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ABOUT JCBM

The **Journal of Construction Business and Management (JCBM)** is an open access journal published bi-annually by the University of Cape Town Libraries, South Africa. The Journal is hosted by the Construction Business and Management Research Group of the University of Cape Town. The journal aims to explore the experience of construction industry stakeholders and trends in the global system. It aims to publish peer reviewed and highly quality papers emanating from original theoretical based research, rigorous review of literature, conceptual papers and development of theories, case studies and practical notes. The journal also welcomes papers with diverse methodological research approaches including qualitative, quantitative and mixed methods. Contributions are expected from academia, public administrators, professionals in the public sector and private practice (such as contracting organizations and consulting firms) and other related bodies and institutions (such as financial, legal and NGOs).

The scope of **Journal of Construction Business and Management (JCBM)** covers, but is not limited to construction management and project delivery, strategic management, decision making, skills development, organizational practices and procedures in construction business. The specific areas in construction management, sustainability in construction and project delivery include project planning/feasibility studies, procurement, resource management, international construction, ethical issues, industrial relations, legislative requirements and regulations, construction education, information and communication technologies, housing policies, and urban design and development. Strategic management in construction covers risk management, quality management, resilience and disaster management, cultural and societal management, project life cycle management, and knowledge creation and management. Among issues in construction organizational practices and procedures covered are business development strategies, human resources and career development, continuous professional development, leadership systems, marketing strategies, gender issues and corporate social responsibility.

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Editorial

Welcome to the first issue of the Journal of Construction Business and Management in 2018. The themes covered in this issue are related to risk management and procurement practices used in the delivery of construction projects. These papers fill critical gaps in the knowledge and practice of construction procurement, business and project management by exposing the reader to innovative procurement systems and risk management techniques. The issue contains five articles that were written by authors based in South Africa and Nigeria. Altogether, eight authors produced these papers aimed at strengthening the discourse in and enhancing construction project procurement, business and management research.

The first paper by Ayegba investigates the duties performed by and the required competencies of management contractors, towards elucidating essential considerations for the selection and use of management contractors on construction projects. The study establishes that a management contractor's duties involve multi-tasking over the design and construction stages of a project. Paper two by Olusanya examines the influence of subcontracting systems on access to social protection measures by workers in the informal building construction sector and suggests that the government in Nigeria should advance formalization of employment in the informal sector and support community-based social insurance schemes. Dosumu's paper highlights the need to identify risks on projects before the initiation of the project based on the research findings that although stakeholders are aware and adopt risk management techniques on construction projects, the implementation is at response level rather than identification level. Paper four by Waziri identifies nine risk factors as significant contributors to the high-risk profile of Build Operate and Transfer projects and proposes that stakeholders should focus on these risk factors responsible for 80% of the risk impacts. The final paper by Anugwo, Shakantu, Saidu and Adamu suggests that a significant number of Small, Medium and Micro Enterprise (SMME) contractors in South Africa are reluctant to amplify their potential capabilities, and needed the readiness to develop international business strategies that would enable them to penetrate and participate in the South African Development Community region and global construction market. The authors recommend that both the SMME and large contractors in South Africa should harness their potential capacity towards globalizing their businesses and improving their global competitiveness.

Finally, I wish to thank all authors who submitted papers for consideration, members of the Editorial Board and Panel of Reviewers for their assistance, timeous feedback and comments that helped shape and improve the quality of the submitted manuscripts. Finally, we welcome your feedback and suggestions that will help improve the quality of the journal and maintain the integrity of the findings published.

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Editor-in-chief

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Duties and Required Competencies of a Management Contractor

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Abstract

One of the responses to the critical failings of separation of design and construction processes of traditional procurement system is the development of management contracting (MC) procurement system. Several studies have indicated MC procurement system to be most suitable for large and complex projects, when on-time project delivery is required, and when flexibility during construction is desired. Owing to the involvement of the Management contractor at both design and construction stage of projects, the management contractors play more significant role in the benefits that MC system has shown to deliver. This study aims to investigate the duties performed by the management contractor and the required competencies for a management contractor, to provide knowledge and understanding on important considerations for the selection of a management contractor. Empirical data was collected using documentary analysis of three management contracts tender documents and a semi-structured interview with a key role player of two of the management contracts in South Africa. Findings revealed the duties performed by management contractors to be multitasking, covering both the pre-construction and construction stage of building projects. Also, owing to the increased responsibilities of management contractors, the competencies required to perform as a management contractor are distinguishable when compared to competencies needed of contractors to perform in other procurement systems. The knowledge and understanding of the duties and required competencies to perform as management contractors provided in this study will help construction clients and the construction industry in the selection process, performance management and evaluation of management contractors.

Keywords: Construction procurement, Management and relationship formation duties, Management contracting procurement system, Management contractor.

1. Introduction

There has been increasing advocacy in favour of a procurement system that supports the requirements for integration in construction in recent years (Smith and Offordile, 2008; Watermayer, 2012). The increased advocacy is linked to the influence of the Latham 1994 "constructing the team" and Egan 1998 "rethinking construction" reports, which suggest the separation of design and construction processes as the fundamental weakness of the construction industry. The procurement systems that absorb contractor's involvement at both the design and construction stages as described by Murdoch and Hughes (2008) are MC procurement system, and design and build system. Nevertheless, unlike in design and build, management contractors in MC do not undertake the actual design and construction themselves. Designers usually do have a separate contract with clients, while the real construction works are sub-contracted to work contractors by the management contractor (ibid). The Chartered Institute of Building (CIOB, 2010) survey report on procurement in the construction industry indicated that as construction projects increase in complexity and value, the management contracting system tends to be the preferred choice of construction procurement adopted by construction clients over the other procurement systems. As well, in a Survey on construction industry indicators by the Construction Industry Development Board (cidb, 2014) management contracting system was indicated to be the second most used procurement system by national and provincial departments after the traditional system which is also referred to as general contracting procurement system.

In a study evaluating management contracting and investigating the significant difference in clients perspective of performance criteria between management

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and traditional procurement systems by Sidwell (1983) and Naoum (1994) respectively; the benefits in management contracting system were attributed to the improved integration of project team members, flexibility of the system, breaking down of work into packages with total competition of work packages, improved collaboration, risk sharing, early contractor's involvement and more relational relationship enhanced by the management contractor.

The distinguishing feature of the management contracting system from the traditional method is the introduction of a management contractor at the design stage of the project. According to Murdoch and Hughes (2008), the introduction of the management contractor allows for the contribution of the management contractor's experience and expertise in the design and construction management of projects. Therefore, the reported benefits of the system can be as a result of the roles and duties performed by the management contractor. While available research on MC emphasises more on the advantages and suitability of using the system (see Naoum, 1994; Naoum and Langford, 1987; Sidwell, 1983; Ward et al., 1991). Limited attention has been given to investigating the performed duties and the required competencies to perform as a management contractor that has resulted in the reported benefits MC has shown to deliver.

The aim of this research, therefore, is to investigate the duties performed by management contractors and the required competencies for management contractors to carry out their functions efficiently.

2. Literature Review

2.1 Management contracting procurement system

The established procurement systems in the construction industry are management contracting, traditional procurement (also known as general contracting or design-bid-build system), design and build and construction management procurement system. Others, as suggested by Macaulay and Ramsey (2002) are hybrid procurement systems based on a combination of one or more of the procurement systems mentioned above.

Each of these construction procurement systems differs in the way they allocate responsibility and liability to contractors for design, construction and management of construction works. For example, from the details in the following textbooks by Hughes et al (2006: 7-12), Masterman (2003: 23-116) and Murdoch and Hughes (2008: 27-79): in the traditional system of procurement, the contractor is only involved at the construction stage of projects, where they undertake construction works only, without any responsibilities or inputs at pre-construction and project design stages; in the design and build system, the contractors are responsible for both the design (based on clients brief) and the construction works of the project; while in a management contracting system, the contractors are responsible for the performance of the whole contracts, including defining packages of work and management of construction works which are subcontracted to work contractors.

Management contracting evolved from the United Kingdom (UK) (Sidwell, 1983). According to Murdoch and Hughes (2008), the system has been in use for a considerable period even though it was only in 1987 that a standard form of contract was developed for it. The horizon factory in Nottingham for John payer limited designed by Arup and Associates and built by Bovis limited, and the British Library in London where among the earliest projects built using this system (Murdoch and Hughes, 2008; Sidwell, 1983).

The international standard organisation (ISO 10845-1 2010) describes management contracting system as a procurement system in which the contractor provides consultation during the design stage and is responsible for planning and managing all post contract activities and for the performance of the whole contract. In contrast to the practice in a construction management system or a traditional procurement system in which contractor also go into direct contract with the client, only the management contractor goes into construction work contract for the entire building project with the client, and takes responsibility for the administrative and operational works of the contract in a management contracting system (Al-Harthi et al., 2014b; Murdoch and Hughes, 2008; Naoum, 1994; Sidwell, 1983; Ward et al., 1991). Therefore, the system is indicated to consist of 100% sub-contracting, since every item of the work is subcontracted to work contractors. However, in the guidance on procurement and contract strategies provided by the Institute of Civil Engineers (ICE, 2005: 7) management contractors may also participate in some actual construction works.

In the Joint Contract Tribunal guidance note as highlighted by Murdoch and Hughes (2008: 61) the suitable circumstances in which management contracting can be used as a procurement option includes: when design is to be carried out by an independent architect and design team, when there is need for early completion since work can begin while complete design is still being undertaken and when project requirements are significant. Others are when there is need to change the client's requirements during the construction stage and when the maximum possible competition concerning price is required. Also, the delivery management guidelines Practice Guide 2 on construction procurement strategy of the Construction Industry Development Board (cidb, 2011) suggests that a management contract is appropriate in the following project environment: where there is limited capability or capacity to advance the work beyond a strategic brief, when the contractor needs to work alongside the design team to develop the programme for design, when the employer has limited resources to manage and procure some construction work contracts, and when single point accountability is desired for the delivery of a series of projects. However, Naoum and Langford (1987) argued that many contracting organisations enter management contracting without the right personnel and do not understand the change in status as they just regard themselves as administrative middle-men between the sub-contractors and the client, and thus do not inject any creative ideas into the project procurement process.

2.2 Difference between management contracting and the traditional procurement system

On review of organization structure and contractual relationships of management contracting and the traditional system of procurement as provided by (Alharthi et al., 2014; Murdoch and Hughes, 2008; Naoum, 1994; Naoum and Langford, 1987; RICS, 2012; Sidwell, 1983; Ward et al., 1991), Figure 1 and Figure 2 were developed to illustrate the contractual relationship and organization structure in expressing the differences between management contracting and traditional procurement system.

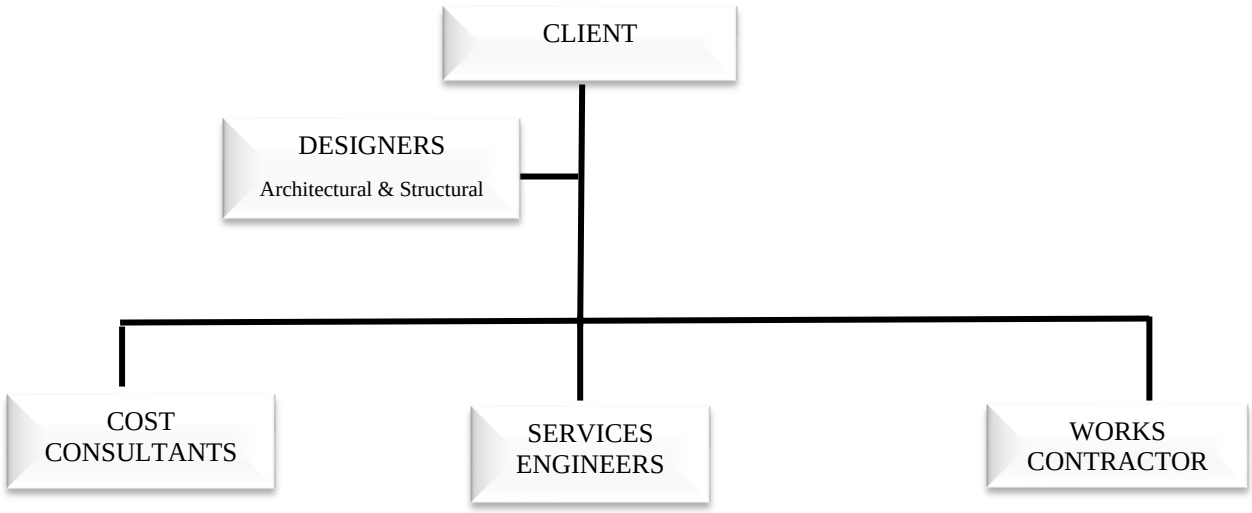

Figure 1. Traditional Procurement System

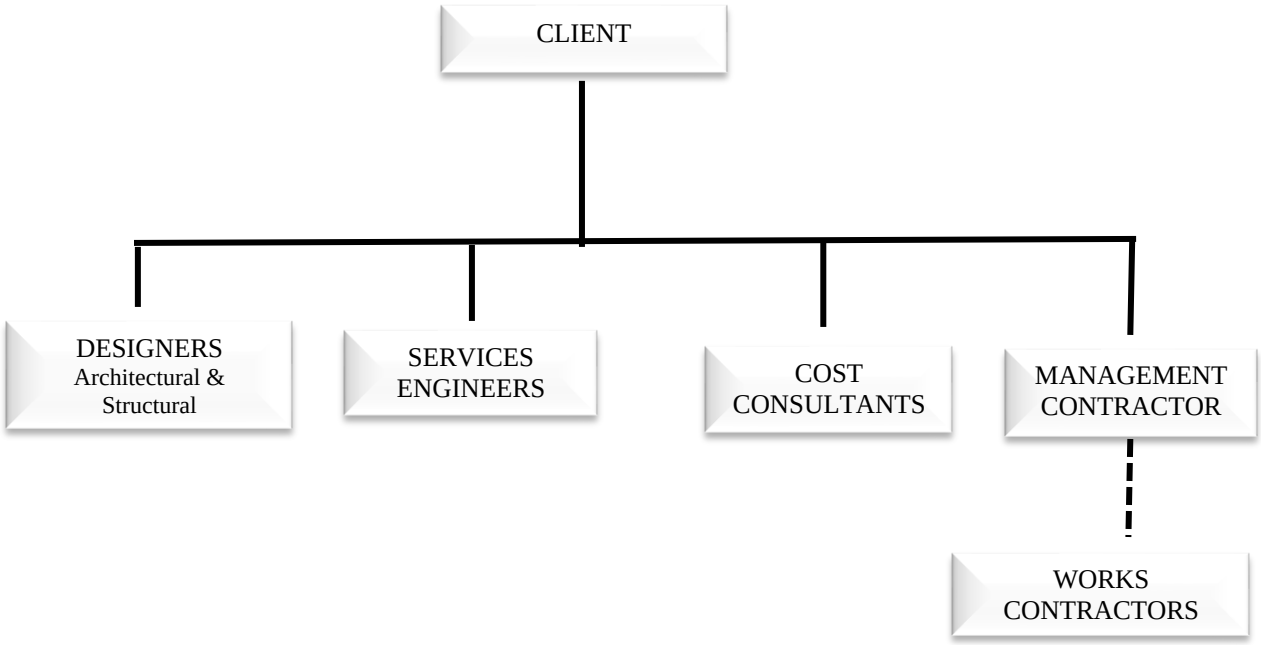

Figure 2. Management Contracting Procurement System

In the traditional procurement system shown in Figure 1, work contractors have a direct contractual relationship with the client. This will result in a more active role by the customer in contrast to what is the practice in management contracting, where only the management contractor has a contractual relationship with the client (see Figure 2). The management contractor then appoints and manages the work contractors who are contractually accountable to the management contractor. This enables clients to take more detached roles in the project procurement process as suggested by (Naoum and Langford, 1987). Figure 2 also shows that the management contractor is elevated to the same level as the project consultants, enabling the management contractor to offer services both at the design stage and as well as the construction stage. With this arrangement, the consultants will be having access to the expertise and experience of the management contractor at the pre-construction stage, which will result in improved services from the consultants. According to Murdoch and Hughes (2008) the opportunity provided for contractors to have the same status with the consultants is the primary reason why contractors favored a management contracting system to the traditional method, where contractors are directly placed under the scrutiny of consultants or the project's principal agent, which usually are architects depending on the type of project.

Also, in contrast to the practice in traditional procurement system in which designs are typically completed before construction commences, in management contracting, the management contractor, being a member of the design team and a member of the construction team is engaged early at the pre-construction stage of the project. Thereby facilitating the overlap of designs and construction processes. This practice is attributed to the flexibility and early project completion feature in management contracting system (Naoum, 1994; Sidwell, 1983 and Ward et al., 1991).

Furthermore, in management contracting system, sub-contracting is a major distinguishing feature. The management contractor does no construction work but rather subcontract all the works, which are usually broken down into work packages to the work contractors as submitted by (Alharthi et al., 2014 and Murdoch and Hughes, 2008). Contrary to the traditional system, where the work contractor is responsible for the actual construction of work and may use subcontractors as well. Also, contractors in a traditional system are often paid a lump sum for the contract, but in management contracting, management contractors usually go into a fee contract and are paid a prime cost for all works done plus a fee. Although Murdoch and Hughes (2008) argued that certain direct works such as site staffing, provision of labour and materials and sundry cost services provided by the management contractor should be dealt with on a lump sum basis instead of cost reimbursement.

From the preceding, the differences in management contracting appear to be responsible for the added advantages attributed to the system over the traditional procurement system. Thereby, making management contracting a more suitable procurement route particularly for large and complex projects, and when early completion and flexibility during construction is desired.

2.3 Duties of a Management Contractor

As a result of the increase in responsibilities of the management contractor, in being a consultant as well as a contractor, and in providing services at the preconstruction stage and the construction stage, the benefits in management contracting could be attributed to the duties performed by the management contractor. Owing to the different roles and responsibilities of the management contractor, the tasks carried out by the management contractor can be argued to be distinct from that of a general contractor in a traditional system. This calls for clarification of the duties of the management contractor and to categorise them accordingly in the different phases of a construction project.

In a case study involving 39 management contracts and 30 traditional contracts in the UK, in investigating whether the means of procurement influenced project performance, Naoum (1994) reported that management contractor's liability and responsibility is not apparent, and there is not enough evidence to support how management contracting reduces overall building cost and quality of projects. This report may be an indication of a gap in knowledge on the duties performed by management contractors. However, Murdoch and Hughes (2008: 64) asserted that due to the functions carried out by the management contractor, the roles of a contract administrator and a quantity surveyor might not be defined in a management contract.

Essentially the duties performed by the management contractor are divided into pre-construction period duties and construction period duties (Murdoch and Hughes, 2008: 64). At the pre-construction stage, the management contractor performs duties such as professional team integration, advising on the breakdown of work packages and assisting with negotiations. While responsibilities such as programming and planning, monitoring off-site preparation work, instituting effective cost control techniques, labour relations and site management are performed by the management contractor at the construction stage, in addition to providing site facilities and services. Sidwell (1983) submits that the two most important duties of the management contractor are in subcontractors control and design team integration. Similarly, Ward et al. (1991) have reported coordination of work responsibilities and liabilities and control functions as the duties performed by a management contractor. These identified management contractor duties appear comparable to management duties as defined by Mintzberg (1973: 92) that includes: the interpersonal role of figurehead, leader and liaison; the informational role of monitor, disseminator and spokesman; and the decisional role of entrepreneur, disturbance handler, resource allocator and negotiator. An earlier view of managerial duties was described by Henry Fayol in 1916 (Fayol, 1954) to include Planning, organising, controlling, commanding and coordinating.

2.4 Required Competencies of a Management Contractor

Competency has been described as the knowledge, skills, and behaviours required to perform well and to keep up with the culture of an industry (Delo et al., 2010). Mirabile (1997) earlier describes competency as the "knowledge, skill, ability or characteristic associated with high performance on a job, such as problem-solving, analytical thinking, or leadership." For a management contractor to perform required duties in management contracting effectively, it can be argued that the management contractor needs certain competencies.

Several studies have sought to identify required skills and their relationship to positions and performance in different jobs. For example, in a report evaluating management contracts in the UK, Sidwell (1983) identified builder's management, construction, estimating, buying and planning as skills made available to design teams by management contractors which brings the benefits of speed, economy, and construction method. Meredith and Mantel Jr (2011: 142) categorise project management required competencies into six key skill areas, to include: communication, organisation, team building, leadership, coping and technological skills. According to Delo et al. (2010), recurring themes of competencies include behaviours such as self-control, resilience, communication, self-assurance, and those related to team leadership. Dainty et al. (2005) suggest that Construction project managers must combine technical knowledge and expertise with behaviours that engender effective multiorganizational teamwork and communication to achieve successful outcomes. They

further identified the competencies for project management performance to include the following: achievement orientation, initiative, information seeking, focus on client's needs, impact and influence, directedness, teamwork and cooperation. Others are team leadership, analytical thinking, conceptual thinking, self-control, and flexibility; with self-control and team leadership being indicated as the core competencies. Owing to the increased responsibility management contractors are expected to perform, undoubtedly the knowledge of their required competencies may provide clients with information for appropriately selecting a management contractor that is capable of achieving the expected project outcomes.

3. Research Methodology

The research was undertaken to investigate the duties performed by the management contractor and the required competencies for a management contractor. This will require a comprehensive and inductive study of management contracts.

In view of this, the study adopted the multi-case study research design involving the use of semi-structured interviews and documentary analysis of projects wherein management contracting was used. Since no published list that will enable identification of such contracts, purposeful snowballing sampling techniques was used, in which the determination and selection of cases was based on information received from experts and informants. This sampling technique identifies cases of interest from people who know people who know what contracts are information-rich; that is, right examples for the study and good interview subjects (Wengraf, 2001). Three recent cases of management contracts in South Africa were identified; semi-structured interviews with the key role player were carried out and permission was obtained to assess tender documents for documentary analysis in which relevant tender documents were evaluated and interpreted to obtain appropriate data for the study.

4. Findings and Discussion

The data collection involved an examination of project tender documents and semi-structured interviews with the key role players of the three case studies with over ten years' experience in construction at management level. The data generated from the semi-structured interview was analysed using content analysis facilitated with the use of Nvivo 11 qualitative analysis software to quickly identify prominent words, as well as key concepts across the three case studies. An analysis was made concerning prominent themes and issues arising from the cases studies. The project details of the three cases of management contracting identified in the study are extracted from tender documents and presented in Table 1. Table 1 shows the details of the project clients, implementing unit, description and location of the projects, and the selection strategy employed. Also, in Table 1 are the conditions of the contract, type of contractor required, performance bond required and the extent of subcontracting.

Table 1: Management Contracts Cases

	Case study 1 (August 2013)	**Case study 2 (August 2013)**	**Case study 3 (April 2014)**
Description and location of project	Refurbishment, extension or alteration of existing buildings for the development of new Sol Plaatje University in Kimberley, Northern Cape Province	Refurbishment, extension or alteration of existing buildings for the development of the new University of Mpumalanga in Nelspruit	Refurbishment of educational and healthcare facilities to improve the quality of existing infrastructure throughout the Western Cape Province
Selection strategy	Framework contract, over a three-year term without a guarantee of a quantum of work.	Same as “CS1."	Framework contract/s over a three-year term without a commitment to a quantum of work.
Conditions of contract	NEC3 ECC – Main Option F (Management Contract). Dispute resolution Option W1: Dispute resolution and secondary Options X2 Changes in the law X7: Delay Damages X13: Performance Bond Z: Additional conditions of contract of the NEC3 Engineering and Construction Contract (June 2005)	Same as "CS1."	NEC3 ECC – Main Option F (Management Contract). Dispute resolution Option W1: and secondary Options X2: Changes in the law X5: Sectional completion X7: Delay Damages X13: Performance Bond X20: Key performance indicators Z: Additional conditions of contract of the NEC3 Engineering and Construction Contract (April 2013)

Type of contractor required	cidb contractor Grade 6 CE or higher Turnover > R 18 m Previous refurbishment projects > R7,0 million	cidb contractor grade 6GB or higher Turnover > R 15 m Previous refurbishment projects > R7,5 million	-
Quality evaluation of contractor's (tender)	Experience of company, experience of principal management, i.e. the key person responsible for interfacing with the Project Manager and the professional team, Approach Paper (Technical approach and methodology)	Same as "Project 1."	Experience of key person responsible for interfacing with the Project Manager, Approach Paper (Technical approach and methodology)
Duration	156 weeks after starting date	156 weeks after starting date	3 years
Extent of subcontracting	20.2 Work which the contractors will do is confined to the establishment and de-establishment of the site and activities that may be agreed with the Project Manager from time to time.	20.2 Work which the contractors will do is confined to the establishment and de-establishment of the site and activities that may be agreed with the Project Manager from time to time.	Work which the Contractor will do is confined to the establishment and de-establishment of the site, maintenance, construction and installation activities that may be agreed with the Project Manager from time to time.
Performance bond	7.5%	7.5%	R 5,0 million

CS1, Case Study 1; NEC, New Engineering Contract; ECC, Engineering and Construction Contract; cidb, Construction Industry Development Board; CE, Civil Engineering; GB, General Building Works.

4.1 Duties of Management Contractor

From the documentary analysis of the project documents for the three case studies, the specific duties performed by the management contractor are presented in Table 2.

Table 2: Duties of Management Contractor

Duties	**Description**	**Stage of Project**	**Case study 1**	**Case study 2**	**Case study 3**
Management	Manage the procurement process, the implementation of project programmes, perform duties relating to overall management of contract, site administration and provide progress reports,	P & C	✓	✓	✓
Co-ordinate	Coordinate a considerable number of subcontractors, service providers and material suppliers and supervises the work of the subcontractors	C	✓	✓	✓
Plan	Planning at a package level including development of maintenance plan and condition assessment and preparing forecast to define cost of work at intervals	P			✓
Direct	Direct the project team	P & C	✓	✓	✓
Design	Oversee development of design	P			✓
Facilitate	Early start of work to meet deadlines	P	✓	✓	✓
Procure Resources	Procure resources that are necessary to provide the required works and related professional design and condition assessment services	P & C			✓
Execute limited portion of the work	execute a limited part of the work with an own workforce, site establishment and de-establishment and provision of site facilities such as latrines, water and electrical services	C	✓	✓	✓
Contract administration	contracting, pricing and targeting strategy, and procurement procedure for the portfolio of projects administer package on behalf of the client, handover completed works and close out of projects and packages	P & C	✓	✓	✓

P, Pre-construction stage; C, Construction stage.

Also, participants for semi-structured interviews for the study were selected based on their involvement in the management contracts under investigation. The interviews lasted for about an hour in each case. Participants were asked specific questions on the duties performed by the management contractor and the required competencies to perform these duties. Note taking, and audio recording of interviews was employed and was then transcribed and analysed using content analysis facilitated with the use of Nvivo 11 qualitative analysis software. The prominent themes from the participant's responses were brought together and are summarised as follows:

- The management contractor puts all service together like a turnkey development where all the team members report to the management contractor who integrates all team.
- The management contractor updates scope and concept to construction drawings and the pre-construction stage.
- The management contractor contributes to resolving design issues, reviewing drawings, constructability problems and issues on how to get the project delivered.
- Management contractors are active partners as part of the development and planning of design team and up to delivery
- The management contractor manages and control subcontractors and other occupations and big size labour force during the construction process
- Carry out induction, safety, and access arrangement
- Programming of works, getting people on time
- Ensuring site safety, managing the whole occupational safety, ensuring work is being secured on time in a safe and timely manner and safe working environment
- Provides training, induction and ensuring everyone has tools and equipment to work with
- Motivate people: keeping the construction team motivated
- Managing clients in controlling changes to scope as it affects cost and deadlines

4.2 Required Competencies for management contractors to perform their duties

- Sound knowledge of construction and building techniques and construction methodology such that will enable achieving the same outcome but in a better way and cheaper cost. If something is not working the management contractor should be able to come up with a solution.
- Construction methodology: knowledge of what is new in the market, what is best in the market, the ability to take a drawing and say something is missing or that does not tie in properly, or that there is a need for more information. Ability to interpret designs, schedule and manage workflows
- Leadership qualities
- Knowledge of construction business which is indicated by the number of years of experience in the business
- Analysing skills: management contractor should be able to examine projects and say this is the sequence of events, this is how to afford these things, and these are the different activities step and resources needed.
- Construction Management: Site administration, procuring subcontractors and then managing and coordinating their work quality and productivity. Being proactive solution driven on getting the job done as a team.
- Contract Management: Managing variety of contractual relationship with suppliers and subcontractors.
- Conflict Resolution: Ability to manage risk events when they occur and move forward.
- Relationship formation: providing a link and relationship among the professional team
- Financial management: the ability to manage cash flow by proper forward projecting so that projects do not run out of money.

5. Discussion of findings

The findings on the duties performed by a management contractor and the required competencies for a management contractor to perform these functions are discussed in this section.

5.1 Duties performed by management contractors

The tasks performed by management contractors were found to include duties carried out at both the preconstruction and construction stages of construction projects. This aligns with the submission of Murdoch and Hughes (2008). The main duties performed by management contractors discussed in this section include:

1. Construction management duties: The management contractor is responsible for the overall administration of the contract by putting and integrating all services together. The management contractor consults with and coordinates the professional team at the preconstruction stage and the work contractors at the construction stage. The management contractor also plans, organises, schedules and programmes design, work packages and site administration. Other construction management duties performed by a management contractor are supervision, monitoring and quality control, to ensure that work is being constructed correctly. Also, the management contractor carries out reporting and provision of required project information and facilitates early completion of projects. These duties aligned to management duties established by Henry Fayol in 1916 (Fayol, 1954) describes to include planning, organising, controlling, commanding, and coordinating.

2. Leadership duties: The management contractor plays an interpersonal role of head of the project team. Directs the project team and work contractors as well as keeps team members motivated while executing the project. Management contractors also act as the liaison; spoke person and resource allocator of the project.

3. Cost Control duties: here management contractors provide cost information to client and design team, prepares forecast to define the cost of work at intervals, carry out cost estimation of work packages, manages clients and the design team in controlling changes to scope

as it affects cost and formulate the most cost-effective plan that will deliver the project within budget.

4. Buildability assessment duties: buildability assessment duties were adjudged as one of the core duties performed by the management contractor (Murdoch and Hughes, 2008; Sidwell, 1983). Management contractors are active partners of the design team and use their experience and expertise in construction to contribute to resolving design issues, reviewing drawings and designs alternatives, reviewing construction feasibility issues, assessing the availability of labour, materials, plants and equipment, and issues on how to get projects delivered. Also, the management contractor updates the scope and concept of the construction drawings, provides information on cost and materials, construction methodology, what is new and best in the market, and implications of various decisions in the course of the project.

5. Purchasing duties: Management contractor purchases and order materials, supplies and resources that is necessary to provide the required works.

6. Contracting duties: the management contractor is responsible for evaluating, selecting, negotiating, and going into contract relationship with subcontractors, suppliers, and other service providers in the client's interest. Also, management contractors are responsible for the establishment and de-establishment of the site at the completion of the project.

7. Conflict resolution duties: A management contractor manages disputes that may arise on site, and drafts and negotiates contracts properly to avoid ambiguities and dispute.

8. Relationship formation duties: Management contractors provide and facilitate links and relationship among project team as well as cooperate and seek cooperation with all persons involved in the project.

9. Health and Safety duties: here management contractors carry out duties ensuring site safety, manages the complete occupational safety, and ensuring work is being secured on time in a safe manner and in saving the working environment. Also, management contractors should ensure compliance with health and safety codes and regulations.

5.2 Required Competencies to Perform as a Management Contractor

Competency is the knowledge, skills, and behaviour necessary to perform well and keep up with the culture of an industry (Delo et al., 2010). Owing to the increased responsibilities assigned to the management contractor in a management contracting procurement system as indicated in the duties of a management contractor from the foregoing, the competencies required to perform as a management contractor differ from that needed to perform as a general contractor in a traditional procurement system of which financial and technical capabilities are key required competencies. The typical required competency for management contractors to carry out their functions identified in the study are: sound knowledge of construction techniques, good understanding of construction methodology, leadership skills including excellent temperament and self-control, knowledge of construction business, construction management skills (to include: programming, planning, organizing, coordinating, supervising and monitoring skills), analyzing skills, financial management skills, sound knowledge of contract management including knowledge of bid evaluation, negotiating power, relationship formation skills and conflict resolution skills. These competencies align with required competencies for management contractors and construction project managers as explained by Sidwell (1983) and Dainty et al. (2005).

6. Conclusions

This study aimed to investigate the duties performed by management contractors and the required competencies for a management contractor, to provide knowledge and understanding on important considerations for the selection of a management contractor. This will give a better understanding of the duties to be performed by a management contractor in a management contracting procurement system and the required competencies for one to perform as a management contractor. The research findings show that the duties performed by management contractors discussed in the study relate to construction management, leadership, cost control, buildability assessment, purchasing, contracting, conflict resolution, relationship formation, and health and safety duties. The identified required competencies to perform as a management contractor are sound knowledge of construction techniques, construction methodology, construction business, construction management, financial management, contract management, relationship formation and conflict resolution. Others are leadership and analysing skills.

The knowledge and understanding of the duties and required competencies to perform as management contractors provided in this study will help construction clients and the construction industry in the selection process, performance management and evaluation of management contractors. The findings from the study also give insight on the needed requirements for professional development and training for aspiring management contractors. Also, the findings from the study will have the potentials to provide documentation for reference in a future study on management contractor and selection of management contractors.

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Subcontracting Systems and Social Protection in the Informal Building Construction Industry in Lagos, Nigeria

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Abstract

Subcontracting systems are entrenched in the building construction process in Nigeria. However, the implications for informal building construction industry workers' access to social protection measures are a cause for concern. This study examined the influence of subcontracting systems on access to social protection measures by workers in the informal building construction industry in Lagos, Nigeria, based on a cross-sectional research design, agency theory and the general theory of employment. The secondary and primary data used for the study were derived from a systematic review of relevant literature, a questionnaire administered to 908 respondents and 50 key informant interviews among informal building construction workers and subcontractors. The structured questionnaire was subjected to internal and external validity; the Cronbach's Alpha reliability test of the survey stood at 0.722. Data extracted from the structured questionnaire and interviews were analysed through the use of descriptive statistics, correlational analysis and narrative analysis. Findings revealed that workers got financial and health assistance from employers and government respectively. Results also show that informal building construction workers perceived provision of social protection as inadequate. The results of Pearson Correlation indicate that subcontracting systems have an inverse and statistically significant relationship with access to free or subsidised medical care, the remedy to accident on site and pattern of savings. Therefore, subcontracting systems influenced the availability of social protection measures significantly. Based on the findings and the important roles of subcontractors in the building construction industry, it is recommended that appropriate legislative instrument should be developed to address the challenges posed by subcontracting concerning access to social protection measures in the informal building construction industry. It is also suggested that steps should be taken by the government to promote formalisation of employment in the informal sector and support community-based social insurance schemes in Nigeria.

Keywords: Building construction, Informal economy, Lagos, Social protection, Subcontracting systems.

1. Introduction

Subcontracting systems are entrenched in the building construction process in Nigeria. The prevalence of subcontracting systems in the building construction industry has been referenced as a coping mechanism against uncertainties associated with the availability of resources, as well as site and climatic conditions (Usdiken, Sozen, & Enbiyaoglu, 1988: 633). Subcontracting systems facilitate the engagement of subcontractors, who sometimes operate in the informal economy. Informality in employment in the building construction industry is observable in most developing countries (Wells, 2007: 91). The informal sector is the term used to describe informal employment within and outside of formal organisations covering informal self-employment and informal wage employment (Chen, Vanek & Heintz 2006: 2132).

Studies have shown that research on employment in developing countries would be inadequate unless necessary attention is given to the informal economy due to increased economic activities in the sector (Heintz & Valodia, 2008: 11-12; Tanzi, 1999: 338). In this connection, the rate of employment generation in the Nigerian informal economy is estimated at between 45% and 60% of the urban labour force (Adejumo & Azuh, 2013: 10). As at the last quarter of 2015 and the first three months of 2016, 61,026 informal sector jobs were generated in contrast with 21,477 formal sector employment in Nigeria (National Bureau of Statistics,

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2016: 3). This statistic shows that more jobs are produced in the informal sector, suggesting that the sector should be a major target for social protection measures.

The goal of social protection measures is to ensure stable income to workers, alleviate poverty and risks associated with poverty (Barrientos & Hulme, 2008: 2; ILO, 2000: 2). Moreover, social protection is believed to have contributed significantly to poverty reduction in developed and developing countries in the last 50 years (ILO, 2000: 2). Nevertheless, workers in the informal economy are more susceptible to inadequacies in employment than those in the formal sector, particularly because the former is unregulated (Akinwale, 2014: 118; Wamuthenya, 2010: 18).

The combination of subcontracting systems, with its attendant challenges for workers as well as short attention to the provision of social protection measures for informal workers in Nigeria, has necessitated this present study. Besides, Canagarajah and Sethuraman (2001: 22) suggested that provision of social security for informal workers is challenged by risks associated with the status of informality in employment. Therefore, the test of effectiveness and improvement of social protection can only be done by studying those who do not seem to benefit from the programme.

In the light of the above, the objective of this study is to assess the relationship between subcontracting systems and access of informal building construction industry workers to social protection measures in Lagos State, Nigeria. The study will answer three questions: (1) How do subcontracting systems relate to social protection measures in the informal building construction industry? (2) What types of assistance and benefits do informal building construction workers receive from the government? (3) What are the kinds of assistance provided by employers for informal building construction workers? The answers to these questions would provide insight into the nature of interventions required for social protection in the building construction industry.

The paper is divided into six major sections: section one deals with the introduction, section two addresses theoretical framework, relevant literature on subcontracting systems and social protection, section three covers methods, section four treats results and discussions, Section five treats conclusion and recommendation, and limitations of the study are discussed in section six.

2. Review of Relevant Literature

2.1 Theoretical framework

This study examines the relationship between sub contracting systems and availability of social protection measures in the informal building construction industry within the ambits of agency theory and the general theory of employment.

2.2 Agency theory

Agency theory originated from studies by Wilson (1968) and Arrow (1971) on the risk and challenge of differing disposition to risk sharing in work requiring some level of cooperation (Eisenhardt, 1989: 58). Agency theory offers explanation for the type of relationship where one party (the principal) delegates work to another (the agent) who possesses specialised knowledge/skills; and performs work on behalf of the principal (Jensen & Meckling, 1976: 309; Eisenhardt, 1989: 59; Boland, Golden & Tsoodle, 2008: 624; Cohen & Baruch, 2010: 187). In this connection, agency theory can be utilised in the analysis of the conflict between principal and agent due to differing goals or desires and for the challenges associated with the disposition to risks. Thus, agency theory is useful in the analysis of principal-agent relations, which describes what a building construction contractor or project owner is to a worker or subcontractor respectively. Kallay (2012: 44) loosely defined agency theory as an interconnection of contracts between resource holders. As such, the nature and character of the agency relationship are defined by contracts. The implication of this is that if an employment contract does not provide for workers to access social protection or any other benefit, then employees may not be able to access whatever is not specified in a contract.

Agency relationships are characterised by conflicting goals between the principal and the agent, on the one hand, and the existence of asymmetric information, which makes monitoring and verification between the principal and agent difficult (Jensen & Meckling, 1976: 311; Eisenhardt, 1989: 58). Therefore, the challenge of differing aims of parties to agency relationships, further aggravated by a gap in communication, may make concerns for social protection receive less attention in the context of subcontracting systems. The informality of employment in the building construction industry, which may account for the state of social protection measures in the sector is not covered by agency theory, and this necessitates the introduction of the general theory of employment into this discussion.

2.3 The general theory of employment

The general theory of employment is associated with John Maynard Keynes, author of General Theory of Employment, Interest and Money (1936). Deduced from Keynes' main argument is the fact that employment is not always full and permanent. This is a departure from the ideas put forward by classical economists, such as Say (1834), Ricardo (1817, 1971), Mill (1808, 1844, 1848), Marshall (1890) and Pigou (1912, 1944). The classical theory of employment believes that people work if their pay is worth the effort on the job in the labour market.

The classical economists argue that when the demand and supply of labour become equal, an economy will inevitably tend toward full employment (Gasset, n.d: 197). Full employment is when everyone who wishes to work is employed at a particular wage. However, one case of employment that is not full is known as non-standard employment. The non-standard employment situation is employment that is not continuous and full-time; without a contract specifying the duration of employment; without regular hours of work and associated benefits besides pay (Okafor, 2012: 103; Simons & Lake, 2005: 4). The short-term engagement of workers due to the nature of building construction work is often the rationale for adopting subcontract systems which invariably limits the obligations of contractors or whoever is the principal to workers. Therefore, Keynes' general theory of

employment advocates legislative intervention, which could translate into social protection programmes.

The argument of the classical economists suggests that there is no chance that individuals may be involuntarily unemployed because they simply cannot find work even though they are willing to work at the prevailing wage. In this connection, the general theory of employment recommends that people must be ready to work for less pay. This recommendation may imply that involving subcontractors in the value chain of a business endeavour may force people to work for less and limit their access to social protection measures.

2.4 Subcontracting systems in the building construction industry

Subcontracting is the means by which individuals or firms purchase part of a product or process to optimise limited resources (Ajayi, 2007: 149; Kimura, 2002: 163). Subcontracting involves subletting the execution of a section or sections of a project to a contractor or contractors who specialise in specific aspects of the project (Manu, Ankrah, Proverbs, Suresh & Adukpo, 2011: 736). Subcontracting systems have been described as an efficient risk-sharing mechanism, as individuals or organisations that choose to subcontract do so after weighing various options (Atamturk & Hochbaum, 2001: 1081; Kimura, 2002: 166). It may be argued that subcontracting help firms to concentrate on core competencies.

Subcontracting systems and subcontractors have an important place in the construction industry (Azari-Rad, Philips & Thompson-Dawson 2014: 242; Enshassi, Choudhry, Mayer & Shoman, 2008: 52). The fragmented and specialised nature of construction work necessitates the engagement of different skills required at various times in the building process (ILO, 2001: 24). As such, subcontractors supply the necessary expertise and workers for construction work in the building construction process. It has been argued that subcontracting in the construction industry serves as a buffer against risk, helps to reduce operating costs, secure competitive advantage and position for maximum profit (Aronson & Zionts, 2008: 232; Ohnuma, Pereira & Cardoso, 2000: 2; Tanaka, 2012: 97). This offers some insight into the appeal of subcontracting systems for principals.

Subcontracting in the production sector in Nigeria commenced in the 1960s (Ajayi, 2007: 149). Subcontracting has been found to thrive in the Nigerian building construction industry, and some studies have examined its relevance in the industry. Adenuga (2013: 336) assessed how subcontractors affect quality in the delivery of construction projects; Ogunsanmi (2015: 64) examined subcontractor control in labour subcontracting and direct labour systems and found that there is less risk of premature delivery of the project in labour-only subcontracting. Furthermore, Fagbenle and Adesanya (2014: 300) examined the relationship between registration and performance of subcontractors and concluded that registration with the Federal Registration Board has no relevance to subcontractor performance and that registration is not a prerequisite for engagement. However, Loh and Ofori (2000) cited in Fagbenle and Adesanya (2014: 297) determined that in Singapore the registration of subcontractors would improve the welfare of workers.

The focus and outcomes of these studies show that available studies on subcontracting systems in the Nigerian building construction industry do not provide adequate information about the relationship between subcontracting systems and social protection in the industry.

2.5 Social protection in Nigeria

Social protection, in the contemporary sense, has been noticeable since the 19th century, a time characterised by the commodification of labour, which exposed labour to new risks associated with mobility and wage flexibility (Canagarajah & Sethuraman, 2001: 2, 4). Social protection in the African setting is entrenched in the informal systems characterised by mutual support in the family networks and charities (IIiffe, 1987: 178).

Social protection programmes in Nigeria such as the Provident Funds and the Children Fund were responsible for the development, rehabilitation and feeding programmes especially following the Biafran war of 1967 to 1970 (IIiffe, 1987: 258). Kabeer, Cook, Chopra and Ainsworth (2010: 29) suggested that studies on social protection in developing countries should centre on the extension of social citizenship to some excluded social groups. This is because the test of effectiveness and improvement of social protection can only be done by studying those who do not benefit from the programme. This assertion reinforces the contribution of this study to knowledge on the subject of social protection in the informal building construction industry in Lagos Nigeria.

Besides, social protection is a sustainable means by which social justice can be provided for marginalised social groups and promote social inclusion and accountability (Jones & Shahrokh, 2013: 10). In this connection, Canagarajah and Sethuraman (2001: 16) recommended that, in developing countries, social protection for workers in the informal industry must address risks, such as fall in income and risks associated with the status of the informality of employment. Nevertheless, it has been argued that the only means by which informal workers can access social protection is to organise (Lund & Nicholson 2006: 5; Olusanya, 2014: 1).

Gonzales and Gregorio-Manasan (2002: 171) observe that social protection is well defined in the formal industry. In the Nigerian context, Nwabueze (1989: 2) observe that social protection has been neglected and is a pointer to distortion in national priorities. Thus, the issue of social protection is yet to receive adequate attention in the informal building construction industry in Nigeria.

2.6 Social protection in the context of informal economy and subcontracting systems

Subcontracting offers employers the opportunity to hire workers on a temporary basis thereby giving employers some flexibility on the determination of terms and conditions of employment. Li and Peng, (2006: 2) argue that there is a weakening of workers protection once there are large numbers of informal workers. Similarly, Canagarajah and Sethuraman (2001: 3) maintain that increased poverty as well as informalisation in labour

markets, is threatening the provision of social protection in most countries, and that, despite best efforts, social protection is still inadequate in Nigeria. This is also the position of Holmes, Akinrimisi, Morgan, and Buck (2011: 1, 2012: Vi; Umukoro, 2013: 305). In this connection, Hagen-Zanker and Holmes (2012: Vi-Vii) explains that:

Nigeria currently spends less on social protection than many other African countries, despite its relative wealth. Social protection represented about 1.4% of consolidated government expenditure in 2009, compared with Kenya's spending of 6.2% of public expenditure in 2007/08. Moreover, two-thirds of this is allocated to civil servant pension and benefit schemes. Social protection is not seen as a top priority for the federal government, as reflected by the limited funding available for it. Some states are demonstrating interest and allocating resources to pro-poor social spending, in general, and, social protection, in particular (e.g., Jigawa State) (Hagen-Zanker & Holmes, 2012: Vi-Vii).

This assertion means that addressing the problem of inadequate investment in social protection would require an overarching policy framework, which would serve as clear guides on the roles of federal, and state governments in the design and implementation of social protection programmes. Also, it is suggested that the role of the local government councils should be articulated, as they are more likely to be more active in these spheres.

Furthermore, Li and Peng (2006: 3) showed that the framework for social protection must take into account both work and status related risks, noting that the labour subcontracting systems, even though it plays a pivotal role in the supply of labour, also contributes to the high risks workers face, specifically in the construction industry. This myriad of challenges particularly in a situation where there is no contract of employment has been highlighted as follows:

Trust, without a contract, makes it difficult to be sure workers will be paid on time, or at all, or have any chance of compensation for damages. It is also related to persistent unemployment, which, in turn, affects the ability of workers to file complaints and be effectively protected. Jobs in construction also bring along high risks of injuries, especially when health and safety standards are not met. Regarding claiming unpaid salaries, the labour subcontractor systems also creates difficulties for those trying to implement policies to improve worker securities. Many researchers called for more creative methods to protect the workers. However, as shown in this research, the problems faced by these workers result from the organisation of the industry (Li & Peng, 2006: 15).

This narrative shows that unemployment affects the willingness of workers to protest hostile working conditions. Li and Peng (2006: 17) cautioned, however, that this myriad of problems, particularly those that confronted rural construction workers in Chinese cities could not be solved with a rapid top-down policy, due to the complex interaction between social policies, industrial organisation and the process of rapid urbanisation.

However, Eme and Ugwu (2011: 2) have noted that the Nigerian Pension Reform Act (2004) translates into improved social security planning for retired workers and their families to achieve a degree of economic security. Nevertheless, the Pension Reform Act (2014) introduced changes, such as: increase in the minimum number of employees required to make contributions under the Act, increase in the minimum contribution into the scheme and the imposition of fines and penalties on Pension Fund Administrators (PFAs) for failure to meet their obligations to contributors as well as violation of the provisions of the Act (Price Waterhouse Coopers 2014: 1). These additional requirements should facilitate the inclusion of the excluded, but the key to success will lie in ensuring compliance from all the parties involved.

3. Methods

The research design adopted for this study was a cross-sectional research design while the strategy employed was survey design. The cross-sectional design was adopted to observe the study population at a point in time (Levin, 2006: 24). This study was conducted in Lagos State, Nigeria, which has a population of about 21 million (Lagos State Government, 2017). Lagos State is divided into 37 Local Development Areas, 20 Local Government Areas and 5 Administrative Divisions, namely: Ikeja, Lagos, Ikorodu, Badagry and Epe (Lagos State Government, 2017; Oteri & Ayeni, 2016: 2). The concentration of economic activities, large population and the resulting demand for building construction in Lagos State makes the city suitable for this study.

The population of this study comprised workers drawn from building construction sites, which possessed an approved building plan in Lagos State. It was necessary to use sites with approved building plans because as at the time this study commenced, the total number of building construction workers in Lagos State could not be ascertained. These approved building plans therefore provided information on active sites in Lagos where workers could be found. The records of approved building plans between 2007 and 2013 were retrieved from the Lagos State Physical Planning Permit Authority. The period 2007 through 2013 relates only to data for building construction sites considered as sample frame of the study and not the time when workers were observed. The population were informal workers artisans, including Carpenters, Blocklayers, Iron-Benders, Welders, Labourers, Machine Operators, Electricians, Plumbers, Plasterers, Painters and Tilers. Table 1 shows approved building plans between 2007 and 2013 across 20 Local Government Areas.

The study adopted Yamane's (1967) formula for sample size determination, which was adapted as follows:

$$n = \frac{N}{1 + N(e^2)} \quad (1)$$

Where: n = Sample Size
N = Population
e = Sampling Error

Table 1: Number of Building Plan Approvals in Lagos State: 2007-2013

S/N	Local Government Areas	Number of Planning Approvals							
		2007	2008	2009	2010	2011	2012	2013	TOTAL
1	Agbado/Ipaja	36	8	19	30	37	51	42	**223**
2	Agege	117	16	31	88	173	160	130	**715**
3	Alimosho	148	14	41	72	74	75	83	**507**
4	Amuwo-Odofin	187	32	112	137	133	112	70	**783**
5	Apapa	25	6	6	14	13	9	16	**89**
6	Badagry	16	4	2	8	5	Nil	Nil	**35**
7	Eko	17	4	9	17	25	22	7	**101**
8	Epe	120	4	2	5	1	4	2	**138**
9	Eti-Osa	705	384	403	554	394	407	395	**3242**
10	Ibeju-Lekki	8	1	5	4	7	25	38	**88**
11	Ikeja	139	61	105	122	120	110	213	**870**
12	Ikoyi/Victoria Island	350	75	95	147	166	163	135	**1131**
13	Ikorodu	846	142	31	55	278	164	149	**1665**
14	Kosofe	374	167	302	293	180	184	142	**1642**
15	Mushin	55	15	21	16	25	33	33	**198**
16	Oshodi-Isolo	316	42	85	108	146	85	78	**860**
17	Ojo	58	4	15	17	31	21	22	**168**
18	Somolu	97	15	38	39	28	52	37	**306**
19	Surulere	46	28	39	40	50	47	35	**285**
20	Yaba	62	35	60	85	63	38	42	**385**
	TOTAL	**3722**	**1057**	**1421**	**1851**	**1949**	**1762**	**1669**	**13431**

The selection of 388 building construction sites from 13,431 obtained with the use of Yamane's (1967) formula provided a basis for identification of the eligible members of the study population. Probability sampling technique was adopted in the process of selecting the sample size for this study to afford each unit of the population equal chance of being selected (Kelley, Clark, Brown, & Sitzia, 2003: 264). Thus, the probability sampling techniques adopted in the process of selecting the sample size for this study comprised the stratified and simple random techniques. The stratified sampling technique was used to select sites from five Administrative Divisions while the simple random sampling technique was used to select respondents from the sites. The research respondents comprised ten percent of workers on 388 building construction sites in Lagos State, Nigeria. Therefore, 388 sites produced 908 respondents as shown in Table 2.

Table 2: Sample Size by Administrative Division

S/N	Administrative Division	No of Sites	Sample Size
1	Ikeja	152	309
2	Lagos	152	264
3	Badagry	29	116
4	Ikorodu	48	191
5	Epe	7	28
	Total	**388**	**908**

The structured questionnaire was utilised to elicit quantitative data from 908 respondents, while Key Informant Interviews (KIIs) were conducted for 50 subcontractors across five Administrative Divisions in Lagos State, Nigeria. Quantitative data collected were examined, coded, entered and analysed using SPSS version 20.1. The nature of data gathered through the questionnaire dictated that descriptive and inferential statistics be employed in the analysis. Descriptive tools used included frequency distribution tables and simple percentages. Also, correlation analysis was used to test the hypothesis formulated. Also, content and narrative analyses were employed in the analysis of qualitative data. The tools find relevance in qualitative research data or open-ended questions and have been combined to deepen the analysis in this study.

4. Results and Discussions

4.1 Socio-economic and demographic characteristics of building construction workers

The socioeconomic and demographic characteristics of the respondents on building construction sites in Lagos State, Nigeria are displayed in Table 3. The data shows that 94.4 percent of the respondents were male; indicating that the building construction is a male dominated industry and may be linked to the physical requirements of jobs in the industry (Jacka, 1997: 22).

The data also shows that 28.6 percent of the respondents were bricklayers, which indicates that bricklayers are required in large numbers throughout the building construction process. Also, a limited number of machine operators are needed (3.3 percent). Therefore, the skilled labour demand is associated with nature of service provided. Over half of the workers (58.7) were married, a pointer to a possible sense of responsibility requiring that they continue to work to earn a living to support their families. A majority of the respondents (60.4 percent) had secondary school education, which makes them eligible to take on other jobs in which they may be interested.

A majority of the respondents were from the southern states (84.6 percent). Indigenes from the northern states

constitute 12.4 percent, while 3.0 percent originated from neighbouring countries such as Benin Republic, Cotonou, Ghana and Togo. These results from the study conducted in Lagos State, reveals that most building construction workers stayed and found work around or in their states of origin. This suggests that provision of social protection measures by State Governments may be an incentive for workers to continue to seek employment in their states of origin. Besides, this would not only benefit the workers, but it would also contribute to economic activities in the State.

Table 3: Demographic Characteristics of Building Construction Workers

Variable	%
Sex	
Male *(n = 857)*	94.4
Female *(n = 51)*	5.6
Highest level of Education	
Primary School *(n = 241)*	26.5
Secondary School *(n = 548)*	60.4
Technical College *(n = 72)*	7.9
No Education *(n = 47)*	5.2
Nature of work on site	
Carpentry *(n = 108)*	11.9
Bricklaying *(n = 260)*	28.6
Iron Bending *(n = 78)*	8.6
Aluminium Works *(n = 61)*	6.7
P.O.P *(n = 68)*	7.5
Plumber *(n = 49)*	5.4
Electrician *(n = 46)*	5.1
Machine Operator *(n = 30)*	3.3
Labourers *(n = 208)*	22.9
Marital Status	
Single *(F = 353)*	38.9
Married *(F = 533)*	58.7
Divorced/Separated/Widowed *(F = 22)*	2.4
State of Origin	
North-Central (103)	11.3
North-East (2)	0.2
North-West (8)	0.9
South-East (88)	9.7
South-South (89)	9.8
South-West (591)	65.1
Foreign Nationals (27)	3.0

4.2 Subcontracting systems in the building construction industry

Table 4 shows the profile of subcontracting systems in the building construction industry. The data shows that the subcontractor hired almost half of the workers (44.6 percent), indicating that subcontractors are employers of labour the building construction industry in Lagos State. A majority of the respondents (89.1 percent) affirmed that their hirer was their employer, revealing that workers were directly responsible to the employers, who control and direct the worker in line with oral, written or implied a contract for work and is obligated to pay wages for work done on site. The distinction between 'hirer' and 'employer' was necessary to determine whether subcontractors on building construction sites merely supplied labour to the users or engaged workers to execute their subcontract on the sites.

Also, the responsibility for quality control and timely delivery of work on site were attributed to the subcontractor and contractor by 40.0 percent and 38.2 percent of the respondents respectively. Similarly, 46.5 percent got their wage from the subcontractor. Thus, the responsibility for quality assurance and collection of wage from the subcontractor confirms the important roles of subcontractors in the building construction industry.

Table 4: Subcontracting Systems in Building Construction Industry

Variable	%
Hirer	
Subcontractor *(n = 405)*	44.6
Contractor *(n = 326)*	35.9
Owner *(n = 135)*	14.9
Other *(n = 42)*	4.6
Hirer same as Employer	
Yes *(n = 809)*	89.1
No *(n = 99)*	10.9
Responsibility for quality control	
Subcontractor *(n = 363)*	40.0
Contractor *(n = 317)*	34.9
Owner *(n = 128)*	14.1
Other *(n = 100)*	11.0
Responsibility for timely delivery of work	
Subcontractor *(n = 347)*	38.2
Contractor *(n = 316)*	34.8
Owner *(n = 137)*	15.1
Other *(n = 108)*	11.9
Source of wage	
Subcontractor (n = 422)	46.5
Contractor (n = 320)	35.2
Owner (n = 128)	14.1
Other (n = 38)	4.2

4.3 Social protection in the building construction industry

Table 5 reveals variables associated with social protection in the building construction industry. It covers the proportion of building construction workers who enjoyed social protection, including assistance from government and employer. The findings reveal that a significant percentage of the workers (97.9 percent) did not receive any assistance from the government. Similarly, 91.4 percent stated that they did not receive assistance from their employers while 86.9 percent indicated that they did not have access to free or subsidised health care services. However, self/home treatment is very popular with the workers (48.1 percent)

Also, the proportion of workers who patronised private hospitals (31.3 percent) was higher than those who visited government hospitals (16.7 percent). Since workers seldom patronised public hospitals, they hardly benefited from subsidised medical services available. Conversely, it is not clear if services provided by government hospitals is sufficient to cater to the needs of the large population of workers in the informal sector.

Furthermore, the data reveals that 11.2 percent of the workers had no savings; the majority (37 percent) saved daily; 29.4 percent saved weekly, while 22.4 percent saved monthly. Nevertheless, the pattern of savings is a function of earnings (Keynes, 1936). These findings demonstrate the deficit in social protection in the informal building construction industry in Nigeria.

However, some respondents acknowledged to receiving free eye check-ups from Non-Governmental Organisations (NGOs) and some assistance from the government, including food items at the local government, free eye test, free medical care, free mosquito nets and donation of basic equipment by members of the legislative arm of government representing a particular locality. The assistance from Local Government Councils and Legislators are usually funded through allocations from the federal government. Also, respondents also acknowledged the role of the Nigerian Labour Congress in the fight for an increase in pay and improvement of working conditions in the building construction industry. Despite all these provisions by the government, the reason why the majority of the workers felt that they did not receive any assistance from government may be that their expectations were at variance with the provisions by the government.

Table 5: Social Protection Experience in the Building Construction Industry

Variable	%
Government Assistance	
Yes *(n = 20)*	2.1
No *(n = 888)*	97.9
Employers' Assistance	
Yes *(n = 78)*	8.6
No *(n = 830)*	91.4
Access to free or subsidised medical care	
Yes *(n = 119)*	13.1
No *(n = 789)*	86.9
Remedy to accident on site	
Self/Home Treatment *(n = 437)*	48.1
Government Hospital *(n = 152)*	16.7
Private Hospital *(n = 2847)*	31.3
Other *(n = 35)*	3.9
Pattern of savings	
None *(n = 102)*	11.2
Daily *(n = 336)*	37.0
Weekly *(n = 267)*	29.4
Monthly *(n = 203)*	22.4

Findings also reveal that employers/subcontractors in the building construction industry sometimes gave assistance, such as the following to their workers: useful advice, accommodation, feeding, bonus for job well done, cash (apart from salary), cash for medical care, supply of equipment and materials for the work, supply of mobile phones, end-of-year bonuses; occasional provision of transportation after work; help to secure other jobs; provision of tips and stipends/pocket money when payment is delayed; payment of children's school fees and other incentives and gifts on special occasions, e.g., birthdays, child-naming, burial of relatives, etc. However, only a small percentage of the workers (8.6 percent) attested to receiving these forms of assistance from their employers. This finding further suggests that a majority of informal building construction workers have no access to social protection and that only a small number of employers offer their employees some help.

The results on the profile of social protection coverage in the building construction industry provide evidence for Wells' (2006:10) assertion that construction workers in the developing world have neither guarantee of permanent employment nor protection against periods of unemployment, sickness or provision for old age.

Evidence from subcontractor interviews in Table 6 shows the forms of assistance provided for building construction workers. The most common form of aid (46 percent) was funding to procure health care services. Some of the interviewees (20 percent) stated that they assisted when workers requested it, whereas 18 percent affirmed that they assisted workers with a right attitude to work. Some other subcontractors (6 percent) noted that they facilitated payment for their employees' accommodation and property acquisition. However, 10 percent indicated that they did not assist their workers. These findings suggest that decisions on forms of aid provided to workers were largely at the discretion of employers. Therefore, it is highly unrealistic to leave this critical decision area to private employers because it is a license for exploitation of workers, which means that public policy has a major role to play in this regard.

Table 6: Forms of Assistance Provided to Workers

Themes	%
Support on request *(n = 10)*	20
Facilitating accommodation *(n = 2)*	4
Property acquisition *(n = 1)*	2
Selective support for workers with good attitude *(n = 9)*	18
Financial and Health Assistance *(n = 23)*	46
No assistance *(n = 5)*	10
Total	**100**

4.4 Test of Hypothesis

To test the hypothesis, which states that there is no significant relationship between subcontracting systems and availability of social protection measures in the building construction industry, correlation analysis was carried out. The results in Table 8 indicate that there is an inverse and significant relationship between hirer and access to free or subsidised medical care (r = -.184; P = 0.000); between situations where hirer is same as employer and pattern of savings (r = -.138; P = 0.000); between responsibility for quality control and pattern of savings (r = -.144; P = 0.000); between responsibility for timely delivery of work and access to free or subsidised medical care (r = -.105; P = 0.000), as well as pattern of savings r = -.183; P = 0.000); between source of wage and access to free or subsidised medical care r = -.199; P = 0.000). These results suggest that subcontracting systems have an inverse and statistically significant relationship with access to free or subsidised medical care, the remedy to accident on site and pattern of savings. These results

align with findings of previous studies that attest to a weakening of social protection where subcontracting meets informal workers (Canagarajah & Sethuraman, 2001: 3; Li & Peng, 2006: 2).

Table 8: Relationship between Subcontracting Systems and availability of Social Protection Measures in the Building Construction Industry

Variables	Government assistance	Employers' assistance	Access to free or subsidised medical care	Remedy to accident on site	Pattern of savings
welfare					
Pearson Correlation	.010	-.046	-.184**	-.065	-.015
Sig. (2-tailed)	.765	.169	.000	.051	.655
N	908	908	908	908	908
Hirer same as employer					
Pearson Correlation	.051	.069*	.125**	.117**	-.138**
Sig. (2-tailed)	.124	.037	.000	.000	.000
N	908	908	908	908	908
Responsibility for quality control					
Pearson Correlation	.041	-.040	-.078*	-.016	-.144**
Sig. (2-tailed)	.218	.232	.019	.624	.000
N	908	908	908	908	908
Responsibility for timely delivery of work					
Pearson Correlation	.062	-.053	-.105**	-.027	-.183**
Sig. (2-tailed)	.061	.112	.002	.425	.000
N	908	908	908	908	908
Source of wage					
Pearson Correlation	.005	-.054	-.199**	-.062	-.003
Sig. (2-tailed)	.878	.101	.000	.063	.937
N	908	908	908	908	908

***. Correlation is significant at the 0.01 level (2-tailed).*

**. Correlation is significant at the 0.05 level (2-tailed).*

5. Conclusions and Recommendation

This study assessed the relationship between subcontracting systems and access of informal building construction industry workers to social protection measures in Lagos State, Nigeria. The study determined the types of assistance and benefits informal building construction workers receive from government as well as the kinds of assistance provided by employers for informal building construction workers.

This study has established that the prevalence of subcontracting systems in the building construction industry limits workers access to social protection measures. Although quantitative data showed that employees did not receive welfare benefits from Government or their employers, qualitative data revealed that workers enjoyed some social benefits from government and their employers. The workers, however, noted that these benefits were inadequate. These benefits include subsidised medical services, accommodation, feeding, the supply of mobile phones, end of year bonuses, and so forth.

In the light of the conclusions of this study, it is suggested that the building construction industry in Lagos State must not be left to 'self-regulate'. Therefore, an appropriate legislative instrument should be developed to address the challenges posed by subcontracting systems about access to social protection measures in the informal building construction industry. This is necessary given that the nature of construction works dictate the engagement of subcontractors. Also, the government, particularly at the local levels should promote and support community-based social insurance schemes for informal sector workers. The inability of the researcher to ascertain the total number of informal building construction workers posed a limitation for the study and made the process of data gathering very tedious. However, this limitation afforded the opportunity for this study to provide a basis for the estimation of the number of informal building construction workers in Lagos State, which should be useful to future researchers. Furthermore, the number of workers on site at the time data was gathered determined the sample from each location. The researcher visited the sites on days when workers worked in large numbers on site. Considering that this study is limited to Lagos State, it is suggested that future research should cover the major geopolitical zones in Nigeria for a more robust evidence and conclusion.

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Assessment of the Likelihood of Risk Occurrence on Tendering and Procurement of Construction Projects

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Abstract

The construction industry is plagued by risks above other industries due to its unique features which include the complexity of building activities, extended period of construction, complicated processes, financial intensity and dynamic organisational structure. These risks are not adequately dealt with and result in increased cost, time and reduced quality. While many types of research have been conducted on construction risks, only a few types of research have investigated the impact of risk (at tendering and procurement stage) on construction projects before they commence. Meanwhile, risk issues are better solved at bidding and procurement phase than construction phase as the case has been. Therefore, this paper examines the likelihood, degree of impact and probability of risk occurrence on tendering and procurement of construction projects. It also investigates the significant sources of tendering and procurement risks, the level of awareness and adoption of risk management techniques in construction tendering and procurement. The questionnaire for the study was administered on building contractors and consultants. A total of 44 questionnaires were retrieved and used for the analysis of the study. The statistical tools used for analysis are frequencies, percentages, mean scores and t test. The findings of the study revealed 17 significant sources of risk among the 35 that were investigated. Risks with high likelihood of occurrence, the degree of impact and high probability of occurrence were also indicated in the study. Based on the findings, it was concluded that respondents are aware and adopt risk management techniques on construction projects, but their adoption is at response level rather than identification level. Therefore, the recommendation of the study is that awareness should be created on the need for risk identification before construction projects commence. This should be implemented at professional and organizational level. Construction stakeholders should guard against risks with a high degree of impact and probability of occurrence during tendering and procurement of construction projects. Therefore, this study contributes to the body of knowledge by investigating the significant sources of risks to tendering and procurement, likelihood of risk occurrence, impact of risks and probability of risk occurrence in tendering and procurement.

Keywords: Construction projects, Cost overrun, Impact of risk, Probability of risk, Procurement, Sources of risk, Tendering and procurement.

1. Introduction

The construction industry, like many other industries, is subject to risks (Smith 2003). The industry is one of the most dynamic, challenging and rewarding fields because it is exposed to both predictable and unpredictable risk (Mills, 2001). As a result of the inherent risks in construction process, Tipili, and Ilyasi (2014) concluded that risks cannot be avoided, so it must be recognised, assessed and managed. Buertney, Abeere-inga and Kumi (2013) noted that risks and construction are not mutually exclusive. A risk is an event that can have an adverse impact on project outcome or opportunities that are beneficial to project performance (FAA system, 2000; Oyewobi, Ibrahim and Ganiyu, 2012; Rezakhani 2012).

The risk in the construction industry is more than that of other industries because of its unique features which include complexity of construction activities, extended period of construction, complicated process, financial intensity and dynamic organizational structure. These

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risks are not adequately dealt with thereby resulting in overall increased cost, time and reduced quality (Sun, Man & Wang, 2015). Risk management involves identifying, controlling and assessing managerial resources with coordinated and economic efforts to minimise the probability and impact of unfortunate events to maximise the realisation of poor project objectives (Ahmed, Azhar & Ahmad 2001; Zou, Zhang and Wang, 2007; Mahendra, Pitroda & Bhavsar, 2013).

Risk is a pre-emptive concept rather than reactive and as such if not properly handled, it can lead to risk effects such as cost overrun, time overrun and poor-quality projects (Iqbal, Choudhry, Holschemacher, Ali and Tamosatiene, 2015). There are many kinds of risks namely; safety risks, social risks, business risks, investment risks, military risks and political (Naphade & Bhangale 2013). These risks are commonly faced by contractors in the form of changes in works, delayed payment on contract, financial failure of owner, labour dispute, equipment and material availability, labour productivity, defective materials, equipment productivity, safety, poor quality of work, unforeseen site conditions, changes in government regulation, delays in resolving litigation/arbitration disputes, inflation, cost of legal process and force Majeure (Oyewobi, et al. 2012). The risks faced by the clients are; awarding the design to unqualified designer, defective design and occurrence of accidents because of poor safety procedures (Enhassi & Mosa, 2008).

The concentration of research on construction risks has had efforts mostly channelled towards effects of risks on construction cost, time and quality (Tam, et al. 2004), risk management at design phase (Chapman, 2001) and construction phase (Abdou, 1996). Other researchers investigated risk from life cycle perspective (Zou, et al., 2007), construction projects (Radujkovic & Car-pusic, 2011; Calzadilla, Awinda & Parkin 2012), public private partnership and contingency (Buertney, et al., 2013), organizational performance (Agwu, 2012), Joint venture projects (Adnan, 2008) and insurance in construction industry (Naphade & Bhangale, 2013). However, there is limited research on the impact of risks faced by contractors during tendering and procurement of construction projects. This may be due to underestimation of its importance by both practitioners and the academia. This study argues that risk issues are better solved at tendering and procurement level rather than at construction phase as the case has been.

The importance of tender figures and procurement options for construction projects cannot be overemphasised. Hence, the tendering and procurement phase is a critical stage in the design and construction of projects because it drives the eventual cost, time and quality of construction projects. Therefore, this study contributes to the body of knowledge by investigating the significant sources of risks to tendering and procurement, likelihood of risk occurrence, impact of risks and probability of risk occurrence in tendering and procurement. The study also determined the level of awareness and adoption of risk management techniques in construction tendering and procurement.

2. Literature Review

2.1 Sources of Risks

Ultimately, all risks encountered on a project are related to one or more of the following failures to stay within budgeted cost/forecast/estimate/tender, stipulated time, design, construction and occupancy and meet the required technical standards for quality, functions, fitness for purpose, safety and environment preservation (Flanagan & Norman 1993). For risks to be effectively eliminated, the sources must be identified and appropriately mitigated. According to Slattery and Bodapati (2001), the sources of risks are schedules, cost, quality, technical, unknown conditions, international, environmental and safety. It was noted in Zou, et al. (2007) that cost related risks include tight project schedule, design variations, changes by the client, unsuitable construction program planning, occurrence of dispute, price inflation of construction materials, excessive approval procedures in administrative government departments, incomplete approval, incomplete or inaccurate cost estimate and inadequate program scheduling. Albogamy and Dawood (2015) noted that the sources of risks are majorly lack of project management skills and competencies. The sources of risks identified by Sayegh and Mansour (2015) are inefficient planning, quality compromise and integrity of design. Table 1 shows the updated sources of risks on construction projects based on the compilation of Radujkovic and Car-pusic (2011:2).

Table 1: Classification of Risk Sources

External Sources		**Internal Sources**	
Legislative	1. Local regulations	Contract	1. Unrealistic deadline
	2. Permits and agreements		2. Unrealistic price
	3. Law changes		3. Other contract provisions
	4. Standards		4. Quality compromise
Political	1. Policy changes	Resources	1. Shortage of workers
	2. Elections		2. Shortage of machinery
	3. War		3. Machinery breakdowns
	4. Existing agreements		4. Late delivery of materials
Economical	1. Economic regulations	Technical	1. Delay
	2. Price rises	Document	2. Incompleteness
	3. Exchange rates		3. Imprecision
	4. Financing conditions		4. New solutions as consequence of 2&3

	5. Economic policy changes		5. Integrity of design
Social	1. Education, culture	Human Factor	1. Productivity
	2. Seasonal work		2. Sick leaves
	3. Strike		3. Motivation
	4. Human fluctuation		4. Errors and omissions
Natural	1. Climate	Resources	1. Shortage of workers
	2. Soil		2. Shortage of machinery
	3. Subterranean waters		3. Machinery breakdowns
	4. Natural disasters		4. Late delivery of materials
		Technology	1. Poorly chosen tech. solutions
			2. Obsolete technology

These sources were classified into two (external and internal). The internal sources were grouped into six, and the external were grouped into five. Twenty-one of the sources are external, and 19 are internal. Calzadilla, Awinda and Parkin (2012) also classified the sources or risks into external and internal. External sources consist of natural/regional sources and the construction industry while internal sources consist of project and company. Under the national, regional sources, there is political situation (national worker's strike, nationalisation of basic industries and labour union), economic/financial (currency exchange control) and social environment (unskilled labour). Construction industry consists of market fluctuation (suppliers bargaining power and shortage of materials and materials and equipment) and laws and regulations (restriction of import or export materials and equipment). From Figure 1, it is evident that if risks are not controlled from sources, they will lead to effects such as time delays and cost overrun.

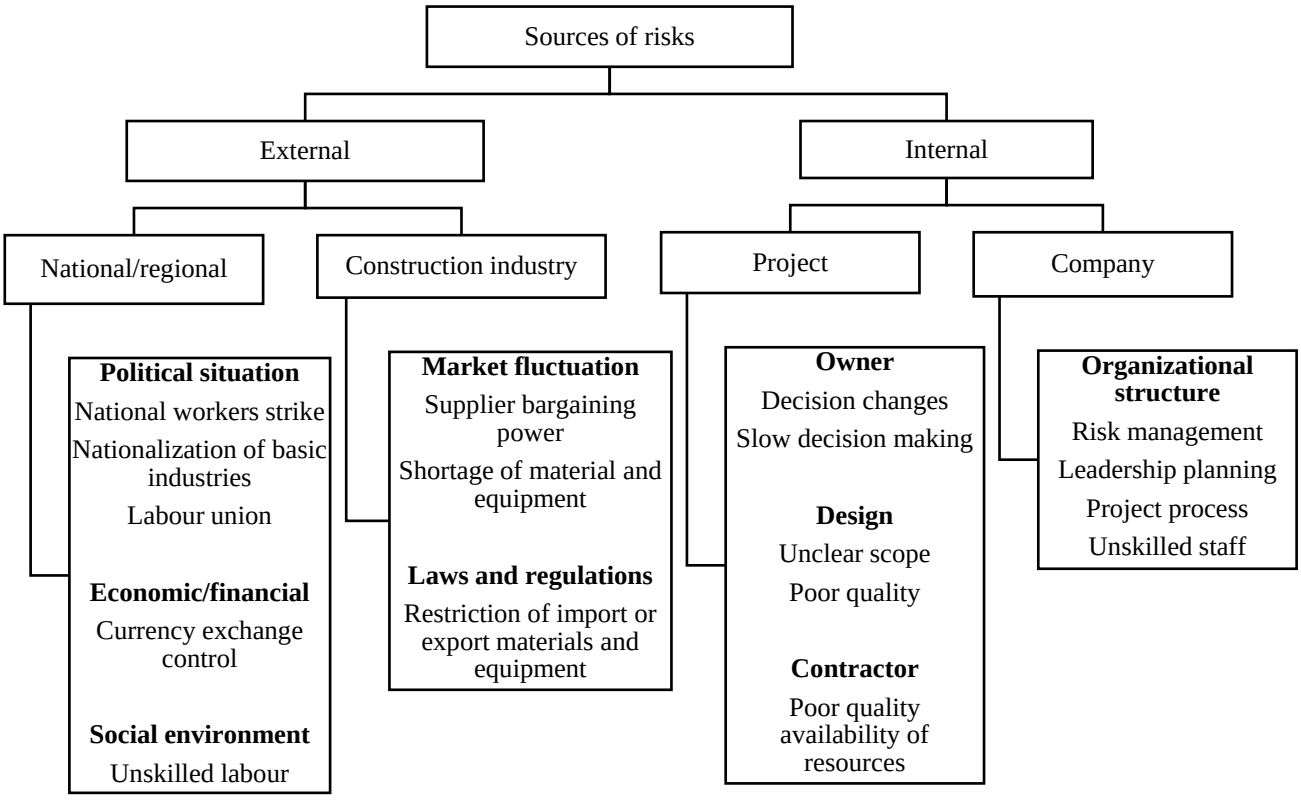

Figure 1: Sources of risks and their effects
Adapted from Calzadilla, Awinda and Parkin (2012: 1215)

2.2 Types of risks in construction

Four types of risks were highlighted by Mahendra et al. (2013) and they are: (1) technical risks- incomplete design, inadequate specification, insufficient site investigation, change in scope, construction procedures and inadequate resource availability, (2) construction risks- labour productivity, labour disputes, site condition, equipment failures, design changes, to high quality standard and slow technology, (3) physical risks- damage to structure, damage to equipment, labour injuries, material, fire and theft and (4) organizational risks- contractual relations, contractor's experience, attitudes of participants, inexperienced work force and poor communication. All these types of risks can be experienced on any construction project; therefore, they must be mitigated from their sources to prevent cost and time overrun.

The types of risks identified by Taghipour, Seraj, Fatemah, Hassani and Kheirabadi (2015) are delays in payment of contractors' claim and low commitment to quality of work by contractor. These types of delays are mutually inclusive because when client delays contractor's payment, the net effect is that contractor's commitment to the work or its quality will reduce. The way to arrest the risks is to identify and control them even before project commences. Ahmed, et al. (2001) noted that the types of risk are acts of God (flood, earth quake, land slide, fire, wind damage and lighting), physical (damage to structure, equipment, labour injuries, materials and equipment fire and theft), financial (exchange rate fluctuation, financial default of subcontractor and non-convertibility), political and environmental (changes in laws and regulations, war and civil disorder, requirement for permits and their approval, pollution and safety rules, expropriation and embargoes), design (incomplete design scope, defective designers and omissions, inadequate specifications and different site conditions) and construction related (weather delays, labour dispute and strike, labour productivity, differing site conditions, defective work, design changes and equipment failure.

Shrestha (2011) categorised risks into political risks which include political decision making, the right of way's risk, competing facilities' risk, regulatory risk, protectionism and legislation change. Other categories are economic risks (pre-investment risk, toll revenues, financial risks and cost overrun risk), socio-cultural risks (public opinion, environmental risks, moral hazard, partnering risks and environmental justice), technical risks (project management risks, construction risks, design and latent defect risk, technology risks, force Majeure physical risks). Oyewobi et al. (2012) noted the classification of risks to be design risks (defective design, variation of work, changes in original design and deficiencies in description of work), financial risk (inflation, inadequate cash flow, exchange rates, cost overrun due to schedule delay and contractors default), construction risk (contractors competence, defective material, poor performance of supplier, poor quality of work, productivity of equipment, labour, material and equipment availability and unforeseen site condition) and political risks (political uncertainty, bank policies, changes in government regulations, permits and ordinances and force Majeure).

Table 2 summarises the types and classification of risks as reviewed in this study.

Table 2: Classification and types of risks

Author	Classification of risks	Types of risks
Mahendra *et al.* 2015 Banaitiene and Banaitis, 2012	Technical, Construction, Physical and Organization, Local, Global and Technological Change	Incomplete design, inadequate specification, inadequate site investigation, change in scope, construction procedures and insufficient resource availability; labour productivity, labour disputes, site condition, equipment failures, design changes, to high quality standard and slow technology; damage to structure, damage to equipment, labour injuries, material, fire and theft; contractual relations, contractor's experience, attitudes of participants, inexperienced work force and poor communication
Taghipour, *et al.,* 2015; Iqbal *et al.* 2015; Banaitiene and Banaitis, 2012; Oyewobi *et al*. 2012	Design, Financial, Construction and Political	Defective design, variation of work, changes in original design and deficiencies in description of work; inflation, inadequate cash flow, exchange rates, cost overrun due to schedule delay and contractors default, accidents, defective designs; contractors competence, defective material, poor performance of supplier, poor quality of work, productivity of equipment, labour, material and equipment availability and unforeseen site condition and; political uncertainty, bank policies, changes in government regulations, permits and ordinances and force Majeure, delays in payment of contractors' claim and low commitment to quality of work by contractor
Banaitiene and Banaitis, 2012 Shrestha, 2011	Political, Economic, Sociocultural and Technical	Political decision making, right of way's risk, competing facilities' risk, regulatory risk, protectionism and legislation change; pre-investment risk, toll revenues, financial risks and cost overrun risk; public opinion, environmental risks, moral hazard, partnering risks and environmental justice; project management risks, construction risks, design and latent defect risk, technology risks, force Majeure physical risks.
Ehsan *et al.* 2010	Technical, Logistics, Management related, Environmental, Financial and Socio-political	Inadequate site investigation, incomplete design, appropriateness of specifications and uncertainty over the source and availability of materials; availability of sufficient transportation facilities and availability of resources; uncertain productivity of resources and industrial relations problems; weather and seasonal implications and natural disasters; availability and fluctuation in foreign

		exchange, delays in payment, inflation, local taxes and repatriation of funds; constraints on the availability and employment of expatriate staff, customs and import restrictions and procedures, difficulties in disposing of plant and equipment and insistence on use of local firms and agent
PMBOK, 2008	Technical, External, Organizational, Environmental and Project management.	-
Ritchie, 2007	-	Delay in award of tender, access to site, site conditions, design responsibility, ambiguities in documentation, extension of time, interface risks, fit–out works, subcontracting, scope of works, fit for purpose and cultural heritage.
Ahmed *et al.* 2001	Acts of God, Physical, Financial, Political and environment, Design and Construction related	Flood, earth quake, land slide, fire, wind damage and lighting; damage to structure, equipment, labour injuries, materials and equipment fire and theft; exchange rate fluctuation, financial default of subcontractor and non-convertibility; changes in laws and regulations, war and civil disorder, requirement for permits and their approval, pollution and safety rules, expropriation and embargoes; incomplete design scope, defective designers and omissions, inadequate specifications and different site conditions; weather delays, labour dispute and strike, labour productivity, differing site conditions, defective work, design changes and equipment failure.

From two case study projects, Ritchie (2007) found that the types of risks include, delay in award of tender, access to site, site conditions, design responsibility, ambiguities in documentation, extension of time, interface risks, fit–out works, subcontracting, scope of works, fit for purpose and cultural heritage. Banaitiene and Banaitis (2012) grouped risks into local, global, economic, physical, political and technological change. PMBOK (2008) categorised it into technical, external, organisation, environmental or project management. Financial issues for projects, accidents and defective designs are the important types of risks on construction projects according to Iqbal et al. (2015). Ehsan et al. (2010) pointed out that the categories of risks are technical (inadequate site investigation, incomplete design, appropriateness of specifications and uncertainty over the source and availability of materials), logistic risks (availability of sufficient transportation facilities and availability of resources), management related risks (uncertain productivity of resources and industrial relations problems), environmental risks (weather and seasonal implications and natural disasters) and financial risk (availability and fluctuation in foreign exchange, delays in payment, inflation, local taxes and repatriation of funds), socio-political (constraints on the availability and employment of expatriate staff, customs and import restrictions and procedures, difficulties in disposing of plant and equipment and insistence on use of local firms and agent). From the types and classes of risks reviewed, it evident that only nomenclature changes, the risk types are the same.

2.3 Risk management techniques in the construction industry

Chen, Zhang, Liu and Hu (2015) discovered that risk perceptions have adverse effects on bids and the probability or magnitude of potential gain or loss have significant impacts on risk perceptions. Al-Shilby, et al. (2013) classified risk assessment methods in quantitative and qualitative methods, the qualitative method involves right judgment, ranking options, comparing option and descriptive analysis. The quantitative technique includes probability, sensitivity, scenario and simulation analysis. Qualitative assessment involves identifying: (1) risks hierarchy which is based on probability of risk occurrence and its impact on the project and employees (2) risks scope and (3) risk occurrence factors. Quantitative risk analysis involves evaluation of the impact of all identified and quantified risk. The results of quantitative methods are more objective than those from qualitative risk analysis. Risk management is divided into risk identification, risk assessment, risk response and risk treatment.

Risk identification involves identifying and applying procedures for identifying opportunities, losses of risks, how and why risks arise, analysing the processes of identifying risks, scenario analysis to identify risks, physical inspection to identify risk, risk source, use of questionnaire, interview, brainstorming, SWOT and examination of local/oversees experience to determine the risk. Risk assessment involves analyses/evaluation of opportunities, SWOT, risk collation, analysis of risk according to likelihood, consequence, quantitative analysis methods, reputation impact, achievement of objectives, financial impact and qualitative analysis method. Risk response involves identification of risk management plan, considering limits to achieve risk management objectives, evaluate cost and benefits of identifying risks, finding out the effectiveness of available controls and risk management responses, prioritising risks that cause great losses and identifying up to rate business continuity plan. Risk treatment involves understanding the risk faced by organizations, regarding communication aboard risk, supporting effective management of risk

between staff and management, providing appropriate level of control regarding risks, risk transfer, risk reduction, monitoring the effectiveness of risk management, avoiding risk and accepting/retaining risk.

Risk management according to Mahendra, et al. (2013) is in four stages – Risk identification, risk assessment, risk response planning and risk control. Risk identification involves brainstorming, Delphi technique, interview/export is categorised into quantitative and quantitative techniques. The quantitative technique involves risk priority numbers, and quantitative technique involves sensitivity analysis, scenario analysis, probabilistic (Monte Carlo simulation) analysis, decision trees, Risk, response involves risk avoidance, risk transfer, risk mitigation/reduction, risk exploit, risk sharing, risk enhancement, risk acceptance and contingency plan. Naphade and Bhangale (2013) noted that the methods of identifying risks are brainstorming, interviews, questionnaire, services specialists and past experience. Risk can be managed by using existing assets, contingency planning and investing in new resources. Risk management strategies are risk prevention (including risk avoidance), impact mitigation, risk sharing, insurance and risk retention. Ritchie (2007) claimed that risk elimination, reduction, transfer and retention are ways of mitigating risk. The risk identification techniques put forward by Kansal and Sharma (2012) are brainstorming, Delphi technique, interview/expert judgment, checklist, influence diagram, flow chart and cause-and –effect diagram. Risk management techniques according to Ehsan, et al. (2010) are risk identification, risk quantification, risk response development and risk response control. Risk response is classified into acceptance, quantification, monitoring the risks, preparing contingency plans, transferring and mitigating risk.

2.4 Impact of risks on tendering and procurement of construction projects

It is important to note that risk inherence is not peculiar to the construction industry alone; however, it is more prominent and grave in the construction industry because of its unique features like complexity of projects, time is taken for construction to complete and the number of stakeholders with different interests involved in a project. Researches have been conducted on risk and risk management concerning cost, time and quality (Tam, et al. 2004) among others. However, the studies appear to be reactive in their approach rather than preventive. Therefore, it would be more beneficial to consider risk and its management at the tendering and procurement stage. The work of Abdul-Razak (2013) indicates that the traditional and integrated/management systems are the two methods of construction projects procurement in Ghana and the traditional system is dominant and popularly used for public projects. Hence, it was discovered that delay in retention release, financial and design risk factors have the highest impact on works procured through National Competitive Tendering (NCT).

Oyewobi, et al., 2012 found that defects in design, inflation, contractor's competence, political uncertainty and changes in government had greatest impact on contractors' tender figure whereas likely trend in wages rates, excessive approval procedure in administration of government departments, unavailability of sufficient amount of unskilled labor and technical manpower and resources of the company were the most significant factors to be considered by contractors when estimating pricing risks. Mantzaris (2014) stated in his work that procurement practices led to corruption in South Africa's national and provincial departments. Hence, concerning the various forms of corruption in the public sector, the roles that systems, risk management imperatives and procurement management play in combating corruption could act as shields against fraud, collusion, extortion and similar corrupt activities. It was also noted that the most crucial element in fighting corruption is political will.

It is worthy of affirmation that there are various fraud and corrupt practices in tendering and procurement of construction projects and this constitutes significant risks to those projects. CIPLA Counter fraud Centre (2015) highlighted key tendering and procurement risks as price fixing, market sharing, bid rigging, manipulation of specifications, manipulation of procurement procedures, bribery for awarding contracts, corruption for disclosing confidential information, conflict of interest and cyber-fraud among others. Agerberg (2012) found that the present risk management process is acceptable but can be improved by a better structure. It was also noted that risk management processes would be enhanced if threats were separated from opportunities both in the identification and analysis phase. CIPLA Counter fraud Centre (2015) pointed out that standard risk management processes and procurement fraud risks should be identified and assessed and appropriate strategies for their management (estimating the probability, impact and proximity of each risk) should be implemented and kept under review. Hence, this study investigates the likelihood, degree of impact and the probability of risk occurrence on construction projects at tendering and procurement phase. This will enable clients, consultants and contractors to know the risks to avoid and how to avoid them.

3. Methodology

The survey research design (quantitative and qualitative methods) was used to collect information for this study. The population of the study is the construction organizations that are involved in project tendering and procurement in Lagos, Nigeria. Lagos was used because it is the economic hub of Nigeria; therefore, many construction works are being executed there. Also, many construction organizations have their head offices or at least a branch office situated in Lagos state, thus making access to projects and respondents easy. The consultants' views were obtained because they are usually involved in the selection process of contractors during the tendering and procurement stage. The construction organizations' list was obtained from the Federation of Construction Industry (FOCI) (57) and construction professional bodies (61). Hence, 118 organizations were obtained and used as the population for this study. To further understand the positions of respondents on the questions raised for the study, informal interviews were conducted with some of them. However, the reports of the interview were not

presented in the study as they were only meant to lend further credence to the questionnaires' responses.

The reliability of the variables used in the study was tested with the Statistical Package for Social Scientists (SPSS 24), and the results of reliability statistics shows that the Cronbach's Alpha for sources of risk is 0.839; likelihood of occurrence of risk is 0.984; degree of impact of risk is 0.896; Awareness of risk mitigation measures is 0.941 and Adoption of risk mitigation measures is 0.623 respectively. Cronbach's alpha values of 0.7 and above indicate higher reliability of instruments and are therefore generally accepted for reliable instruments (Polit & Hungler, 1985).

Using the formula proposed by the Creative Research System (2001), sample size was calculated to be 90 (see formula below). Hence, A total of 90 questionnaires were sent out to capture relevant information on the study and 44 were retrieved giving a response rate of 49%. This response rate is acceptable and not uncommonly low as noted in Dosumu and Onukwube (2013). The sampling was based on convenience as organizations on the lists that are equally willing to provide information were considered for the study. The data for the study were analysed with frequencies, percentages and mean scores.

The formula proposed by the Creative Research System (2001) is stated thus:

$$SS = \frac{Z^2 \times P \times (1-P)}{C^2} \qquad (1)$$

Where: SS = Sample size, Z = Z-value at 95% confidence level (1.96), P = probability of selecting a population member (0.5), C = Margin of error at 95% confidence level (0.05)

Also in calculating total risks and probability of occurrence of risks on construction tendering and procurement, the formulae proposed by National Institute of Standards and Technology (2012) as described below were used:

1. Total Risk = likelihood of occurrence (L) X degree of impact (I)
2. Probability of occurrence (P) = (Total risk/ cumulative total risk)

4. Data Analysis

Table 3 presents the information on respondents, projects and organizations used for the study. Information covered includes profession of those surveyed, type of service rendered, sector of project involvement, work experience, educational qualification, professional affiliation, type of projects handled and procurement methods used for projects.

It can also be deduced from Table 3 that builders and quantity surveyors dominate the study and contractors who work in both public, and private projects are well represented in the study. Respondents with 1-15 years' work experience, B.Sc, M.Sc and appropriate professional qualification are the information providers for the study. Thus, the respondents of the study are well qualified. The types of buildings handled by respondents' organisation are 36.4% residential, 9.1% institutional, 9.1% religious and 45.5% commercial. The traditional procurement method was used on 9.1% of projects, design and build method was used on 45.5% of projects and project/construction management method was used on 45.5% of projects.

Table 3: Background information on respondents, projects and organizations

Profession of respondents	**Frequency**	**%**
Architecture	4	9.1
Civil/Structural engineering	8	18.2
Quantity surveying	16	36.4
Building	12	27.3
Others, specify	4	9.1
Type of service rendered		
Consultancy	16	36.4
Contracting	28	63.6
Sector of project involvement		
Public	20	45.5
Private	24	54.5
Work experience		
1-5	16	36.4
6-10	16	36.4
11-15	8	18.2
16-20	4	9.1
Educational Qualification		
HND/B.Sc.	20	45.5
M.Sc.	24	54.5
Professional affiliation		
Nigerian Institute of Architects (NIA)	4	9.1
Nigerian Society of Engineers (NSE)	8	18.2
Nigerian Institute of Quantity Surveyors (NIQS)	20	45.5
Nigerian Institute of Building (NIOB)	12	27.3
Type of projects handled		
Residential	16	36.4
Institutional	4	9.1
Religious	4	9.1
Commercial	20	45.5
Procurement method		
Traditional	4	9.1
Design and Build	20	45.5
Project/Construction Management	20	45.5

Table 4 indicates that the highly rated sources of risks in construction tendering and procurement according to mean values are poorly chosen technical solution (3.73), bad management (3.64), errors and omission (3.55), unrealistic price (3.55) and economic

Table 4: Sources of risks in construction tendering and procurement

Sources of risks	Mean	Std. Deviation	Rank	p- value	Remark
Unrealistic deadline	3.82	1.126	1	0.000	Significant
Poorly chosen technical solution	3.73	0.973	2	0.000	Significant
Bad management	3.64	1.080	3	0.000	Significant
Errors and omission	3.55	0.999	4	0.001	Significant
Unrealistic price	3.55	1.320	4	0.009	Significant
Unskilled staff	3.50	1.377	6	0.027	Significant
Economic regulations and price inflation	3.45	1.247	7	0.020	Significant
Education and culture	3.36	1.163	8	0.044	Significant
Changes in law and standards	3.36	1.080	8	0.031	Significant
Climate and soil condition	3.36	1.080	8	0.031	Significant
Financing conditions	3.36	1.313	8	0.073	Not significant
Late delivery of materials	3.36	1.163	8	0.044	Significant
Delay in preparation of document	3.36	1.313	8	0.073	Not significant
Sick leaves	3.30	0.911	14	0.044	Significant
Obsolete technology	3.27	1.370	15	0.194	Not significant
Incomplete document	3.18	1.352	16	0.377	Not significant
Unfamiliarity with local conditions	3.09	1.254	17	0.633	Not significant
Human fluctuation	3.09	0.910	17	0.511	Not significant
Local regulations, permits and agreements	3.09	1.178	17	0.611	Not significant
Inadequate contractor experience	3.00	1.141	20	1.000	Not significant
Risk management planning process	3.00	1.294	20	1.000	Not significant
Low productivity	3.00	1.141	20	1.000	Not significant
Shortage of materials	2.91	1.326	23	0.652	Not significant
Shortage and breakdown of machinery	2.91	1.326	23	0.652	Not significant
Imprecise specification	2.91	1.460	23	0.682	Not significant
Season-related work	2.91	1.254	23	0.633	Not significant
Poor motivation	2.82	0.724	27	0.103	Not significant
Shortage of workers	2.73	0.973	28	0.070	Not significant
Suppliers bargaining power	2.73	1.227	28	0.148	Not significant
Electioneering process of politicians	2.73	0.872	28	0.044	Significant
Exchange rates	2.64	1.511	31	0.118	Not significant
Uncertain relationship between project participants	2.45	1.389	32	0.013	Significant
War and unrest	2.45	1.577	32	0.027	Significant
Force majeure	2.18	0.843	34	0.000	Significant
Natural disaster	1.91	1.522	35	0.000	Significant

Regulations and price inflation (3.45). However, when the one sample t test was applied to determine the significance of the sources of risks statistically, it was discovered that 17 out of the 35 sources investigated are statistically significant ($P < 0.05$). It is important to state that, some of the statistically significant sources of risks have low mean values, but the statistical inference makes sense in practical terms. For example, electioneering process, uncertain relationships among project participants and natural disasters have low mean scores, but it is practically reasonable that risks are constituted when any of them exist. Therefore, if risks are to be averted, the 17 discovered significant sources of risks should be prevented regardless of what the mean scores read in the study. Table 5 depicts the likelihood of risk occurrence, degree of impact of risks, total risks and probability of occurrence of risk on construction tendering and procurement.

Table 5: Total risk and probability of occurrence of risk in construction tendering and procurement

Risks	Likelihood of occurrence	Degree of impact	Total risk	Probability of occurrence
Flood, earthquake, landslide, fire, wind	1.09	2.55	2.78	0.0075
Inclement weather	2.36	2.45	5.78	0.0156
Design failure/defective design	2.09	2.45	5.12	0.0138
Human resource management challenge	2.00	2.70	5.40	0.0146
Equipment failure	2.60	3.18	8.27	0.0223
Project complexity	2.20	2.82	6.20	0.0167
Poor project management	1.60	2.64	4.22	0.0114
Wrong construction technology	1.82	2.45	4.46	0.0120
Inadequate site investigation	2.00	2.00	4.00	0.0108

Inappropriate specifications	2.67	1.73	4.62	0.0125
Labour and material supply challenges	1.91	2.73	5.21	0.0141
Unavailability of equipment and productivity challenge	2.00	2.73	5.46	0.0147
Bad market condition	2.45	3.18	7.79	0.0210
Financial default by client	2.73	3.09	8.44	0.0228
Interest rate challenge	2.09	3.36	7.02	0.0190
Delayed payment	2.18	2.18	4.75	0.0128
Global economic pressure	2.64	2.27	5.99	0.0162
Incomplete design	2.27	2.82	6.40	0.0173
Differing site conditions	2.36	2.73	6.44	0.0174
Change in scope	2.18	3.00	6.54	0.0177
Estimation error/methods	2.27	2.60	5.90	0.0157
Low credibility of shareholders and lenders	2.36	2.27	5.36	0.0145
Change in bank formalities and lenders	1.55	2.45	3.80	0.0103
Insurance risk	3.00	3.18	9.54	0.0258
Inadequate cash flow	3.00	3.09	9.27	0.0250
Contractors default	2.73	3.18	8.68	0.0234
Local taxes	2.27	2.55	5.79	0.0156
Increased material cost	2.82	2.00	5.64	0.0152
Low market demand	1.82	1.91	3.48	0.0094
Legislative/statutory influence	1.73	3.00	5.19	0.0140
Customary rights and litigation	2.45	1.82	4.50	0.0122
Public opinion	1.45	1.64	2.38	0.0064
Availability and employment of expatriate staff	1.91	2.00	3.82	0.0103
Difficulty in disposing of bad plant and equipment	1.27	3.30	4.19	0.0113
Bribery and corruption	3.20	2.40	7.68	0.0207
Language and cultural barrier	2.09	2.18	4.56	0.0123
Bureaucracy	1.82	1.80	3.28	0.0089
Force majeure	1.20	2.09	2.51	0.0068
Defects in supervision	2.36	2.82	6.66	0.0180
Safety of workers and materials	3.36	3.45	11.59	0.0313
Poor quality of work	2.91	2.64	7.68	0.0207
Location of project	2.73	2.36	6.44	0.0174
Unforeseen site conditions	2.73	3.27	8.93	0.0241
Defective work	2.27	3.00	6.81	0.0184
Breach of contract by project partner	1.73	2.82	4.88	0.0132
Lack of enforcement of legal judgment	1.36	2.09	2.84	0.0077
Improper verification of contract document	1.73	2.18	3.77	0.0102
Uncertainty and unfairness of court judgment	1.45	1.55	2.25	0.0061
Internal management problem	1.55	1.73	2.68	0.0072
No past experience on similar project	1.18	1.27	1.50	0.0041
Short tender time	1.82	2.20	4.00	0.0108
Improper project feasibility study	1.64	2.27	3.72	0.0100
Poor relation and dispute with partner	2.09	2.09	4.37	0.0118
Poor team work	1.73	2.60	4.50	0.0122
Industrial relation problem	2.00	2.55	5.10	0.0138
Land acquisition	1.73	2.73	4.72	0.0127
Damage to structure and equipment	2.20	2.30	5.06	0.0137
Labour injuries	1.64	2.27	3.72	0.0100
Defective design	1.64	2.45	4.02	0.0109
Errors and omission	2.36	3.00	7.08	0.0191
Variation of work	2.18	2.55	5.56	0.0150
Changes to original design	2.00	2.55	4.72	0.0127
Deficiencies in description of work	1.64	2.36	4.59	0.0124
Wrong construction procedure	2.27	2.80	4.95	0.0134
Logistics	2.09	2.18	4.56	0.0123
Bad contractual relations	1.73	2.73	4.72	0.0127
Contractors and work force experience	2.09	2.91	6.08	0.0164
Poor attitude of participants	2.55	2.64	6.73	0.0182
Poor communication	1.82	3.10	5.64	0.0152

It is worthy of note that risks with high likelihood of occurrence and degree of impact are the ones that have high probability of occurrence. Hence, those risks need to be watched by contractors and other stakeholders during

tendering and procurement of construction projects. from the calculations in table 4, the risks with the highest probability of occurrence in tendering and procurement are equipment failure (0.022), market condition (0.021), financial default by client (0.023), insurance risk (0.026), inadequate cash flow (0.025), contractor default (0.023), bribery and corruption (0.021), safety of workers and materials (0.031), quality of work (0.021) and unforeseen site conditions (0.0241). The implication of this result is that knowledge of the risks with the highest probabilities of occurrence will assist construction organizations to guard against them and devise appropriate risk management technique to be adopted for them.

Table 6 shows the respondents level of awareness and adoption of risk management techniques for construction tendering and procurement. The respondents are mostly aware of past experience (3.40), interview/ expert opinion (3.20), ranking options (3.09) and risk control (3.0) among other techniques. Also, it is clear that the level to which respondents adopt risk management techniques in construction tendering and procurement include; risk sharing (3.55), comparison (3.45), risk enhancement (3.27), contingency plan (3.27), risk transfer (3.27), descriptive analysis (3.27), interview/ expert opinion (3.20), ranking option (3.18), flow chart (3.0), risk control (3.0) and risk exploit (3.0). It is important to note that on top of the table are risk response strategies, followed by risk assessment strategies and then risk identification strategies. This indicates that many of the respondents' organisation only do risk intervention and evaluation while risk identification is utterly neglected. When risk identification is made, there may be less need for risk assessment and response because they may have been averted at the point of identification.

Table 6: Level of awareness and adoption of risk management techniques for construction tendering and procurement

Management techniques	Mean	Awareness	Rank	Mean	Adoption	Category	Rank
Risk sharing	2.64	Normal	9	3.55	Normal	Risk response	1
Comparing options	2.55	Normal	15	3.45	Normal	Risk assessment	2
Risk enhancement	2.64	Normal	9	3.27	Normal	Risk response	3
Contingency plan	2.45	Normal	19	3.27	Normal	Risk response	3
Risk transfer	2.45	Normal	19	3.27	Normal	Risk response	3
Descriptive analysis	2.73	Normal	6	3.27	Normal	Risk assessment	3
Interview/expert opinion	3.20	Normal	2	3.20	Normal	Risk identification	7
Ranking options	3.09	Normal	3	3.18	Normal	Risk assessment	8
Flow chart	2.64	Normal	9	3.00	Normal	Risk identification	9
Risk control	2.64	Normal	9	3.00	Normal	Risk control	9
Risk acceptance	3.00	Normal	4	3.00	Normal	Risk response	9
Risk exploit	2.73	Normal	6	3.00	Normal	Risk response	9
Brainstorming	2.64	Normal	9	2.91	Normal	Risk identification	14
Probabilistic analysis	2.64	Normal	9	2.91	Normal	Risk assessment	14
Risk mitigation/reduction	2.45	Normal	19	2.82	Normal	Risk response	16
Scenario analysis	2.45	Normal	19	2.73	Normal	Risk assessment	17
Decision tree direct judgment	2.64	Normal	9	2.55	Normal	Risk assessment	18
Risk priority number	2.73	Normal	6	2.55	Normal	Risk assessment	18
Questionnaire	2.27	Low	27	2.55	Normal	Risk identification	18
Checklists	2.90	Normal	5	2.55	Normal	Risk identification	18
Monte-Carlo simulations	2.36	low	24	2.55	Low	Risk assessment	18
Sensitivity analysis	2.64	Low	9	2.36	Low	Risk assessment	23
Cause-effect diagram	2.30	Low	26	2.33	Low	Risk identification	24
Risk avoidance	2.55	Normal	15	2.27	Low	Risk response	25
Delphi technique	2.45	Normal	19	2.18	Low	Risk identification	26
Influence diagram	2.36	Low	24	1.73	Low	Risk identification	27

5. Discussion of Findings

The study of the impact of risks on tendering and procurement of construction projects is necessary to prevent cost and time overrun before their symptoms begin to unfold. The significant sources of risks on construction projects according to this study are poorly chosen technical solution, bad management, errors and omission, unrealistic price, economic regulations and price inflation among others. 17 statistically significant sources of risks were identified from the 35 that were investigated. In comparison with the previous study, the results of this study are quite different those of Flanagan and Norman (1993) and Slattery and Bodapati (2001) among others. The finding of Zhou, et al. (2007) is consistent with the result of this study in the area of materials price fluctuation and bad management. These two variables are closely related as only bad project managers would let materials' price fluctuation catch up with them on any project. In Nigeria, many project managers are inexperienced and not fit for the projects they manage. This usually results in unwise decisions and bad project management. The work of Dosumu, Idoro and Onukwube (2017) indicate that errors and omission in contract documents are potential risks for any construction project as they increase cost by about 10% of contract sum. Moreso, as a country, Nigeria does not have any serious economic policy for construction projects and this is likely one of the reasons for unrealistic pricing of construction projects.

The study also found that risks with high likelihood of occurrence and degree of impact eventually have the highest probability of occurrence in tendering and procurement. This indicates that variables with high likelihood and degree of impact should be prevented before they occur. In this study, the risks with high probability of occurrence are equipment failure, market condition, financial default by client, insurance risk, inadequate cash flow, contractor default, bribery and corruption, safety of workers and materials, quality of work and unforeseen site conditions. Although many studies did not calculate the probability of risk occurrence; the results of this study is not unexpected as most of the risks identified occur on Nigerian projects. Many of the equipment used on construction projects are obsolete and poorly maintained, market prices are unstable due to lack of economic policy, clients default financially due to high bank interest rates and delays leading to inadequate cash flow. When cash flow becomes inadequate, contractors would likely default. Bribery and corruption in the Nigerian construction industry have eaten deep into many of the stakeholders especially the consultants that allow shoddy works to pass to the next stage of construction thereby leading to building collapse, defects, wastages, quality problems, cost and time overrun and sometimes disputes. Many projects in Nigeria do not have health and safety plan before, during and after construction. This explains the reason for high accidents on Nigerian projects as noted in Dosumu and Onukwube (2014). Bribery and corruption are not peculiar to Nigeria alone; Mantzaris (2014) also pointed out that there is corruption in South Africa's national and provincial departments of procurement. This is disheartening because it is disgusting to know that professionals are going that low to acquire money through extortion.

The result of the study also indicates that the respondents have knowledge of the risk management techniques as shown in Table 5. The respondents also adopt them at a normal level. The problem is the stage at which the risk management techniques are utilised. According to the categorization of adoption level in Table 5, it is evident that the order of adoption of risk management techniques is risk response, risk assessment and risk identification respectively. However, the correct order is supposed to be risk identification, assessment, response and control. The current order indicates that many of the respondents' organisation only do risk response and assessment while risk identification is utterly neglected. There may be less need for risk assessment and response because they would have been averted at the point of identification and this is what should be campaigned to construction organizations. Risk identification should be made a routine activity before construction begins. Government establishments should ensure that risk identification is made approval criteria for construction projects.

6. Conclusions

The findings of the research are that the significant sources of risks are poorly chosen technical solutions, bad management, errors and omission, unrealistic price, unskilled staff, economics regulations and price inflation among others. Also, safety of workers and materials, interest rate challenge, difficulty in disposing bad plant, unforeseen site condition, equipment failure, contractor default, market condition, insurance risk, communication, financial default by client, inadequate cash flow, errors and omission, legislative influence, changes in scope, defective work, contractors and workforce experience, breach of contract by project partner, defects in supervision, project complexity, incomplete design, construction procedure, land acquisition, contractual relations, equipment availability and productivity challenge, differing site conditions and variation of work have a high degree of impact on construction tendering and procurement.

The study also found that respondents are aware and adopt risk management techniques on construction projects; however, their adoption is at response level rather than identification and assessment level. This is dangerous because it may not help construction projects avert cost and time overrun in most cases. Risks with the highest probability of occurrence are flood, earthquake, inclement weather, design failure, human resource management challenge, equipment failure, project complexity, project management, construction technology, inadequate site investigation, inappropriate specifications, labour and material supply challenges, market conditions and financial default by client. The respondents are aware of the use of past experience, interview, ranking options, risk control, checklists, risk exploit, risk priority number, descriptive analysis, probabilistic analysis, risk enhancement, decision tree, direct judgment, flow chart, risk sharing, brainstorming, risk avoidance, comparing options sensitivity analysis, risk acceptance, risk mitigation, contingency plan, scenario analysis and risk transfer.

The study, therefore, concludes that there are many sources of risks for construction projects at the tendering and procurement stage. These sources have the capacity to increase the probability/likelihood of risk occurrence on construction projects, hence the need to adopt the available management techniques of risk identification to mitigate them. Having noted that construction organizations ignore risk identification before project commences, it is recommended that risk management should follow the order of risk identification, assessment, response and control. Based on the result of the study that respondents have low awareness on the use of management techniques such as questionnaire, cause-effect and influence diagrams to conduct risk identification of construction projects, the study recommends that appropriate awareness should be created in that regard. Questionnaire, cause-effect and influence diagrams are scientific approaches to risk identification (problem solving) in construction projects and as such, may require the engagement of construction consultants (especially academics) who have sufficient scientific knowledge to conduct risk identification of construction projects before they commence. Hence, it is recommended that construction consultants should be engaged to conduct scientific identification of project risk before they start; this will go a long way to averting cost and time overrun on projects. The government should also make risk identification a criterion for building approval.

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Pareto Analysis of Critical Risk Factors of Build Operate and Transfer (BOT) Projects in Nigeria

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Abstract

The need to meet the massive infrastructural gaps has led to the adoption of alternative procurement methods. Build Operate and Transfer (BOT) is one of the new ways used for procuring infrastructure. In developing countries, BOT projects are characterised by high-risk profile discouraging private investment. Therefore, it is imperative to identify the critical risk factors inherent in such arrangements with the view to attracting the desired level of private investment. This study employed Pareto Analysis to identify vital risk factors of BOT projects in Nigeria. Structured questionnaires were used to establish critical risk factors based on the perception of key stakeholders (government, concessionaire, lenders, and developers) in Abuja. Kaduna, Port Harcourt and Lagos. Descriptive statistics were used to obtain Standard Deviation of the risk factors indicating their impacts and severity. Based on the results, Pareto Analysis was carried out to separate the "vital few" from the "trivial many". The results indicated nine risk factors as the vital few responsible for 80% contribution. The risk factors include; changes in government policies, hostile general business environment, project company default, time performance risk, cost performance risk, excessive development cost, instability in government, failure to raise finance for the project and lack of experience in handling the project. Therefore, for effective implementation of BOT projects, it is necessary for stakeholders to focus on the "vital few" risk factors responsible for 80% of the risk impacts. The results of the study may not be generalised for use by clients and contractors operating in environments with different political and economic climate with Nigeria as the impact and likelihood of occurrence of risks may vary.

Keywords: Build-operate-transfer, Nigeria, Pareto analysis, Risk factors.

1. Introduction

The challenges of meeting the huge infrastructure needs of most developing countries caused by population explosion and budget constraints have influenced most government agencies to shift from the conventional procurement systems to more innovative types of procurement. One popular option for meeting these demands for infrastructure projects and improvement in service level has been private investment through concession agreements such as the Build Operate and Transfer (BOT). The use of BOT types of contract for the development of infrastructure projects has gained considerable acceptance and is becoming popular in many countries around the world. The BOT arrangement enables clients to have access to funds for the delivery of capital projects through financing partnership between a private and public agency with the parties receiving concessions on design, planning, financing, execution and management of projects (Amusanet al., 2013; Garole and Jarad, 2016). Dankara (2014) observed that BOT had been employed in the last few decades as an alternative procurement route for infrastructure development all over the world. Governments across the world embrace it as a procurement strategy for the provision of infrastructure due to financial constraints and increased demand for such essential services by the citizens. BOT has been successfully deployed in the development of infrastructure projects such as power, engineering, telecommunication and transportation in many countries like USA, UK, Canada, Japan, Indonesia, Malaysia, Singapore and India among others (Amusanet al., 2013).

In Nigeria, several projects were successfully executed through PPP while others failed to be actualized owing to problems of the inadequate legal framework, lack of development finance, inadequate technical among

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other risks (Babatunde et al., 2012; Egboh and Chukwuemeka, 2012). Despite these developments, the federal government had in recent time declared and requests for proposals for many projects through the BOT mechanism indicating the significance and prospects of the financing option for infrastructure development in the country (Mohammed et al., 2012). However, BOT contracts have been identified having a complex risk portfolio leading to the restriction of the award of some concession agreements in Nigeria. This may be attributed to the use of multiple parties with different objectives (Thomas et al., 2006). Furthermore, the successful implementation of BOT projects depends to a considerable extent on the degree to which various risks are identified, managed and allocated (Thomas et al., 2006). Therefore, it is imperative to determine and classify the different risk factors inherent in BOT with the view to providing a platform for effective risk management. This paper attempts to employ Pareto Analysis to identify critical risk factors of BOT projects that are responsible for the greater amount of risk impacts in Nigeria.

2. Concept of BOT Mechanism

Several types of PPP arrangements have been utilized for the development of infrastructure in many countries, BOT being the most common and popular arrangement (Garole and Jarad, 2016). Based on the original BOT, different variants have evolved including; Build Own Operate (BOO), Build Lease Transfer (BLT), Build Own Operate and Transfer (BOOT), Build Transfer Operate (BTO), Design Build Finance Operate (DBFO), Rehabilitate Own Operate (ROO) and Rehabilitate Operate Transfer (ROT) among others. These are employed for the development of different types of infrastructure projects in various countries.

Infrastructure projects to be undertaken under the BOT financing mechanism are announced by the government and private sector companies in the different specialisation of construction are invited to submit their proposals for the implementation of the projects. Upon the completion of tender formalities, the successful contractor is selected for the contract. Based on this method the government then grants the advantage of design-financing-construction- and operation of the project to the chosen private sector for a specific period in the form of a contract (Vosoughi and Vosoughi, 2015). At the end of the contract term, the project manager is responsible for the exploitation of the project and the repayment of the principal amount of received loan and interest on such loans from the proceeds of the project services. An acceptable profit will be paid to the investors of the project from what remains of the earnings. The project company may be responsible for all the stages or may entrust the project to their partners based on an internal contract arrangement. Based on the standard of the contract, at the end of the concession period, the project company transfers all the project assets (financial, physical and legal) to the government and that brings the life of the contract to an end (UNIDO, 1996; Vosoughi and Vosoughi, 2015).

The concession period is one of the key elements of a BOT type of contract which is very significant for its performance. A longer concession period is more beneficial to the private investor which in turn leads to loss of investment to the government (Nasirzadeh et al., 2014). On the other hand, if the concession period is too short, the investor would either reject the contract offer or would be forced to increase the operation fees to recover his investment and make a certain level of profit. Consequently, the risk involved caused by short concession period would be shifted to the end user or users of the facilities (Shen et al., 2002).

3. Critical Risk Factors of BOT Projects

The identification and classification of critical risk factors associated with BOT contracts has been a subject of many studies across the world (Tiong, 1990; Woodward, 1992; Chapman and Ward, 2001; Akintoye, et al., 2005; Amusan et al., 2013. Patel, 2013; Sachet al., 2007; Zhang et al., 2008; Wang et al., 2000, Mohammed et al., 2012; Chan et al., 2015; Garole and Jarad, 2016). Tiong (1990) categorised risks in BOT into technical, political, and financial risks. The study revealed that political risk has the highest impact on the implementation of BOT projects. Woodward (1992) considered risks as global (political, legal, commercial) due to wider range and elements (technical, operational, financial and revenue) that are peculiar to a project. The study also demonstrated that both the global and local factors have a significant impact on the achievement of the projects within the desired level of performance. Akerele and Gidado (2003) revealed that from the myriad of risks factors associated with PPP arrangements, political and regulatory risks have the highest regarding severity index. Thomas et al. (2006) noted that private infrastructure under BOT has complex risk portfolio due to factors such as lengthy payback period, lumpiness of huge investment, high developmental efforts and upfront cost, the length of term of the loan, susceptibility to political and economic risk, low market value of security package and a complex construct mechanism involving many participants with diverging interest. Sachet al. (2007) identified currency inconvertibility and transfer restrictions, expropriation, breach of contracts, political violence, legal, regulatory and bureaucratic risks as key risk factors of BOT projects.

Mohammed et al. (2012) classified risk into four categories of political risk, construction risk, operating risk and market and revenue risk. The study indicated that instability in the political system and change in policy affects the effective achievement of BOT projects in Nigeria. Patel (2013) identified a procedure for risk identification and management and its perception from the Indian construction industry players. The study revealed that time constraints and experience of the project manager are crucial for identification of the level of risk for large and complex projects. The study further suggested the integration of time and cost management with the identification process.

Amusan et al. (2013) evaluated risks cost implication from the perspective of concessionaires and professionals. The study revealed that the common risks associated with projects expected are inflation, variation to works,

changes in judgment policy and the fluctuating nature of the foreign exchange. Renuka al. (2014) observed that early project risk identification and assessment during bidding and incorporation in the bid package would assist in the better estimation of budgets and schedules. The study recommended a simple analytical tool for each project task that would assess risk swiftly for effective analysis.

Chan et al. (2015) identified and evaluated typical risks associated with PPP projects in China. The study revealed that completion risk, inflation and price change risks have a higher impact on Chinese PPP water projects while government corruption, imperfect law, supervision system and change in market demand have a lower impact on the PPP water projects in China. The result of the investigation would to a large extent assist in improving the efficiency of privatisation in public utility service. Garole and Jarad (2016) investigated the risk factors of road projects in India from the perspectives of lenders, developers, contractors and governments. The study identified delay in approval, cost overrun, construction schedule, change in the law, dispatch constraints, land acquisition and compensation, enforceability of the contract, financial closing tariff adjustment and environmental risk as the key risk factors. The study further indicated that the risks are due primarily to the variability of legal systems, market situations and economic climate.

4. Application of the Pareto Analysis

According to the Pareto principle, in any group of things that contribute to a common effect, relatively few contributors account for most of the effect. The Pareto principle otherwise known as the 20/80 rule has been originally analysed by the Italian, Vilfredo Pareto who observed that 80% of property in his country was owned by 20% of the population (Reh, 2008). Juran and Gryna (1998) further generalised this principle and called it the 'vital few' and 'trivial many' stating that most of the results in any context are raised by a small number of causes.

Harris and McCaffer (2005) also observed that Pareto analysis is a simple technique that helps separate the primary causes of problems from the minor ones providing the management team with a tool for focusing attention on the relevant few. Pareto analysis has been employed as a problem-solving tool in many sectors including the construction industry (Kado et al., 2016). Durnyev and Ismail (2002) employed Pareto analysis to identify the nature of improvement measures of factors causing 80% of the on-site productivity problems in the New Zealand construction industry. The study established that project management, project finance, workforce, and project characteristics are accountable for the bulk of on-site productivity problems. Kado and Bala (2015) employed Pareto analysis to investigate the prevalence of quality factors of Nigerian design firms. The study identified four key quality section factors which largely influence the performance of the Nigerian design firms. The factors identified are employee training, external design review, design contract review, and performance quality audit. Mahboob et al. (2015) employed Pareto analysis to investigate the critical success factors for total quality management of software engineering. The study concluded that top management commitment was the most common factor followed by customer service and satisfaction. Kado et al. (2016) employed Pareto Analysis to investigate Total Quality Management (TQM) status of the Nigerian design firms. The study revealed that there is a need for the improvement of the status of design firms in Nigeria. The study further indicates deficiencies in the areas of training awareness, education and skills, objective management and feedback and use of TQM tools and techniques.

5. Methodology

Primary data for the study was obtained through a field survey while the secondary data was obtained from a review of relevant works of literature from published journals, conference proceedings and fact sheets of local and international organisations. The primary data was obtained using a structured questionnaire randomly distributed to four categories of respondents (government officials, concessionaires, developers and lenders) in Lagos, Port Harcourt, Kaduna and Abuja.

These cities were chosen due to their ample infrastructure projects that have been realised under the BOT financing option. The questionnaire is divided into two sections. The first section captured background information of the respondents, while the second section captures the risk factors associated with BOT contracts established through a literature search. Before the instrument was adopted and administered, it was scrutinised by four (4) experts who have considerable experience and knowledge on the subject matter to satisfy the desired level of validity. The questionnaire was then modified based on the suggestions of the experts before it was administered.

The questionnaire consists of 45 risk factors and provides the participants with the options of rating the factors based on a five (5) point Likert scale, ranging from "very important" to "not important". The population for the study consisted of professionals in the offices of contractors, developers, lenders and government officials. One hundred and twenty (120) questionnaires (30 for each group of respondents) were randomly distributed out of which 98 (81.6%) were returned and 86 corresponding to 71.6%were found to be fit for analysis. Mean Item Score (MIS) and Mean Deviation (MD) was used to determine the significance and the impact of each risk factor based on the perception of the respondents. The Pareto analysis was then employed by developing Pareto charts to identify the 'vital few' factors that have the greatest impacts from 'trivial many' by adopting the step-by-step procedure outlined by Haughey (2014).

6. Results and Findings

6.1Profile of Respondents

The profile of the respondents for the survey is presented in Table 1.

Table 1: Profile of Respondents

Characteristics	Frequency	Percent
Category of Respondent		
Government	24	27.91
Concessionaire	21	24.42
Developers	19	22.09
Lenders	22	25.58
Educational Qualification		
High School	0	0.00
Diploma	18	20.93
University Degree/HND	51	59.30
Master/ PhD	17	19.70
Work Experience		
Less than 5 years	11	12.79
5 to 10 years	16	18.60
11 to 15 years	19	22.09
16 to 20 years	24	27.90
Greater than 20 years	16	18.60
Position		
Managing Director	21	24.42
Principal officer	25	29.01
Senior Personnel	28	32.56
Others	12	13.95
Designated Profession		
Engineering	19	22.09
Architecture	16	18.60
Quantity Surveying	12	13.95
Building	17	19.76
Estate Surveying	12	13.95
Others	10	11.63

The demographic profile of the respondents revealed that 27.9% of the survey participants are from government establishments whereas 24.42%, 22.09% and 25.58% are from the offices of concessionaires, developers and lenders respectively. The profile further revealed that most of the respondents (59%) are first degree holders and 19% either have a Masters or PhD degree. The results also show that the majority of the respondents occupy management positions as either principal, deputy directors or directors in their organisations. These results indicate that the information obtained from these categories of respondents can be considered adequate.

6.2Risk Factors of BOT

The results of Mean Item Scores of risk factors are presented in Table 2. The results indicated that changes in government policy which falls under the political risk factor is ranked first which is followed by unfavorable business environment, project company default, time performance risk and cost performance risk. The factors considered to have the least risk are an outbreak of hostilities, strong public opposition and inclement weather.

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Table 2: Mean Item Score of Risk Factors

S/No	Risk Factors	MIS	MD	Rank
1	Change in government policy	4.3953	0.7658	1
2	Unfavourable general business environment	4.2093	0.5797	2
3	Project company default	4.2093	0.5797	3
4	Time performance risk	4.1279	0.4983	4
5	Cost performance risk	4.0814	0.4518	5
6	Excessive development cost	4.0581	0.4286	6
7	Instability in government	4.0116	0.3821	7
8	Failure to raise finance for the project	4.0116	0.3821	7
9	Lack of experience in handling the project	3.8837	0.2542	8
10	Termination of concession	3.8721	0.2425	9
11	Changes in project specifications	3.7558	0.1262	10
12	Quality performance risk	3.7326	0.1030	11
13	Variation	3.7326	0.1030	11
14	Force majeure	3.7326	0.1030	11
15	Inflation risk	3.7093	0.0797	12
16	Currency risk	3.7093	0.0797	12
17	Lack of integrity in the tendering process	3.6977	0.0681	12
18	Change in economic policies	3.6628	0.0332	13
19	Production target slippage	3.6047	0.0249	14
20	Default by concessionaire	3.6047	0.0249	14
21	Nonexistence of legal and regulatory system	3.6047	0.0249	14
22	Delays in design approval	3.6047	0.0249	14
23	Foreign exchange	3.5930	0.0365	15
24	Changes in general legislation affecting the project	3.5930	0.0365	14
25	Resources risk	3.5814	0.0482	16
26	Error in operation and maintenance cost estimate	3.5814	0.0482	16
27	Changes in design during construction	3.5814	0.0482	16

28	Lack of commitment to concession contract	3.5698	0.0598	17
29	Adverse action of the government	3.5465	0.0831	18
30	Lack of expertise	3.5465	0.0831	18
31	Delay in feasibility study	3.5349	0.0947	19
32	Changes in demand for the facility over concession period	3.4767	0.1528	20
33	Complicated negotiations	3.4535	0.1761	21
34	Labor risk	3.4419	0.1877	22
35	Delay in settling claims	3.4302	0.1993	23
36	Flaws in contractual documentation	3.3953	0.2342	24
37	Unfavorable local conditions	3.3953	0.2342	25
38	Expensive and lengthy tendering process	3.3605	0.2691	26
39	Material unavailability	3.2791	0.3505	27
40	Labor shortage	3.2209	0.4086	38
41	Unavailability of quality personnel to operate facility	3.1628	0.4668	29
42	Inappropriate operating methods	3.1628	0.4668	30
43	Outbreak of hostilities (wars, riots and terrorism)	3.1163	0.5133	31
44	Strong public opposition	2.9651	0.6645	32
45	Inclement weather	2.9535	0.6761	33

6.3Pareto Analysis

To develop the Pareto chart, the cumulative percentages from the mean scores were calculated and presented in Table 3. The risk factors were assigned the codes (RF) for the 45 factors investigated. The factors were arranged in descending order as required by the principle of Pareto analysis to compute the cumulative percentage for constructing the cumulative frequency curve (Haughey, 2014).

Table 3: Cumulative Percentages of Risk Factors

Code	Risk Factors	MIS Count	% of Total	Cumulative Percent
RF1	Change in government policy	4.3953	2.6973	2.6973
RF2	Unfavorable general business environment	4.2093	2.5831	5.2804
RF3	Project company default	4.2093	2.5831	7.8635
RF4	Time performance risk	4.1279	2.5332	10.3967
RF5	Cost performance risk	4.0814	2.5046	12.9013
RF6	Excessive development cost	4.0581	2.4903	15.3917
RF7	Instability in government	4.0116	2.4618	17.8535
RF8	Failure to raise finance for the project	4.0116	2.4618	20.3153
RF9	Lack of experience in handling the project	3.8837	2.3833	22.6986
RF10	Termination of concession	3.8721	2.3762	25.0748
RF11	Changes in project specifications	3.7558	2.3048	27.3796
RF12	Quality performance risk	3.7326	2.2906	29.6702
RF13	Variation	3.7326	2.2906	31.9608
RF14	Force majeure	3.7326	2.2906	34.2514
RF15	Inflation risk	3.7093	2.2763	36.5277
RF16	Currency risk	3.7093	2.2763	38.8040
RF17	Lack of integrity in the tendering process	3.6977	2.2692	41.0732
RF18	Change in economic policies	3.6628	2.2478	43.3209
RF19	Production target slippage	3.6047	2.2121	45.5330
RF20	Default by concessionaire	3.6047	2.2121	47.7451
RF21	Nonexistence of legal and regulatory system	3.6047	2.2121	49.9572
RF22	Delays in design approval	3.6047	2.2121	52.1693
RF23	Foreign exchange	3.593	2.2049	54.3743
RF24	Changes in general legislation affecting the project	3.593	2.2049	56.5792
RF25	Resources risk	3.5814	2.1978	58.7770
RF26	Error in operation and maintenance cost estimate	3.5814	2.1978	60.9748
RF27	Changes in design during construction	3.5814	2.1978	63.1726
RF28	Lack of commitment to concession contract	3.5698	2.1907	65.3633
RF29	Adverse action of the government	3.5465	2.1764	67.5397
RF30	Lack of expertise	3.5465	2.1764	69.7160
RF31	Delay in feasibility study	3.5349	2.1693	71.8853
RF32	Changes in demand for the facility over concession period	3.4767	2.1336	74.0189
RF33	Complicated negotiations	3.4535	2.1193	76.1382

RF34	Labor risk	3.4419	2.1122	78.2504
RF35	Delay in settling claims	3.4302	2.1050	80.3554
RF36	Flaws in contractual documentation	3.3953	2.0836	82.4390
RF37	Unfavorable local conditions	3.3953	2.0836	84.5226
RF38	Expensive and lengthy tendering process	3.3605	2.0622	86.5848
RF39	Material unavailability	3.2791	2.0123	88.5971
RF40	Labor shortage	3.2209	1.9766	90.5737
RF41	Unavailability of quality personnel to operate facility	3.1628	1.9409	92.5146
RF42	Inappropriate operating methods	3.1628	1.9409	94.4555
RF43	Outbreak of hostilities (wars, riots and terrorism)	3.1163	1.9124	96.3679
RF44	Strong public opposition	2.9651	1.8196	98.1875
RF45	Inclement weather	2.9535	1.8125	100.00

The Pareto chart presented in Figure 1 was constructed using the cumulative percentage counts of the risk factors based on the procedure outlined by Haughey (2014). The broken line on the chart separates the vital few (top 20%) from the trivial many (80%).

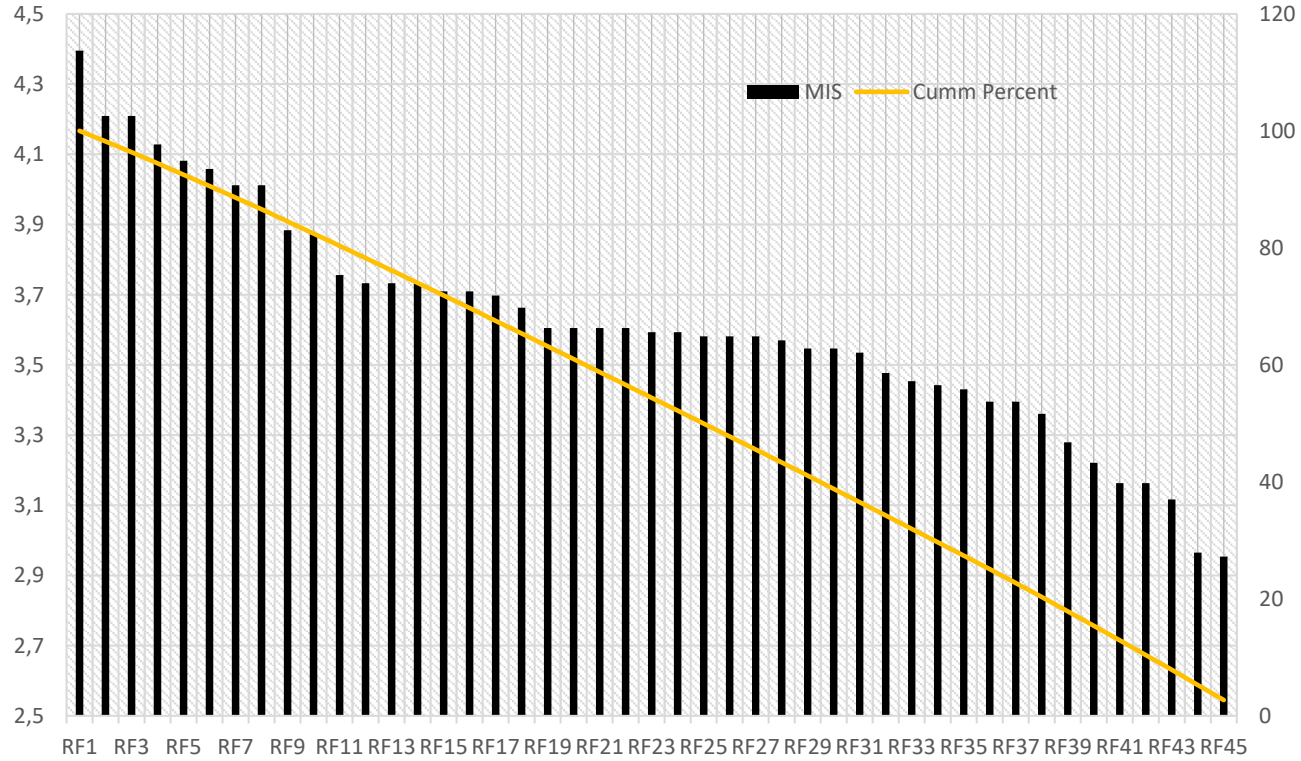

Figure 1 Pareto Chart of Risk Factors

From the Pareto chart, the nine highest risk factors are established to be the vital few (20%). These factors are a change in government policy, unfavorable general business environment, project company default, time performance risk, cost performance risk, excessive development cost, instability in government, failure to raise finance for the project and lack of experience in handling the project.

7. Discussion of Results

Change in government policy is one of the vital risk factors which impact the effective realisation of BOT projects in Nigeria. This is in consensus with the studies of Akerele and Gidado (2003), Amusan et al. (2013) and Vosoughi and Vosoughi(2015) in which change in policies concerning infrastructure projects and instability in government were identified as a critical risk factor for adequate conception and implementation of BOT projects. Government's opinion regarding policies relating to the benefit of a project is critical for pulling government's effort toward such project. Risks associated with the political environment are common in most developing countries (Schaufelberger, 2005). Therefore, it is essential to mitigate against the political risk to have effective implementation of BOT projects.

A hostile general business environment tends to discourage private sector investment thereby defeating the quest for the public-private partnership mechanism necessary for infrastructure project development. The general business climate relates to the economic environment, such as currency devaluation, foreign exchange fluctuation, fluctuation in interest rates, and inflation. These risks were particularly significant for a

BOT project in Nigeria. These risks affect the cost of debt service and the real value of the projected revenue. The impact of this type of risk on BOT projects in other parts of the world is evident from the study of Schaufelberger (2005). Project company default is a vital risk factor of BOT projects that is requiring the utmost attention during project implementation. A myriad of factors are responsible for the nonperformance of project firms. It is, therefore, necessary to consider companies with a track record of performance for capital projects. This is in agreement with the study of Garole and Jarad (2016) which showed that the effectiveness and efficiency of the private company are crucial toward actualizing BOT projects in developing countries.

Time performance risk essentially affects the implementation of infrastructure project within the time frame and projected cost. Time performance risk may be caused by technical difficulties, poor management or by the combination of both (Schaufelberger, 2005). Akerele and Gidado (2003), Jefferies and Chan (2015) and Chan et al. (2015) indicated that many PPP projects had failed in China due in large part to construction completion (scheduled) risk. Moreover, delays in completion of concession projects will certainly lead to shortened operational life which reduces the investors' income. However, if a project could not start operation as scheduled, the private company would not have sufficient cash flow to pay for the debt and charges on borrowed funds resulting in an extension of operation time which increases operating cost and reduces profit (Chan et al., 2015). Since BOT investors rely on income from the completed project to recover their investment, any delay in completion will certainly delay the generation of revenue.

Cost performance risk is also a vital factor that should be focused upon while engaging in BOT projects. Cost performance of infrastructure projects is a desired criterion for measuring success. The cost performance of BOT projects is however affected by a plethora of other factors leading to cost overrun which will impact the profitability of the project by increasing construction and financing cost. The impact of cost overrun on the implementation of BOT projects was also established by Schaufelberger (2005). Therefore, key stakeholders should focus on these factors to carefully and effectively mitigate the risk factor.

Some private investors are not too enthusiastic about bidding for a BOT project due to excessive development cost which they may never recover. Therefore, it is imperative for decision-makers to pay more attention to this risk factor because its effect on project viability is more critical and risk management techniques are required to mitigate and minimize its effects. The instability in government results in cancellation or revision of contracts. In developing countries, it is imperative to mitigate against political risks, since the most important political changes often occur. Before the implementation of BOT projects, it is necessary for the promoter to conduct a thorough political risk profile to minimise the risk. Every investment is subjected to political risk due to an unstable government and its component, and low foreign reserves.

The performance of the concessionaire is crucial in seeking for the fund to implement a BOT project. Usually, equity risk is related to the performance of the company which is measured by the share price of the enterprise. The capability of the company in raising capital for the BOT project is reflected in the share price. The equity investors and other long-term investors will only agree to provide the amount of funding for BOT project when the promoter has proven the financial capability of the project over its entire lifespan. Therefore, the competence in carrying out detailed and comprehensive feasibility study, economic and risk assessment study would ensure the promoter to be in better position in obtaining domestic equity finance for funding the BOT project. Lack of experience in similar projects by any of the key stakeholders is another critical risk factor which requires attention for the successful achievement of infrastructure project under the BOT mechanism. Therefore, it is desirable for stakeholders to determine the level of experience of all key players on the type of project in question during the early phase in order to effectively handle such project.

8. Conclusion

This study employs Pareto analysis in identifying critical risk factors that have a great impact on the implementation of BOT project in Nigeria. The attractiveness of the BOT concept stems from the difficulties many developing countries are facing in both finding sufficient public funding for infrastructure and in attracting private infrastructure investors. The study has found that nine risk factors with the highest criticality Index as the vital few (20%) that are responsible for 80% of the risk impact of BOT projects in Nigeria. The risk factors identified are a change in government policy, unfavourable general business environment, project company default, time performance risk, cost performance risk, excessive development cost, instability in government, failure to raise finance for the project and lack of experience in handling the project. The study also found that some risk factors including labour shortage, unavailability of personnel, inappropriate operating method, outbreaks and hostilities, public opposition and inclement weather, among others, constituting the "trivial many" which is considered to have a low impact on the implementation of BOT projects. Although this study is based on the perception of key stakeholders, it highlighted the significance and the impact of the investigated risk factors for the effective implementation of BOT projects in developing countries. The study further exposed the critical risk factors that play a crucial role in the implementation of infrastructure projects within schedule and planned budget and consequently provided the possibility to carefully assess the impact and likelihood of occurrence of such risk to effectively realise BOT projects in Nigeria. It is recommended that, for successful project implementation, key stakeholders of such projects should ensure that appropriate measures are geared toward mitigating these risk factors by allocating risk to parties that best able to control the risks for improved service delivery.

The generalisation of the results of the study is limited by the population for the study which comprised of

respondents from construction organisations in Nigeria. Therefore, the results of the study may not be entirely useful to clients and contractors operating in environments with different political and economic climate with Nigeria as the impact and likelihood of occurrence of risks may vary.

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Potentiality of the South African Construction SMME Contractors Globalising within and Beyond the SADC Construction Markets

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Abstract

The African continent stands on the verge of developmental take-off, most especially the Southern African Development Community (SADC) region being one of the emerging economies. The 15 years SADC strategic plan for implementation of infrastructure and construction development is believed to stimulate economic, social and technological advancement; and increase the competitiveness and sustainability amongst the Small, Medium and Micro Enterprises (SMME) and large contractors within the region and globe. The major problem is that most of the SMME contractors within South Africa, which have the potential to grow into large construction companies and, to further internationalise their businesses lacks the global readiness. Thus, the global thrusts have generated the concepts of globalizing business strategy and operations, as one of the drivers of competitiveness of many countries and organisations. The purpose of this study is to evaluate the potential of the South African construction SMME contractor's capability for globalizing within and beyond the SADC construction market. This study was conducted among the construction SMME contractors in Port Elizabeth, the Eastern Cape Province of South Africa. The qualitative research method was adopted an in-depth interviewing technique with 34 contractors (civil engineering and general building contractors) within the cidb grade 4 to 6 contractors. These SMMEs are being perceived to have the potential capacity to become large-scale construction organisations shortly. Findings revealed that only two SMME contractors are operating internationally while other contracting firms are currently sustainable and competitive in the domestic market, and however, few are planning to go global. The study also revealed that most of the SMME contractors are reluctant to amplify their potential capabilities, and needed the readiness to develop international business strategies that would enable them to penetrate and participate in the SADC region and global construction market. The study recommends that the SA construction contractors both SMME and large contractors should strive earnestly to harness their potential capacity towards globalizing their businesses, strategies and operations frameworks that would foster their global competitiveness.

Keywords: Business Strategies, Capability, Globalisation, SMME Contractors, South Africa.

1. Introduction

The developing countries are on the verge of infrastructural and developmental take-off, most especially the African continent as one of the emerging economies. This is as a result of their yearnings to bridge the massive infrastructural deficits, as well as its maintenance that would worth around US$100 billion per year on the continent over the next decade (KPMG, 2014). Pienaar (2016) claims that infrastructure spending in Africa is estimated to grow from US$70 billion in 2014 to US$180 billion per annum by 2025; as new projects and

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the refurbishment of asset infrastructure would be expected to increase by more than 25% from the previous year. However, these infrastructure investment opportunities within the African continent is attracting global construction player attention, to penetrate and participate actively in the design and procurement activities (Pienaar, 2016). KPMG (2014) further revealed that most of the organisations that are planning to gain entrance into the construction market in the African continent have their headquarters in Europe and the Middle East, and many of these organisations are small companies. Thus, this global thrust has generated the concept of globalisation and internationalisation in today's construction-business world. Dugdale (2014) urges the construction SMMEs and large organisations, and their stakeholders to continue innovating, as well as to embrace the ever-changing market structure in today's global market if they aimed to stay competitive. Uddin and Akhter (2011) argued that many organisations are adopting the cross-border alliances (internationalisation/ globalisation) strategy to enhance their global transformational business agenda; as well as to gain competitive advantages while utilising the opportunities emerging from the global market. This concept of globalisation and internationalization of organisations is becoming the strategic source of competitiveness and economic sustainability in the global construction businesses (Ibrahim, 2013; Uddin and Akhter, 2011; and Dlungwana and Rwelamila, 2004).

1.2 Concept of Globalisation in the Business Perspective

Globalisation is the movement of people, resources, goods, services, ideas, language and skills across international spaces (Ibrahim, 2013; and Dlungwana and Rwelamila, 2004). Tallman and Fladmoe-Lindquist (2002) noted that globalisation is the managerial process of an organisation by integrating its global activities into a single world business strategy. This could be achieved through an organisation(s) managing their business networks of differentiated but integrated subsidiaries, affiliates, alliances and associations. Wadiwalla (2003) states that in today's business environment, globalisation is at the forefront, because of the global business expansion, diversification, and deepening of trade. Tallman and Fladmoe-Lindquist (2002) further assert that globalisation adds a new dynamic and strategic dimension towards conducting business because there is a significant potential for gaining a competitive advantage through globalisation.

Blaauw (2013) noted that the Chinese organisations are intensively dominating the Africa construction market, as they are constructing several projects to improve infrastructures, such as roads, electricity, railways and irrigation systems in the Africa continent. Blaauw (2013) further claims that the Chinese organisations' strategic moves and successes in Africa and global construction markets emanate from its strategic integration between business networks of the Chinese companies in Africa and globally. In other words, the Chinese firm's internationalisation method involves a strategic integration that is close and well-structured business network in the form of subsidies and incentives (Blaauw, 2013). Chew, Yan & Cheah (2009) noted that the Chinese Construction Firms (CCFs) compete largely with others globally. Chew et al. (2009) further argue that the domination by the Chinese contractors in Africa has meant that African construction companies do not just represent a strong source of competition, but also think that African organisations lack financial and technical skills capacity to be in a global landscape of construction markets. However, Chew et al. (2009) also claimed that low skill and technology endowment amongst African contractors had limited the Chinese construction organisations' interest in establishing collaborative ventures with local companies.

1.3 The Study Problem Identification

There is a lack of global readiness amongst the South African construction SMME contractors that are being perceived to have the potential capacity and capability to globalise their businesses within and beyond the SADC construction market.

1.4 Purpose of the study

This study aimed to evaluate an in-depth understanding of the South African SMME contractors' capacity and capability to globalise within the SADC construction market and beyond.

2. Literature Review

2.1 Globalisation Forces in the African Construction Industry (CI)

According to Anugwo and Shakantu (2016); and Ofori (2000), the African continent is playing a vital role in the current and future investments of construction and infrastructural development globally. Ofori (2000) added that globalisation is an inescapable fact for the construction industries in developing countries. As such, the indigenous construction organisations within the continent need to strategies and seize the opportunities on the current globalisation trends, as it is vitally important for the continent going forward (Ofori, 2000). Thus, the construction market is becoming increasingly integrated within the continents that no local markets are immune against external influences (globalization); as such, cannot be insulated from global effects (Anugwo and Shakantu, 2016).

Wadiwalla (2003) states that some of the South African construction organisations have been globalising, as results of business expansion, diversification, deepening of trade within the SADC region, to eliminate the cyclical nature of the construction market within South Africa. Furthermore, Wadiwalla (2003) states that the contracting business in the SADC is being dominated by South African contractors. Tallman and Fladmoe-Lindquist (2002) warn that the organisation, perhaps including construction organisations are becoming multinational firms and their strategic model is intended to engage in resources seeking strategies. These resources-seeking business strategies and models are targeting local complementary resources to gain market entry competitively. Ofori (2000) further argues that through globalisation, the African construction companies can actively help to upgrade and enhance their national

construction industry's capacity. Ofori (2000) reviewed the works of Drewer (1980), which focuses on the need for developing countries to strategically use their construction works opportunities and strategic positions to support the growth and development of their indigenous contractors so that they can replace the foreign firms. In line with this thought, Dulupcu and Isparta (2005) highlighted the positive impacts of globalisation to include; Information and Communication Technology (ICT) capabilities flows; labour hyper-mobility and global distribution of labour; income distribution; capital formation; increase enterprises and production; competition, risk and information sharing; and technological developments for creating new business opportunities. These drivers should be the primary stimulation for strategic government policy in developing countries. In this view, Dulupcu and Isparta (2005) also maintain that the African governments are becoming more sensitive and inclined in creating an enabling business environment, and aiming to enhance their countries' potentiality, competitiveness, and technological advances. Dulupcu and Isparta (2005) added that technological development at national level occurs through their invention, innovation, entrepreneurship, adaptation and modification of pre-existing technologies, and diffusion of technologies amongst firms, individuals, the public sector and foreign organisations.

2.2 The Southern African Development Community (SADC) Regional Market Integrations

The Southern African Development Community (SADC) is a Regional Economic Community comprises 15 Member States; Angola, Botswana, Democratic Republic of Congo, Lesotho, Madagascar, Malawi, Mauritius, Mozambique, Namibia, Seychelles, South Africa, Swaziland, Tanzania, Zambia and Zimbabwe. This was established in 1992 for regional integration towards economic development and for ensuring peace and security (SADC, 2012). The Blueprint Strategy & Policy (BSP) Ltd (2005) claims that globalisation forces have pressured the SADC to deal with the issue of how regional integration might strengthen the regional economy, competitiveness and preparation for global competition.

Thus, on August 2012, SADC Summit endorsed the SADC Regional Infrastructure Development Master Plan (RIDMP) and Regional Indicative Strategic Development Plan (RISDP), as a strategic drive to promote competitiveness and sustainable economic development (SADC, 2012). According to Van Wyngaardt (2015), the RIDMP and RISDP would guide the SADC's strategic development in a seamless and cost-effective approach towards successful implementation of infrastructure development projects. These infrastructure project plans include the development of adequate power, water supply, meteorology and sanitation; developing road and rail transport sectors; and ensuring sufficient and efficient information and communications technology operation (Van Wyngaardt, 2015).

The SADC Regional Infrastructure Development Projects

According to the SADC (2012), the SADC regional infrastructure development projects gear towards creating a broader market and more significant economic opportunities and competitiveness to promote and sustain regional economic development, trade and investment, and as well as to improve social conditions (SADC, 2012). Furthermore, the SADC (2012) states that its master plan would be implemented over three stages within five-year intervals, ranging from short-term goal (2012-2017), medium-term goal (2017-2022) to the long-term goal (2022-2027). This is in line with the SADC Vision 2027, as a 15-year infrastructure implementation plan, which aimed to progressively deepen the horizon for forecasting infrastructure requirements in the region (SADC, 2012).

Fernandes (2014) highlights the factors for market drivers of the SADC construction sector as economic expansion; demographic growth; increase demands for residential homes, retails, industrial and commercial construction services; increasingly needs for social and physical infrastructure development and maintenance on existing structures; an increase in economic growth through natural resources and economic diversification. Meyer (2016) acknowledged that the construction contractors' business strategies and model towards the affordable housing market and investments in infrastructure in South Africa, as well as within the SADC region are the key to positive prospects for 2016 and going forward. However, the recent South African government housing initiatives are aimed at boosting infrastructure delivery, which are important signals and an opportunity for construction growth and market penetration for both SMME and Large contractors (Mayer, 2016). Mayer (2016) further said that construction contractors' potential growth within the South African market is a competitive business journey. However, there are considerable varieties of opportunities available in the Southern African Development Community (SADC) countries. Thus, there is a need for the SMME contractors to capitalise on their potential capacity to develop adequate international business strategies towards globalising their market horizon and contributing towards their regional competitiveness (Mayer, 2016).

2.3 The Business Concept of Internationalising an Organisation

Ellis and Williams (1995) state that international trade and business links have increased the complexity of business approach regarding their strategic capability and management ability. It has become a strategic challenge on all sizes of construction organisations because they need the ability to respond appropriately (potentiality and readiness) to the twin pressures of trade liberalisation and international competition (Ellis and Williams, 1995). According to Blaauw (2013), the business mission, vision and strategy of an organisation are essential aspects of the internationalisation and globalisation of their business activities. Therefore, it becomes an ideal for the construction organisations in developing countries to develop and integrate international business strategy into their business strategies. Ellis and Williams (1995) believe that international business strategy is about how an organisation would compete effectively and efficiently

in international markets. Ellis and Williams (1995) further suggest that organisations have to formulate (readiness) and implement their international business strategy (such as international business, strategic management, international finance, organisational development and international marketing), concerning international aspects of industries, companies and their strategies.

According to Younoussi, Jouali & Arwata (2013), the international activities of small firms are attracting growing interest. There is significant interest in the concept of globalisation, internationalisation, entrepreneurship, and small business growth amongst investors and business research scholars. Younoussi et al. (2013) observed that the growing instability of a business environment, because of the waves of integration and liberalisation in the international markets. This wave has dramatically forced the SMMEs to change their strategic behaviour and to adopt the new realities of free trade as the only means of economic sustainability and competitiveness (Younoussi et al., 2013). Blaauw (2013) states that organisations that opt to internationalise and globalise their business process and activities must proactively adapt to the international strategic business measures; while their ultimate goals by collaborating with foreign organisations would be based on gaining a competitive advantage, economic sustainability, and creation of more business opportunities. Younoussi et al. (2013) added that the potential capability, and readiness to develop strategic business strengths, which are to enable an organisation to take advantage of international market(s) have become essential for small businesses grow, especially in developing countries. Thus, the internationalisation of small construction organisation may be achieved through strategic alliance and partnership for competitive advantages; as Uddin and Akhter (2011) alluded that, to achieve competitive advantages, organisations must combine their assets and capabilities into cooperative and mutually beneficial alliances.

According to Mowla (2012), strategic alliances have been perceived as one of the primary sources of organisational competitiveness both in the local and global market. Mowla (2012) further posits that this strategy also creates opportunities for organisations to gain access to external resources, synergies and foster rapid learning and change in business organisations. Supporting this view, Uddin and Akhter (2011) further claimed that, strategic alliances have become a principal source of competitive advantage for many firms (especially small businesses) and have allowed them to cope with increasing organisational and technological complexities that have emerged in the global market. Parvatkar (2011), states that the generic motive for seeking strategic alliances within an industry is to ultimately create and sustain a long-term competitive advantage in a fast-changing business world. This strategy allows organisations to utilise economies of scale, reduce costs, gain knowledge, boost research, investment and development efforts, increase access to new technology, enter new markets, and improve quality (Parvatkar, 2011).

2.4 International Business Strategy

Carpenter and Dunung (2012) posit that globalisation and internationalisation is the shift toward a more interdependent and integrated global economy which creates more significant opportunities for international business both small and large organisations. This process involves exchanges of money for physical goods; resources, such as people, intellectual property, and contractual assets or liabilities (Carpenter and Dunung, 2012). Lockefeer (2010) argues that internationalisation could mean the firm‘s ability to initiate, to develop, and to sustain business operations outside their local market and to integrate with the international economic activities. Lockefeer (2010) highlighted the Emerging Market (EM) conditions of firms' capabilities, home country networks and corporate entrepreneurship; and through the home country, network ties are in particular necessary to overcome barriers to internationalization.

Lockefeer (2010) further highlighted that the strategic constructs for the firm-specific condition in the internationalisation are the ability to build networks and make use of social relations; ability to build strategic alliances; use of technology and working capital; management experience and capabilities; employee experience and knowledge; contextual experience; firm size and age. This is in line with Dlungwana & Rwelamila (2004) advise that industries in the developing countries, such as South African construction industry, should maintain the continuity in enhancing its capacity at the base levels, and to improve their capacity and readiness to deliver on local and global projects efficiently. Thus, Lockefeer (2010) noted that the potential growth of the company; proximity to potential clients; asset seeking; market seeking; efficiency-seeking; resource-seeking; technology-seeking; and economies of scale are the crucial drivers fostering the motivations of internationalisation among the Chinese SMEs.

The Small, Medium and Micro Contractors' Globalisation Readiness, and Potentiality

The, KPMG Global Construction Survey 2013, found that, about half of 165 senior leaders in the construction and engineering industry globally, are strategically planning to move into new geographical areas and most of them focus their business direction towards the African continent, which has been listed as the most popular and prospect to run a business (KPMG, 2014). However, Pienaar (2016) claims that more projects in sub-Saharan Africa in 2016 compared to the past two years because Africa is only scratching the surface of the real value of the continent; and growth across Africa will exceed growth in the rest of the world significantly for years to come. Also, Anugwo and Shakantu (2016) stated that global readiness could be fostered amongst the local construction contractors by competing both in the domestic and global market through their strategic understanding of the key drivers of the local and global competitiveness and internationalisation business strategies. On the other hand, Wadiwalla (2003) observes that the drivers of globalisation and internationalisation in the African construction market are emanating from the growth of Information, Communication and Technological (ICT) changes; and the regionalisation of the Africa's infrastructures development agendas. Ellis

and Williams (1995) perhaps, noted that the changing dynamics of an organisation's external environment coupled with its internal context, explain what should be expected as the drivers that would motivate the SMME and Large construction organisations to develop a local or international business strategy.

Pienaar (2016) affirms that the strategic success of expanding, industrialisation, globalisation and regional trade within Africa and SADC region should be the primary driver of growth; and this strategy strongly linked to infrastructure and construction products and services, which would offer tremendous opportunities for SMME and large construction contractors within the continent. On the other hand, Corkin, Burke and Davies (2008) claim that Chinese enterprises are promoting entrepreneurship in Africa, through the establishment of new markets and opportunities. This shows that the Chinese companies have more competitive advantages over others (the local and global market players within Africa). This could be as a result of the African contractors' inadequacy and lack of capacity; as Blaauw (2013) noted that the Chinese construction organisations are dominating the Africa continent amongst the local and foreign contractors. Dlungwana and Rwelamila (2004) also alluded that most of the local construction organisations such as SMME contractors fail to undertake the competitive process of globalising their business services. Dlungwana and Rwelamila (2004) believe that SMME contractors can execute small and medium-sized projects and can compete in both the local and global markets. Scarborough (2014) advocates that any business, large or small can in today's globally competitive environment, think or act proactively and strategically of globalising and internationalising their businesses.

Ofori (2000), argues that the peoples' perceptions about internationalisation and globalisation, is one-sided and distorted by regarding it as only the flow of exports from the industrialised nations to developing countries, which is entirely not the case. Clarifying this distorted perception, Ofori (2000) further elaborates that the international construction market does not lie within the developed countries alone, as some of the organisations exporting construction services and products are coming from the developing countries. For instance, Ofori (2000) emphasized that China as a nation as has several indigenous international contractors, notwithstanding there are present of foreign firms actively participating in their mature project market.

3. Research Methodology

This study adopted a qualitative research approach, rooted in the phenomenological paradigm and utilising the in-depth interviewing method. Out of the seventy-four (74) construction organisations in Grades 4-6 of the CIDB register of contractors, thirty-four (34) were purposively selected and interviewed in Port Elizabeth, South Africa. According to Miles, Huberman and Saldana (2014) phenomenological paradigm tend to look at data thematically to extract essences and essentials of researcher respondents (contractors) perceptions and its meaning. A phenomenologist advocates the "need to consider human beings' subjective interpretations, their perceptions of the world (their life-world) as their starting point in understanding social phenomena (Mack, 2010). This method is considered the most appropriate and effective to elicit authentic information and perspectives on globalization and internationalization of businesses. The interviewees are the SMMEs construction business owner's and executive managers as firms' representatives, and strategic position to initiate and drive internationalization business strategies.

Table 1: The profile of the interviewees

Code	cidb Grade	Position	Years of Exp.	Code	cidb Grade	Position	Years of Exp.
D1	4GB	General Manager (Business Owner)	26	E6	5CE	Managing Director (Business Owner)	20
D2	4GB	Managing Director (Business Owner)	+25	E7	5GB	Managing Director (Business Owner)	40
D3	4CE	Executive Manager (Firm's Rep.)	10	E8	5CE	Director (Family Business)	17
D4	4GB	Contract Manager (Firm's Rep.)	8	E9	5GB	Director (Business Owner)	39
D5	4CE	General Manager (Business Owner)	7	E10	5GB	Managing Director (Business Owner)	11
D6	4CE	Managing Director (Business Owner)	15	E11	5CE	General Manager (Family Business)	15
D7	4GB	Managing Director (Business Owner)	17	E12	5GB	Chief Exec. Officer (Business Owner)	20
D8	4GB	Director (Business Owner)	7	E13	5GB	General Manager (Business Owner)	9
D9	4GB	Director (Business Owner)	+10	F1	6GB	Managing Director (Business Owner)	40

D10	4GB	Executive Member (Partnership Business Owners)	13	F2	6CE	Executive Manager (Firm's Rep.)	13
D11	4CE	Managing Director (Partnership Business Owner)	15	F3	6CE	Managing Director (Business Owner)	42
D12	4CE	Operation Manager (Firm's Rep)	15	F4	6CE	Director (Business Owner)	32
D13	4CE	Contract Manager (Firm's Rep)	20	F5	5GB	General Manager (Business Owner)	9

Source: Researcher's Construct (2017)

4. Finding and Discussion

The findings of this research are presented as follows:

4.1 The cidb contractors' grading of the interviewees

The study interviewed 34 interviewees (see Table 1) that have strategic positions, insightful business knowledge and experience in making business decisions in their respective organisations, thus ensuring the validity and accuracy of their responses. By the cidb contractors' grading system, out of 34 interviewees in the study, eight firms (24%) were contractors in the cidb grade '6GB and 6CE'- coded as E1- E8. The, 13 firms (38%) were contractors in the grade '5GB and 5CE'- Coded E1-E13; and another 13 firms (38%) in the cidb grade '4GB and 4CE'- Coded as D1-D13 respectively.

4.2 The Interviewees' Working Experience in Construction Industry

The number of years of experience that the interviewees had in the construction industry ranged between seven (7) and thirty-five (35) years. Thus, 44% had a working experience in construction between seven and 15 years; 32% had worked since 16 to 25 years; while 12% had worked for 26 to 35 and 36 to 45 years in the construction industry respectively.

4.3 Highest Educational Accomplishment of the Interviewees

Concerning educational attainments of interviewees, the study recorded that Diploma Certificates in the built environment and related disciplines were the most common types of qualification attained. Thus, 50% of the interviewees held Diploma Certificates in building, civil engineering, construction management, quantity surveying and business management. However, 26% held Bachelor Degrees in civil engineering, electrical engineering, and construction management and construction economics. 18% of interviewees held only Matric Certificates as their highest educational qualification, although most of them have vast hands-on experience in the construction industry. About 3% of interviewees held honours and master's degrees as their highest educational achievement respectively.

4.4 Theme 1: Globalisation Readiness, International Business Strategy and its Challenges on Construction SMMEs

Interview question: Does your organisation have business plans of operating internationally? Moreover, why?

The South African construction SMME contractors' participation in the global market is at very low pace as this study recorded only two (2) of the thirty-four (34) organisations are actively operating within and beyond the South African construction market. One of the respondents- F1 explained that: "Yes, at this moment, you can call us an international organisation, because we have a subsidiary in Namibia, which started working on a project in Oshakati. However, going international is very daunting, but also very rewarding. We decided to expand into the international market, because of the economic situation in South Africa." Moreover, the other respondent E13 stated that: "We are successfully operating in some other countries in Africa, but it is very challenging but very rewarding at the same time." These findings confirm the assertion made by Lockefeer (2010:18) that internationalisation could mean the firm's ability to initiate, to develop, and to sustain business operations outside their local market and to integrate with the international economic activities. Also, Dlungwana and Rwelamila (2004) view that SMME contractors can execute small and medium-sized projects; and may as well compete in both the local and global markets. Fernandes (2014) states that the factors for market drivers of the SADC construction sector are economic expansion and diversification; demographic growth; and increase demands for residential homes, retail, industrial and commercial construction services.

Thus, 25% are considering globalising within SADC region as a long-term business plan as five respondents highlighted that they have long-term plans to expand nationally before considering expanding internationally. Respondent D12 stated that: "We hope to operate our business in the international market, but unfortunately, we cannot explain the detail of the plans at this moment." This organisational long-term strategic are in line with what, Dugdale (2014) advocated for the construction SMMEs and large organisations to embrace and be part of globalised organisations if they aim to stay competitive. Uddin and Akhter (2011) argued that many organisations are adopting the cross-border alliances (internationalisation/globalisation) strategy to enhance their global transformational business agenda; as well as to gain competitive advantages while utilising the opportunities emerging from the global market.

However, 70% of the organisations interviewed indicated that they have no international business strategy or any strategic business intention to engage in the

international construction market. As one of the respondent D6 stated: "To operate internationally? No! To be honest with you, we have not thought of that in our organisation." While one other respondent (E8) explained their reasons for not having interest in the international market, as follows: “It involves a lot of risk and finances. Moreover, it is resource demanding and yet faced with a lot of government restrictions and restrictive bank policies." E11 explained that: "I have never thought about that as it never crosses my mind to operate internationally". E9 stated: "I do not want to because I am too old, and it is too risky for me." These perceptions are in line with what Ofori, (2000), warned against, which is that the peoples' perceptions about internationalisation and globalisation, is one-sided and distorted by regarding it as only the flow of exports from the industrialised nations to developing countries, which is entirely not the case.

Thus, only 5% of the SMME contractors are participating in the SADC construction market. This 5 % represent two construction organizations that are operating successful business ventures in Oshakati-Namibia and Gaborone area- Botswana with their parent's organization in Port Elizabeth, South Africa.

4.5 Theme 2: Strategic Partnership with Foreign Organisation(s)

Interview Question: Does your organization have any form of partnership with a foreign organization? Also, why?

On the issue regarding SMME contractors’ collaborating and partnering with foreign organisations, some of the respondents refrained from commenting, whilst some commented that their organisations have not yet explored the business opportunities and advantage or perhaps, have not had the opportunity of forming partnership with an international partner both within and beyond South African construction market. They said that they could only consider this option or form a subsidiary organisation if it appears to be feasible and viable for their sustainable growth. Respondent -D12 explained as followed: "We are currently evaluating business options and studying various countries that have shortfalls in the kinds of services we offer, such as specialist civil works; as well as to ascertain if those countries' construction markets have a demand for such services. Then, we can collaborate with foreign organisations or form a subsidiary organisation. However, it is quite difficult to study and ascertain the feasibility and viability of going international, though there are opportunities out there" (D12); and respondent F6 explained that: “we are still in the proposal stage of going international, but we will definitely consider having foreign partners”. This inclination of thought is in line with the assertion of, Lockefeer (2010) that organisation’s potential growth lies in its proximity to potential clients; asset seeking; market seeking; efficiency-seeking; resource-seeking; technology-seeking; and economies of scale as the important drivers fostering and motivating the concept of internationalisation among SMEs.

Thus, the respondent D8 stated that: “Maybe in future, our organisation may consider partnering with some of the Chinese private construction organisations, because I do not visit China for fun, but for business purposes.” However, respondent E12 acknowledged and stated that: “There are opportunities in the international construction market, but we are not yet ready to partner or form an alliance with any foreign organisation.” While Respondent E8 stated that: "We can only go into a partnership with foreign organisations if they are interested in working in South Africa". This strategic sense subtly reflects the assertion of this concept of globalization and internationalization or foreign alliance and partnership of organizations is becoming the strategic source of competitiveness and economic sustainability in the global construction businesses (Ibrahim, 2013; Uddin and Akhter, 2011; and Dlungwana and Rwelamila, 2004).

5. Conclusions

The article sets out to evaluate the potentiality and readiness of organisations towards globalizing within the SADC construction market amongst the SMME contractors in the Port Elizabeth, Eastern Cape province, South Africa. The critical review of the literature has shown that African continent, mainly the SADC region is attracting substantial global interest in its construction market; and it is evident that globalization is becoming one of the emerging drivers of competitiveness for various countries and organization in the construction market. As such, the globalization forces are inevitable, and the local SMMEs and large contractors in South Africa must consciously harness their potential capability to create a higher level of readiness towards penetration and participation in the infrastructure developmental take-off within the SADC region and beyond.

Thus, the study revealed that all the respondents interviewed demonstrated that their organisations are sustainable and competitive in the domestic market, and only two out of 34 organisations are operating within and beyond the South African construction market. The study also observed that many of the SMME contractors who are being perceived to have the potential capacity and capability to harness the opportunities in the international market lack readiness, and willingness for globalizing their businesses, to strategically explore, and actively penetrate and participate within the African continent, SADC region and global markets in the nearest future.

The study further revealed that the most challenging factors hindering the capability for the SMME contractors readiness for internationalizing/globalisation their businesses are lack of knowledge and awareness of business opportunities in the global markets; focusing only the risk aspect of going globally, and while neglecting the advantages. Further persistence in the lack of capacity for the South African SMME and large contractors to harness their potential capabilities and readiness, and willingness for globalizing their businesses, to strategically explore, penetrate and participate actively within the African continent, SADC region and global markets may jeopardise and undermine their sustainability and competitiveness in the nearest future. As such, the strategic business and readiness for the South African construction organisations should target to harness and unleash their potentiality in alignment with the global trends as a competitive advantage. However,

strategic positioning regarding huge proposed infrastructure development plans within the Africa and SADC region remains the untapped market opportunities for indigenous construction organisations in the continent to improve its global penetration and participation.

Thus, finally, the study further revealed that there is the potential capability of some the South African SMME contractors to participate actively in the international construction market, particularly in the SADC region; as, 2 out 34 construction organisations interviewed are actively and successfully operating subsidiary firms in Namibia and Botswana, while handful of them indicated an interest in growing nationally and then globally. This has shown that amongst the SA SMME contractors, some have the capacity and capability to globalise and to become competitive in the international construction markets.

This study recommends that the South African construction SMME contractors that are listed in Grade 4-6 of the cidb Register of Contractors should gear towards integrating international business strategies into their organisational operation and strategic plans. This strategic business undertaking would enhance their SMME contractors' potential capabilities and readiness for globalization, and heighten their organisations' regional and global economic sustainability and competitiveness. If these recommendations are adhered to, there will be a significant improvement in capacity building and competitiveness amongst SMME contractors in South Africa.

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