THE APPLICABILITY OF RISKS MANAGEMENT PRACTICES IN BID EVALUATION ON COMMON FUNDED PROJECTS. A CASE STUDY OF HO MUNICIPAL ASSEMBLY

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DECLARATION

I hereby declare that this submission is my own work and that, to the best of my knowledge and belief, it contains no material previously published or written by another person nor material which to a substantial extent has been accepted for the award of any other degree or diploma at Kwame Nkrumah University of Science and Technology, Kumasi or any other educational institution, except where due acknowledgment is made in the thesis.

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ABSTRACT

The effort of ensuring fairness in bid evaluation through effective risk management practices has the tendency of improving project implementation of infrastructure delivery. The process prior to actual construction of common funded projects for assemblies better improve when effective and efficient applicability of risk management within bid evaluation processes are enhanced in preventing the likelihood of potential risks occurrence that might impact on the overall common funded projects for the assemblies. This study assesses applicability of risks management practices in bid evaluation on common funded Projects. Ho Municipal Assembly was case of study for which sample format comprises of Entity Tender Committee Members; Municipal Project Engineers; Municipal Procurement officers; and selected D1K1D2K2 contractors from the assembly. Sample size of the study was sixty (60). The data collected formed the main analytical criteria based on questionnaires as instrument designed. Analytical framework for this study was both non-parametric group analysis and one sample t-test. This is descriptive statistics with purpose to obtain the mean and p-values and compared means. The analysis was done based on response rate of 90% using a five-point Likert-scale(s) designed and coded using SPSS. Results obtained were ranked accordingly for easy interpretation. From the study, it has been found that in most common funded projects implemented and or under construction, bid evaluation criteria often records contractors' inability to provide adequate documentations; poor technical and financial capacity; interference with bidding process by political class; poor health & safety records; omissions of accurate figures among others. it was found that these has the likelihood of causing risk namely technical risk; financial risk; political risk; relational risks and work performance risk in the contract. Further recommendations including encouraging proper documentations; compliance with preliminaries regulatory clearance and registration; adopting effective risk management process prior, during and after contract will mitigates potential risks with bid evaluation process among others were suggested to be included as part of project management and the processes of bid evaluation for common funded project contracts.

KEYWORDS: Risk management, bid evaluation and funded projects

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I say, “God richly bless you all”.

DEDICATION

This dissertation is dedicated to the Almighty God who enabled me to get this far and also my dear wife Mrs. Grace Doh who edited the project and whose encouragement has brought me this far. It is also dedicated to my daughter Rhema Doh.

CHAPTER ONE

INTRODUCTION

1.1 Background of the study

The involvement of several stakeholders including clients, contractors, technical supervisors of construction, called for effective risk identification and management for effective and efficient project construction process. The implementation of such action especially within bid evaluation prior to contract further eliminate risks and create value in construction project implementation process for the assemblies. The goals and specification requirements within the contract if essential data are eliminated or not inclusive within the contract and documented have the likelihood of generating risks within common funded projects often undertaken for the assembly.

In Ghana selection of a qualified contractor is clearly regulated only in the public entity as outlined in the Public Procurement Act, (Act 663, 2003) amended. Construction tenders are regulated only when works are performed under public procurement or construction projects are funded by either government and or international programmes. When selecting a contractor, a client evaluates its qualification (checks whether it meets specified legal, financial, economic and technical requirements) and compares qualification of different contractors. This thesis intends to focus on the contractor evaluation criteria and applicability of risk management practices in creating value. It describes an investigation of Ghanaian construction companies with specific focus on local contractors and on the criteria for evaluation of contractors' qualification as well as the importance of managing uncertainty involves in the process prior to construction.

Risk and uncertainties are common in construction works (Hayes et al., 1986), regardless of the size of the project available. Although the size of one of the main causes for the risk to be can,

are complexity, speed of construction, location of the project, used technology and familiarity with the work other risk factors. Quayle (1999), quoted by PMI (2015), points out risks in the project management practice of European Aerospace plc. Czuchry and Yasin (2003), cited by (Mulcahy, 2012; PMI, 2015), suggested before, a practical roadmap to develop to problems to identify and promptly corrective action to take. The construction industry is more exposed to risks and uncertainties than others (PMI, 2015). The construction process of the initial stage to the completion and use of the product is particularly in large projects very lengthy and complex. The process involves different types of people with different ideas, experiences and abilities. Different interests of the project team and poor project coordination has likelihood of impacting on project objectives and this may cause risks in common funded projects. This complexity is due to a series of external and non- controllable factors such as wrong quotations of bills and project valuation that must be checked. More so, procurement methods adopted for construction and improper bid evaluation and risk management practices impact on assembly project implementation efforts. This requires careful risk management practices and assessment in meeting scope specifications requirements.

1.2 Problem Statement

In Ghana and for that matter Ho Municipal assembly (HMA), the prime causes of inadequate contractor selection are due to inappropriate criteria and evaluation qualification of a contractor. This challenge (inappropriate) is significantly attributed to bid price often charged by most assemblies. More so, the challenge of inappropriate methodology is applied for the contractor evaluation and selection task creating risk and value in project construction (Mulcahy, 2012; PMI, 2015).

The inability of local contractors to provide purposive bid for evaluation in order to compete and win contract has been a challenge for the Ho municipal assembly. The effort of creating value for money often requires effective project implementation efforts that involve meeting scope and specification requirements by service providers involving local and foreign contractors for which likelihood of meeting bid requirement often become a challenge. More often than not, local contractors in the assembly are often unable to provide the necessary scope and specification required namely; experiences, technological requirements, financial, plant and equipment that often required in the guideline. The local contractors' failure to collaborate and to provide strong case in bidding for contract in the assembly often prevents the likelihood of competing and win contract. The uncertainty inherent in along project bid preparation and evaluation of meeting necessary requirements particularly from the view point of local contractors is much more risky than imagine because the entities tend to transfer more risk to private parties (Dey and Ogunlana, 2004). The specification requirements required local contractors for instance, who are expected to assume much longer involvement in common fund projects. The likely failure to provide require information for sufficient risk management practices for purposive bid evaluation for common funded projects has the challenged. As a result of this that the research work would want to explore the applicability of risks management practices in bid evaluation for common funded projects with consideration of selected contractors of Ho Municipal Assembly.

1.3 Aim and Objective of the Study

1.3.1 Aim of the study

This study aimed at assisting local contractors, project engineers and the entity tender committee in purposive evaluating process of tenders especially in common funded projects implementation effort within Ho municipal assembly.

1.3.2 Research Questions

a) What are bid evaluating criteria for selecting local contractors?

b) What are the potential risks involve in bid evaluation and selecting local contractors?

c) What are mitigating measures in ensuring effective bid evaluation for local contractors?

1.4 Specific objectives of study

a) To determine bid evaluating criteria for selecting local contractors

b) To identify the potential risks involves in selecting local contractors

c) To determine mitigating measures in ensuring effective bid evaluation for local contractors

1.5 Research Methodology

The study adopted survey research design based on several literature reviews on the subject matter of the studies "risk management practices in bid evaluation" from google scholar searched for which the questionnaire will be designed. The study adopted case study common in construction project according (Tabachnick & Fidell, 2007; Copper and Schindler, 2008). It is believed that adopting such exploratory designed using case study has likelihood of providing content based analysis and correct information that are required within a short period of time.

Researchers like Minchin and Smith (2005) have innovative, quality-based performance evaluation systems introduced that an index for all contractors create to their quality for a particular frame specified. The fuzzy theory is also applicable framework for the contractor pre-qualification to develop in identifying potential risks when applied.

This study however considered interpretive or socio-constructivist positioning approach. This is intended to find new meanings and constructs in regard to effective evaluation criteria and risk

management practices for the project performance for the assembly. Current methodological research synthesized existing literature approach was used, where research methods synthesized and existing literature reviewed. Social constructivist approach provides drivers and connections for further investigations for which in particular the findings were discovered (Tabachnick and Fidell , 2007; Copper and Schindler, 2008; Bryman, 2012).

1.6 Justification of the Study

One of the major issues that justified the study was inability of local contractors in providing purposive bid in winning contract. The indigenous contractors within the assemblies often lose out due to their inability to meet the scope and specification requirements as outline prior to contract. The Municipal Assembly contractors were no exception. There are several reasons assigned for this for which this study intent to unrivaled to ensure effective construction bid evaluation and risk management practices for the local contractors in managing construction project work. Further useful lessons learnt justify the need for identifying the causes of project evaluation criteria in selecting contractors in improving assembly infrastructural supplies.

In the selection of the contractor are countless methods such as open tendering, restricted tendering or negotiations applied. A contractor is either from all bidders selected, or the selection processes for the contractor can be in two phases: pre-qualification and final selection. The pre-qualification of contractors includes a review process which a number of criteria based each individual bids are considered (PMI, 2015). Palaneeaswaran (2005) highlights pre-qualification criteria for contractors. Contracting authority's objectives of managing preferred to risks identified and failures to minimize the impact affect level of performance for both selected contractors who established maximum capacity to improve. The desire to minimize risk in the context of procurement procedures justifies the need, factors in the stem activities to take

account of and risks to eliminate and the same to create value for the assembly. This is a further part of the "process improvement practices" for the management of public procurement in Ghana and in particular for the meeting stakeholder requirement for common funded projects.

The findings of the study will specifically help Ho Municipal Assembly in their project and or contract administrative efforts to improve performance in public infrastructure delivery. The study will also help policy makers in the built environment in bid selection and evaluation as well as assess uncertainty involves in the in meeting stakeholders' expectations. However, for further studies, other researchers especially in the built environment will be useful in understudying indigenous constructional work in developing economies like Ghana in appreciating bid evaluation and applicability of risk management practices in creating further value. The study aimed to assist project engineers and local contractors as well as other stakeholder groups involved in construction design in providing purposive bid for evaluation to win and compete for price within construction environment within Ghana and Ho Municipality in particular.

1.7 Scope of the Study

The study has been limited to applicability of risks in bid evaluating in common funded projects in the construction built environment with the specific focus on the local constructors. Moreover, indigenous contractors with D1D2 and K1K2 have been considered in Ho Municipal Assembly (HMA), in Volta Region. This has been due frequent records of challenges of local contractors of the assembly not meeting the bid evaluating criteria set out and the quest for providing purposive bid to win the contract.

1.8 Organisation of the study

This thesis will be divided into the following chapters.

Chapter one includes an introduction of the whole study giving an overview of the topic being researched and outlining the problem statement. It presents the goals, objectives and research questions. The research approach explaining how the study is going to be carried out is mentioned and the pertinent key ideas to the study are clearly defined

Chapter two presents the literature review that explores and explains the theories and concepts of the work on the application of criteria for the evaluation of offers and in the construction.

Chapter three contains the research design, the methods of sampling, procedures and techniques that have been employed to assist in collecting the data, how the collected data was analyzed in order to provide responses to the questions asked by this study.

Chapter four portrays the analysis of the research and discusses the data collected from the various interviews and questionnaires that have been administered. The data were coded into a Statistical Package for Social Sciences (SPSS, version 21) and analyzed using the one sample t-test on the basis of the five-points-likert-scale used for the continuation of variables of the study. This was based on the google scholar- search engine retrieval based on objective defined for study. The fourth chapter was presented in table format for ease interpretation of the results. The chapter ends by discussing and summarizing the main findings of the study.

Chapter five is the last chapter in the thesis which summarizes the findings from the study, the concluding remarks from what the researcher discussed in the findings and the recommended actions concerning the study and for further research. It also consists of the limitations of the study and direction for future study.

CHAPTER TWO

LITERATURE REVIEW

2.0 Introduction

In considering the subject area of this research work, publications and other works by various authors were reviewed. This section has been divided into various sub-headings and the key variable were defined at the beginning, followed by the framework of theories and concepts of the study, experiential work on the potential risks involves in selecting local contractors, bid evaluating criteria for selecting local contractors, and end with mitigating measures in ensuring effective bid evaluation for local contractors in ensuring value preposition for contractors and assemblies in their effort of implementing value for money of common funded projects.

2.1 Brief History of Ho Municipal Assembly

The Ho Municipal is one of the five Municipalities in the Volta Region which was established by a Legislative Instrument (L.I) 2074 of 2012. Originally, Agotime –Ziope and Ho West were all part of the then Ho District until 2012 when these Districts were carved from it. The Municipality is located between latitudes 6o 20”N and 6o 55”N and longitudes 0o12’E and 0o 53’E. The municipality is bordered by Adaklu and Agotime Ziope districts in the south, Ho West district in the north and west and Togo Republic in the east. The total land area is 2,361 square kilometers and does so 11, 5 percent of the total land area of the region. Ho is the regional capital of Volta region and form as economic and administrative center of the Volta region. According to population - and housing census of 2010, Ho total population made up of 177,281 inhabitants, for which 8.4 percent of the total population of the region. Women make up 52.7 percent and men 47.3 percent respectively. Within the Municipality, around 62 percent of the population lives in urban areas. The youth population in the municipality makes 31 percent of the population

with a small number of older people around from 65 years and above. There are currently no large industrial holdings in the community. The commercial sector is dominated by retail activities and there are limited wholesale activities in agriculture and industry. Other businesses include the service sector of small operators for which telecommunications services, hairdressing services, electronic repairs, repairs of vehicles and shoes, as well as some local contractors offer their services in the municipality (GSS, 2012).

2.2 Definition of Key Variables

Risk can be defined as an uncertain event likely to occur and impact positively and or negatively on the construction project. The risk which is the uncertainty exerts effects on construction project objectives such as schedule, cost and quality (PMI, 2013). Bid referred to as tender. The process of evaluating of bid through an independent, faire, but transparent means of selecting the preferred individual or entity based on pre-determined criteria for successful but robustly bidder to procure works, services and or product (PPA, 2003; Antoniou et al., 2012). The applicability of risk management to bid evaluation has likelihood of eliminating risks whiles further ensure smooth delivery for construction projects and value for money for the assembly.

2.3 Theoretical and conceptual framework of study

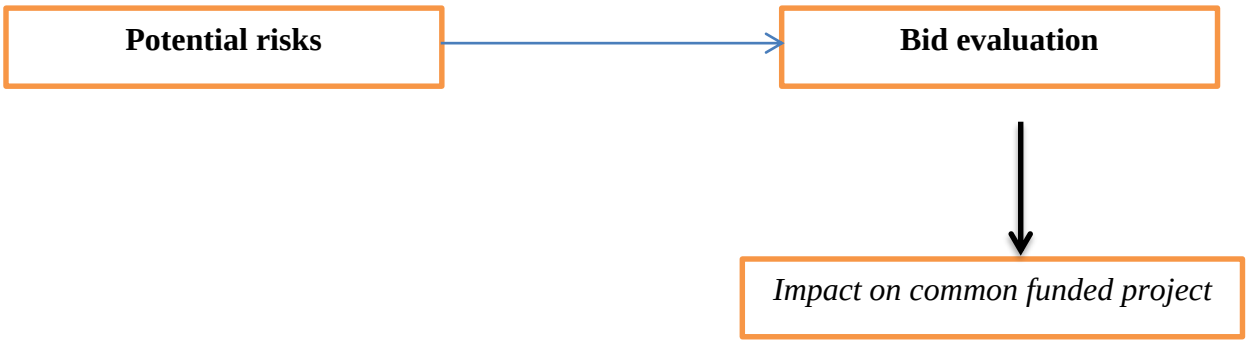

Figure 2.1 conceptual framework

Theoretically, applicability of risks management has been independent viable and dependent variable has been bid evaluation in common funded project implementation

2.4 Bid Evaluating Criteria for Selecting Local Contractors

The evaluation of tenders and the selection of contractors remain an area of considerable importance and interest to organizations responsible for the achievement of project results. It occurs early in the project lifecycle and may be one of the most critical ventures of clients whose effectiveness is directly related to project success and the achievement of specific goals (Dale Christenson, 2007; Tanmay et al., 2017). The environment for making judgments about suppliers and their ability to deliver is complex, comprising high levels of ambiguity and uncertainty. More so, competing stakeholder values and complicated relationships as a result of multiple conflicting objectives regarding bid evaluation (Dale Christenson, 2017; Terry et al., 2012). Further, the complications arise in identifying suitable and relevant criteria and assigning appropriate weights, all of which are likely to vary as a function of many factors, such as least of which organizational objectives and experience of the evaluator are become critical. The complexities and underlying issues surrounding contractor selection, and the variety of criteria

available, choose of clients' suppliers and the relationship between the criteria used in an evaluation is critical consideration essential for bid evaluation (Victor Boateng, 2010) The challenges then are making decision about which criteria influence to used and whether price more determinant than other variables such as the experience, capability, expertise, and or work performance (Victor Boateng, 2010). There are prepositions which often addresses the relative importance of industry position and experience in establishing selection criteria (Zhang et al., 2007; l These questions form the basis of our ongoing research to examine what factors influence the actual selection of a contractor for major projects and the relative importance of the criteria used, in particular, for projects with limited joint financing in developing countries (Ghana). Notwithstanding, importance of selecting contractors remains largely unexplored, as evidenced by the very few studies reported specifically for county and metropolitan assemblies. The criteria used to evaluate and select contractors or suppliers have been examined under various industrial purchasing situations (Louviere and Timmermans, 1990; Adamowicz et al., 1998; Lambropoulos, 2007; Antoniou et al., 2012; Meng and Gallangher, 2012). However, empirical work within Ghanaian context on common funded projects for the MMDs local contractors is essential. The criteria used to evaluate and select contractors or suppliers have been examined under various industrial purchasing situations (Antoniou et al., 2012). According to (Zhang et al., 2007; Watt et al., 2010), criteria included those in which evaluators could gauge contractors and their likely performance across key project dimensions; relevant experience, track record, quality, expertise, capability, cost, safety record, and capacity to name a few However, Antoniou et al., 2012 earlier indicated in considering evaluating and selecting criteria for contractors, no individual criteria or group of criteria are consistently reported as being more important than others. Further, cost, quality and delivery performance were identified as the most important

criteria used during the evaluation and selection process (Zhang et al., 2007; Terry et al., 2012). Whiles service or product quality, performance in delivery and quality criteria, and others to select suppliers for the delivery of industrial equipment and services (Watt et al. 2009). Nevertheless, in project evaluation criteria attributes according to (Jeffrey, 2015) organizational experience of local contractors, project management expertise, tender price, technical expertise, past project performance, company standing (reputation) method and or solution, client-supplier relations among other are often considered (Watt et al., 2009). Other criteria include workload or capacity gives critical information or data for which if proper evaluation are done and assess create risk within the bid evaluation process (Tanmay et al., 2017). There are countless criteria and levels based on the scope and specification requirements of the contract to be executed. Fractional factor techniques are used to limit the number of combinations and subsequent selection sets for selecting contractors (Tanmay et al., 2017). Development of efficient designs without compromising response data and model estimates, reducing burden by offering fewer selection sets. With regards to the number of selection sets, Adamowicz et al., 1998; and Louviere and (Louviere and Timmermans, 1990), cited by Antoniou et al., 2012) indicated the selection criteria often depend on the complexity of the contract and the project under consideration. Relevant criteria were used in previous research by Watt et al. (2009). The basis of this study was a comprehensive literature search in combination with an industry survey in which eight main criteria were identified. Although the costs (offer price) were not identified as the main criterion, they were included in this study. Various numbers of levels and types have been tested, including all numerical values (weights), all qualitative descriptors, or combinations of both. Numerical values (weights) were preferred, but were not possible because it was difficult to construct a suitable randomized design that ensured that the sum of the normalized

weights across all criteria within a given selection set would always correspond to the unit. In agreement with Louviere et al. 1990; Verma and Pullman 1998; Crouch and Louviere 2004; Antoniou et al., 2012), the descriptions of existing evaluation procedures for tenders and contractors, evaluation plans for tenders and source selection reports must be well managed in order to reduce the risks in the construction process in public project implementation.

2.5 Applicability of Risk Management in Bid Evaluation

2.5.1 Empirical work on potential risks involves in bid selecting

The applicability of risk management in bid evaluation is crucial in project design. Building risks are uncertainties that have a positive or negative impact on project implementation (PMI, 2015). The construction industry is exposed to more risks and uncertainties than others (Dey and Ogunlana, 2004). In the building process from the initial phase to the completion and use of the assets, the procurements for the assemblies are very lengthy and complex. The process involves different types of stakeholders with ideas, experience and skills, especially in the context of bid evaluation before the actual creation (Watt et al., 2009). Each stakeholder, including the Enterprise Tendering Committee, usually has different interests, so ensuring effective and efficient risk-taking creates good value for money for fund use. The literature review revealed that there are numerous reports concerning the offer evaluation in the selection of shooters in the public sector: the evaluation of the contractor's performance in terms of the final cost (lowest bidder), the work plan, the quality of work and the experience (Turner & Simister, 2001; PPA, 2003; Tang *et al.* , 2008; Meng & Gallagher, 2012). Grünberg *et al.*, 2007) have already identified a combination of evaluation criteria to assess bidders on how to ensure project quality and the value of final project execution. While loud (Lambropoulos 2007, Padhi & Mohapatra, 2009) changes in the lowest bid criteria were required. According to (Wang *et al.2010)* provide

guidelines for using different types of contracts for a particular project ensures value creation and provides the basis for bidders to eliminate potential risks that prevail in the process. The methods for calculating incentives and ensuring smooth process improvement processes (Shr & Chen, 2003, 2004, PMI, 2015). Efforts to identify and mitigate associated risks (Chan *et al.*, 2011b, PMI, 2015) and motivations for good contractile behavior (Rose & Manley, 2011, Chan *et al.*, 2011a) were considered relevant to the offering Find evaluation process to eliminate the risk within the process. The potential risks to the project's performance as part of the bid evaluation process for jointly funded projects for the impact of the local assembly. Companies that make concerted efforts to identify and manage potential risks in the bid process ensure a smooth construction process for both customers and businesses.

However, several methods, including fuzzy AHP and sensitivity analysis, similar to the human relative weight approach, use approximate information and uncertainties to identify risk and offer evaluation (Zhang et al., 2007). Zuo et al. (2007), these methods were specifically developed as formalized tools to handle the inherent inaccuracies, evaluate the offer and identify risks. Companies can use the AHP technique as a widely used decision-making method with multiple criteria to address complex decision-making problems (Kablan, 2004), dividing factors into different groups and levels and then prioritizing or weighting them accurately and consistently (Zuo et al., 2007; Zhang et al., 2007; Terry et al., 2012). These risks are, as described in the literature, complex and strongly project-related. The assessment of these risks is usually vague and inaccurate at this time. The partners must conduct a comprehensive assessment of the risk status of the proposed joint venture agreement. The fuzzy AHP approach to addressing the multi-faceted risk assessment that plays a role in joint venture decision-making. The fuzzy AHP approach consists of three steps: building the hierarchical risk structure,

determining the weighting vector based on the AHP, and assessing the fuzzy risk (Zuo et al., 2007; Zhang et al., 2007, Watt et al., 2010).

It should be noted that the AHP requires that a problem be broken down into layers, each consisting of elements. The elements of a given layer are independent of each other but comparable to the elements of the same layer. This assumption forms the basis for the proposed fuzzy AHP methodology (Zuo et al., 2007; Zhang et al., 2007, Terry et al., 2012). This methodology is relevant creating efficient risk allocation and categorization within project and developing relevant relationship between various risks identified for effective and efficient control and or mitigation in common funded projects.

2.5.2 Construction Risk Categorization

There are many ways to classify or categorize construction risk (Mulcahy et al., 2013; l). Construction risk could emanate from external (compliance and regulatory, environmental, governmental, market shift) (Mulcahy et al., 2013). Internal (time, cost, scope changes due to variation by the clients' demands, inexperience, poor planning; clients interferences; poor design; staffing; materials; equipment) (Mulcahy et al., 2013; Mpofu at al., 2017). Technological (changes in technology and designs etc.). Unforeseeable (force majeure) and corrupt practices (Zou et al., 2007; Mulcahy et al., 2013; Mpofu at al., 2017). According to Mulcahy et al. (2013) better way to create specific risk categories and identify and assign them at each stage of the project is to group risks within the contract management process. The classification of the identified risks may include the activities of the customers. It has been identified that lack of project management skills, poor tendering procedures when selecting qualified contractors for work (Tanmay et al., 2017). Further potential risks could arise from a cost overrun (Zou et al., 2007); changes in scope due to deviations as result of frequent project variation and interference

of the process (Tanmay et al., 2017; Mulcahy et al., 2013). Also, issue related to late payments due to the inability of companies to work in accordance with the terms of the contract (Tanmay et al., 2017, Mulcahy et al., 2013, Mpofu at al., 2017); Design flaw (Tanmay et al., 2017; Mulcahy et al., 2013); Health, environment and safety regulations (Tanmay et al., 2017; Mulcahy et al., 2013; Mpofu at al., 2017) have been identified. However, according to (Zou et al. (2007) bid evaluation is an important component in construction industry in China have noted that potential risks could affect the final project execution cited by (Tanmay et al., 2017) classified potential risks of Biding projects in six major groups according to the nature of the risks. The six groups include financial risks, legal risks, management risks, market risks, political risks and technical risks. Chapman (2004) has grouped the risks into four subgroups, Environment, Customers, Industry, and Project, which must be considered prior to final contracting. Previously, Dias and Iannaou (1995) indicated that the causes of construction risk are a poor supply process for companies and the physical, financial, construction, utility, advance, logistics, procurement, expansion and operational risks involved in the project are indicated. Flanagan and Norman (1993), cited by (Olsson, 2008), presented three ways to classify the risks using the combination of theory and work structure plan. The three options are the identification of risk results, the identification of risk types before, during and after construction. Wang and Yuan (2011) categorized risks into appropriate factors such as decision-making, engineering experience, completeness of information, expertise, level of activity, economic and social experience, technical aspects, and efficiency of achieving the goal of the decision.

Project bid evaluation takes elements of risks in the form of cost, time, quality, environment, health and safety, management experience that must be identified, being criteria for the bidders. The determination of actual and or eventual winner is often based on these elements. The

likelihood of entities not having these criteria not only impact on the project but further affect triple constraints often charted of all project and value for money for the stakeholders (PPA, 3003; Meng & Gallagher 2012; Mulcahy et al., 2013 PMI, 2015). Assessment criteria are developed that take into account the economy, social issues, climate, time, quality, costs, resources, team members, experience and project duration, management and policy and / or project management (PPA, 2003; Zayed et al., 2008; Meng & Gallagher 2012; Mulcahy et al., 2013). In their work on risk analysis, Iyer and Jha (2005) have considered factors such as auditors, design, competition, project nature and climate as risk factors. Zeng and Smith (2007) have analyzed the risk factors related to the project manager's involvement, management support, stakeholder-to-owner coordination, activity monitoring, and climate as critical indicators of a tender bid. Renuka et al. (2014) classified risk factors as scope and design changes, site conditions, rules and regulations, resource availability, management capabilities, resource availability, weather, permits, safety and delays.

However, risks occurrence prior to construction are preventable. The ability to ensure successful bidding process prevents the likelihood occurrence of the risk. What this therefore means is that the readiness of entities and contractors in taking advantage and or putting mechanism of sharing the risk and further creates value within public procurement delivery for the assemblies. More so, construction sector is typically one of the most risky if not uncertain industries compared to other contemporary business environment. Adopting effective risk management strategies based on the risk identified and properly response to will create value and improve local contractors' construction project delivery and further saved money for the assembly. The frequent law suits due scope variations and delay payment of contractors are better mitigated if proper risk planning and mitigating mechanisms are put in place prior to contract implementation effort. Due to the

involvement of huge number of complex activities that are involved in it in producing value to meet requirement specification for the clients, it is always important effective risk management strategies are adopted. The main objectives of any construction project is to operate within the triple constraints that is meet the time schedule, at budget and within scope without compromising on quality for stakeholders according project management institute (PMI, 2013). While achieving these targets, the project faces a large number of risks which can be related to budget overrun, schedule overrun, financial losses, environmental damage and sometimes loss of life mostly occurring at the construction stage of supply. With the aim of meeting such specifications and requirements, the project is exposed to a multitude of risks, often associated with budget overruns, missed deadlines, financial losses, environmental damage, and sometimes the loss of life on the site with adequate health and safety and environmental regulations are not sufficiently adhered to (PMI, 2013; Mpofu at al., 2017). Therefore, the project can be positive or negative. In order to add value to the project, the risk management process should be introduced to improve the efficiency and the results of the project.

2.6 Effects of Potential Risks on Bid Evaluation

Although the construction industry, perhaps more than most industries, is particularly plagued by risks (PMI, 2013; Mpofu at al., 2017), the risks are not adequately addressed in the process, resulting in poor performance with increased costs and time delays leads, scope changes and less value in the final delivery of the project (Baloi. & Price, 2003; Amend et al, 2005; Besner. & Hobbs, (2012). Common risks in bid evaluation often identify faced by entrepreneurs: disruptions, changes in work , late contract payment, financial failure of the owner, labor disputes, labor, equipment and material availability, labor productivity, defective materials, equipment productivity, safety, poor work quality, unforeseen site conditions, financial failure of

the contractor, political failure uncertainty, changes in regulatory requirements, licensing and regulations, inflation, litigation costs, documentation and inability to estimate force majeure or uncertainty in the correct estimate.

In addition, the impact of the potential risk on the bid evaluation impacts the overall cost risk of the project and the smooth process of project appraisal, which requires coordinated efforts and analysis to ensure value for money in project execution of assemblies. According to (Nasir et al 2003, Olsson, 2008), special attention must be paid to the risk assessment for construction projects. High quality and safety of large-scale construction projects can be ensured by risk assessment techniques which must prevent the likelihood of potential risk including the tendering process (PMI, 2013; Mpofu at al., 2017). Due to uncertainties and a large stakeholder involvement, tender evaluation processes are becoming increasingly complex and require methods that relate to new high-risk assembly projects. When objective information such as probabilistic data is not available to local contractors, subjective evaluation data play a role, and the risk of corruption, delays, and interventions in the process create further risks and breaches of the principle of value for money (Baloi & Price, 2003, PPA, 2003, Amend et al., 2005). Besner & Hobbs (2012) described project risks as undesirable events that can lead to delays, overspending, unsatisfactory project results, safety or environmental hazards, and in some cases even total failure. "Uncertainty, complexity, urgency, lack of resources, or other constraints such as capabilities, policies, etc. are some of the key risks that can arise when smooth bid evaluation processes are not being adhered to in the Assembly and by local contractors.

2.7 Mitigating measures in ensuring effective bid evaluation for local contractors

While risks cannot be avoided entirely, risk management techniques such as proper cost estimation by the contractors to prevent cost overrun, detail scope specification by the assembly

engineers, improve data documentation by both bidders and the entities; ensuring smooth transparent process and early payment to contractors, whiles ensuring designs are properly done in meeting specifications requirements are included in bid as form mitigating potential risk that might occurred. More so, including proper health, safety and environmental conditions within contractual stage as part of the process have the likelihood of preventing prior construction risks during bid evaluation (PMI, 2013; Mpofu at al., 2017). Project management Institute PMI, (2013) further has indicated that for project plans to succeed, adopting effective risk mitigating mechanisms and putting some extra resources and back-up plans prior before construction and during and post project implementation is strategic framework for being proactive but not reactive in mitigating risks in project implementation process (PMI, 2013; Mpofu at al., 2017). Such mechanisms are in the form of work around, contingency and management reserves in preventing the likelihood bid evaluation risk. Mitigating risk must follow proper but effective risk management process. Plan risk, identification, assessment, qualification and quantification as well as Risk response strategies (PMI, 2013; Mpofu at al., 2017). The complexity and hurdle in completion of a project especially at the construction therefore called for quantitative and qualification of the potential bid evaluation risks as an effective risk response strategy (Mulcahy et al., 2013). The implications are that for local contractors, managing risk at bid evaluation stage of construction alone might be enough. An effort for proper planning and preparation that requires documentation, less interference and transparency increases the probability and impact of opportunities on the construction project while decreasing the probability and impact of threats within the project bid evaluation.

In conclusion, risks have to be identified and managed right from project initiation and continue throughout the construction project closure until the project has finally been handed over to the

client. Local contractors and the operating team must be aware of effective applicability of risk management strategies knowing the initial factors likely to occur during bid evaluation and strategies in improving the process. The potential impacts in the form of increase cost-risk, schedule delay, corruption and subvention of the process that prevent value for money principle are common. A potential risk in bid evaluation is inseparable from actual construction, effective and efficient bid evaluation process however, laid the foundation for project success. Whiles potential risk in construction have been described as exposure of construction activities likely to incur economic loss, and prevent value for money effectual but smooth bid evaluation process will accommodate the uncertainty likely to occur. Whiles bidding evaluation process is becoming increasingly important due to the need for transparency, fairness, and involvement of different identified stakeholder groups, several factors consideration in ensuring effective and efficient procurement and construction process, are essential for the local assemblies.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

The chapter has been focused on the research methodology and includes how the method used in carrying out the study. The chapter includes subheading such as the research design, source of data collection, the research population, sampling techniques and research's sample size, the data collection instruments used, procedure for analysing the data and end with brief summary of the area under study.

3.2 Research Design

The study adopted quantitative research method to collect data from the field the survey designed. The study used a Five-point Likert scale and the scales were interpreted as; Strongly agree (1), agree (2), strongly disagree (3), disagree (4), uncertain (5), in collecting primary source of information from contractors operating within the sample. These were designed based on the reviewed literature on the subject matter of the studies "constructional risks" from google scholar searched for which the questionnaire was designed. The study adopted case study common in construction project as espoused by Tabachnick and Fidell, (2007); Copper and Schindler, (2008); Ahadzie et al, (2012). It is believed that adopting such exploratory designed using case study has likelihood of providing content based analysis and correct information that are required within a short period of time. The experiences of the stakeholders within the identified groups as case are easily identified and analyzed for effective and efficient results (Copper and Schindler, 2008 Tabachnick and Fidell, 2007). However, there was a pre-testing of the designed instruments to ascertain how valid the content of the instruments was and to eliminate errors that might apply before admitting to the respondents. Since it was field survey,

respondents give their own responses within two weeks for which data were collected from them for further analysis. This was to prevent further biases and interfering with data provided. The data collected were coded into SPSS version 22 for further analysis.

3.3 Population of the Study

The target population for this study numbering one hundred and fifty (150) based on current suppliers' registry for 2019 from the assembly database (Ho municipal assemble, 2019). A sample size was drawn from the target population mainly from Ho Municipal Assembly.

3.4 Research Sample and Sampling Technique

The sample size was chosen from the population of the study and was derived from using the projected formulae n = $\frac{N}{(1+N(e)^2}$ where (n) = N/1 + ($N(e)^2$) with an error rate margins of 5% and a level of confidence being 95%. That is N equals to the sampling population of the study, e is the error rate of margins and n represents the sample size (Cochran, 1977).

n = $\frac{150}{(1+150(0.05)^2}$

n=109.

However, after sending the questionnaires designed to the respondents, only fifty-five percent (55%) of the responses returned making sixty (60) of the valid data to be coded for further analysis. The questionnaire was equally distributed among the respondents which were made up of five (5) Municipal Project Engineers (MPE), six (6) Municipal Procurement Officers, fifteen (20) Local Contractors (D1K1), twenty-five (20) Local Contractors (D2K2), and nine (9) Tender Committee Members (TCM) operating within assembly. Furthermore, the purposive sample techniques otherwise known as judgmental sample method was used for study. This was due the fact that the method is easy and simple to use whiles targeting right experience respondents,

contractors purposely for the study. The respondents believed to be having necessary experience and knowledge to respond to the instrument designed for the study.

3.5 Source of Data

Questionnaire form data collection instrument and has been designed collected from respondents from the assembly. The secondary data source was collected from construction journals, articles from google scholar and reports from entity document which were duly referenced in meeting ethical standard of academic studies.

3.6 Research Instrument

Questionnaires were employed as the main tool for this study. The questions were both open-ended and closed-ended with five point likert scale attached. Thus; respondents' completed questionnaires administered themselves with less interference from the researcher after being pre-tested for correction and errors detected were eliminated to meet standardized base. The sample frame was made up of Municipal Project Engineer (MPE); Municipal Procurement Officers; Local Contractors (D1K1); Local Contractors (D2K2); and Tender Committee Members (TCM) within assembly.

3.7 Data Analysis

After the collection of the primary data, the data was analyzed, coded and then later presented on tables. Data collected were analyzed using descriptive statistic for which one-sample test (T-test) descriptive statistical technique have been used to obtain values. The descriptive statistics were used to obtain the mean values, standard deviations and standard error as well as the p-values as being the significant of the study (Tabachnick et al., 2007; Bush et al., 2008).

CHAPTER FOUR

DATA ANALYSIS AND PRESENTATION

4.0 Introduction

The chapter contains the findings of the study in line with the stated objectives of the research work. The analysis was grouped based on the objectives and were categorized into sections. Section A: Biographical Data, Section B: Bid evaluation criteria for selecting local contractors. Section C: Potential risks involved in bid evaluation and selection of local contractors. Section D: Mitigating measures in ensuring effective bid evaluation process for contractors' Statistical standard deviation, standard error, and mean values were determined and ranked accordingly. The collected data which was used as the main criteria for the analysis of this study were both non-parametric group analysis and one sample t-test. This is descriptive statistics with purpose to obtain the mean and p-values and compared means. The analysis was done using a response rate of 55% on a five-point Likert-scale(s) designed and coded in SPSS. Those who form the main variable for the study included members of entity tender committee within the construction sector and on common funded projects. Descriptive statistics, statistical tables were used in presenting the findings to obtain the p-values and mean values to make it easy to read and interpret. The findings were supported from various authors based on the subject matter understudy. The major findings were summarized and discussed at the end of the study.

4.1 Demographic Characteristics

Table 4.1 Section A: Demographic Data

Responses	Frequencies (60)	Percentages (100)
Gender:	****	
Male	45	75
Female	15	25
Total	60	100
Qualifications:	****	****
HND/BSc	38	63
Masters (MSc/MPhil)	12	20
Others	10	17
Total	60	100
Years of Experience:	****	****
1-5 years	21	35
5-10 years	30	50
10 years and above	9	15
Total	60	100

Field survey, 2019

Table 4.1 above shows a description of respondents' demographic data within the Ho Municipal Assembly. From the table 4.1, males represent seventy-five percent (75%), whiles female respondents represent fifteen percent (15%) who participated in the study. Also, sixty-eight percent (68%) of the respondents were HND and first degree holders in construction engineering, twenty percent (20%) were Masters' Degree holders. The remaining seventeen percent (17%) were holding certificates in construction technician including health and safety certificates.

Also, from the table 1 above, thirty-five percent (35%) of the respondents were having about (1-5 years) in the construction industry, fifty percent (50%) were in the industry for the past (5-10

years) whiles the remaining fifteen percent (15%) have been in the construction industry working as contractors and serving as entity tender committee members for the assembly. This suggest that all those who responded having the requisite characteristics were sampled equally and experiences that are relevant for this research work. In addition, the qualification level of the respondents' and experiences were taken into consideration as epistemological evidence participating in the bid evaluation for this study and analyzing this type of study.

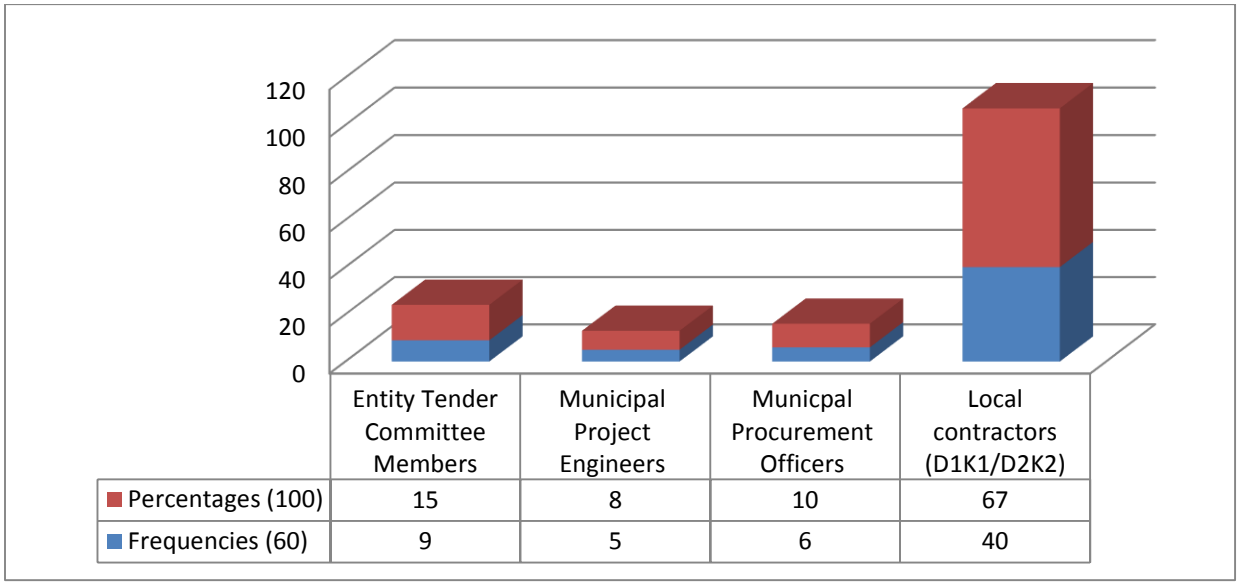

Figure 4.1: Components of respondents of study; field work, 2019

Figure 4.1 above defined how the respondents that participated in the research were structured. The characteristics here considered the respondents' level of experience and knowledge in tender and or bid evaluation in contracting especially in the implementation of public projects for the assembly. From the above, 9/60 representing fifteen percent (15%) were Entity Tender Committee Members; 5/60 representing eight percent (8%) Municipal Project Engineers, 6/60 representing ten percent (10%) and the remaining 40/60 representing sixty-seven percent (67%) were contractors made up of D1K1D2K2 local contractors in managing some selected common funded projects in the assembly.

This implies that, those who responded to the study had some level of qualification and have the necessary experiences in bid evaluation. Their professional inputs for the study are very relevant not only to ensure how effective they are but also efficiency in bid evaluation processes and to manage risks that might occur.

4.2: Bid evaluation criteria for selecting local contractors.

Table 4.2: One-Sample Statistics on the evaluation criteria

No	*Statement on the evaluation criteria*	N	Mean	Std. D	Std. Error Mean	Ranked
EC1	Financial capacity: financial capabilities and accuracy of bill of quantity provided	60	**3.950**	1.254	.16195	1st
EC2	Technical capacity: ability to do the work	60	3.851	1.002	.12937	2nd
EC3	Past work performance & experience	60	3.850	1.041	.13974	3rd
EC4	Sufficient documentation of procurement authority registration (e.g. W&H certificate)	60	3.840	1.254	.16195	4th
EC5	Level of management expertise and project management	60	3.755	1.004	.12976	5th
EC6	Ability to transfer knowledge and skills	60	3.752	1.002	.12833	6th
EC7	Adequate legal documentation (tax clearance, VAT, SSNIT)	60	3.750	1.002	.12937	7th
EC8	Level of responsiveness of local contractors	60	3.616	1.263	.16311	8th
EC9	Client-Supplier relations and workload	60	3.666	1.297	.16752	9th
EC10	Level of fairness, and transparency in process	60	**2.002**	0.368	.04751	10th

Correlation is significant at 0.05 level, 2-tailed.* ***Source: field survey, 2019**, strongly agree - 5, strongly disagree - 1. MPO (Municipal Procurement officer); MPE (Municipal Project Engineer); TCM (Tender Committee Members); D1K1D2K2 (Contractors)*

Table 4.2 above described one-sample test conducted on the bid evaluating criteria for selected common funded projects within the assembly. And with a point limit of p-values of 0≤5.00 being level of significance and mean (z-values) range of 2.002 to 4.246; standard deviation of 1.002 to

0.3684 and standard mean Error of 0.1675 to 0.12937, the values obtained were significant across board.

Using the significant level as the basis, there was a further ranking of the variables involved and their effects on bid evaluation process to obtain value for money. The results further ranked in order (1^{st}, $2^{n,}$ 3^{rd} etc.) accordingly. This implies that financial capabilities and accuracy of bill of quantity provided follow by Technical capacity: ability to do the work and Past work performance & experience are most critical criteria often being considered in selecting local contractors for common funded projects in the assemblies.

Table 4.3: One-Sample Test on the evaluation criteria

Statement on the evaluation criteria	Test Value						
	T	df	Mean Diff.	95% Confidence Interval of the Difference		*P-values*	*Ranked*
				Lower	Upper		
Financial capacity: financial capacity and the bill of quantity provided	9.483	59	1.050	1.374	.7259	0.001	1st
Technical capacity: ability to do the work, technical capacity in tender document	9.362	59	1.250	1.508	.9911	0.001	2nd
Past work performance & experience	9.662	59	1.250	1.508	.9211	0.003	3rd
Sufficient documentation of procurement authority registration (e.g. W&H certificate)	6.483	59	1.050	1.374	.7259	0.002	4th
Level of management expertise (project management competencies)	9.162	59	1.250	1.508	.9911	0.000	5th
Level of responsiveness of local contractors	8.481	59	1.383	1.709	.0569	0.003	6th
Adequate legal documentation (tax clearance, VAT, SSNIT)	9.262	59	1.250	1.508	.9511	0.001	7th
Ability to transfer knowledge and skills	9.062	59	1.250	1.508	.9911	0.002	8th

Client-Supplier relations and workload	7.960	59	1.333	1.668	.9981	0.003	9th
Level of fairness, transparency	6.036	59	1.000	1.095	.9049	0.004	10th

Correlation is significant at 0.05 level, 2-tailed.* ***Source: field survey, 2019**, strongly agree - 5, strongly disagree - 1. MPO (Municipal Procurement officer); MPE (Municipal Project Engineer); TCM (Tender Committee Members); D1K1D2K2 (Contractors)*

Moreover, an analysis of table 4.3, with confidence level of 95%, the variation between the obtained values for the computed mean, the t-test stressed that the computed mean with estimates and p-values obtained were significant across on most common funded project bid evaluated within the assembly. The result obtained from the test has shown that, the estimated means were significant and that the variables tested were relevant in affecting bid evaluation and has further likelihood of impacting on risk for the assembly. The result has therefore revealed the criteria used in bid evaluation is critical if entity is to mitigated risks through proper documentation and that entity consideration factors such as: Adequate legal documentation (tax clearance, VAT, SSNIT); sufficient documentation of procurement authority registration (preliminary certification e.g. W&H certificate; Level of responsiveness of local contractors; Technical capacity: ability to do the work; Financial capacity: financial capabilities and accuracy of bill of quantity provided; Past work performance & experience; Level of management expertise and project management; Ability to transfer knowledge and skills; Client-Supplier relations and workload; Level of fairness, and transparency in processes are essential.

This finding has agreed with (Turner & Simister, 2001; PPA, 2003; Tang *et al.*, 2008; Meng & Gallagher 2012). Gruneberg, 2007) who have earlier indicated combination of evaluation criteria that assess bidders in providing project quality and value in project delivery. Whiles according to (Lambropoulos 2007; Padhi & Mohapatra, 2009) modifications of the lowest bid criteria is essential, Wang *et al.*, (2006), opined that to eliminate potential risks in bid evaluation, processes

and procedures in ensuring guidelines provided in selection of lower bidder are followed to ensure value creation among the bidders. The implication that entity is to ensure strict adherence with the process to ensure proper documentation prior to contract award as this forms one of the major tenets of public procurement and construction.

Section 4.3: Potential risks involves in bid evaluation and selecting local contractors.

Table 4.4: Descriptive statistics of potential risks in bid evaluation process

No	Statement of potential risks	Descriptive statistics						
		Median values (Mdn)				*Level of significant*		
		D1K1 /D2K 2	*TCM*	*MPE*	*MPC*	*Mean-z*	*p-values*	*Ranked*
PR1	Environmental health & safety risks: *poor health, & safety records*	2.102	3.221	3.452	*3.123*	**4.246**	0.002	1st
PR2	Financial risks: *inadequate financial capacity of contractors*	3.095	2.341	3.123	3.100	3.417	0.003	2nd
PR3	Technical risk: inaccurate bill of quantities	3.452	3.172	2.401	3.142	3.224	0.004	3rd
PR4	Legal risks: *tendency of poor compliance and omissions*	2.045	3.027	3.011	2.065	2.076	0.001	4th
PR5	Management risks: *capacity of core competencies in managing contract*	2.221	3.001	4.014	2.012	3.256	0.002	5th
PR6	Economic risks: *delay Payment of contract*	3.103	3.102	3.033	3.021	3.430	0.001	6th
PR7	Political risks: *Interference in the process*	4.123	3.122	3.123	3.342	3.012	0.003	7th
PR8	Relational risks: *poor relationship building among contracting parties*	3.102	3.345	2.013	2.134	3.085	0.003	8th
PR9	Work Performance risk: poor works rate	3.001	3.194	4.021	4.021	3.034	0.001	9th

Correlation is significant at 0.05 level, 2-tailed.* ***Source: field survey, 2019**, strongly agree - 5, strongly disagree - 1. MPO (Municipal Procurement officer); MPE (Municipal Project Engineer); TCM (Tender Committee Members); D1K1D2K2 (Contractors)*

From the table 4.4 above, potential risks that are likely to occur in bid evaluation processes have been identified. From the table 4.4 above, MPC (Municipal Project Engineers) rated higher "Technical risk: inaccurate bill of quantities and ability to do work" (Median**001, z=**3.430, p=0.002) compared to (D1K1D2K2) contractors; (Median=2.103, z=3.121, p=0.002). Also, on the same continuous variable, Tender Committee Members (TCM) rated technical risk (Median=3.021, **z=**3.121, p=0.002) compare to (Median=3.021, **z=**3.121, p=0.002) for MPE (Municipal Project Engineer). Furthermore, (D1K1D2K2) contractors; rated "Management risks, ability to demonstrate core competencies in managing contract" (Median=2.221**, z=**3.246, p=0.003) compared to (Median=3.12**, z =**3.246, p =0.003), by MPO (Municipal Procurement Officer), (Median=3.12**, z =**3.246, p =0.003), and MPE (Municipal Project Engineer); (Mdn=2.341**, z =**3.246, p =0.003). Also, "Economic risks: *delay Payment of contract"* was rated high (Median=3.452**, z =**3.024, p =0.004) by (D1K1D2K2) contractors and MPO (Municipal Procurement Officer), (Median=3.142**, z =**3.224, p =0.004).

Conversely, from the data, a conducted pair-wise test showed that the Municipal Officer (MPO) was given higher ratings "Legal risks: *tendency of poor compliance and omissions of essential documents"* (Median=**3.132**, z=**3.102**, p=**0.001**); whiles (D1K1D2K2); rated "Management risks" (Median=**3.127**, $_{Z}$=**2.017**, $_{P}$=0.002); whiles Municipal Project Engineer (MPE); rated high "Market shift risks (unstable economic indicators)" (Median=**3.331**, z=**3.409**, p=0.000); (D1K1D2K2); rated high "Financial risks: *inadequate financial capacity of contractors*" (Median=**3.331**, $_{Z}$=**3.023**, $_{P}$=0.002); compared to Municipal Engineers (MPE) who rated "Financial risks: *inadequate financial capacity of contractors"* (Median=3.221, Z=2.013, P=0.000).

More so, further pair wise analysis has revealed that "Environmental health & safety risks: poor health, & safety records" was rated high by both MPE (Municipal Project Engineers); and MPC (Municipal Procurement officers) (Median=**3.345**, $_{Z}$ =3.023, $_{P}$ =0.003) respectively. Whiles Tender Committee Members (TCM) rated "Relational risks: *poor relationship building among contracting parties"* (Median=3.102, $_{Z}$ =3.085, $_{P}$ =0.001) whiles "Political risks: *Interference in the process*" (Median=2.221**, z** =3.246, p =0.003) was rated high by (D1K1D2K2); (MedianSS**30**, $_{Z}$ =2.578, $_{P}$ =0.001). MPE (Municipal Project Engineer); rated "Work Performance risk: poor works rate" (Median=4.021**, z** =3.034, p =0.003) whiles Contractors (D1K1D2K2); rated "Political risks: *Interference in the process*" (Median=4.123, z =3.012, p =0.003); and MPO (Municipal Procurement officer) and MPE (Municipal Project Engineer); rated higher "Work Performance risk: poor works rate" (Median=**4.021, z** =3.034, p =0.001).

Technical risk: inaccurate bill of quantities; Management risks: capacity of core competencies in managing contract; Economic risks: delay Payment of contract; Legal risks: tendency of poor compliance and omissions; Environmental health & safety risks: Poor health & safety records; Political risks: Interference in the process; Relational risks: poor relationship building among contracting parties; Relational risks: poor relationship building among contracting parties; Work Performance risk: poor works rate. The findings have agreed with (Chan *et al.*, 2011b; PMI, 2015) who indicated that the efforts of ensuring smooth process in bid evaluation improves the processes and the practices with contract and that the effort eliminate risks (Shr & Chen, 2003, 2004; PMI, 2015). The effort of identifying and mitigating the associated risks (Chan *et al.*, 2011b; PMI, 2015) as well as motivations for good contracting behavior (Rose & Manley, 2011; Chan *et al.*, 2011a) were found to be relevant in bid evaluation processes to eliminate risk within the process. The potential risks prevalent within the bid evaluation process in common funded

projects have been identified mainly from poor documentation. Whiles according to (PMI, 2013; Mpofu at al., 2017), potential risks found not dealt with adequately within the processes prior to contract result into poor performance with increased costs and time delays, scope changes and less value in common funded projects.

Section 4.5: Mitigating measures in ensuring effective bid evaluation process

Table4.5: Sample Statistics on mitigating an effective bid evaluation process

No.	*Statement on mitigating measures*	N	Mean	Std. D	Std. Error Mean	Ranked
MM1	Encourage compliance with regulatory framework governing bid selection and evaluation	60	4.133	1.449	.1871	1st
MM2	Ensure effective risk management process & identification	60	4.083	1.148	.1483	2nd
MM3	Proper cost estimation of bill of quantities by local contractors to prevent cost overrun	60	4.183	1.136	.1467	3rd
MM4	Emphasis on transferred of technical skills and knowledge in contract agreement tenders	60	4.100	.9471	.1222	4th
MM5	Encourage proper legal documentation (tax clearance, VAT, SSNIT	60	4.003	.8576	.1107	5th
MM6	Encourage joint bidding by local contractors for technical and financial capacity	60	3.846	.9793	.1264	6th
MM7	Emphasize on trust building between entity and local contractors for collaborative engagement	60	3.383	.9476	.1223	7th
MM8	Practice effective stakeholder engagements and reorient (local partners' on bid evaluation requirements	60	3.816	1.093	.1412	8th
MM9	Emphasis early payment for common funded projects	60	3.033	.979	.1264	9th
MM10	Improve management expertise and work performance of local contractors through knowledge sharing	60	2.366	.947	.1223	10th

Correlation is significant at 0.05 level, 2-tailed.* ***Source: field survey, 2019**, strongly agree - 5, strongly disagree - 1. MPO (Municipal Procurement officer); MPE (Municipal Project Engineer); TCM (Tender Committee Members); D1K1D2K2 (Contractors)*

Table 4.5 above described one-sample test conducted on the mitigating measures for selected common funded projects within the assembly. And with the cut-off point of p-values of $0 \leq 5.00$ being level of significance and mean (z-values) range of 2.002 to 4.246; standard deviation of 1.002 to 0.3684 and standard mean Error of 0.1675 to 0.12937, there appears to be a significance across board in the values that were generated. Using the significant level as the basis, there was a further ranking of the variables involved and their effects on bid evaluation process to obtain value for money. The results further ranked in order (1^{st}, $2^{n,}$ 3^{rd} etc.) accordingly. The implication is that most significant variables in mitigating risk within common funded project include encouraging compliance with regulatory framework governing bid selection and evaluation; practicing effective risk management process & risks identification; ensuring proper cost estimation of bill of quantities by local contractors to prevent cost overrun in that order.

Table 4.6: Sample Statistics on mitigating an effective bid evaluation process

Statement on mitigating measures	Test Value						
	T	df	Mean Diff.	95% Confidence Interval of the Difference			
				Lower	Upper	P-values	Ranked
Encourage compliance with regulatory framework governing bid selection and evaluation agreement tenders	17.74	59	2.966	2.341	1.592	0.002	1st
Emphasis on transferred of technical skills and knowledge in contract	11.02	59	2.633	2.930	2.336	0.003	2nd
Proper cost estimation of bill of quantities by local contractors to prevent cost overrun	10.51	59	1.616	1.910	1.323	0.004	3rd
Encourage proper legal documentation (tax clearance, VAT, SSNIT	9.673	59	.8667	1.111	.6220	0.000	4th
Encourage joint bidding by local contractors for technical and financial capacity	9.663	59	.9000	1.121	.6784	0.001	5th
Emphasis early payment for common funded projects	8.128	59	.9166	1.169	.6637	0.003	6th
Emphasize on trust building between entity and local contractors for collaborative engagement	7.251	59	1.183	1.428	.9385	0.004	7th
Practice effective stakeholder engagements and reorient (local partners' on bid evaluation requirements	7.241	59	.9166	1.199	.6341	0.002	8th
Ensure effective risk management process & identification	7.087	59	.9166	1.169	.6637	0.000	9th
Improve management expertise and work performance of local contractors through knowledge sharing	6.492	59	1.183	1.428	.9385	0.000	10th

Correlation is significant at 0.05 level, 2-tailed.* ***Source: field survey, 2019**, strongly agree - 5, strongly disagree - 1. MPO (Municipal Procurement officer); MPE (Municipal Project Engineer); TCM (Tender Committee Members); D1K1D2K2 (Contractors)*

Likewise, an analysis of table 4.6, with confidence level of 95%, the variation between the obtained values for the computed mean, the t-test stressed that the computed mean with estimates

and p-values obtained were significant across on most common funded project bid evaluated within the assembly. The result obtained from the test has shown that, the estimated means were significant and that the variables tested were relevant in affecting bid evaluation and that impact on risk for the assembly. The result has therefore revealed effective risk mitigating measures such as: Emphasis on transfer of technical skills and knowledge in contract agreement tenders; Improve management expertise and work performance of local contractors through knowledge sharing; Proper cost estimation of bill of quantities by local contractors to prevent cost overrun; Encourage compliance with regulatory framework governing bid selection and evaluation; Encourage proper legal documentation (tax clearance, VAT, SSNIT; Encourage joint bidding by local contractors for technical and financial capacity; Emphasize on trust building between entity and local contractors for collaborative engagement; Practice effective stakeholder engagements and reorient (local partners' on bid evaluation requirements; Ensure effective risk management process & identification; Emphasis early payment for common funded projects are essential.

The findings have agreed with (PMI, 2013; Mpofu at al., 2017) who indicated that mitigating risk must follow proper but effective risk management processes. Plan risk, identification, assessment, qualification and quantification as well as Risk response strategies (PMI, 2013; Mpofu at al., 2017). Potential risks identified must be quantified after risk qualifications have been done for effective risk response strategy to be provided (Mulcahy et al., 2013). Though the process is a continues process especially in bid evaluation prior to contract, risks such as Technical risks emerge as a result of inaccurate bill of quantities and management risks: capacity of core competencies in managing contracts are mitigated when there is proper documentation and training of local contractors. Economic risks that occur as a result of future delay in the payment of contracts must be negotiated and paid for among the contracting parties.

Table 4.7 Descriptive statistic on risk management process to bid evaluation

No.	*Statement of applying risk management to bid evaluation*	**Descriptive statistics**						
		Median values (Mdn)				*Level of significant*		
		D1D2/K1K2	ETC	MPE	MPO	Mean-z	p-values	*Ranked*
APR1	Contractors and Entity follow procedures in managing risks identified	3.021	3.231	3.143	4.031	**3.409**	0.002	1st
APR2	Risks identified in tender document are further qualified and quantified	2.221	2.341	3.123	3.100	3.256	0.003	2nd
APR3	Risks identified are often own and managed by stakeholder	3.023	3.372	3.331	3.102	3.024	0.004	3rd
APR4	Contractors identified and categorized risks	2.045	3.027	3.311	2.065	3.351	0.001	4th
APR5	Plan risk responses strategies are applied in common funded projects	3.095	3.001	4.014	3.012	3.451	0.002	5th
APR6	Contractors and Entity monitor and control risks in common funded projects	3.102	3.102	3.034	3.021	3.034	0.001	6th

Correlation is significant at 0.05 level, 2-tailed.* ***Source: field survey, 2019**, strongly agree - 5, strongly disagree - 1. MPO (Municipal Procurement officer); MPE (Municipal Project Engineer); TCM (Tender Committee Members); D1K1D2K2 (Contractors)*

From the table three (3) above, MPO (Municipal Procurement officer) rated higher "Contractors identified and categorized risks" (Mdn=**4.031, z=**3.351, p=0.002) compared to Contractors; (Mdn=3.021, z=3.351, p=0.002). Also, MPE (Municipal Project Engineer) rated high "Risks

identified in tender document are further qualified and quantified" (Mdn=3.123, **z=**3.256, p=0.002) compare to (Mdn=2.221, **z=**3.256, p=0.002) by contractors. The MPE (Municipal Project Engineer) rated "Contractors and Entity follow procedures in managing risks identified" (Mdn=3.311, z=2.076, p=0.001). Additionally, *D1K1D2K2 (Contractors)*; rated "Plan risk responses strategies are applied in common funded projects" (Mdn=2.221**, z=**3.246, p=0.003) high compared to D2K2 (Local Contractors2); (Mdn=3.12**, z=**3.246, p=0.003), MPO (Municipal Procurement officer (Mdn=3.12**, z=**3.246, p=0.003), MPE (Municipal Project Engineer); (Mdn=2.341**, z=**3.246, p=0.003). "Contractors and Entity monitor and control risks in common funded projects" (Mdn=4.014**, z=**3.007, p=0.001).

Nonetheless, a pair wise test conducted among the respondents revealed that MPE (Municipal Project Engineer) rated higher "Plan risk responses strategies are applied in common funded projects" (Mdn=4.014**, z=**3.246, p=0.003); whiles Contractors; rated high "Contractors identified and categorized risks" (Mdn=3.021, z=3.351, p=0.002). More so, MPE (Municipal Project Engineer); rated high "Contractors and Entity follow procedures in managing risks identified" (Mdn=**3.331**, z=**3.409**, p=0.001); Contractors rated "Contractors and Entity monitor and control risks in common funded projects" (Mdn=3.102, **z=**3.034, p=0.002) compared to Tender Committee Members (TCM) rated high "Risks identified are often own and managed by stakeholder" (Mdn=3.372, $_{Z}$=3.024, $_{P}$=0.001).

The results were further ranked accordingly (1^{st}, 2^{nd}, 3^{rd} etc.) where risks identified were often owned and managed by stakeholders; Contractors identified and categorized risks; Risks identified within tender document were further qualified and quantified; Contractors and Entity follow procedures in managing risks identified; Plan risk responses strategies are applied in

common funded projects; Contractors and Entity monitor and control risks in common funded projects among others were identified and ranked respectively.

The finding further agreed with (Mulcahy, 2012; PMI, 2015) which suggests that, developing a practical roadmap to identify problems and implementing timely corrective actions. The construction industry is exposed to more risks and uncertainty than others are (PMI, 2015). The effort of providing effective processes and procedures prior to contracts creates confidence and transparency within the processes and value for all stakeholders.

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CHAPTER FIVE

SUMMARY OF FINDINGS, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

This study ends with this chapter which explains the conclusions gathered from the findings and the recommendations made for the research to be included in management decision upon request. It also touches on the recommendations for future studies and interest.

5.2 Summary of Major Findings

Objective one (1): To determine bid evaluating criteria for selecting local contractors

From the study it has been found that, in most common funded projects implemented and or under construction, bid evaluation criteria such as: Adequate legal documentation (tax clearance, VAT, SSNIT); sufficient documentation of procurement authority registration (preliminary certification e.g. W&H certificate; Level of responsiveness of local contractors; Technical capacity: ability to do the work; Financial capacity: financial capabilities and accuracy of bill of quantity provided; Past work performance & experience; Level of management expertise and project management; Ability to transfer knowledge and skills; Client-Supplier relations and workload; are commonly considered. This implies to prevent risk prior to contract; contractors and entity are to ensure there is a proper process and documentation done to avert the likelihood of risk in the contract which further increases the cost and delay the effective implementation of the contract.

Objective two (2): To identify the potential risks involved in selecting local contractors

From the study, potential risks in the bid evaluation process includes: Technical risk: inaccurate bill of quantities; Management risks: capacity of core competencies in managing contract;

Economic risks: delay Payment of contract; Legal risks: tendency of poor compliance and omissions; Environmental health & safety risks: Poor health & safety records; Political risks: Interference in the process; Relational risks: poor relationship building among contracting parties; Relational risks: poor relationship building among contracting parties; Work Performance risk: poor works rate. The implications are that stakeholder including entity and contractors are to ensure risks identified in common funded projects are own and properly manage for value for money.

Objective three (3): To determine mitigating measures in ensuring effective bid evaluation for local contractors

From the study it has been identified that, to ensure effective applicability of risk management process in the bid evaluation, various mitigating measures such as: the result has therefore revealed effective risk mitigating measures such as: encourage proper documentation including legal tax clearance, VAT, SSNIT; emphasis on transfer of technical skills and knowledge in contract agreement tenders; and improved management expertise and work performance of local contractors through knowledge sharing. Also, there is a need to ensure proper cost estimation of bill of quantities by local contractors to prevent cost overrun; whiles encouraging compliance with regulatory framework governing bid selection and evaluation prior to contract. It was further suggested that, to mitigate risks within the process encourages joint bidding by local contractors for technical and financial capacity is critical. There should be emphasis on trust building and collaborative engagement between entity and local contractors for effective bid evaluation processes. More so, the entity and contractors as well as tender committee members should practice effective stakeholder engagements whiles reorienting local contractors on bid evaluation requirements and processes for them to be conversant with the process. Last but not

the least, the effort of ensuring effective risk management processes and identification; and having a consented plan in place for early payment for common funded projects are essential.

Finally, with the cut-off point of **0*.005*** being level of significance and mean (z-values) of 5.00 the variables measured were within the range of ***2.002 to 4.246****;* standard deviation of ***1.002 to 0.3684*** and standard mean Error of ***0.1675 to 0.12937.*** The implication is that variables beyond the cut off are out of control; such variable is insignificant and does not impact on the findings thus meeting the evaluating criteria in common funded projects (Copper and Schindler, 2008 Tabachnick & Fidell, 2007). The results are however presented on tables in descriptive statistical format.

5.3 Conclusion

The efforts of ensuring effectiveness and transparency in the bid evaluation process does not only create value for money but also ensures fairness that enhances probability of reducing risks that might occur after the signing of the contract. Risk identity prior to the contract further enhances proper risk management processes and assessment in construction management effort especially in the implementation of common funded projects. The budgetary constraint nature of common funded projects requires concerted efforts to prevent the likelihood of possible risks that impact on bid evaluation and contract implementation for the assembly.

This study assesses applicability of risks management practices in bid evaluation on common funded Projects. The Ho Municipal Assembly was a case study for which sample format was made up for respondents from the assembly including entity tender committee members; municipal project engineers; municipal procurement officers; and D1K1D2K2 contractors.

The study was carried out on three main objectives that included: to determine bid evaluation criteria for selecting local contractors, to identify potential risks involved in bid evaluation and selecting local contractors and to determine mitigating measures in ensuring effective bid evaluation processes for contractors. Descriptive Statistics was used to ascertain the values for the mean and value of the p which indicate the level of significance across board from Google searched after the variable found were coded and run. Findings and recommendations were however made to be incorporated into assembly project implementations effort and entity tender committee assessments while improving bid evaluation practices for contractors.

5.4 Recommendations

The following recommended actions have been espoused to be included into the decisions of the entity tender board and for contract management practices among local contractors for the assembly upon request.

From the study, it has been found that in most common funded projects undertaken or under construction, bid evaluation criteria often records contractors' inability to provide adequate documentation. Sufficient documentation of preliminaries such as procurement authority registration (W&H certificate; tax clearance, VAT, SSNIT) should always be enforced. For local contractors to be responsible, their level of technical capacity: ability to do the work; and financial capacity have to be supported through prompt payment of work done. Also, financial capabilities are best developed when contractors bill of quantity provided are accurate and joint bidding is encouraged among the local contractors. There should be continuous capacity training for the local contractors while encouraging application of technology in the bill of quantity preparation. In addition, past work performance & experience; management of expertise; project management as well as ability to transfer knowledge and skills are essentials to be considered.

Also, risk that are being identified (Technical risk: inaccurate bill of quantities; Management risks: capacity of core competencies in managing contract; Economic risks: delay Payment of contract; Legal risks: tendency of poor compliance and omissions; Environmental health & safety risks: Poor health & safety records; Political risks: Interference in the process; Relational risks: poor relationship building among contracting parties) are to be categorized, owned by stakeholder and mitigated to improve the bid evaluation process. For instance, Legal risks: tendency of poor compliance and omissions are mitigated through proper documentation process and with accurate weight added. Whiles there should be conscious effort in early payment for common funded projects to prevent contractors padding of cost estimate as against previous loss and non-payment.

More so, the entity should encourage proper doculmentation including legal tax clearance, VAT, SSNIT; whiles emphasizing on transfer of technical skills and knowledge in contract agreement tenders. Similarly, entity should ensure proper cost estimation of bill of quantities by local contractors to prevent cost overrun; whiles encouraging compliance with regulatory framework governing bid selection and evaluation prior to the contract.

Additionally, there should be emphasis on trust building and collaborative engagement between entity and local contractors for effective bid evaluation process. This would assist entity tender committee members and contractors in understanding and appreciating bid evaluation requirements and processes making them more conversant with the process to create value.

Last but not the least, the effort of ensuring effective risk management processes through effective risk planning, identification; risk qualification and quantification follow by risk

monitoring and control and developing risk response strategies to mitigate risks likely to occur prior to contract in the bid evaluation to further create value and improve the process.

5.5 Limitation of Study

This study however has been limited by several constraints notable among them include the inability of the respondents having the necessary time in providing inputs for the study as well as their perception on the likelihood of investigating their private dealings due to perception of corruption within public procurement in Ghana and the Assembly in particular. Also data were not available about current status of most of common funded projects to support the findings which further create likelihood of risks most assembly projects.

5.6 Direction for Future Study

For further studies, it is recommended that exploring the impact of political interference on bid evaluation on selected project within construction sector in Ghana is noteworthy to investigate.

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Appendix -Questionnaires

Dear respondent,

The questionnaire designed is from a student researcher of Kwame Nkrumah University of Science and Technology, Kumasi. As part of a partial requirement for the award of a Master of Science degree in Construction Management certificate. The student is undertaking a study on your Assembly on the topic ***"Applicability of risks management practices in bid evaluation on Common funded Projects. A case study of Ho Municipal Assembly"*** This study is purely for academic purposes for which all ethical consideration especially your inputs necessary shall be considered confidentially. You are, kindly requested to give your opinion by providing answers to the following questions.

Section A: Bio Data

1. **Gender:** Male ☐ Female ☐
2. **Age:** 21-25 yrs ☐ 26-35 yrs ☐ 36 yrs and above ☐
3. **Qualification:** Diploma (HND) ☐ Degree (BSc. Cert.) ☐ Masters ☐

   others……..
4. **Experience:** 1-3 yrs ☐ 4-6 yrs ☐ 7 yrs and above ☐
5. **Categories of Respondents**

Municipal Project Engineers (MPE) ☐

Municipal Procurement officer (MPO) ☐

Local Contractors (LC/DIK1/D2K2) ☐

Tender Committee Members (TCM) ☐

Section B: **Knowledge of applicability on risk management for bid evaluation**

1.	Statements on bid evaluating criteria for selecting local contractors	Please tick [√]				
		1	2	3	4	5
BEC1	Adequate legal documentation (tax clearance, VAT, SSNIT)					
BEC2	Sufficient documentation of procurement authority registration (preliminary certification e.g. W&H certificate, etc.)					
BEC3	Level of responsiveness of local contractors					
BEC4	Technical capacity: demonstration of technical capacity in tender document					
BEC5	Financial capacity: demonstration of financial capacity in tender document (bill of quantity)					
BEC6	Past work performance & experience					
BEC7	Level of management expertise (project management competencies)					
BEC8	Ability to transfer knowledge and skills					
BEC9	Client-Supplier relations and workload					
BEC10	Independent, faire, and transparent in the procurement processes					

NB: SA-strongly agree -5, A-agree -4 DA-disagree-3, Disagree -2 SDA-strongly disagree -1

Section C: Potential risks involves in bid evaluation and selecting local contractors

Obj2	Which of the following *potential risks* are common in undertaking construction joint ventures within your municipality	**Please tick [√]**				
		1	2	3	4	5
PR1	Technical risks (local contractors lacking accurate bill of quantity & capacity)					
PR2	Management risks (contract management & administration)					
PR3	Market (economic) risks (unstable economic indicators for pricing of items)					
PR4	Legal risks (poor compliance & inadequacy or omission of tax clearance, VAT, SSNIT certificates					
PR5	Financial risks (poor creditworthiness/bill of quantity from local contractors)					
PR6	Political risks (collusion and change of existing project engineers from assembly)					
PR7	Relational risks (Client-Supplier relations and trust)					
PR8	Environmental risks (failure to demonstrate climate change affecting construction)					
PR9	Work performance risk (Lack of experience in project implementation effort)					

NB: SA-strongly agree -5, A-agree -4 DA-disagree-3, Disagree -2 SDA-strongly disagree -1

Section C: Potential risks involves in bid evaluation and selecting local contractors

	Which of the following statement are relevant to effective applicability to risk management process	Please tick [√]				
		1	2	3	4	5
ARP1	Local contractors identified and further categorized risks within tender document					
ARP2	Local contractors often extensively used multi-criteria decision to identify risk within tender document					
ARP3	Local contractors often categorize risk identify in common funded project					
ARP4	Local contractors/Entities often follow processes and procedures in managing risks in common funded project					
ARP5	Local contractors/Entities often perform qualitative & quantitative risk analysis, in common funded project					
ARP6	Local contractors/Entities often plan risk responses in common funded project					
ARP7	Local contractors/Entities often monitor and control risks in common funded project					

NB: SA-strongly agree -5, A-agree -4 DA-disagree-3, Disagree -2 SDA-strongly disagree -1

Section D: Mitigating measures in ensuring effective bid evaluation for local contractors

	Which of the following mitigating measures ensure effective bid evaluation for local contractors	Please tick [√]				
		1	2	3	4	5
MME1	Emphasis on transferred of technical skills and knowledge in contract agreement tenders					
MME2	Improve management expertise and work performance of local contractors through knowledge sharing					
MME3	Proper cost estimation of bill of quantities by local contractors to prevent cost overrun					
MME4	Encourage compliance with regulatory framework governing bid selection and evaluation					
MME5	Encourage proper legal documentation (tax clearance, VAT, SSNIT					
MME6	Encourage joint bidding by local contractors for technical and financial capacity					
MME7	Emphasize on trust building between entity and local contractors for collaborative engagement					
MME8	Practice effective stakeholder engagements and reorient (local partners' on bid evaluation requirements					
MME9	Ensure effective risk management process & identification					
MME10	Emphasis early payment for common funded projects					

NB: SA-strongly agree -5, A-agree -4 DA-disagree-3, Disagree -2 SDA-strongly disagree -1

Thank You