreed. Any item with a mean response of 2.49 and below was equally considered to be disagreed respectively.

RESULTS OF FINDINGS AND DISCUSSIONS

Table 1: Total Quality Management (TQM) Practices Measures

S/N	Quality management practices measures	Mean Rating
1.	There is effective division of labour among workers	3.01
2.	There are technological modern facilities, machines, tools and equipment	2.84
3.	There is adequate of quality constructional materials	2.82
4.	Management leaders are democratic	2.80
5.	There is effective communication	2.75
6.	Utilization of qualified engineers and architect for inspection	2.73
7.	Workers are recruited by merit	2.61
8.	Management leaders are visionary	2.59
9.	Builders are used on site work	2.58
10.	There is effective training and re-training of workers	2.5
11.	Workers in the construction industry receive higher remuneration	2.45
12.	There is effective management of financial resources	2.35
13.	Workers are well motivated	2.34

Source: Field survey December 2015.

Means with the same letters along the same column are not significant different at $P \leq 0.05$

- Key: Not adopted - 1
- Slightly adopted - 2
- Quite adopted - 3
- Strongly adopted - 4

All the various TQM measures such as: There is effective division of labour among workers (3.01), There are technological modern facilities, machines, tools and equipment (2.84), There is adequate of quality constructional materials(2.82) are all rated higher as quite adopted.. Other measures like Management leaders are democratic (2.80), there is effective communication (2.75), Utilization of qualified engineers and architect for inspection (2.73), Workers are recruited by merit (2.61), Management leaders are visionary (2.59), in supervision, qualified builders are used on site work (2.59), There is effective training and re-training of workers (2.50) all these are quite adopted. Whereas, measures including Workers in the construction industry receive higher remuneration (2.45), There is effective management of financial resources (2.35), Workers are well motivated (2.34) are all slightly adopted. The three least measures slightly adopted by the respondent of the research are in accordance with previous research by Idris & Sodangi (2010), which stated that: quality and efficiency have been identified as the major imperatives lacking in Nigeria's construction industry. From a general knowledge, a number of construction firms in Nigeria under-pay their workers, with poor

salary package. Construction labours tend to focus more on the number of hours worked and quantity of work done rather than the quality of work executed (Ayinuola and Olalusi,2004). In other to see if there was any significant in the TQM measures, the Analysis of Variance showed that there was significant difference ($p < 0.05$) in that the extent to which total quality management practices measures are being adopted has effects on building collapse.

Conclusion And Recommendations

From the analysis of the result of the effects of total quality management practices on building collapse the following were deduced; it was observed that the extent of adoption of total quality management measures has significant effects on building collapse in Osun state. The main findings of the study revealed that construction workers in the study area are not well motivated. The absence of quality in preconstruction, construction and post construction stages has resulted in the failure of

buildings. It has also been observed that total quality management remains optimum for achieving effective project performance in all types of infrastructural development.

The following are therefore recommended in order to minimize the incessant building collapse in Osun state and Nigeria as a whole.

- (1) Total quality management practice measures should be effectively adopted during the execution of project and hence curb the menace of building collapse
- (2) Construction labours should focus more on the quality of work executed rather than number of hours worked and quantity of work done.
- (3) Workers in the construction industry should be well motivated and receive higher remuneration.
- (4) Integration of Quality management practices in the early stage of the project should be encouraged and ensuring quality system are well instituted.

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