# TECHNIQUES FOR IMPROVING QUALITY MANAGEMENT AND SAFETY CULTURE ON BUILDING CONSTRUCTION SITES I N ABUJA

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**Abstract**
*The study investigated techniques for improving quality management and safety culture on construction industries in Abuja. This is because there is need for quality management and the right safety culture on construction sites in order to reduce the occurrence of site accidents and improve the quality of building projects. The population of the study was 40 building experts, comprising 15 building professionals and 25 site workers all within Abuja. Two research questions were raised to guide the study. The instrument for data collection was a 30 items questionnaire developed by the researcher and known as Questionnaire on Technique for Improving Quality Management and Safety Culture on Construction Industries (QTIMSCCI). The questionnaire was validated by two experts in the Department of Building and one from the Department of Industrial and Technology Education both of Federal University of Technology Minna, Niger State. A pilot test of the instrument was carried out in Lafia, Nasarawa State. The Cronbach alpha coefficient method was used to determine the internal consistency of the instrument and 0.82 was obtained as the overall reliability coefficient of the instrument. Data collected was analyzed and mean and standard deviations were used to answer the research questions. Findings revealed among other things that there are 6 core causes of poor quality management and safety culture and 4 major strategies for improving safety on building construction sites. Based on these findings therefore, it was recommended among others that construction managers should embrace training and retraining programmes for both skilled and unskilled workers by organizing workshop, sponsored conference attendance and short term programmes. Workers compensation insurance should be adequately implemented and reward workers that exhibit excellent safety performances in order to improve the quality of site management.*

**Keywords:** Quality Management, Safety Culture, Safety Climate, Construction Sector and Work Safety

## Introduction

Quality is the standard of a product or service as measured against other things of similar kind. It is also the degree of excellence of a product or service (Agwu, 2012). For quality to be assured in any organization, there must first be proper management. Management in the construction industry encompasses the efficient use of machinery, labour and raw materials in industrial production. It is particularly important from the viewpoint of costs and economics of production and safety (Agbede *et al*, 2016). Quality management in the construction industry therefore encompasses giving workers a sense of empowerment, responsibility, accountability and consistently reinforcing their good work.

The construction sector is globally considered to be a critical industry on which the development of a country depends (Kolawole, 2014). Construction impacts the quality of life for building facilities and plays a major role in a nation's economy and development. Due to

the fact that the construction industry usually involves collection of professionals, subcontractors, craftsmen, artisans, labourers and suppliers within and outside the industry, there is therefore a need for sufficient quality management that would yield better quality assurance from the industry (Ibrahim & Stephen, 2014).

When accidents occur in the workplace, it is important to understand what human factors may have contributed to the outcome in order to avoid similar incidents in the future (Sherratt, 2014). It is only through the understanding of why and how accidents occur that appropriate methods for accident prevention can be developed (Ogunde *et al*, 2017). In the past, any attempt to improve work safety or to control workplace risks has focused on technical aspects and on the direct influence of human behaviour (Dodo, 2014). According to Muiruri and Mulinge (2014), safety, which is key to achieving success in a construction projects, is a state of being free from harm. In other words, safety is a state of being secured from accidents, hazard, injury or death due to measures put in place to prevent such from happening. Safety in the workplace can only be assured through the maintenance of the right safety culture.

The term "safety culture" first made its appearance in the 1987 Organisation for Economic Cooperation and Development (OECD) nuclear agency report on the 1986 Chernobyl disaster (Glendon & Stanton, 2000). Relatively connected with the phrase safety culture is safety climate. Safety culture is concerned with the determinants of the ability to manage safety in a top-down organizational approach whereas, safety climate is concerned with the workers' perception of the role safety plays in the workplace bottom-up perceptual approach. The top-down approach includes observable measures such as management commitment, participation and accountability, procedures and policies, communication among others. On the other hand, the bottom-up approach includes a different set of observable measures such as workers' constructive involvement, proactive reporting, individual attitude, group behavior, working relationships with supervisors and co-workers among others.

According to Akinwale and Olusanya (2016), the major weaknesses of construction firms in Nigeria are in the areas of staff training, awareness, education, objective measurement, feedback and the use of quality tools and techniques. Also are the issues of contractors and clients engaging the services of quacks, use of inferior building materials all in the bid to cut costs which usually result in accidents and deaths during and after the construction process. One of the major concerns of the construction industry in Nigeria, especially in fast growing cities like Abuja is the increasing cases of collapsed and defective buildings in recent times. Based on these facts, there is therefore a need to examine the techniques for improving quality management and safety culture on the construction industry in Abuja.

**Aim and Objectives of the Study**

The main purpose of the study is to examine the techniques for improving quality management and safety culture on construction industry in Abuja. Specifically, this study identified:

(i) The causes of poor management and safety culture on building construction sites in Abuja
(ii) Strategies for improving quality management and safety culture on construction sites in Abuja.

**Research Questions**

The following research questions guided the study:

(i) What are the causes of poor management and safety culture on building construction sites in Abuja?
(ii) What are the strategies for improving quality management and safety culture on construction sites in Abuja?

## Methodology

A descriptive survey design was adopted for the study. A descriptive survey design according to Sani (2015), uses sample of an investigation to document, describe and explain what is in existent or non-existent on the present status of phenomena being investigated. In a descriptive survey study, views and facts are collected through questionnaire, analyzed and used for answering research questions. The design is considered appropriate as the present study sought answers on the techniques for improving quality management and safety culture on construction sites in Abuja. The study was carried out in Abuja, the capital city of Nigeria. Abuja was chosen as the area for the study because of the presence of several reputable construction companies that can provide the necessary data for effectively carrying out this research work. The target population for the study was 40, comprising 15 building professionals and 25 site workers all within Abuja.

Data was collected using a 30 items questionnaire developed by the researcher and known as Questionnaire on Techniques for Quality Management and Safety Culture on Construction Industries (QTQMSCCI). The QTQMSCCI is made up of two parts. Part one contains the introduction and the respondent's personal data while, part two contains the questionnaire and is divided into two sections: A and B. Section A contains research question one which focuses on the causes of poor management and safety culture on building construction sites in Abuja and contains 20 items. Section B contains research question two which focuses on the strategies for improving quality and safety implementation on construction sites and contains 10 items. Sections A and B were structured using four-point rating scales of Strongly Agree (SA), Agree (A), Disagree (D), and Strongly Disagree (SD). These ratings weighted 4, 3, 2 and 1, beginning from the highest to the lowest respectively.

The instrument was content validated by two experts in the Department of Building and one from the Department of Industrial and Technology Education both of Federal University of Technology Minna and their comments and suggestions were considered in preparing the final draft of the instrument. The instrument was trial tested in Lafia, Nasarawa State, on 15 respondents comprising 9 building professionals and 6 building technicians The Cronbach alpha coefficient was used to determine the internal consistency of the instrument and 0.80 was obtained as the overall reliability coefficient of the instrument. The instrument was later administered to the respondents by the researcher and a 100% return rate was recorded from both the building professionals and building technicians.

Mean and standard deviations were used to answer the research questions. Mean scores above 2.50 and above were considered Agreed; while mean scores 0f 2.49 and below were considered Disagreed by the respondents, in accordance with the research questions.

## Results

### Research Question One

What are the causes of poor management and safety culture on building construction sites in Abuja?

**Table 1: Mean Ratings of Building Professionals ($X_1$) and Site Workers ($X_2$) on the Causes of Poor Management and Safety Culture on Building Construction Sites in Abuja**

| S/N | Items | X1 | X2 | XT | REMARKS |
|---|---|---|---|---|---|
| 1. | Lack of training | 3.47 | 3.52 | 3.49 | Agreed |
| 2. | Reckless operations | 3.47 | 3.60 | 3.54 | Agreed |
| 3. | Lack of skilled labour | 3.53 | 3.52 | 3.53 | Agreed |
| 4. | Substandard equipment | 3.73 | 3.40 | 3.59 | Agreed |
| 5. | Poorly educated workers | 3.40 | 3.64 | 3.52 | Agreed |
| 6. | Lack of personal protective equipment | 3.73 | 3.40 | 3.57 | Agreed |
| 7. | Lack of technical guidance | 3.53 | 3.48 | 3.51 | Agreed |
| 8. | Lack of experienced project managers | 3.47 | 3.40 | 3.44 | Agreed |
| 9. | Excessive overtime work | 3.27 | 3.52 | 3.39 | Agreed |
| 10. | Insufficient promotion of safety awareness | 3.53 | 3.48 | 3.51 | Agreed |
| 11. | Ineffectiveness of current safety policies | 3.53 | 3.56 | 3.55 | Agreed |
| 12. | Tight schedule | 3.33 | 3.48 | 3.41 | Agreed |
| 13. | Workers' physical fatigue | 3.47 | 3.56 | 3.52 | Agreed |
| 14. | Financial pressure | 3.07 | 3.48 | 3.28 | Agreed |
| 15. | Lack of management commitment to safety Programs | 3.60 | 3.60 | 3.60 | Agreed |
| 16. | Lack of inspection procedures on site | 3.53 | 3.44 | 3.49 | Agreed |
| 17. | Lack of safe construction site environment | 3.47 | 3.44 | 3.46 | Agreed |
| 18. | Lack of safety supervisor on site | 3.60 | 3.52 | 3.56 | Agreed |
| 19. | Lack of worker compensation insurance | 3.80 | 3.44 | 3.62 | Agreed |
| 20. | Poor safety awareness among top management | 3.53 | 3.52 | 3.53 | Agreed |

Xt= Grand mean

The data presented in table 1 reveals that the entire 20 items had their mean scores ranging from 3.28 – 3.62, which is above the cut-off point of 2.50. This signifies that the respondents agreed that all the items were causes of poor management and safety culture on building construction sites in Abuja.

**Research Question Two**

What are the strategies for improving quality and safety implementation on building construction sites in Abuja?

**Table 4.2: Mean Ratings of Building Professionals ($X_1$) and Site Workers ($X_2$) on the Benefits of Quality and Safety Implementation on Building Construction Sites in Abuja**

| S/N | Items | $X_1$ | $X_2$ | $X_t$ | REMARKS |
|---|---|---|---|---|---|
| 21. | Preliminary evaluation done by qualified persons | 3.60 | 3.32 | 3.46 | Agreed |
| 22. | Emergency response plan maintained and kept current | 3.33 | 3.52 | 3.43 | Agreed |
| 23. | Signaling devices in place where there are 10 and above workers | 3.44 | 3.44 | 3.42 | Agreed |
| 24. | Appropriate site control procedures in place | 3.27 | 3.52 | 3.39 | Agreed |
| 25. | Safety and health training programme | 3.73 | 3.40 | 3.57 | Agreed |

| | | | | | |
|---|---|---|---|---|---|
| 26. | Personal protective equipment issues addressed | 3.27 | 3.56 | 3.52 | Agreed |
| 27. | Safety and health hazard analysis conducted | 3.47 | 3.60 | 3.54 | Agreed |
| 28. | Appropriate decontamination procedures implementation | 3.27 | 3.48 | 3.38 | Agreed |
| 29. | Discard the use of damaged tools | 3.47 | 3.44 | 3.46 | Agreed |
| 30. | Catchy slogans will make safety a workplace culture | 3.47 | 3.52 | 3.49 | Agreed |

Xt= Grand mean

The data presented in table 2 reveals that all ten items had their mean score ranging from 3.38 – 3.57, which is above the cut-off point of 2.50. This signifies that the respondents agreed that all the items were the strategies for improving quality and safety implementation on building construction sites in Abuja.

**Major Findings**

Research Question 1 recorded the following major findings as the causes of poor management and safety culture on site.

(i) Lack of worker compensation insurance
(ii) Lack of management commitment to safety programme
(iii) Substandard equipment
(iv) Lack of personal protective equipment
(v) Lack of safety supervisor on site
(vi) Ineffectiveness of current safety policies

Research Question 2 recorded the following major findings as the strategies for improving quality and safety implementation on building construction sites.

(i) Safety and health training programme
(ii) Safety and health hazard analysis conducted
(iii) Personal protective equipment issues addressed
(iv) Catchy slogans will make safety a workplace culture

**Discussion**

The results from Table 1 revealed that the respondents agreed that all items were causes of poor management and safety culture on building construction sites in Abuja. As was presented in Table 1, items 19, 15, 4, 6, 18 and 11 recorded higher mean scores of 3.62, 3.59, 3.57, 3.56, 3.55 and 3.53 respectively. Most of these points to the construction site management lack of commitment to the safety of workers. Some of which includes lack of PPE and use of substandard equipment which can pose more health and safety of workers. Faremi (2014) affirmed the importance of the use of personal protective equipment (PPE) for protecting employees from accidents and hazardous substances on construction sites. Wearing personal protective equipment will mitigate and prevent work-related injuries while working on construction sites. Windapo and Rotimi (2012) reported that failure to comply with occupational health and safety regulations is one of the reasons the construction industry experiences low productivity because a healthy worker will be more productive. Furthermore, workers compensation insurance is not attended to, as they are burdened with overtime work.

Results emanating from Table 2 reveals the strategy for improving quality management and safety culture on building construction sites recorded items 25, 27, 26 and 30 with higher mean score of 3.57, 3.54, 3.52 and 3.49 respectively. Inadequacy of qualified safety

supervisors on site resulted in ineffective training and awareness programme for workers. It is therefore imperative that companies strive to equip their workers and managers with knowledge and skills necessary for them to deliver projects with the aim of ensuring zero accidents on construction sites. The training should foster awareness and understanding of work place hazards and how to identify, report and control them (Okoye, Ezeokonkwo, & Ezeokoli, 2016). The safety preliminary evaluation, inspection, site control procedures and analysis are not appropriately implemented. On the overall presentation the respondents agreed that all the 10 items [21-30] are strategies for improving quality management and safety culture on site.

## Conclusion

Conclusively, therefore, there is need for constant improvement of safety practices of the construction companies in Abuja because of their vital contributions to economic development. More proactive measures must be put in place by the management of this construction companies right from the planning stage to avert possible risk associated with their projects.

Safety in the construction industry is a prerequisite for a successful project delivery, therefore the management having identified some of the challenges and possible strategies to improve safety practices on site management should ensure strict implementation of such practices which is geared toward zero accidents on site.

Safety culture and climate in the construction site will on the long run impact positively on safety outcome and ensure maximum profitability and benefit to all stakeholders. Therefore, adopting sustainable strategies that will eliminate possibility of accidents and the builders or contractors stating the degree of confidence at which the work could be executed will go a long way in improving the safety culture on construction sites in Abuja.

## Recommendations

It is therefore recommended based on these findings that:

(i) Management should be committed to safety of workers on site by providing adequate and quality Personal Protective Equipment [PPE] ensure proper usage.
(ii) Engage only qualified safety personnel to promote safety awareness, safety auditing / analysis and policy implementation on site.
(iii) Training and retraining programmes for both skilled and unskilled workers by organizing workshop, sponsored conference attendance and short term programmes.
(iv) Workers compensation insurance should be adequately implemented and reward workers for excellent safety practice on site.

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