AN APPRAISAL OF PREQUALIFICATION CRITERIA USED FOR CONTRACTORS SELECTION IN PUBLIC BUILDING PROJECTS IN NIGERIA

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DECEMBER, 2012

DECLARATION

I declare that the work in the thesis entitled "Appraisal of prequalification criteria used for contractors' selection in public building projects in Nigeria" has been performed by me in the department of Building under the supervision of Prof. M. M. Garba. The information gotten from literature has been duly acknowledged in the text and a list of references provided. No part of this project was previously presented for another degree or diploma at any university.

……	…….	…….
Victoria H. Jiya	**Signature**	**Date**

CERTIFICATION

This thesis entitled "AN APPRAISAL OF PREQUALIFICATION CRITERIA USED FOR CONTRACTORS SELECTION IN PUBLIC BUILDING PROJECTS IN NIGERIA", by Victoria Hassana Jiya, meets the regulation governing the award of the Masters degree of science (M.Sc Construction Management) of Ahmadu Bello University, Zaria and is approved for its contribution to knowledge and literary presentation.

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ABSTRACT

The research was carried out to appraise contractors' prequalification criteria used by public organizations for building projects, for the last six years (2006-2011). Field survey involving ten public organizations in Kaduna was conducted. Data were collected with the aid of structured questionnaires. 60 questionnaires were distributed to construction professionals/ staff of which 55 responses were returned and 50 used for analysis. Information gathered include the major contractors' prequalification criteria and the sub contractors' prequalification criteria used to asses contractors on building construction works. The relative importance index (RII) was used to compute the mean score of the contractors Prequalification criteria in relation to the overall responses on a criterion were calculated. The research discovered that technical capacity with over 58% of the professionals considered it important among the major prequalification criteria. Health and safety is not appreciated, only 4% of the professionals considered it important. 'Similar projects executed' among the sub contractors' prequalification criteria, with over 60% responses considered it very important and Experience Modification Rating with only 8% responses considered it very important. The study further collected data from 30 contractors' prequalification check lists of completed public building projects. This was to check the significant agreement between percentage score allocation to the criteria. Kendall's test of co-efficient of concordance, was used to compare ranking of common variables with score rate allocation obtained from sum scores. The result shows W value of 0.14 and test of significant of 16.15 agreement, which means, there is significant agreement in some percentage score allocation to criteria from the public organizations. Public organizations placed less emphasis on some contractors' prequalification criteria on the checklist. The study recommends that, professionals/ staff should aspire to understand, adopt and implement the requirements of contractors' prequalification criteria of building works. The public organizations should standardize respective building construction prequalification practices in putting into consideration all criteria on contractors' prequalification checklist with percentage score allocation to each criterion.

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LIST OF ABREVIATIONS

CPC: Contractors Prequalification Criteria

OSHA: Occupational Safety and Health Administration

EMR: Experience Modification Rating

NADB: North America Development Back

FGIC: Financial Guarantee Insurance Company

OHSR: Occupational Health, Safety and Rehabilitation

ICA : Indonesia Contractor Association

SSPS: Statistical Packages for Social Sciences

BPP: Bureau of Public Procurement

APCC: National Procurement Construction Council

CGF: Construction Guarantee Fund

FER Financial Enhancement Rating

ILO: International Labor Organization

CIB: Conference internationale des Bareaux

DP: Domestic Partner

CHAPTER ONE

INTRODUCTION

1.0 BACKGROUND OF THE STUDY

In this era of globalization and increasing competitive environment, the need for evaluating contractors' performance becomes more crucial. This is because the technological complexity of construction projects generates enormous risks, and selecting a capable contractor is one of the most important tasks faced by a construction client or his representative who wishes to achieve successful project outcome (Fong and Choi, 2000). The importance of contractor selection is mostly underestimated and neglected in construction (Turksi, 2008). The contractor selection is a risk management process for the fact that the duly selected should be competent to bear portions of the risks in the project.

As construction projects become more complex, so also is the contractor selection process as observed by Li *et al* (2005). This involves the elimination of incompetent contractors from the bidding process following a set of pre determined criteria. This practice and procedure of contractor selection in the construction industry is found in most countries, Nigeria inclusive. Several researchers have proposed some selection criteria in order to minimize contract failure and also meet the client's objective. Selection of competent contractor has been observed to be a key to the success of a project (Anagnostopoulos and Vavatsikos, 2006) . Holt *et, al*. (1996) described contractor selection as a system of selecting competent contractor and negotiating the contracts. It is a task which needs to be addressed at the early stage of any contract programme

(El-sawalhi *et, al.,* 2007). This process comes after advertisement.

The quality of a good contractor is in his ability to complete a project on time, within budgeted cost and to the desired quality. This is not always the case in Nigeria (Fong and Choi, 2000). Several cases as reported in Ogunsemi and Aje (2005) are characterized by cost and time overruns, leading to substandard work, disputes and abandonments. These emanate from several factors which include the wrong choice of contractor. In order to select the most appropriate contractor for a project, baselines criteria which include financial stability, technical expertise, experience, and performance measures must be observed including other general information about the contractor (Turkis, 2008, Russell and Skibniewski, 1998, Hatush and Skitmore, 1997a). Hatush and Skitmore (1997b) and Odusanmi (1998) view contractor selection criteria in two stages namely, the prequalification and the bid /evaluation stages. Prequalification was defined by Moore (1985) and Stephen (1984) as the screening of construction contractors by project owners or their representatives according to a predetermined set of criteria deemed necessary for successful project performance.

According to Procurement Act (2007), this selection depends on the stipulated criteria and weightings, upon which an entity or contract administrators in the various public procurement offices seeks to give consideration to. In understanding the desires of clients and establish the best set of criteria to use for assessing contractors or applicants in reaching decision as to which, contractor or service provider qualifies in the pre qualification process (Bulama, 2005). Olatunji (2007) pointed out that a successful applicant contractor during prequalification must not have less than 70% in the assessment. This is carried out to determine the contractor's competence or ability to

participate in the project bid. Contractor prequalification and tender evaluation are therefore, decision making processes that occur within the overall procurement process

Bid evaluation is the procedure used in strategic assessment of bids submitted by prospective contractors who have been successfully pre-qualified. The strategy used for bid evaluation should reflect the client's objectives (Hardy, 1978). These, according to Herbsman and Ellis (1992), amount to the 'major' criteria includes cost, time, and quality and measured by the bid amount, time of execution, and quality of previous work done respectively. This implies that the winning bid is fully responsive to the contract in addition to the bidders' qualification to undertake the contract (Hardy, 1978).

Ajayi (2010) observed that in Nigeria, the lowest bidder methodology of awarding contract is a frequently used method of selecting contractors and observed that, this method has been abused. Olatunji (2007) found that about 25% of respondent see the lowest bid selection which aims at saving cost as a wrong approach for the fact that the project is subjected to a risk of not getting optimum performance if the whole life cycle of the project is considered. This therefore calls for a modernization of the affected tendering method. Hatush and Skitmore (1997a) opined that lowest bidder methodology also tends to affect the project performance and the client bears the risk. This study focused on the five major categories of prequalification and its subdivisions.

1.1 STATEMENT OF THE RESEARCH PROBLEM

The evaluation and selection of contractor leading to the award of construction contracts is a vital part of the construction process (Oakland, 2006). The implementation of contractors' prequalification exercise has reduced the risk of project failure (McCabe *et, al,* 2005 and Russell, 1996) and increased the chance of project success (Abudayyeh *et al.* 2007 and Mangitung 2005). According to Olatunji (2005), the assessments criteria used in Nigeria are similar to global standards and have been applied to generate national models for selection of contractors for public works.

Olatunji *et al,* (2007) observed that in Nigeria, selection of contractors for construction projects is largely subjective. Reports have shown that some contractors' selection methods currently in existence have been criticized as being incomplete, bias and lack consideration in terms of the contractor's ability to achieve simultaneously, in time, cost, quality and safety standards (Fong and Choi, 2000). Ajayi (2010) stated that current selection methods are faced with inherent weaknesses which adversely affect the performance of the construction project.

In Olatuji (2007) the effect of project failure on the image of the Nigeria Construction Industry is seen to manifest in terms of high initial cost of projects, project inflation, poor quality of works, delay in project delivery and abandonment. These could be linked to poor methods and procedures of selection of contractors, however, these poor methods are not only subjective on public contracts awards, but are based on informal relationships between contractors, public officials and project teams. Thus, most of the models of assessments used for selection of contractors are based on value price and initial lowest bids, as well as other informal factors. This call for an intuitive study, to

establish the important criteria to be given at most consideration in assessing contractors and project performance in public sector in Nigeria.

1.2 JUSTIFICATION OF THE STUDY.

The significance of this study is to provide baseline information to the construction clients and consultants in the public organizations in Nigeria, on the importance of contractors prequalification selection criteria to be adopted, and to enable the construction industry in general to change the existing attitudes on selection practice, which will eventually translate to a better decision making and increase project performances.

1.3 AIM AND OBJECTIVES

1.3.1 Aim

This research aimed to assess the criteria used in contractors' prequalification for building projects in Nigeria, with a view to recommending the most appropriate for better project performance.

1.3.2 Objectives

The objectives of the study are:-

(i) To articulate contractors' prequalification selection criteria used in public building projects

(ii) To assess the contractors' prequalification criteria used for the construction industry

(iii) To compare the contractors' prequalification criteria and the percentage score allocation used in public organizations for building projects

(iv) To identify the set of most used criteria for better contractors' performances

1.3.3 Research Hypothesis

Alternation Hypothesis H_1: There is a significant agreement in the contractors' prequalification criteria with score rating allocation in the public organizations

Hull hypothesis H_O: There is no significant agreement in the contractors' prequalification criteria with score rating allocation in the public organizations.

1.4 METHODOLOGY

1.4.1 Data collection

A review of literature was carried out from text books, internet, magazines, professional and academic journals, published and national dailies. In line with the objectives set out in this works, primary data was collected through files and structured questionnaire, the questionnaires were administered to professionals and staff who have attended prequalification exercise to obtain the required data. The prequalification criteria and scores of contractors on the criteria used in assessing them were use for the necessary test.

1.4.2 Data analysis

Data collected from the files and questionnaire were interpreted and analysed with the aid of descriptive and infereritial statistical tools for analysis. The descriptive statistical method was used and this gave the opportunity of having data tabulated and plotted in graph forms for easy visualization.

1.5 SCOPE AND LIMITATION

1.5.1 Scope

This study was limited to building projects in selected public organizations and on the criteria used in assessing the contractors. The samples were taken from the multitude of projects which the selected public organizations have used in the last 6yrs (2006-2011). The prequalification criteria for selection used within this period were included.

The groups of respondents that were targeted for this research work are those who have been involved in the contractor selection practices of building project at one time or the other. They are mainly construction professionals and staff, who have played the key roles in prequalification process. All the projects that were used for this research are building project which were either bungalow or storey buildings. Both maintenance and new projects that fall within this category were considered. The criteria for selecting contractor, adopted for realizing these projects by these public sectors at the prequalification stage should be considered.

1.5.2 Limitation

Limitations encountered in this research include; hesitation in the release of required documents and filling in of distributed questionnaire by some organizations, this is probably because it is considered secret documents. Absences of key officers are another limitation to give relevant documents and information. Some staff lack adequate understanding of the required information by giving out contractors' tender analysis instead of contractors' prequalification analysis. Data from these people were eliminated.

CHAPTER TWO

LITERATURE REVIEW

2.0 INTRODUTION

Choosing a proper construction contractor increases the chances of successful completion of a construction project and fulfilling the client's goals, keeping the schedule of the cost, time and quality. Construction contractors' competences are very often evaluated during pre–qualification, which is not only contractor competence evaluation but also elimination of potential bidders. In such a case, it is necessary not only to judge whether the contractor fulfils the basic criteria, but also to what degree they are fulfilled. Not all criteria are equally important for the client. The basic issue is assigning the right weights to the criteria (Edyta, 2010). The next stage is the tendering, which indeed gives a client the choice in awarding contract to a qualified company.

The above condition made it that, it is especially important to properly evaluate the contractors' predispositions to fulfill the tasks entrusted to him. One of the methods of such evaluation is the use of pre-qualification criteria.

2.1 THE ROLE OF THE PREQUALIFICATION PROCESS

According to National Procurement Construction Council (APCC) (1998) the commonwealth, state and territory governments have agreed to use prequalification as one strategy to drive the development of a national construction industry committed to best practice, international competitiveness and the highest ethical behavior.

APCC (1998) further states that the prequalification process aims to identify capable contractors before the calling of tenders. This has two advantages;

(i) It expedites the tender review process, minimizing the cost of tendering to industry and governments.

(ii) It facilitates industry development. .

The criteria for prequalification should allow reliable and objective assessments to be made of a contractor's capability to complete a project in terms of time, cost and quality. Criteria should also be adopted to allow the identification of those contractors committed to industry reform and achievement of best practice performance.

The adoption of the prequalification process and nationally consistent pre-qualification benchmarks will enable the commonwealth, states and territory Governments to reward better performing contractors. Where ever possible, the commitment to best practice will be tested and measured using the criteria incorporated into the prequalification process.

Service providers will be expected to justify claims by references to past performance or evidence of the implementation of appropriate systems and standards. They may also expect to be monitored, reviewed or audited during the contract period, and subject to post contract analysis.

At the pre-qualification stage the main factors are the ability to timely complete the project representing the time dimension and organizational expertise representing the quality dimension. This is illustrated in fig 2.1

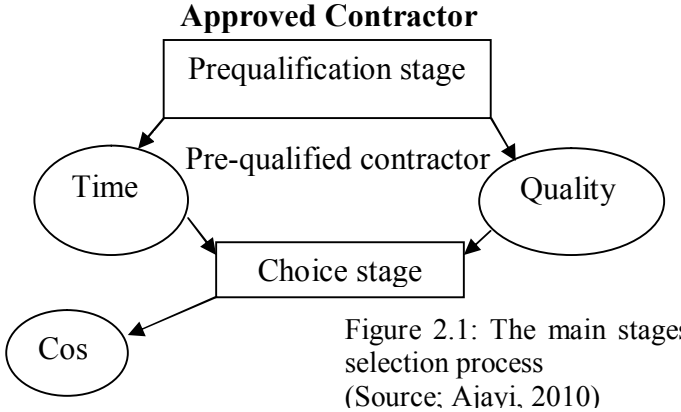


Figure 2.1: The main stages for the model on the contractor selection process
(Source; Ajayi, 2010)

2.2 CRITERIA FOR CONTRACTORS PRE-QUALIFICATION IN THE CONSTRUCTION INDUSTRY

The Main Criteria and Sub-Criteria for Contractors' Prequalification and Bid evaluations were established on the bases of literature among; Holt *et.al,* (1996), Kumanasaswany(1996), Hustush and Skitmore (1997a), Hustush and Skitmore (1997b) and Russel and Skibniewaski 1990.

2.2.1 Financial soundness

Financial soundness or financial standing of a contractor deals with financial issues, ensuring that resources are available to meet the demands, performance standards and costs (Jerome 2005). Financial capability of a contractor relates to bank status which gives an indication of the financial management abilities of the contractors and their relationship with banks in case of insolvency (Aje, 2008 in Ajayi 2010). Eady (2007) explained that it is a statement of the contractor's financial condition and resources, including the current assets and liabilities and a third-party's verification of any unsecured lines of credit extended to the contractor by banks or other financial institutions. This could be a certified audited financial statement by a certified public accountants review of the financial statements.

Financial capacity determines whether the contractor will stand or fail in the process of prequalification (Russell, 1992). However, the evaluation of financial soundness shows the financial historical data so as to give the financial status of the contractor (Mangitung and Emsley, 2002). According to Hatush and skitmore (1997a), the financial status of a contractor can be accessed through the balance sheet which shows the financial position of the firm and income statement, which measures the net result of firms, operations

over a specified interval such as annually. The sub criteria of financial capability include financial stability, credit rating, banking arrangement and bonding and financial status.

(a) Financial strength (stability)

This measures the value of equity and working capital for the past two years or less. The greater the values of both financial factors the greater the number of the project packages can be performed. This financial strength indicates the maximum number of project packages a qualified Contractor can deliver at the same time for it and qualified main areas of construction work (Mangitung, 2005).

(b) Banking arrangement and bonding

Banking arrangement and bonding may be for several reasons. According to Construction Guarantee (1984), Clients in the construction industry are becoming more and more risk averse. Many are looking to eliminate as much uncertainty as possible from every construction project. One way to achieve this is by requiring all contractors and subcontractors not to ask for this type of information on their forms may assume that the contractors will provide bonds. The contractors are required to furnish bonds and insurance on a project by project basis, thus, agencies that do this receive these instructions individually as each project is awarded. North America Development Back (2011) pointed out that names and address of the contractor's banker as well as the names and addresses of individuals familiar with financial standing are also necessary.

According to rating agency of Malaysia (RAM) (2010), contractors' participation in the bidding process often hindered by the requirement to furnish guarantees. Traditionally, contractors have had to approach banks for guarantees, which in turn would require them to produce collateral. In addition, the contractor is subject to hefty interest charges. The bond fund, on the other hand, provides guarantees based on the financial profile and

competency of the contractor, rather than collateral. By providing a guarantee, Construction Guarantee Fund (CGF) is obliged to settle any legitimate claim that may arise due to non-performance of the agreement.

The fund provides six types of guarantees: bid bonds, performance bonds, advance-payment bonds, maintenance bonds, retention bonds and combined bonds. Bid bonds are required by a contractor during the tender-application process; performance and advance-payment bonds are required during the execution of a project. Meanwhile, the other 3 types of bonds are required after the completion of a project to protect the employer during the maintenance phase of the project and to ensure that the contractor will rectify any shortcoming (NADB, 2011).

(c) The Credit Rating System

Woo (2006) defined credit rating as the Financial Enhancement Rating (FER) which deals with the current opinion on the overall capacity of the Financial Guarantee Insurance Company ("FGIC") to meet its financial obligations to policy/contract holders on a timely basis. The opinion is not specific to any particular policy/contract; as it does not take into account the expressed terms and conditions of any specific policy/contract. The credit rating system is to serve as a supplementary indicator of the financial standing of the larger construction firms in its Contractors Registry. The adopted credit rating system for insurance is one that has been developed by different Organizations, such as domestic partner (DP) information group, to assess the financial health of companies.

Woo (2006) further stated that Credit rating offers the firms an objective measure and a practical way to manage their own financial and credit standing, which will in turn give their clients some assurance that the firm is well managed." Companies will have an incentive to adopt better credit management procedures and risk management strategies in

order to maintain their good credit standing. If such rating begins to slip, immediate steps are taken to address the areas of concern.

The benefits of adopting the credit rating system include:

(i) Enabling firms to be more vigilant in their financial and credit management;

(ii) Assisting firms in managing and understanding financial and credit risks associated with the project scale;

(iii) Improving the credit and financial standing of the firms and the construction sector as a whole.

(v) Reducing the risks exposure of the construction firms

(vi) Improving the project performance for the clients.

(d) Financial status

The basis for evaluating the financial status of companies for prequalification is based on financial statements or balance sheets. Gransberg and Riemar (2009) stated that financial statement covers a broad range of possible information, used in over 200 countries and helping hundreds of businesses in Nigeria since 2001**(**Bistre, 2001 in Ajayi 2010**).** It requires a full account of the company's financial status performed by a certified public accountant and supported by audit statements and tax returns.

NADB (2011) opines that financial statements or balance sheets should be sought as a general guide to the financial health of the contractor for example, the financial results over the five years and the projection for the following two years should be positive Consistent losses or a risk of insolvency shown in the accounts may be cause for rejecting the applicant contractor.

2.2.2 Technical Capability

Technical issues, reviews organizational structure, discipline/trade skills, ability and experience in similar projects (Jerome, 2005). Technical capability is broadly defined as having recent previous experience and demonstrated capability relevant to a monetary threshold in one or more of the prescribed field of work types. To meet the requirements of this criterion the contractor must provide information on area of work that include past experience, expertise or specialization, staffing level, plant and equipment, etc (Act government, 1998).

(a) **Past Experience on Similar Work**

Holt et al (1996) explain that experience measures the national or local catchment, type and size of past project completed. Therefore the geographical area of operation needs to be determined during prequalification (Aje, 2008 in Ajayi, 2010). NADB (2011) states that experience could be either contractor or applicant's general or particular experience. The general capability should be related to the availability of current, relevant experience and the value of work undertaken experiences requirements should be stipulated as annual values of the general contraction work carried out over a stated period, e.g. five years. The basic ability of a contractor is evaluated on the basis of experience, shows the maximum amount of a construction project contract for the same main area of construction work that a contractor can perform in the future (Mangitung, 2005).

In the area of the particular experience, the applicant demonstrates that they have carried out work of a natural, size, value and complexity similar to that of the project to be executed. First, the applicant should have carried out similar work of at least a magnitude approximating that of the package of work for which prequalification is sought.

Depending on the nature of the work to be bided, the criterion should be related to the applicant having carried out one or more projects of a certain value referred to that of the proposed project over a specified period, usually the last five years (or less, in special circumstances). The individual value to such previous contracts should be about 80 percent of the estimated cost, including contingencies, of the contract to be undertaken.

Second, the applicant should have performed operations of a value and quality similar to those required for the project (NADB, 2011).

(b) Plant and Equipment.

Eady (2007) describe the contractor's plant and equipment, as including complete details of the identity, age, condition, cost, and current book value of each piece of construction equipment. The availability of plant and equipment can affect the decision of clients in selecting a contractor because they are vital to construction success.

An inventory of construction plant and equipment capabilities represents a high capital cost overhead to a contractor. In consequence, not all competent potential bidders will maintain an inventory of high value items that are in suitable condition for major contracts. In most cases contractors can readily purchase, lease or hire equipment. It is thus usually unnecessary for prequalification to depend on the contractors owing generally available items of equipment (Ajayi, 2010).

Ajayi further stated that the criteria adopted should therefore be invited only to those bulky or specialized items that are critical for the type of project to be implemented and which may be difficult for the contractor to obtain quickly even in such cases, the main contractors may not own the equipment, and rather they may rely on specialist sub contractors or equipment line firms. The availability of the subcontractor and the specified equipment should be subject to verification (at the time of prequalification or at the time

of bidding) in such cases. Particular care is needed in setting criteria for equipment because of the different skill levels and techniques that contractors bring to construction projects.

(c) Quality of Personnel

This describes the key persons of a construction firm that are responsible for handling managerial and technical aspects. For small construction firms, the board requires an experienced engineering technician only, whereas an experienced engineering expert is required for medium-sized and large companies. However, medium-sized and large companies are still required to have an experienced and qualified engineering expert for every main area of construction work for which they are qualified (Mangitung, 2010). According to Olatunji (2010) this deals with the technical capacities of contractors which is measured based on the credentials of key technical and support staff on the payroll of the contractors. Olatunji further stated that in most cases, assessors are misinformed, perhaps, due to skill shortages fictitious lists and credentials presented. This implied many firms can lay claim to a simple individual, without his consent or to untraceable parsons (dead, bankrupt and illegal entities) as the technical member of their firm. Gransberg and Riemar (2009) explain that key personnel experience is basically, to look and to see whether the people working directly on the projects have the requisite experiences to complete the projects for which their firms will be prequalified.

(d) Ability of Contractor

According to construction contractor viewpoint (2010), this deals with the ability of a contractor to deliver profitable, on time jobs, to track all project activities, cost, and revenues. The ability to seamlessly interact with accounting. Simplicity for variations,

sub contract and purchase order complete document tracking including submittals, transmittals, daily diary and project meetings.

2.2.3 Management Capability

Management capability of a contractor relates to the past performance and quality of work, project management organization, experience of key personnel and management knowledge (Ajayi, 2010). Contractor's site management system relates to the amount of workload a contractor must do within the contractor's **resources** (Moore, 1985). A constraint prior to invitation to tender includes; capacity to manage sub contractors, cost control procedures, material management, method of procurement and cash flow forecasting.

In addition site management leads to project performance. It entails the experience of the key personnel on site. Managerial criteria determines major violation whether key principals in the organization have been previously disbarred from bidding and/or convicted of construction fraud, felony, or other crime. One can see that both deal with specific issues regarding the people who actually will be involved in the work. For example, construction companies may complete the contracts for which the firm is prequalified. The "Business Connections" factor is seeking to identify any conflicts of interest (Gransberg and Riemar, 2009).

(a)Past Performance and Quality

The evidence of past performance does not mean pictures of executed project this has to be accompanying with copies of letter of awards and certificate of practical completion on similar jobs executed in the last five years. Commendation letters from previous client may be added advantage. (Olatunji, 2010). According to Gransberg and Riemar (2009) past performance and quality relate to the past project performance by the contractor, and

the ability of the contractor on the upcoming projects depending on the work classification, most a times the contractor is ask to complete a checklist of classes of construction work. Another way is to ask the contractor to list the type of major projects experiences, it allows the contractor to elaborate on key successes they had in the past, or simply list the number of projects completed within a given number of years. Past illegal behavior determines whether a contractor is involved in issues such as fraudulent claims.

Procurement Solutions (2009) commented that Contractor's Past Performance involves listing of five projects (maximum) that are significant and relevant to his current prequalification status which have been completed in the past 12 months. The project must have been done qualitatively. Quality issues deals with evaluating the ability of the contracting organization to ensure the integrity and quality of the service (Jerome, 2005).

(a) Project (business) Management Organization.

This is a mandatory requirement for prequalification, that all contractors must have Business Management Systems (QA, OHS&R and EM) in place. Evidence that the systems have been certified by a second/third party approved auditor is required. The Prequalification Registrar will notify separately when renewal certification is required. If any renewals coincide with this renewal application then that certification must be included (Procurement Solutions, 2009).

(b) Experience of Technical Personnel

The management and technical competence of a contractor is largely related to its key personnel on site. This deals with the extent to which the contractor demonstrates having staff with extensive experience, this should be limited to those requiring critical operation or technical skills. The prequalification criteria should therefore refer to a limited

numbers of such key personnel for instance, the project manager and those superintendents working under the project manager.

The applicant (contractor) should normally be required to name a principal candidate and an alternate for each key position. Criteria of acceptability should be based on a minimum number of years of experience in a similar position, and minimum number of years of experience or number of comparable project carried out in a specified number of preceding years.

The requirements of specified education and academic qualification are normally unnecessary for such position as contractors often employ competent staff who have learned their profession on the job and who lack formal qualifications. It may be appropriate to specify that certain positions are filled by individuals who have held posts of comparable authority for, say three years with the contractor. This is so to enable key staff in executive site positions have sufficient knowledge of the contractor's, management policy, procedures and practices to act with confidence and authority (NADB, 2011).

(c) Management Knowledge

This seeks to determine whether the management team is experienced enough to effectively manage a construction project of a given magnitude in requested work classification (Gransberg and Riemar, 2009).

2.2.4 Health and Safety

Health and safety is a criteria for contractor prequalification in which the organization should have health and safety policy. However, in Nigeria health and safety is not usually of paramount importance unlike in developed countries like U K (Wong, Holt and Harris, 2001). Even though in Nigeria, health and safety measures are part of the preliminaries

items that should be priced by the contractors. Health and safety competence is not only a premise of safe performance but also the ability to ensure that an activity can be executed pragmatically and in a value adding way (Proverbs *et al,* 2007 and Carpenter, 2006).

According to APCC (1998), the construction industry has a poor record relating to occupational health, safety and rehabilitation (OHS & R). Improved management OHS &R is aimed at reducing the level of accidents, curtailing lost time due to industrial disputes and increasing the industry's productivity.

(a) Safety

According to international labor organization (ILO) safety is "the degree to which an operation is under control "hence safety is about doing the right thing at the right time. Prevention is by far cheaper than correcting errors, repairing breakdowns or handling accident, injuries or death. Safety in construction should be a behavior or culture, good safety program should begin with management creating goals and then implementing the plan.

According to Health and Safety document (2006) safety program outline should include the following;

(i) Establish a goal of safety

(ii) Create a safety program

(iii) Educate management and supervision

(iv) Measuring safety as a part of job performance

(v) Make safety, and planning for it, a job site priority

(vi) Make employees responsible for, and accountable for safe behavior

A good safety program will reduce or eliminate accidents prevent property damage/loss, reduce employee's absenteeism, increase morale, create competitive advantage and give

the organization a good cooperate image. It will improve quality of work and customer satisfaction, while maximizing production and ensuring on time project completion.

In as much as construction activities are sign of economic growth, it is however a nightmare for victims of construction accident. Roads, bridges, building and other structures are sometimes being put up at the expense of people's life.

(b) Experience Modification Rating (EMR)

A contractor's experience modification rate *(*EMR) is the ratio of the firm's actual workers compensation insurance claims costs to its expected workers compensation losses for the company's type of work, averaged over the last 3 to 4 years (Einersson, 1998)

According to Act government (1998), Act contractors are required to have public liability and worker compensation policies. Other insurance may also be necessary. Principal controlled insurance cover may also be arranged. All insurance will be listed in the tender documents and will be required at the time a contractor is selected as preferred tenderer.

CIB World building congress (2007) states that, the experience modification rating Scheduled is an objective assessment of health & safety performance of contractors by independent rating bureaus. It is on equitable means of deterring premium for workers compensation insurance. The methodology is such that record is made of the average workers compensation losses expected to be paid over a given type of firm's work compared with others doing similar work. When the coefficient of losses incurred by the employer compared with the expected bench mark of losses is low, it means fewer or less accident had occurred than expected as a result of low insurance cost and vice versa if the rating is high.

Hinza and Godtrey (2003) argue that the experience rating of contractors is largely a function of nature of project, workers motivation factors like; pay, compensation,

commission welfare packages etc. as well as the effective, ubiquitous and responsive applications of technological assiduity all through the construction process. For instance, more severe accidents should be expected when inexperienced, unknowledgeable, unexposed workers, cheap labour and bad tools are patronized under heavy pressure to meet schedules and work specifications.

(c) Occupational Safety and Health Administration (OSHA) Incidence Rate

Einersson (1998) stated that an OSHA incidence rate is the number of OSHA-reportable injuries (roughly equivalent to injuries requiring attention by a doctor) per 200,000 working hours. OSHA demands that contractors report this on log sheets each year. Einersson further explains that the occupational safety and health Act of America (1970) explain that record and report of accidents on the sites on a annual survey form that contains information of occupational injuries and illness , which is to keep record of constructors site fatalities.

OSHA assessment provides analytical data on the number of fatalities, number of injuries and illness without cost workdays. To evaluate the safety consciousness of any contractor, OSHA assessment procedures is a reliable indicate which is based on recordable incidences of injuries and illness that negatively Impacted productivity, relationships and transactional harmony. According to Osazee, (2005), the occupational safety bill is a tripartite cooperation. The federal ministry of labour and productivity intend to follow up OSH matters in all work place in Nigeria with a special interest in health, safety working conditions and Management safety accountability. This is important because evaluating the safety and health capability of contractors is largely, a positive way to providing a systemic overview of health and safety orientation of the construction industry.

(d) Management Safety Accountability

Hatush and skintmore (1997a) describe management accountability with respect to safety and health variables as technical strength and quality of staff, demonstrable evidence of documentary corporate health and safety Code, plans and programs, regular on-the-job training for old and new workmen, frequent and effective tool box safety meeting, on in the jobs discipline and management commitment as well as amount of own work force in the overall work populace, quality of technological sophistication in use.

2.2.5 Organization Reputation

Eady (2007) describes the contractor's organization reputation as setting forth the identity of the contractor's officers, principals, and owners, and the qualifications and prior experience of the firm and each of its officers, principals, and other key personnel. The qualification of a contractor's reputation and image is subjective and difficult to gauge (Alarcon and mourgues, 2002). Aje (2008) in Ajayi 2010 opined that contractors are evaluated base on past failures, reasons for recent debarment**,** and reasons for failed contract, previous failures to perform contracts properly, to complete on time, financial penalties and termination of contract.

(a) Past Failure in Completed Project

Gransberg and Riemer (2009) explain that, this requires the applicant to list all projects that they did not complete, usually by being held in default of the contract. This factor extends to detected projects those key individuals who were involved with while working with other companies. It could also be a statement identifying any liens, default notices, or claims by or against, or any penalties or liquidated damages assessed against the contractor with regard to any project performed within the previous five calendar years; statement disclosing the details of any formal complaints by or against the

contractor with respect to its alleged noncompliance with any federal or state labor laws (Eady, 2007)

Davidson. *et al* (2007) explains that the Most Common Causes of Construction Contractor's failures include.

(i) *Growing too fast*. A company that does not have the infrastructure to support the rapid growth it may suffer significant losses. By growing too fast the company will promote inexperienced employees. This may lead to delayed/inaccurate billing, inaccurate and/or untimely financial information, poor project estimation, and cash flow problems.

(ii) *Obtaining work in a new geographic region.* Performing a contract in two different places are not the same. Logistically it is harder to manage a contract thousands of miles away than one in your backyard. Also, labor supply, subcontractor quality, suppliers, codes, lien laws, permits, labor laws, tax rates, weather and soil conditions can be dramatically different and, accordingly, may result in unforeseen costs and problems.

(iii) *Dramatic increase in single job size*. A contractor who continually builds 1, 000, 00 units of commercial buildings will find new and different challenges building 15, 000, 00 units of building. If your company wants to increase the size of the projects it bids, consider a joint venture with a contractor who routinely completes project to fifteen thousand units of projects.

(iv) *Obtaining new types of work.* Diversification is important when investing. However, in the construction industry diversification can become your downfall. Each type of construction takes unique talents and specialties. The contractor should stick with the type of work that has made them successful, before going into a different type such as road, bridge work, commercial buildings, etc.

(v) *High employee turnover*. Estimators, project managers, and superintendents are critical to the success of a contractor. Sky-high turnover in key positions will result in lower job profitability and potential bidding errors.

(vi) *Inadequate capitalization.* Money may be one of the leading causes for a construction company's failure. Many business owners underestimate how much money will be needed, not only to start the business, but also to sustain it as it struggles to gain financial strength. Tangible working capital less than 5% of annual revenues and a poor banking relationship will contribute to severe cash flow issues.

(vi) *Poor estimating and job costing*. Contractors must have internal controls over the estimating and job cost processes. Also, a good estimating software package is a must for the contractor.

(vii) *Poor accounting system.* Construction is a specialized industry and construction companies must have specialized accounting software. The accounting system must provide monthly financial statements on the percentage of completion method with detailed contract schedules.

(viii) *Poor cash flow*. Cash flow is a critical component of any company. In order for a construction company to survive it must actively manage its cash flow especially a contractor with a labor-intensive contract with weekly payroll.

(ix) *Buying Dumb Stuff*. Public companies make their "ego purchases". A company buys the naming rights to a stadium or ballpark etc and then plunges into financial trouble. Construction contractors are no different. A successful contractor often will take the profits of the construction company and buy a home, purchase a helicopter, purchase speculative real estate, or open a restaurant. There is nothing wrong with enjoying the financial success of your company. However, if these investments turn out, often times

the construction side of the business will fund the sinking venture. Management should fight the temptation to purchase such investments these are common mistakes made by the failed contractor, and one should be cautious if ones company is falling into these traps.

(b) Number of Years in Construction

The contractor's prior construction experience that indicates how long the contractor has been in the construction business and the nature of the contractor's construction experience during that period; a complete record of all construction work completed in the five prior years; the type of work performed; the project location; the contract price for work actually performed by the applicant firm; and the name, address, and current telephone number of the owner's project engineer or project manager in charge of each listed project (Eady, 2007).

(c) Past Client Relationships

The relationship between the contractor and the client is governed by the contract itself, so it seems logical to start with the basic question, "What is a contract?" A contract can be simply defined as an agreement between two or more parties which is intended to be legally binding. It apportions responsibility and apportions risk between the parties (Mile, 1996).

Miles further stated that, to minimize the risk of failure, the relationship between contractor and client must be spelled out in clear and equitable contract documents. Equity is important, and one-sided documents are not really beneficial to the client in the long run because the reputable and competent contractor really has the choice - "To bid or not to bid." Clients who alienate this group are doomed to rely upon contractors who

are both incompetent and disreputable, and in performance terms they will get what they deserve.

A research in USA shows that many difficulties are related to the structure of the relationship between contractor and client (Einersson, 1998). Eady (2007) explain that any relationship, whether financial, personal, or familiar, with the owner of any construction project, that is listed as construction experience; factors affecting trust and distrust in client-contractor relations.

Das and Teng (1998) emphasize the role of communication in building confidence in partner co-operation. Clear and explicit goals are often considered critical for control. The understanding of why co-operative client-contractor relations in construction seem to be so fragile, because of the uncertainty the client and the contractor have to interact frequently during the contract period for communication and joint problem solving, and this limits the degree of conflict possible. Also, the client is strongly dependent on the good will of the contractor both to deliver work of good workmanship, and to handle unforeseen circumstances in a co-operative way (Kadefors,*et al*, 1996).

(d) Cooperation with Contractors

Indonesia Contractor Association, (2008) explain that cooperation with contractors is to promote and encourage a highly reliable, independent, productive, accountable and competitive National construction industry, either in National or International market. This is to initiate codes of ethics among National contractors, forge bonds and partnership, promote cooperation among members, encourage and support professional competencies of members and their business partners. Is also to promote conducive climate in construction industry, encourage growth and progress of construction industry.

Improve development in order to enhance Contractors Association members' competency and professionalism as players in construction industry.

In facing globalization era, Contractors are required to improve the following subject: Personnel competence cooperation among contractors/associations in study and development of technology in area of contract administration: engineering and financial on-site technical implementation cooperation in especially for cost efficiency in project financing. Establishing order and code of ethics among contractors bonds and fostering cooperation among contractors putting on effort and assisting by boosting competencies of professional members be active in giving suggestions to Government in the area of enhancing and development construction industry

Construction industry need to be active in improving technology and competencies of players by conducting joint cooperation with research and education institutions set up and socialize codes of practice for professional in construction industry build relationship and promote joint cooperation with either domestic or international institution, Training for operators, managers and middle executives conducted joint meetings with some International Contractors and Associations to facilitate closer cooperation among organizations in the area of construction industry

The contracting environment is to adopt a co-operative approach to contract administration and dispute resolution, minimizing time and cost implications for all. A partnering approach can improve project outcomes for all participants by creating the better levels of commitment, trust, communications, performance reviews and conflict avoidance procedures that the process involves. According to Kadefors *et al,* (1996) Information to be evaluated includes:

(i) Evidence of Past Performance in:

Co-operation with government agencies in the administration of contracts; reducing over-runs through co-operative effort; ensuring timely lodging and progress of contractual claims; ensuring an appropriate level of competence in staff appointed to administer contracts; ensuring a non-adversarial approach to dispute resolution is adopted and followed in accordance with the contractual dispute resolution procedures; and ensuring litigation is reserved as a last resort.

(ii) Statistics on past disputes referred by the contractor to arbitration and/or litigation, including the outcomes or current status of such proceedings; of particular importance is the manner in which the dispute is managed and progressed by the contractor.

(iii) Commitment to ethical conduct in dealings with subcontractors, particularly in payment of money owed to parties lower in the contractual chain.

(vi) Experience in partnering;

(v) Commitment to the partnering concept by all levels within the contractor's Organization associated with a project.

(vi) Contribution to effective communications, development of trust and team building, on a project.

(vii) Contribution to the monitoring and review procedures for assessing achievements of project objectives.

2.3 PRE QUALIFICATION OF CONTRACTOR IN NIGERIA

When a procuring entity has made a decision with respect to the prequalification of bidders minimum qualifications of suppliers, contractors or service providers by requesting interested persons to submit applications, to be pre-qualify, it shall set out precise criteria upon which it seeks to give consideration to the applications in reaching

decision as to which supplier, contractor or service provider qualifies, apply only the criteria set out in the prequalification documents and no more Procurement Act (2007).According to Procurement Act (2007) Procuring entities shall supply a set of prequalification documents to each contractor

2.3.1 Contractors Necessary Possessions:

(i) Professional and technical qualifications to carry out particular procurement.

(ii) Financial capability

(iii) Equipment and other relevant infrastructure

(iv) Adequate personnel to perform the obligations of the contract.

(v) Possess legal capacity to enter a contract

(vi) Have fulfilled all obligations to pay taxes, pensions.

(vii) Not be in receivership

(viii) Accompany every bid with affidavit of disclosure, disclosing whether any officer of Bureau of public procurement(BPP) is a former or present director of Company.

(x) Not have any director who has been convicted in any country for any criminal offence relating to fraud or financial impropriety.

2.3.2 Grounds for Disqualification

i) Non compliance with any of the above principally.

ii) Promise of a gift of money or any item for tangible item, or employment in an attempt to influence any action of decision making of any procurement activity – consultants / contractors usually buy suites, shoes etc for public office holders.

(iii) If consultant / contractor failed to perform or to provide due care in performance of any public procurement during the last three years prior to the commencement of the

procurement proceedings.(iv) Section 23 (12) a procuring entity shall disqualify any contractor who fails to demonstrate

its qualification again if requested to do so (Procurement Act, 2007).

CHAPTER THREE

METHODOLOGY

3.0 INTRODUCTION

This chapter reports on methods and procedures used in this research work this includes: The survey method, survey instrument and Nature of data, Adopted sampling techniques and sampling size, Data collection and handling, and tools for data analysis.

3.1 Method of Data Collection

3.1.1 Survey Method

The use of both primary and secondary data were adopted to collect data through files and written questionnaire in this research. In administering the questionnaire a response of construction professional and staff in the public organizations were targeted. Consequently, in contacting the respondent to the questionnaire due care was taken to ensure proper representation of the key personnel.

This research focused on building construction projects that passed through prequalification process in Kaduna between the years 2006-2011, therefore there were consideration for construction professionals and personnel expected to have a good knowledge of contractors' prequalification process in Nigeria.

3.1.2 Survey Instruments and Adopted Nature of Data

The self administered questionnaire and retrieval of data from files was divided into two (2) sections.

Section A: was designed to obtain data relating to respondents profile and nature of work executed.

Section B: was to obtain data relating to the number of major criteria, sub- criteria and percentage scores allocated to each criterion used for the prequalification of contractors in the public organizations. All questions were carefully structured with the last questions left open-ended for free comments. Generally the questionnaire sought the basic information about the major and sub criteria used by the construction professionals and staff in the public organization on building projects in Nigeria and their perception on the relative importance of the use of prequalification criteria for contractor selection.

A copy of the results of the retrieval survey as obtained and that of the self administered questionnaire are attached as appendix II.

3.1.3 Self Administered Questionnaire

The self administered questionnaire and retrieval was from files and questionnaire accompanied with introduction letter from the Department of Building, Ahmadu Bello University, Zaria. The letter drew the attention of the target respondents to the essence of the research assuring them of the strict confidentiality on the information supplied by them.

3.1.4 Questionnaire Distribution and Response

A pre survey was conducted in order to have a preview of the population list of prequalified contractors and the criteria used for the different building projects in the public organizations, this in a view to have a better and more realistic questionnaire. Morenikeji (2006) states that, in statistical analysis, any data in which the number of observations (n) is less than 30 are regarded as a small sample, while data in which the number (n) is greater than 30 is regarded as large samples, 60 questionnaires were distributed to relevant personnel, out of which 55 were returned and 50 used, representing 83%. According to Aibinu and Jagboro (2002) this is considered adequate for the

analysis. Jagboro stated that, the result of a survey could be considered as biased and of little value if the returned rate is lower than 30 to 40% of the distributed questionnaire.

3.1.5 Sampling Techniques and Sample Size

A purposive sampling technique was adopted for this research. The type of sampling was used because it is purposed that the sampling units are indicative or typical of the population as a whole. This is to minimize bias. Therefore experienced construction personnel within public organizations in Nigeria were targeted.

3.1 6 Survey contractors prequalification Checklist

Data was obtained using project files and records of 30 completed Contractors' prequalification criteria list for building projects in Kaduna. The 30 representing (100%) were used in the study of the criteria used and percentage score allocation to each criterion in contractors selection. The public organizations contractors' prequalification checklist was used in order to obtained direct information.

3.1.7 Importance of Use of Contractor Prequalification Criteria

Section B of the questionnaire is preparatory to the establishment of the perception of the respondents, on the level of importance of use of the 25 listed major and sub prequalification criteria, used in assessing contractor on building construction projects in the public organization. On a likert scale using 5 for very important, 4 for important, 3 for neither/nor important, 2 of less important and 1 for of no important.

3.2 TOOLS FOR DATA ANALYSIS

3.2.1 Data Collection and Handling

Two primary types of analysis were used in the analysis of data obtained for this research descriptive and inferential statistics. The descriptive statistics was performed on questionnaire (field survey responses) using Microsoft excel soft ware, while the

inferential statistics was performed on data collected from project files using statistical packages for social sciences (SPSS).

Frequency counts, the means item score for each criterion for each group of criteria and overall weighted average was computed; the mean item score for all the criteria are ranked for each organizations and all of them grouped together. Responses were presented in tables, means, percentages and charts. Multiple bar charts were used in order to compare the responses of the significance of the criteria used in the public organizations.

Pair wise comparison was carried out. Kendall's co-efficient of concordance was used to determine the degree of association between common selected criteria with percentage score allocation of contractors prequalification. The Kendall's coefficient of concordance formula given by Legendre, (2005) and Usman, (2011) was used to test the alternative (H_1) and null (H_0) hypotheses postulated in the research.

$$\text{Kendall test (W)} = \frac{12}{k^2 n (n^2-1)} \sum_{i=1}^{n} \left[R_i - \frac{k(n+1}{2} \right]^2$$

Where

k, is the number of variables

n is the number of organizations

R_i is the sum of the ranks for variables. This is to check whether any agreement exists in the selected common criteria and score rate allocation in the perception of the personnel, involved in the contractors' prequalification process.

3.2.2 Relative Importance Index (RII)

The relative importance index (RII), was used to compute the mean score of the

Contractors' prequalification criteria in relation to the overall responses on a criterion.

This was calculated as follows (Kometa and Olomolaiye, 1997)

$$\text{Relative index} = \frac{\Sigma W}{A * N} = \frac{5n_5 + 4n_4 + 3n_3 + 2n_2 + 1n_1}{5N}$$

Where;

W is the weight given by respondent to each prequalification criteria range from 1-5

A is the maximum height, 5 in this case

N is the sample size (total number responses)

n_5 is the number of respondents for vary important

n_4 is the number of respondents for important,

n_3 is the number of respondents for neither / nor important

n_2 is the number of respondents for of less important and

n_1 is the number of respondents for of no important.

3.2.3 Kendall's Coefficient of Concordance.

Inferential statistical analysis was used to determine the degree of concordance between variables. And Kendall's test is appropriate for this kind of test. According to Legendre, (2005) and Usman, (2011) Kendall's test is used for hypothesis testing, it is a non parametric statistic, that is used for assessing agreement among rates. Kendall's Coefficient of Concordance is an extension of spearman's rank correlation for more than two variables

The Kendall's measure was adopted to compare ranking of four sets of common variables with score rate allocation obtained from sum score computation. Consequently, the

ranking indices were employed on the responses of contractors' prequalification criteria with percentage score rate allocation to each of these criteria obtained from records and files from the public organizations.

CHAPTER FOUR

DATA PRESENTATION, ANALYSIS AND DISCUSSION

4.1 DATA PRESENTATION

4.1.1 Distribution of Department

Table 4.1: Frequency Distribution of Department

Department	Frequency (NO)	Percentage (%)
Physical planning department	20	40
Estate department	16	32
Works and services	10	20
Others	4	8
Total	50	100

Source: Field Survey, 2011

It is observed from fig 4.1, that 40% of the respondents work in physical planning/monitoring department of the public organization 32% in Estate department. 20% are in the works and services department, and finally 8% works in the other departments of the public organizations.

Therefore, the percentage of respondents that work in the physical/ monitoring planning department observed to be highest (40%) and others been the least with (8%). This shows that the opinion of the respondents was highly realistic and dependable since this research is based on public building projects

4.1.2 Distribution of Education Background.

Table 4.2 shows the distribution of education level of the respondents.

Table 4.2: Frequency Distribution of Education Background.

Education Background	Frequency(No)	Percentage(%)
OND	4	8
HND	6	12
BSC	18	36
PGD	13	26
MSC	6	1
PHD	3	6
Total	50	100

Source: Field Survey, 2011

Table 4.2 shows that 36% of the respondents are B.Sc with the highest level of frequency, respondents having PGD with 26%, while HND and M.Sc with 12%, OND with 8% and finally Doctorate degree with 3% respectively. Therefore, respondents with B.Sc have the highest level of educational qualification, while respondents with Doctorate Degree have the lowest value of 3%.

This further supports the fact that the responses collected are from a sample frame that is described as educationally and knowledgeable, capable of providing the much desired professional and judgmental opinion required for achieving the aims of this research.

4.1.3 Distribution of Professionals/ staff

Figure 4.1 shows the distribution of professionals/technical staff used for the survey.

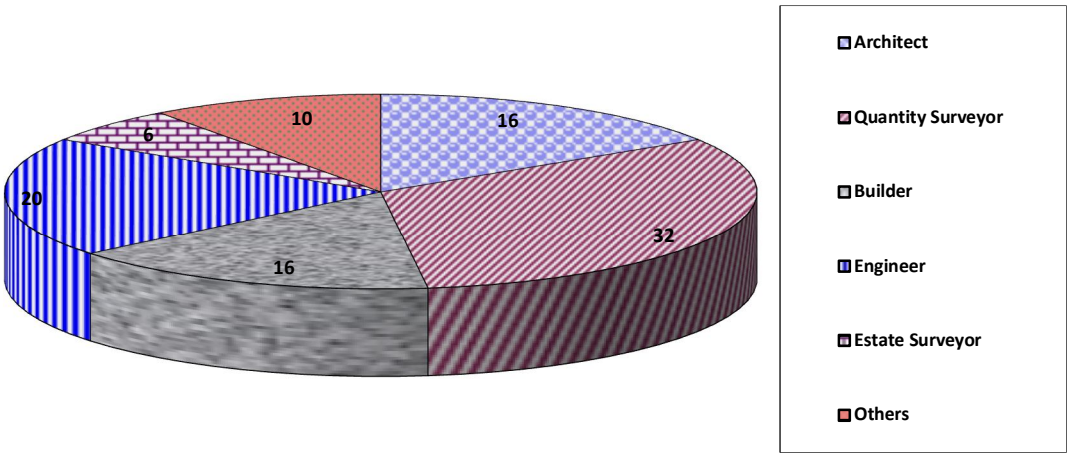


Figure 4.1: Frequency Distribution of Professionals

Source: Field Survey, 2011

From fig 4.1, it can be observed that 32% of the respondents are quantity surveyors this is followed by engineers with frequency of 20% architects and builders with frequency of 16%. The least frequency of 6% was observed for estate surveyors. It is therefore evident that the professional/ staff with the highest percentage response of 32%, are the Quantity surveyors and the least are the estate surveyors. Hence the means of the analysis may be based on the competences of quantity surveyor followed by the engineer since they both constituted the largest proportion of the respondents.

4.1.4 Distribution of Post/designation

Frequency Distribution of Post/designation of the respondents is grouped using percentage as represented in figure 4.2 below.

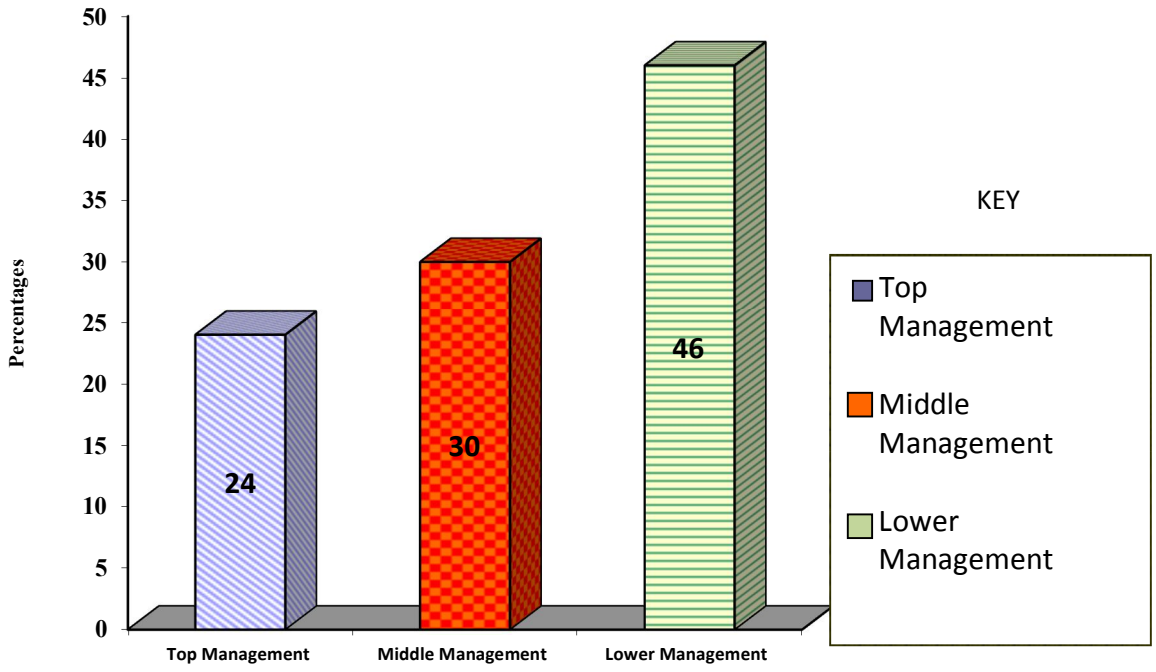


Figure 4.2: Frequency Distribution of Post/designation

Source: Field Survey, 2011

From fig 4.2, it can be seen that the lower management group formed the largest group with 46% of the whole respondents. This suggests that most of the technicians are engaged in these practices. The next is followed by middle management group which formed the largest group with 30% and finally the top management with 24%.

4.1.5 Years of Experience of Professional/ staff

Figure 4.3 shows the distribution of the Professional/ staff according to years of experience in the construction contractors' prequalification exercise,

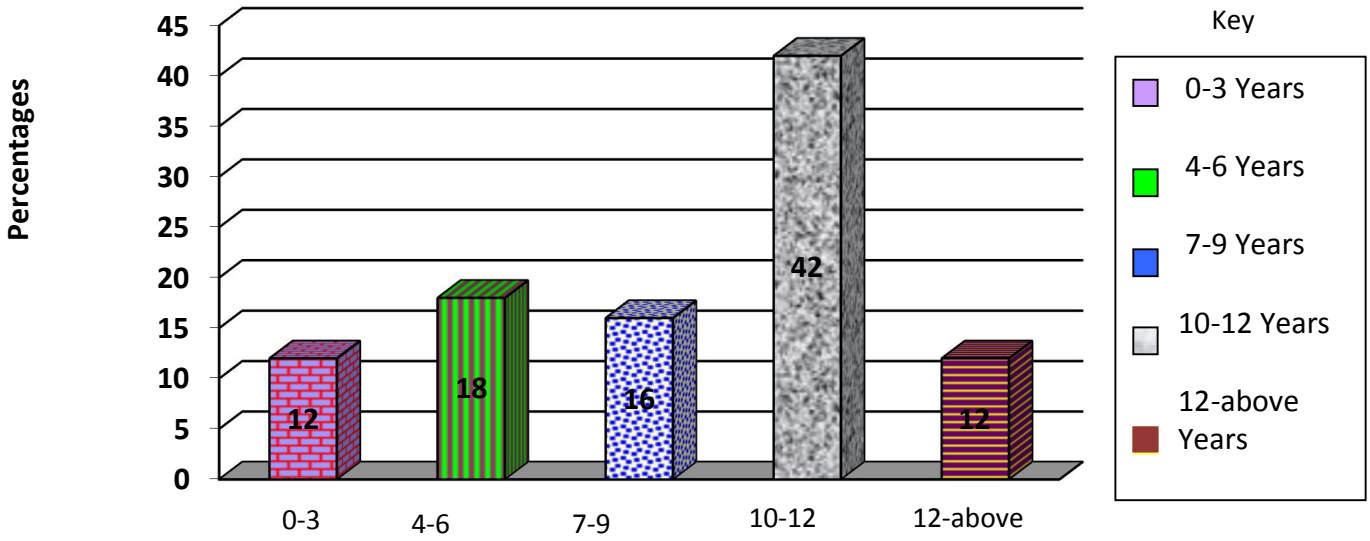


Figure 4.3: Years of Experience of Professional/ staff

Source: Field Survey, 2011

From figure 4.3, it can be understood that there is a high percentage (42%) of the respondents having a working experience of 10-12 years and the least percentage (12%) groups having a working experiences of 0-3 years and 12 years each. Also 18% of the respondent having an experience of 7-9 years on the average therefore, the responses obtained could be said to come from a sample frame of adequate knowledge based of building contractors prequalification exercise having experience between 4-20 years.

4.1.6 Respondents' Involvement in Contractors' Prequalification

Table 4.3 below shows respondents' involvement in prequalification exercise of building projects.

Table 4.3: Respondents' Involvement in Contractors' Prequalification

Items	Frequency (NO)	Percentage (%)
Yes	48	96
No	2	4
Total	50	100

Source: Field Survey, 2011

Data collected on respondents' involvement in contractors' prequalification as shown in table 4.3, revealed that 96% of the respondents have been involved in this exercise, While 2% have never attended a prequalification exercise. This means that almost all the respondents have attended contractors' prequalification exercise, and the data collected are relevant for this research work.

4.1.7 Types of Projects Executed

Table 4.4 represents the distribution of the type of projects executed by respondents

Table 4.4: Types of Projects Executed

Types of projects	Frequency (NO)	Percentage (%)
New structure	5	10
Renovation/ rehabilitation	5	10
All of the above	40	80
Total	50	100

Source: Field Survey, 2011

Table 4.4 shows data collected on types of building works, it was revealed that 10% of the building projects works are new structures and renovations each, with 80% for both new works and renovation work combine. Meaning that majority of the work executed by prequalification process have been both new building projects and renovations/rehabilitation projects.

4.1.8 Major criteria mostly recommended for contractors pre-qualification process.

Figure 4.4 below shows major criteria mostly recommended for building construction contractors pre-qualification

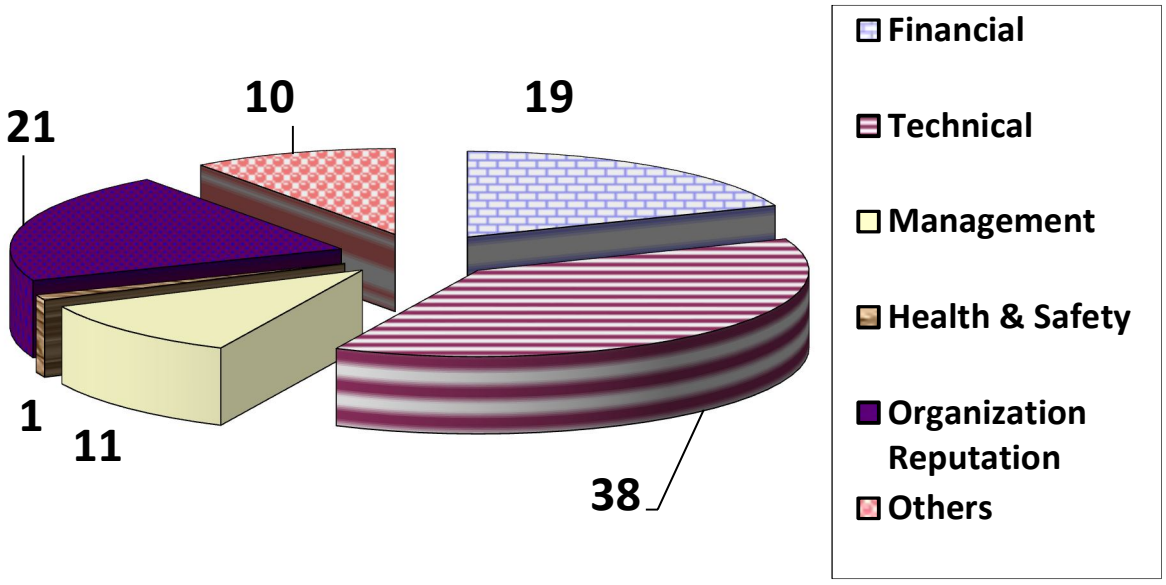


Figure 4.4: major criteria mostly recommended for contractors Pre-qualification process.

Source: Field Survey, 2011

From figure 4.4. The mostly recommenced of all the major criteria is technical capacity of a contractor with 38%, followed by organization reputation with 21%, financial capacity 19%, management capacity and other criteria with 11% and 10% respectively and the least is health and safety with 1% recommendation as applicable to building construction work in public organizations.

Others as mentioned above mean Criteria use by these organizations which include;

Registration and evidence of incorporation of business, evidence of tax clearance certificate for 3-5 years, presentation and contractor's evidence of commitment to local content and community social responsibility etc.

4.1.9 Limitations of Contractors prequalification from respondents.

From the data collected, it can be understood that, some of the most common limitation encountered during the process of contractors prequalification in the execution of building construction projects are;

(i) Incorrect information and documentation from the contractors.

(ii) Lack of understanding of instructions by the organizations.

(iii) Nonpayment of Tax.

(iv) Past client relationship.

(v) Influence of high ranking officers in the public organization.

4.2 Importance of Contractors' Prequalification Criteria as Perceived by Respondents.

The respondents were requested to evaluate a set of five major contractors' prequalification criteria and twenty sub contractors prequalification criteria used in the building construction industry in Nigeria. With 5 for very important, 4 for important, 3 for neither/nor important, 2 for of less important, and 1 for no important. This is because in Public organization most construction projects under go prequalification process before tender exercise. However, the names of the respondents' and organizations are not mentioned for confidentiality reason.

4.2.1 Responses from questionnaire surveyed to major contractors pre-qualification criteria

Table 4.5: Respondents' weight given to each of the major contractors pre-qualification

s/n	Criteria	5	4	3	2	1	Total weight	Average	RII	Rank
1.	Health and safety	0	2	32	11	5	131	2.62	0.524	1
2.	Management capability	15	28	8	2	0	203	4.06	0.812	2
3.	Organization Reputation	16	23	10	1	0	204	4.08	0.816	3
4.	Financial soundness	22	15	10	3	0	206	4.12	0.824	4
5.	Technical capacity	29	21	0	0	0	229	4.58	0.916	5

Source: field survey,2011

From table 4.5, the respondents stated that technical capacity for evaluating contractors as the important criteria. Average mark for this is 4.58, and over 58% of the professionals/ staff consider it as very important and 42 % as important. None of the respondents gave it a lower mark than 4. Others are in sequence; financial capacity, organization reputation, management and health and safety.

4.2.2 Contractors Prequalification Criteria and their Codes.

Table 4.6 below shows the codes given to each contractors sub prequalification criteria

Table 4.6: Contractors Prequalification Criteria and their Codes.

Code:	Prequalification criteria
i.	**Financial soundness**
CPC 1	Financial stability
CPC2	Credit rating
CPC3	Banking arrangement and bonding
CPC4	Financial status (owned financial fund)
ii.	**Technical ability**
CPC5	Experience on similar work
CPC6	Plant and equipment
CPC7	Quality of Personnel
CPC8	Ability of the contractor
iii.	**Management capability**
CPC9	Past performance and quality
CPC10	Project management organization
CPC11	Experience of technical personnel
CPC12	Management knowledge
iv.	**Health and Safety**
CPC13	Safety
CPC14	Experience Modification Rating (EMR)
CPC15	Occupational Safety and Health Administration(OSHA) incident rate
CPC16	Management safety accountability
v.	**Organization reputation**
CPC17	Past failure in completed projects
CPC18	Number of years in construction
CPC19	Clients relationships
CPC20	Cooperation with contractors

4.2.3 Responses from questionnaire surveyed to sub contractors pre-qualification

Table 4.7: Respondents' Weight given to each Sub Contractors Pre-qualification Criteria

Criteria	5	4	3	2	1	NO
CPC1	34	12	2	2	0	50
CPC2	13	29	7	11	0	50
CPC3	34	11	3	2	0	50
CPC4	30	14	6	0	0	50
CPC5	29	15	6	0	0	50
CPC6	37	13	0	0	0	50
CPC7	30	20	0	0	0	50
CPC8	40	10	0	0	0	50
CPC9	31	16	3	0	0	50
CPC10	26	21	3	0	0	50
CPC11	31	15	4	0	0	50
CPC12	11	29	8	2	0	50
CPC13	10	18	16	3	3	50
CPC14	4	2	20	16	8	50
CPC15	2	7	26	12	3	50
CPC16	5	10	24	8	3	50
CPC17	16	11	12	10	1	50
CPC18	30	17	0	3	0	50
CPC19	12	24	4	10	0	50
CPC20	7	20	11	9	3	50

Source: Field surveys 2011.

Table 4.7 presents the 20 sub prequalification criteria and the frequency of the respondents of the whole sample; it shows the importance of these criteria from the clients' perspective.

4.2.4 The mean items score for each criterion.

Table 4.8 shows the importance of contractors' pre- qualification criteria as perceived by professional/ staff from different public organizations.

The relative importance indices are then ranked from the lowest to the highest. Weighted, weighted average, mean scores were also calculated.

Table 4.8: The mean items score for each criterion calculated to obtain the relative importance index as follows.

Code	Total weight	Average	RII	Rank
CPC14	128	2.56	0.512	1
CPC15	143	2.86	0.572	2
CPC16	156	3.12	0.624	3
CPC20	169	3.38	0.676	4
CPC13	179	3.58	0.716	5
CPC17	181	3.62	0.724	6
CPC12	199	3.96	0.796	7
CPC10	223	4.46	0.892	8
CPC2	224	4.48	0.896	9
CPC4	224	4.48	0.896	9
CPC18	224	4.48	0.986	9
CPC11	227	4.54	0.908	12.5
CPC3	227	4.54	0.908	12.5
CPC9	228	4.56	0.912	14.5
CPC1	228	4.56	0.912	14.5
CPC7	230	4.60	0.92	16
CPC6	237	4.74	0.948	17
CPC8	240	4.58	0.96	18
CPC19	248	4.96	0.992	19
CPC5	273	5.46	1.092	20

Source: Field survey, 2011

From the table it is understood that the most important sub pre- qualification criteria for assessing contractors in building projects is experience of similar project CPC5, with a mean score of 5.46 with rank 20th, clients relationshipCPC19, with a mean score of 4.96 with rank19 and the experience modification rating (EMR), as CPC14 with a minimal value of 0.512, and rank 1st as the least important criteria.

4.3 HYPOTHESIS TESTING

4.3.1 Kendall test of co-efficient of concordance; these are used to determine the degree of association (agreement) between common selected criteria with percentage score rating, from recorded files. That is financial capability of a contractor, evidence of similar projects executed, plant and equipment and technical professional staff support. Kendall's takes on values between zero and one ($0 \leq W \leq 1$). the closer the value of W is to one, the stronger the degree of agreement or association or from O (no agreement) to 1 (complete agreement).

4.3.2 Common selected criteria from survey checklists with percentage score allocation (row data)

Table 4.9 shows the common criteria with percentage score allocation from 30 completed building projects.

Table 4.9: Comparism of Common selected criteria from survey checklists with percentage score allocation (row data)

S/n	A	B	C	D
1	15	30	20	25
2	10	25	10	40
3	15	20	20	25
4	15	20	20	25
5	5	30	25	30
6	15	20	20	25
7	15	20	15	10
8	15	25	25	25
9	10	30	10	25
10	15	25	20	30
11	15	20	20	25
12	15	30	20	25
13	5	30	25	30
14	15	25	25	25
15	15	25	20	30
16	15	20	15	10
17	15	25	20	30
18	5	30	25	30
19	10	30	10	25
20	15	20	15	10
21	10	25	30	30
22	10	25	10	40
23	15	20	20	25
24	10	25	10	40
25	15	25	25	25
26	15	25	10	40
27	5	30	25	25
28	15	30	20	40
29	15	25	10	30
30	5	30	25	25
				40

Source: field survey, 2006 - 2011

A is for financial capability, B is for Evidence of similar project executed, C is for List of plants and equipments and D is for Professional staff support

The Kendall's coefficient of concordance is distributed approximately chi-square with k-1 degree of freedom. Hence, the procedures for the Kendall's coefficient of concordance summarized as follows:

Hypothesis

Alternation Hypothesis H_1: $W \neq 0$ (The Kendall's coefficient is significant)

Hull hypothesis H_o: $W = 0$ (The Kendall's coefficient is not significant)

Level of significance

$\alpha = 5\% = 0.05$

Test statistic

Chi-square = $X^2_{cal} = K(n-1)W$

Decision rule

Reject H_o, if $X^2_{cal} \geq X^2$ α, K-1 degree of freedom

Where K = number of criteria

4.3.3 Replace of common criteria with score rating by ranks

The common selected criteria are been replaced by ranks as shown in the table 4.10 below.

Where the constant value of $\frac{k(n+1)}{2} = \frac{4(30+1)}{2} = 62$

Table 4.10: Replacement of common criteria with score rating by ranks

s/n	A	B	C	D	R_i	$R_i - \frac{k(n+1)}{2}$	$\left(R_i - \frac{K(n+1)}{2} \right)^2$
1	21	25.5	16	10	72.5	10.5	110.25
2	8.5	14.5	4	28	55	-7	49
3	21	4.5	16	10	51.5	-10.5	110.25
4	21	4.5	16	10	51.5	-10.5	110.25
5	3	25.5	25.5	21	75	13	169
6	21	4.5	16	10	51.5	-10.5	110.25
7	21	4.5	9	2	36.5	-25.5	650.25
8	21	14.5	25 .5	10	71	9	81
9	8.5	25.5	4	10	48	-14	196
10	21	14.5	16	21	72.5	10.5	110.25
11	21	4.5	16	10	51.5	-10.5	110.25
12	21	25.5	16	10	72.5	10.5	110.25
13	3	25.5	25.5	21	75	13	169
14	21	14.5	25.5	10	71	9	81
15	21	14.5	16	21	72.5	10.5	110.25
16	21	4.5	9	2	36.5	-25.5	650.25
17	21	14.5	16	21	72.5	10.5	110.25
18	3	25.5	25.5	21	75	13	169
19	8.5	25.5	4	10	48	-14	196
20	21	45	9	2	36.5	-25.5	650.25
21	8.5	14.5	30	21	74	12	144
22	8.5	14.5	4	28	55	-7	49
23	21	4.5	16	10	51.5	-10.5	110.25
24	8.5	14.5	4	28	55	-7	49
25	21	14.5	25.5	10	71	9	81
26	21	14.5	4	28	67.5	5.5	30.25
27	3	25.5	25.5	21	75	13	169
28	21	25.5	16	10	72.5	10.5	110.25
29	21	14.5	4	28	61.5	5.5	30.25
30	3	25.5	25.5	21	75	13	169
							$\sum = 4,995$

Source: Field Survey, 2006-2011

Kendall test (W)

$$W = \frac{12}{k^2 n (n^2-1)} \left[R_i - \frac{k(n+1)}{2} \right]^2$$

$$= \frac{12}{4^2.30(30^2-1)} \times 4995$$

$$= 0.1392$$

$$W = \underline{0.1392}$$

The valve of the Kendall's co-efficient of concordance W = 0.1392, indicates a very weak agreement in the percentage score allocation to contractors prequalification criteria used for building projects by the public organizations. Meaning score rate allocation to these four criteria are different from one organization to another. Hence the test of significance for the Kendall's coefficient of concordance is conducted as follows.

Testing of significant for W

Alternation Hypothesis H_1: There is a significant agreement in the contractors' prequalification criteria with score rating allocation in the public organizations

Hull hypothesis H_O: There is no significant agreement in the contractors' prequalification criteria with score rating allocation in the public organizations.

Computations

X^2_{cal} = K (n-1) W

Where, K= 4, n=30 and W=O.1392

X^2_{cal} = K (n-1) W

= 4 (30-1) 0.1392

X^2_{cal} = 16.1472

Table value

$$X^2\ \alpha, K\text{-}1$$
$$= X^2_{0.05}, 3$$
$$= 7.815$$

$$X^2_{cal} = 16.1472 > X^2\ \alpha, K\text{-}1 = 7.815$$

Since $X^2_{cal} = 16.1472 > X^2\ \alpha, K\text{-}1 = 7.815$ therefore, the null (H_o) hypothesis is rejected and the alternative hypothesis (H_1) is accepted. This mean that despite the week W value, there is a statistical evidence to prove that there is a week significant association in some of the contractors' pre-qualification criteria with percentage score allocation among these pubic organizations in Nigeria.

4.4 DISCUSION OF RESULTS

From the result of the analysis, it was established that among the major contractors' prequalification criteria of building construction projects; Technical capacity of the contractor is an the important criteria with a mean score of 4.58, and over 58% of the professionals and technical staff consider it as very important and 42 % as important. None of the respondents gave it a lower score than 4. The remaining criteria as considered important are in the following sequence; financial capacity, organization reputation, management and health and safety.

None of these criteria got score below 4 except health and safety which means, that all the criteria are important to the public organizations.

The findings in this research are similar to the findings of Ogunsemi and Aje (2006). Past performance, contractors similar experiences, workmanship quality, tender sum and plant and equipments were the most important criteria for contractors' prequalification.

The results also showed that the most important sub pre- qualification criteria for assessing contractors in building projects is the experience of similar projects executed CPC5, with a mean score of 5.46 with rank 20th, clients relationship CPC19, with a mean score of 4.96 with rank19 and the experience modification rating (EMR), as CPC14 with a minimal value of 0.512, and rank 1st as the least important criteria, as perceived by professional/ staff from different public organizations (Table 4.8).

The outcome of the research is slightly different from Olatunji (2008), commented that the candidate must satisfy the client in terms of facts relating to capabilities, competencies and sound understanding of project peculiarities in terms of evidences of past performance on similar projects (including the presentation of letters of awards, letters of commendation from previous clients, and certificate of practical completion on recent and similar completed projects).

The study further observed that, the valve of the Kendall test of co-efficient of concordance W = 0.1392 gotten from contractors prequalification checklists of completed building projects with common selected criteria with percentage score allocation, indicates a very weak agreement in the percentage score allocation to contractors prequalification criteria used by the public organizations. Meaning, score rate allocation to these four criteria is different from one organization to another. Hence the test of significance for the Kendall's coefficient of concordance was conducted as follows

The alternative hypothesis (H_1) is accepted, and the null (H_O) hypothesis is rejected, this is because X^2_{cal} = 16.1472 is greater than X^2 α, K-1 = 7.815. This mean that there is a statistical evidence to prove that there is significant association in some of the contractors pre-qualification criteria with percentage score allocation among these pubic organizations in Nigeria.

This tally's with Olatunji (2008) pointed out that the stipulated criteria and the weighting are not fixed. Construction administrators in various public procurement offices, have the right to review the criteria and the weight of the criteria. Through it must be done in fairness and commitment to openness and accountability. Olatunji (2008) further concluded that successful candidate (contractor) must have overall scored not less than 70% in the assessment.

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 SUMMARY OF THE RESEARCH FINDINGS

The outcome of this research can be summarized as follows:

i. This study affirms that the public organizations do employ contractors' prequalification criteria with percentage score allocation for building construction works.

ii. It was find out that among the major contractors' prequalification criteria; key personnel in the public organizations placed more emphasis on technical ability of the contractors at an average mark of 4.58 level of importance. Over 58% of the professionals/ staff consider it as very important. While less emphasis on major contractors prequalification criteria connected to health and safety at 2.62 level of importance.

iii. Experience of similar projects executed was the most prominent sub contractors' prequalification criteria with an average mark of 5.46. Over 60% of the professionals/ staff consider it as very important. And Health experience modification rating was the least among the sub contractors' prequalification criteria, in assessing contractors in building construction projects in public organizations in Nigeria.

iv. The use of certain contractors' prequalification criteria in the public organizations appears to be common. Some public organizations do not use all the criteria on their contractors' prequalification checklist, and do not allocate percentage score to all the criteria.

v. Four common prequalification criteria with percentage score allocation were found in the prequalification checklist gotten from the study organizations.

vi. Inconsistency in the percentage score allocation to each criterion was found in the contractors' prequalification checklist.

vii. The test of coefficient of concordance, shows that there is a significant agreement at 5% level of significance with W= 0.1392 and X^2_{cal} =16.1472 of percentage score allocation to some criteria on building contractors prequalification checklist. This indicated that public organizations allocate score rating independently.

viii. The generality of the construction personnel in the public organization are involved in the prequalification of contractors for building construction in Nigeria.

5.2 CONCLUSION

The following conclusions can be drawn:

There are differences found in the criteria on the prequalification checklist used for building construction projects by the public organizations, except on some criteria that are common to all with percentage score allocation. Also some of the criteria on the checklist were not used; this is evident by the lack of percentage score allocation to those criteria.

Incorrect information, lack of proper documentation, nonpayment of tax from the contractors ,understanding of instruction by the organizations and past client relationship are some of the problems encounter during the process of contractors prequalification.

5.3 RECOMMENDATIONS

Base on the findings of the research work, the following recommendations are made.

1. Contractors performance depends on the prequalification criteria used by the construction professionals/ staff in the public organization. The implementation of prequalification criteria by the public organizations and construction industry as whole to be successful, these organizations should be guided by the criteria used and percentage score allocation to each criterion, for both major prequalification criteria and sub prequalification criteria.
2. Public organizations should aspire to understand construction industry requirements, adopt and implement it for better contractors' prequalification in executing building construction.
3. The mostly used criteria by these organizations are; technical capacity, professional staff support, evidence of similar projects excuted, list of plant and equipment and financial. Other criteria on the contractors prequalification check list that were not used include; Registration and evidence of incorporation of business, evidence of tax clearance for 3-5 years, Company's Annual Turnover, Audited account, presentation contractor's evidence of commitment to local content and community social responsibility etc.
4. There is a need for construction professionals/ staff in the public organizations to consider all the criteria on their prequalification checklist. There is also a need to standardize and allocate percentage score rate to all the various criteria for contractors' prequalification exercise.

5.4 AREAS OF FURTHER RESEARCH

This research work has establish that in establishing contractors prequalification criteria, for building construction work in public organizations in Nigeria, more attention is placed on technical capacity, evidence of similar project executed, list of plant and equipment and financial capacity. This now give more room for further research to assess.

a. The importance of health and safety in public building construction projects.
b. The effect of percentage score allocation to contractors' prequalification criteria on public building construction works in Nigeria.
c. This study was strictly carried out on public building construction work; further research could be done on private sector.

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APPENDIX I; Questionnaire

Department of Building
Faculty of Environmental Design,
Ahmadu Bello University,
Kaduna

Respondent,

QUESTIONNAIRE FOR THE PROFESSIONALS AND STAFF IN PUBLIC ORGANIZATION.

An appraisal of prequalification criteria used for contractors' selection in public building projects in Nigeria.

Field Survey Questionnaire:

This questionnaire is purely an academic research work aimed to assess the prequalification criteria for contractor selection.

Please do supply the information needed, here below as accurately as possible.

Thank you.

Yours faithfully,

Jiya Victoria Hassana

N.B: Please be rest assured that the identity of projects given by you will not be reflected in the finished work neither will the identity of respondents be disclosed. Questions asked are solely for statistical analysis.

Section A: Respondent profile

Kindly thick [√] where applicable to you.

1. Organization/ Department ……

2. Your Post/Designation within your organization

a. Top management b. Middle management c. Lower management

3. Educational background

a. HND/BSC..... b. MSC/PGD…… c. Others please specify…….

4. Professional discipline:

a. Architect…… b. Engineering (Please specify)…… c. Building…….. Q/surveying …….

d. Others……

5. Years of experience

a. 0-3yrs……. b. 4- 6yrs…….. c. 7- 9yrs…… e. 10- 12yrs…….

6. Have you been involved in contractor prequalification for any building work in public organization a. Yes…… b. No…….

7. If yes to question 6, to which category does this project belong?

a. New structure ☐ b. Renovation/ Rehabilitation ☐ c. All of the above ☐

8. From experience which of these criteria listed below would you mostly, recommend for contractors prequalification for public building projects.

Financial soundness…… Technical ability…….. Management capacity……

Health and safety…….. Organization reputation …… Others……

9. What in your view would you consider are the limitations of contractor selection criteria in public organizations in the execution of projects. ……

Section B: This Section deals this with Major and sub prequalification criteria

10. This is to assess your rating in order of importance of use of the following groups of contractors' prequalification criteria by your organization /Department. Using likert scale 1-5 with 5 for Very important, 4 for Important, 3 for neither /nor important, 2 for of less important, 1 for of no important

GROUP	PREQUALIFICATION CRITERIA	Level of importance				
		5	4	3	2	1
i.	**Financial soundness**					
	Financial stability					
	Credit rating					
	Banking arrangement and bonding					
	Financial status					
ii.	**Technical ability**					
	Experience on similar work executed					
	Plant and equipment					
	Quality of Personnel					
	Ability of the contractor					
iii.	**Management capability**					
	Past performance and quality					
	Project management organization					
	Experience of technical personnel					
	Management knowledge					
iv.	**Health and Safety**					
	Safety					
	Experience Modification Rating (EMR)					
	Occupational Safety and Health Administration(OSHA) incident rate					
	Management safety accountability					
v.	**Organization reputation**					
	Past failure in completed projects					
	Number of years in construction					
	Past clients relationships					
	Cooperation with contractors					

APPENDIX II; PRE QUALIFICATION CHECKLIST

Ministry/Department/Agency/: KADUNA STATE

TYPES OF SERVICES: BUILDING/CONSTRUCTION

PROJECT TITLE: CONSTRUCTION OF TWIN LECTURE HALL Date: 10th October, 2007

S/N	CONTRACTOR	EVIDENCE OF REGISTRATION WITH C.A.C	CURRENT REGISTRATION WITH KASU	EVIDENCE OF TAX CLEARANCE FOR 3 YEARS	VAT CERTIFICATE AND REGISTRATION	FINANCIAL CAPABILITY AND BANKING SUPPORT	EVIDENCE OF SIMILAR PROJECT EXECUTED	LIST OF EQUIPMENT AVAILABLE FOR THE PROJECT	PROFESSIONAL STAFF SUPPORT	TOTAL SCORE	POSITION	REMARKS
	Score	**0**	**5**	**0**	**5**	**15**	**30**	**20**	**25**	**100%**		
1	A	-	5	-	2	5	5	10	5	32	6th	
2	B	-	5	-	5	15	25	10	14	74	3th	Qualify
3	C	-	4	-	5	5	5	5	8	33	5th	
4	D	-	0	-	0	0	0	0	0	0	0	0
5	E	-	5	-	5	15	25	15	20	85	2nd	Qualify
6	F	-	5	-	5	15	25	15	23	88	1st	Qualify
7	G	-	5	-	5	15	10	7	7	49	9th	
8	H	-	5	-	5	5	5	5	4	29	7th	
9	I	-	5	-	0	5	7	8	10	35	4th	
10	J	-	0	-	5	2	3	10	9	29	7th	