
Assessment of quality management practices of ministry of housing registered building construction companies in Nigeria a case study of Anambra State

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ABSTRACT

Quality issues have been of great concern throughout the recorded history of man and its management has a direct impact on the level of client satisfaction and overall organizational performance in the dynamic and competitive global market. The study adopted survey design for its research design effected through literature review and well-structured questionnaire. The study assesses quality management practice of building construction companies registered with Anambra state Ministry of Housing, for delivery of public building projects in Nigeria. Data for the study were obtained through structured questionnaires administered to 150 staff and management of 58 building construction firms registered with Anambra state Ministry of Housing out of which 120 questionnaires were returned and analyzed using tables, SPSS version 22 and mean score index. The result revealed that the quality management practice of Building construction companies in the study area do not conform to the international standard but they are more interested in getting work done just to receive payment. Also, lack/inadequate employees' education and training; lack of top management commitment/support emerged the most challenging to QM practice. The study concluded that most firms do not have established system for managing quality. The study therefore recommends that Building construction companies in Anambra state should establish a clear and well-defined QM system duly communicated from management level to site operatives such as ISO 9001 QMS, they should also train their staff regularly. Government should establish Quality control units.

KEYWORDS

quality management practice; building construction companies; Anambra state public building projects

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INTRODUCTION

The quality of building facilities produced by construction companies has an impact on the level of client satisfaction and performance of the organization in the dynamic and competitive market. Hence, the management of such organization should be in line with international standard in order to enhance their competitive advantage.

In spite of the role and contributions of the construction industry to man and the nation at large, the industry still lags behind in the delivery of quality services to meet the ever-changing clients' requirements. No wonder Page and Gordon (2017) asserted that Quality is an elusive concept that is aspired to in the building sector yet difficult to achieve. Perhaps, the collapse of an uncompleted 3-storey building and a 2-storey building at Miracle Junction axis, Ifite-Awka in 2019 and also the collapse of 4 storey buildings each at No 7 Ngene Street, Okpuno, and Ifite-Amansea Road, near Unizik Rear Gate both in Awka South on 15th July and 16th September, 2019 respectively could be attributed to absence or ineffective quality management practice (Osegbo, Okolie, Okeke, Ezeokoli and Akaogu, 2021).

According to Salaheldin (2008); Wanderi, Mberia, and Oduor (2015) the current market is stiffly competitive with ever changing customer requirements, an organization must come up with unique competitive strategies and produce goods and services that continuously meet and exceed these demand and expectations. Thus, the need for construction industries of developing nations to emulates the manufacturing industries in adopting quality management concept just like their counterpart in developed economies.

In order to mitigate the adverse effects of globalisation and compete favourably with firms from developed nations, Khan (2004) emphasized that developing countries should adapt certain policies including developing the local industry, maintaining good governance, keeping performance monitoring systems, training labour to cope with the challenges of open economy and acquiring new technological skills.

According to Tan and Abdul-Rahman (2005) Quality management concept from the perspective of a building construction company is defined as the act of maintaining the quality of construction works at the required standard so as to obtain customers' satisfaction that would bring long term competitiveness and business survival for the companies. It includes all activities that managers perform in an effort to implement their quality policy, objectives and responsibilities. The implementation of a quality management system is a strategic decision for a company capable of improving the results of its activities and providing a solid basis for initiatives focused on sustainable development (Popova, 2017).

According to Freddy, Agus, Joko, Shofwatun, Dewiana and Masduki (2020) one form of implementation of a world-famous quality management system is ISO 9001 ISO 9001:2015 is a standard that specifies' quality management requirements for organizations that seek to consistently provide projects that meet clients' and legal requirements. Thus, the implementation of Quality Management practice compatible with ISO 9001 would enhance client's satisfaction and competitive advantage of building construction companies in Anambra state. In conclusion, the studies of Ashokkumar (2014) and Al-Ani and Al-Adhmani (2011) opined that construction firms need to adopt quality management in order to solve quality problems and meet the demands of the clients.

LITERATURE REVIEW

(1)The Nigerian Construction Industry

The construction industry is one of the major drivers of the economic growth of developing countries (Abubakar, Abdullahi and Bala, 2018). The diverse nature of the industry enables it to mobilise and effectively utilize human and material resources: draw the expertise of the various construction stakeholders and in addition a major consumer of the products of the manufacturing sector.

The industry is devoid of challenges, Aibinu and Jagboro (2002) opined that the building industry is faced with problems such as construction delays, time and cost overruns, abandonment of projects, at various stages of completion, lack of skilled local labour, power shortage, unavailability of materials, corruption, unethical practices and lack of capacity to deliver.

According to Oladinrin, Ogunsemi and Aje (2012) the construction industry plays an important role in the economy and the activities of the industry are also vital to the achievement of national socio-economic development goals of providing shelter, infrastructure and employment. In a more recent study Abubakar et al. (2018) observed that the construction industry in Nigeria contributes an average of over 3% to the annual gross domestic product and an average of about one third of the total fixed capital investment.

(2)Overview of ISO 9001:2015 Quality Management System (QMS)

ISO 9001 Quality Management Systems (QMS) according to Alwerfalli, Karatas and Alshammari (2016) is the most widely used QMS standard in the world, with over 1.1million certificates issued to organizations in 178 countries. (ISO), defined ISO 9000 series as "the standard that provides a set of standardised requirements for a quality management system, regardless of what the user organization does, its size, or whether it is in the private, or public sector" ("ISO 9000 Essentials") (Bert-Okonkwo, 2021).

The study of Ahmed (2017) states that ISO first published ISO 9001 standard in 1987 and later published an updated version in 1994. In an effort to address the changing needs of its users, ISO again updated its standard in 2000 and 2008 and again in 2015. The chance of meeting client's needs is higher when such a standard guides quality management processes and performance of organizations.

This standard is a means to achieve quality goals that are expected to be able to answer the challenges of globalization where the ultimate goal is to achieve organizational effectiveness and efficiency (Ong, Purwanto, Supono, Hasna, Novitasari, Asbari, 2020).

The study of Scrimshire (2015) opined that determining the scope of any organisation's QMS involves defining the key activities performed and the types of product and services offered to customers. ISO 9001:2015 aims according to Lukichev and Romanovich (2016) is to create a management system; therefore, the QMS may improve competitiveness in the global market.

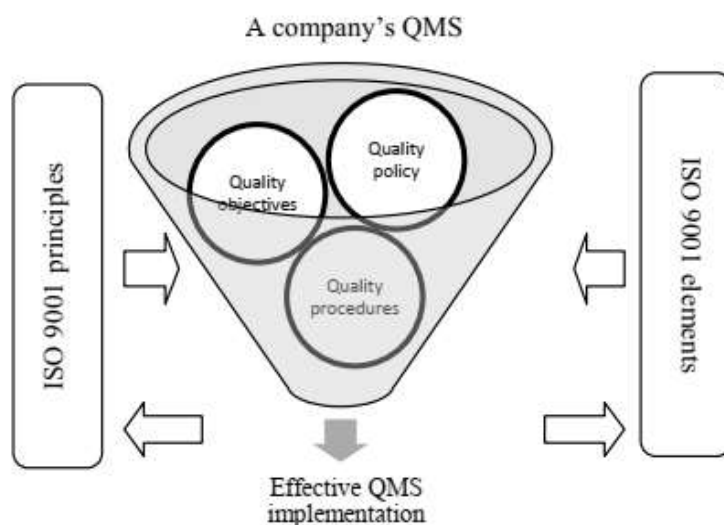


FIGURE 1: An Effective ISO 9001 Quality Management System

Source: (Willar, 2012).

Figure 1 shows an effective Quality Management system implemented in a company's processes. According to Ong, et al. (2020) implementation of Quality Management Systems (QMS) seeks to improve the quality and customer satisfaction both internal and external of an organization. One form of implementation of a world-famous quality management system is ISO 9001. ISO 9001 standards have been implemented in various parts of the world.

(3) Overview of Quality Management concept

The pursuit of quality is an age old endeavour that can be traced back to the origin of human civilization (Maguad, 2006; Wen, Sun and Yan, 2020). According to Abdul, (2017) quality issues have been of great concern throughout the recorded history of humans. Quality has changed dramatically and now represents an ideology, a combination of methodologies and procedures, as well as an ongoing commitment to value performance.

Quality management has had a long and fascinating history (Wen et al., 2020). Modern-day Quality Management came to limelight shortly after the end of World War II; Ashford (1989) observed that after the Second World War the economy of Japan was in ruins. To attain their military objectives, all available resources of capital and of technical manpower had been directed to armaments manufacture, while their civilian economy gained an unenviable reputation for producing poor quality copies of products designed and developed elsewhere. Unless they were able to raise the quality of their products to a level which could compete, and win, in the dynamic and global marketplace, they stood no chance of becoming a modern industrialized nation. The spring up of company-wide quality control led to transformation of management ideologies, desiring rigorous personnel management development to attain the expectation.

Consequently, the need to learn how to revitalize their industries, hence, a group were sent abroad to study the management practices of other countries, as well as, the invitation of some foreign experts to provide advice.

The foreign experts brought a new message, which can be summarized as follows according to Abdul (2017): Top management commitment, employee's responsibility, established quality system and education and training of employees for quality enhancement. These are the basic principles of management concepts which have since become identified under the generic term of quality management.

According to Quality guru Juran (1986) Quality Management is defined as the process of identifying and administering the activities needed to achieve the quality objectives of an organization. Osho (2019); Ojoh (2010) describe QM as top management process responsible for the policy, objectives, responsibilities and implementation of quality of the construction products achieved through planning, assurance, control and improvement.

Quality management practices have a direct impact on the level of client satisfaction, quality enhancement, elimination of rework, and the enabling synergy between different project parameters (Alwi, Hampson and Mohamed, 1999; Smallwood and Rossouw, 2008). According to Calingo (1996) managing the quality dimension of an organization is not generically different from any other aspect of management. It involves the formulation of strategies, setting goals and objectives, developing action plans, implementing plans, and using control systems for monitoring feedback and taking corrective action. If quality is viewed only as a control system, it will never be substantially improved. It's not just a control system; but a management function. Quality management in organization should be capable of being third party certified to an international standard for formal recognition of its quality system. This would underscore the organization's commitment to achieving total customer satisfaction and that it is prepared to open its system to external scrutiny, by means of third-party audit (Mbamali, 2019).

I. Quality management process

A Quality management process is a set of procedures that are followed to ensure that the deliverables produced by a team are specification compliance or "fit for purpose". CIOB (2019) states QM includes planning, assurance, control, and improvement of outputs. Each of these processes is briefly described in the following sub-headings.

a. Quality Planning (QP)

Quality Planning sets the standards to be achieved as well as the actions necessary to meet them. According to the American Society for Quality (ASQ) a quality plan is defined as: "A document or set of documents that describe the standards, quality practices, resources and processes pertinent to a specific product, service or project". Abdul (2017) ascribed Quality planning to be identifying internal and external customers, determining customer needs, developing a product or service that responds to those needs, establishing goals that meet the needs of customers and suppliers at a minimum cost, and proving that the process is capable of meeting quality goals under operating conditions.

b. Quality Assurance (QA)

Agbenyega (2014); Harris and McCaffer (2001) described quality assurance as a set of activities, whose purpose is to demonstrate that an entity meets all quality requirements. It is a shift from the old inspection and quality control systems where a lasting and continuous improvement in quality is achieved by directing organizational efforts towards planning and preventing problems from occurring at the source (that is a shift from detection towards the prevention of non-conformance). QA is broadly the prevention of quality problems through planned and systematic activities. 'Fitness for purpose' and 'right first time' are the basic principles of QA to ensure that specifications are consistently met (Abdullahi, Bustani, Hassan, and Rotimi, 2018; Harris and McCaffer, 2002).

c. Quality Control (QC)

Quality control (QC) is described as an ongoing process of monitoring and appraising work, and taking corrective action so that quality outcomes that are planned for could be achieved (Abdullahi et al., 2018; Nicholas and Steyn, 2008). QC is thus, primarily concerned with defect detection through QC techniques related to inspection and statistical quality control (statistical sampling).

According to Abdullahi et al. (2018) inspection takes two forms in construction works: that which is quantifiable for example lines, levels, verticality and dimensions; and that which is open to inspectors' interpretation such as fitness, tolerance, cleanliness and visual checks. Quality checks for construction performance are undertaken by work supervisors to ensure they comply with specifications.

On the other hand, statistical sampling involves choosing a part of a population of interest and subjecting them to checks, tests or inspections (PMI, 1996). Testing the cube strength of concrete is a typical example of statistical sampling in construction. Appropriate sampling can often reduce the cost of quality control (PMI, 1996).

d. Quality Improvement (QI)

ISO 9000 stated that QI is "Part of quality management focused on increasing the ability to fulfil quality requirements". Quality improvement can be said to be change for better performance of the product, process and system in an organization, which is either the elimination of error or for the growth and prosperity of the organization.

According to Bert-Okonkwor (2021) Continual systematic approaches to quality improvements such as adherence to Total Quality Management (TQM), ISO 9000, Six Sigma or any external industry standards, can be used.

(4)Challenges of Quality Management Practices

There is evidence of failed results in many organizations' effort to implement QM due mainly to barriers in implementation. The study of Ardit and Gunaydin (1997) asserted that attainment of acceptable levels of quality in the construction industry has long been a problem. Great expenditures of time, money and resources, both human and materials are wasted each year because of inefficient or non-existent quality management procedures. Thus, significant time and cost is expended in correcting problems during and after construction of the building. In a study conducted by Okuntade (2015) it was observed that the major causes for the decline of construction productivity directly or indirectly involves poor management practice.

According to Abdullahi et al. (2018) obstacles to QM in Building Construction companies in Abuja, Nigeria are lack of awareness on the benefits of quality management and High cost of implementing quality management etc.

According to the study conducted by Oludare and Oluseye (2018) opined that the most difficult task in implementing quality in building construction companies in Lagos, Nigeria is lack of top management commitment, lack of expertise and resources required for quality management and lack of employee commitment to quality management etc.

The study of Al-Musleh (2010) identified poor quality and lack of standards in the face of high fragmentation in the industry as barriers to quality management implementation. The inability to pass into law the National Building Code which specifies minimum standards for building construction processes with a view to ensuring quality, safety and proficiency in the building construction industry in Nigeria for years now has aggravated the issue of poor quality in the project delivery process.

In the study of Shittu et al., (2013) it was observed that a very serious safety problem facing Nigeria is the problem of defect in building as a result of poor-quality materials and workmanship which leads to fatal site accidents due to building collapse. The study carried out by Osho (2019) identified Shortage of skilled workers, poor workmanship, and the use of sub-standard materials as the most challenging of QM practices. According to the study of Osegbo et al. (2021) workmanship is the skill and competence applied in executing a specified task. It is centered on quality; good or bad, if workers are careless or fail to follow proper protocol in achieving a job the project usually ends up with poor quality. In Anambra state, there is dearth of quality workmanship due to most youth are not patient enough to go through the learning process of acquiring skills in the building construction industry. The indigenous building construction companies in Nigeria are not living up to expectation as well in terms of management and supervision of materials and labour utilization, hence the entrance of poor quality and ineffective quality management practices experienced in the industry. The increasing cost of building materials in recent time is worrisome and has resulted to proliferation of poor-quality materials in the building materials markets. In the available building materials markets in Anambra state all sort of substandard materials exists such as re-bagged cement, nails, reduced reinforcement steel bars and wood size, adulterated anti-termites etc resulting to building defects/failure in most cases.

The most worrisome issue bedevilling the Nigerian building construction industry in recent time is the incessant rate of building collapse ravaging lives and properties across the nation most especially in Anambra state after Lagos. 2019 National Bureau of statistics alone shows that Nigeria recorded 43 collapsed cases resulting to 66 deaths and 174 injured out of which Anambra state had the second highest number of building collapse cases.

Plates of Poor-Quality Management Practices of Building Construction company's delivery public building projects in the study area.



Plate I: Collapsed building site at Anambra state due to poor supervision.



Plate II: Remedial works on ALIMS Building due to poor workmanship.



Plate III: Inserting of steel reinforcement bars into holes bored on column for beam.



Plate IV: Casting of concrete into water filled formwork due to poor supervision.



Plate V: Extension of 2Nos without bars from foundation for column extension due to lack of quality assurance.



Plate VI: No provision of concrete groove at Joint.



Plate VII: Rusted steel reinforcement bars in slab.



Plate VIII: Excavating timbering of trench wall.



Plate IX: Cracked block wall with due to poor workmanship.



Plate X: Mixing of concrete on bare floor due to poor supervision.



Plate XI: Fetching of dirty water for concrete mix.



Plate XII: Mixing of concrete with dirty water due to lack of quality.

METHODOLOGY

The study was carried out in Anambra State, Nigeria, using a survey design method of research. Anambra State is a part of the South-eastern states and one of the 36 states in Nigeria. (See Fig. 2). There are twenty-one (21) local government areas in Anambra State (See Fig. 3). Anambra is the eighth-most populated state in the Federal Republic of Nigeria and the second-most densely populated state in Nigeria after Lagos State (Ezekoli, Onyia and Bert-Okonkwo, 2019).

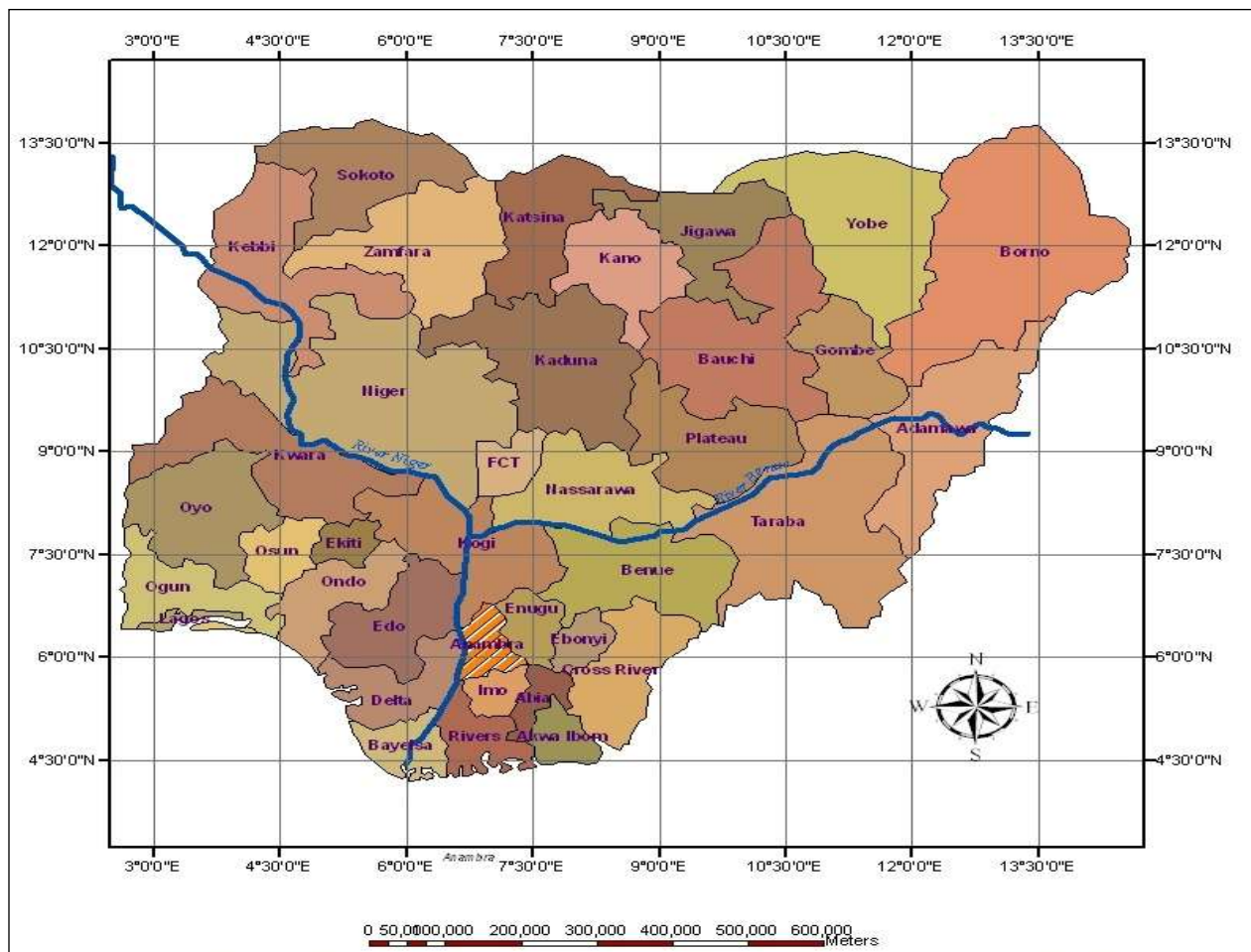


FIGURE 2: Map of Nigeria showing Anambra State with a black dot.

Source: Department of Surveying and Geo-Informatics, Nnamdi Azikiwe University, Awka, Anambra state (2019).

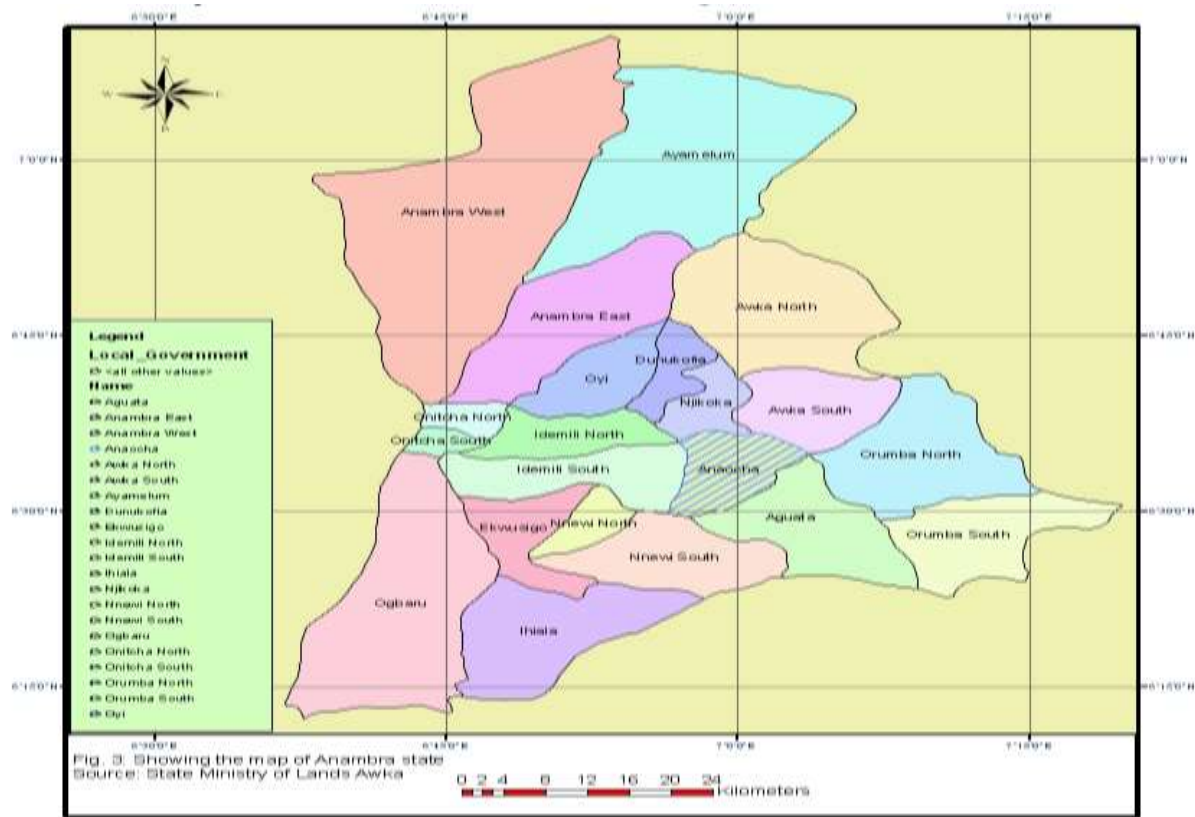


FIGURE 3: Map of Anambra State showing Area of Study

Source: Department of Surveying and Geo-Informatics, Nnamdi Azikiwe University, Awka, Anambra state (2019).

TABLE 1: Population of Building construction companies registered with Anambra state Ministry of Housing, Awka and domiciled in the state

S/No	Type of Organization	Population Size
1	Building construction companies in Anambra state registered with the Ministry of Housing for Public building projects delivery	58
Total		58

Source: Ministry of Housing (2020)

Whereby the population size is manageable it was adopted as the sample size for the study.

TABLE 2: Population of the respondents from the records of Anambra State Ministry of Housing, Awka

S/No	Building Construction staff	Population Size
1	Managing Directors	34
2	Project Managers	38
3	Site Engineers	27
4	Site Supervisors	14
5	Project Architects	17
6	Construction Managers	11
7	Quality Mangers	9
Total		150

Source: Ministry of Housing (2020)

Whereby the population size is manageable it was adopted as the sample size for the study.

The study collected data for the research through well-structured questionnaire administered to the respondents. While, tables, SPSS version 22 and mean score index were used for data analysis and presentation. Mean score (MS) was computed using:

Where: 5...1 are the weightings on the Likert Scale n= number of responses on a particular scale. N= Total number of responses.

RESULTS AND DISCUSSION

A total number of one hundred fifty (150) questionnaires were distributed to the staff of the fifty-eight (58) Ministry of Housing Registered Building Construction Companies in Anambra state; out of which one hundred and twenty (120) valid questionnaires were received for analysis thus representing 80% of the population.

TABLE 3: Nature of Quality Management Practice of Building Construction Companies in Anambra State.

Nature	Mean	St.D	Ranking
Obtaining feedback on performed activities	4.43	0.7072	1
Effective communication across organizational structure	4.25	0.8306	2
Clear assignment of roles and responsibilities delegated	4.20	0.8120	3
Teamwork among all project participants	4.15	0.7596	4
Records and documentations of projects activities	4.08	0.8660	5
Practice Effective materials handling and proper storage system	3.98	1.0652	6
Check design for conformance to standards	3.95	0.8352	7
Obtain statutory approval of design	3.93	1.1011	8
Quality department/site supervisor supervises and monitors operations.	3.83	1.2067	9
Training and development of employees.	3.80	0.9800	10
Performance review	3.80	1.0296	10
Utilize the right Plant/Equipment and materials with attention to specification.	3.80	0.9798	10
Top Management/Leadership establishes quality policies and objectives.	3.65	1.1300	13
Sub-contractors and supplier's relationship	3.55	1.1927	14
Motivation of workers.	3.53	0.9844	15
Engaging quality workmanship	3.45	1.2337	16
Conducting of internal Quality audit	3.45	1.0943	16
Carrying out regular site meeting.	3.45	1.1001	16
Conducting of soil investigation	3.25	1.3370	19
Crushing of concrete regularly to ascertain compressive strength	3.18	1.3087	20

Source: Researcher's field survey, 2021

Table 3 shows the result of field survey performed to ascertain how often the identified quality management practice are performed in the building construction companies in Anambra State.

The result shows that Obtaining feedback on performed activities ranked 1st with mean score 4.43 while effective communication across organizational structure and Clear assignment of roles and responsibilities delegated emerged 2nd and 3rd; with 4.25 and 4.20 mean respectively. This implies construction companies are more interested in the outcome of work performed, hence there ensure effective communication and clarity of responsibilities delegates for payment.

On the other hand, conducting of soil investigation and Crushing of concrete regularly to ascertain compressive strength ranked 19th and 20th; with 3.25 and 3.18 mean respectively indicating absence of an established effective quality management system.

TABLE 4: Challenges of Quality Management Practices of Building Construction Companies in Anambra State.

Challenges	Mean	Ranking
Lack/inadequate employees' education and training	4.05	1
Lack of top management commitment and support	3.93	2
Lack of awareness on benefits of Quality Management	3.8	3
Incessant building collapse	3.8	3
Lack/inadequate Quality Management expertise	3.8	3
Inadequate planning/lack of attention to quality	3.78	6
Lack of effective communication	3.75	7
Inadequate site inspection procedures on part of government staff	3.75	7
Poor workmanship/shortage of skilled workers.	3.73	9
Lack of clear assignment of responsibility among project members	3.68	10
Lack of clear strategy for Quality Management	3.66	11
Improper materials handling (e.g. Mixing concrete manually on bare ground)	3.58	12
Delay in payment	3.55	13
Awarding tender on the bases of lowest prices	3.55	13
Inadequate motivation of workers for achieving desired level quality	3.53	15
Inadequate supervision and monitoring for quality implementation.	3.53	15
Lack of proper equipment available for use	3.48	17
High cost of implementing the company Quality management	3.45	18
Poor record and documentation	3.45	18
Lack of progress review	3.38	20
Political influence/Corruption and greed of government official	3.35	21
Lack of effective evaluation of quality information/ Lack of internal quality audit	3.35	21
Inability to identify opportunity and eliminate waste	3.35	21
Perception that too much paper work is required for Quality Management	3.33	24
Constructing on unascertained soil bearing capacity	3.23	25
Inadequacy of storage and security system	3.13	26
Use of substandard materials/Use of local materials with unascertained quality	3.13	26
Lack of feedback on quality implemented	3.10	28
Difficulty to change behavioural and attitude related to quality	3.08	29

Source: Researcher's field survey, 2021

The results in Table 4 shows the field survey of major challenges of quality management practice of building construction companies in Anambra State registered with Ministry of Housing for public building projects delivery. The result shows that Lack/inadequate employees' education and training was ranked 1st with 4.05 mean as the most severe factor militating against quality management; while lack of top management to commitment/support was ranked 2nd with 3.93 mean as factor militating against quality management. Lack of awareness on benefits of Quality Management, incessant building collapse and lack/inadequate quality management expertise jointly ranked 3rd with 3.8 mean. On the other hand, difficulty to change behavioural and attitude related to quality ranked 29th with 3.08 mean as the least challenge of quality management practice of building construction companies in Anambra State.

CONCLUSION

Quality management is not tied to a single activity but to series of activities which entails all the management functions aimed at achieving customer satisfaction. QM in an organization should be capable of being third party certified to an international standard for formal recognition of its quality system which is open to external scrutiny thereby underscoring the organization's commitment to meeting clients' specified needs.

In view of this the construction companies registered with Ministry of Housing in the study area for public building projects delivery are performing below the international best practices as evidence in the study (see plate I-XII).

They are more interested in issuing directive and obtaining feedback on work done for payment purpose without an established system for managing quality.

The study therefore recommends that Building construction companies in Anambra state should establish a clear and well-defined QM system that's in conformity to an international standard and duly communicated from management level to site operatives such as ISO 9001 QMS, they should also train their staff regularly. Government should establish Quality control units.

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COMPETING INTERESTS

Authors have declared that no competing interests exist.

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