

ADDIS ABABA UNIVERSITY SCHOOL OF GRADUATE STUDIES



BID EVALUATION PROCESS ON NON-RESIDENCIAL PUBLIC BUILDING PROJECT, CASE STUDY ON SELECTED PUBLIC BUILDING PROJECTS IN ADDIS ABABA

FITSUM GEBRU

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A thesis submitted to the School of Graduate Studies of Addis Ababa University in partial fulfilment of the requirements for the Degree of Master of Science in Construction Technology and Management.

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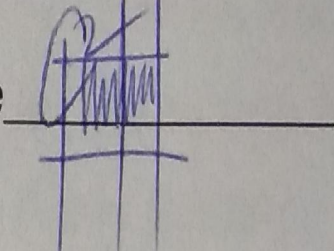
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DECLARATION

I declare that this thesis entitled "**BID EVALUATION PROCESS ON NON-RESIDENCIAL PUBLIC BUILDING PROJECT, CASE STUDY ON SELECTED PUBLIC BUILDING PROJECTS IN ADDIS ABABA** " is my original work. This thesis has not been presented for any other university and is not concurrently submitted in candidature of any other degree, and that all sources of material used for the thesis have been duly acknowledged.

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Date: October, 2018

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Abbreviations

AAU	–	Addis Ababa University
ECSA	–	Ethioian Central Statistics Agency
EU	–	Euopen Union
GDP	–	Gross Domestic Product
IBRD	–	International Bank of Reconstruction and Development
ICB	–	International Competitive Bidding
IDA	–	International Development Association
LE	–	Livre Egyptienne (Egyptian Pound)
MEAT	–	Most Economically Advantageous Tender
MoFEDPD	–	Ministry of Finance & Economic Development Procurement Directive
MoFEDPM	–	Ministry of Finance & Economic Development Procurement Manual
MoH	–	Ministry of Health
NCB	–	National Competitive Bidding
PPAPA	–	Public Property Administration and Procurment Agency
PPAPM	–	Public Property Administration and Procurement Manual
SDB	–	Standard Bid Document
WBPGL	–	World Bank Procurement Guide Line
WBPM	–	World Bank Procurement Manual

ABSTRACT

In the public construction procurement process, the tendering phase of a project and selecting the most appropriate main contractor is an initial milestone for project success. Public procurement process in Ethiopia currently is facing many problems that hinders the process from having effective and efficient result. There are problems that are related to public building project procurement process that are found in the literature review, but to make the finding more precisely related to non-residential public building procurement in Addis Ababa, a pilot survey of an interview on the process factor conducted to Public Property Administration and Procurement Agency (PPAPA) specifically department of procurement directorate and professionals from few construction management consultant made to conclude the gap identification.

Then questionnaires have been developed and distributed to construction sector professionals who are actively working for on the construction sector. In addition to see the trend in setting bid qualification criteria and their strict use on bid evaluation process, project case studies have been studied on eight non-residential public building projects under construction in Addis Ababa.

Procurement process factors are identified through interview and questionnaires, and then the response has been analyzed to rank the factors based on their relative weight using frequency and severity index analyses as perceived by professionals responding the questionnaires. The study showed that favouritism in providing influential information to bidders, inappropriate project scope definition by client, selecting lowest bidder by avoiding technical score form further evaluation in the process, inappropriate project packaging by client, setting subjective criterion on bid document by consultant and clients are some of the most influential process factors considered crucially by the respondents for bid evaluation process in non-residential public building project current practice in Addis Ababa.

This study provides supportive practical solution for public client to enhance and improve their contractor selection processes in order to have successful completion of construction projects that would meet their requirements and increase their satisfaction levels.

Keywords: Public Body, Public Procurement, Bid, Pre-Qualification, Post-Qualification.

1. INTRODUCTION

Ethiopian construction history starts from the ancient Axumite Empire; Axum the wealthy African trading empire had made magnificent construction prints that passed from the third century till now. Today the former imperial capital Axum contains some of the best-preserved examples of Axumite-style architecture, including stelae from the third and fourth centuries, and obelisks, royal tombs and palaces dating from the sixth and seventh centuries (W. Phillipson, 2012).

The rock hewn churches of Lalibella are also another era magnificent endeavours of construction. The longer time pause of construction again restart during the emperor Fasiledus since 1635, by building Gondars' castles (Fetene, 2008).

Construction industry in Ethiopia is one of the major sectors which involves substantial amount of finance and human resources. Where the sector is expected to register a 36.4% annual growth and contribute 5.2% to the country's GDP (ECSA, 2007). Public construction projects in Ethiopia are parts of the country's development initiative. It shared considerable amount of the country's scarce financial resources. In Ethiopia, the construction industry is the highest recipient of government budget in terms of government development program. Consequently, public construction projects consume an average annual rate of nearly 60%, according to MoWUD (2006), and 58.2% according to Wubishet (2004), of the government's capital budget.

Currently, Ethiopian public sector procurement is largely based on the lowest bid award system. The legal but the customary practice of awarding contracts to a lowest bidder was established to ensure the lowest cost for completing a project. In public construction works, this practice is almost universally accepted since it not only ensures a low price but also provides a way to avoid fraud and corruption (Irtishad, 1993). The traditional low-bid approach tends to promote more adversarial relationships rather than cooperation or coordination among the contractor, the designer and the owner, and the owner generally faces increased exposure to contractor claims over design and constructability issues (Rizwan, 2008).

This study is based on case study on bid evaluation process adopted in major public procurement units like Ministry of Health in the case of St. Paul and St. Peter

specialized hospitals, and Ministry of Education in the case of Addis Ababa University using direct project bid data accompanied with interviews of prospective professionals. Furthermore, data collected in the form of questioners from experienced industry professionals and analysed to rank influential factors that are affecting the procurement process.

1.1. Statement of the problem

In Ethiopian construction industry, the tender document preparation and bid evaluation process particularly on non-residential public building procurement must be fair, equitable, transparent, competitive and cost effective. Because of the gap in the tender document preparation and bid evaluation process many public building projects are suffering excessive cost and time overrun, as well as unacceptable quality standard. This study aims to address and explore the following core points:

- On several non-residential public building projects, bid evaluation criteria and bid evaluation process adopted uniform,
- Many non-residential public building project constructions complete after having excessive delay and significant cost overrun.
- Most public building construction projects are currently awarded on least bid offer bases, even to an offer below project direct cost.
- On many research findings, contractors incapability coupled with consultant inefficiency has become major source of public building project poor performance.

1.2. Objective

1.2.1. General objectives

To evaluate bid evaluation process in non-residential public building projects and identify the problems that the construction industry facing in respect to bid evaluation process.

1.2.2. Specific objectives

The specific objectives are:-

- To assess the appropriateness of bid evaluation criteria's on tender document of non-residential public building project.
- To assess the strict use of the assigned evaluation criteria's during the bid evaluation process.

- To evaluate trends of bid evaluation process and associate its' impact with performance of the project.
- To identify best international practices in construction industry and recommend adaptation of the best practices.
- To recommend amendement points on the public procurement manual.

1.3. Significance of the research

The research has been done in a direct use of current construction project data in Addis Ababa, thus, research output might help to observe major problems and constraints that are affecting the public procurement on non-residential building construction projects in view of transparency, efficiency, fairness and impartiality in selection of appropriate contractor.

Following appropriate procurement and bid evaluation process, helps to select the right contractor as well as enables to realize the required physical facilities completed on time. It also helps to enable the utilization of the large sum of public money spent on procurement in a manner that ensures greater economy and efficiency in public projects; these will benefits the general public.

Contractors and consultants will also benefited by the presence of fair competition in the market and gaining work at competent offer.

2. LITERATURE REVIEW

The process of selecting the most competitive tender offer and appointing the most suitable contractor for the construction works is a complicated and risk-related task. The correct appointment of a competent and suitable contractor may have a positive impact on the outcomes of the works and result in lowering construction cost, increased quality of delivered work, shorten the project realisation time, have higher number of qualified and competent workers increased the safety and lower number of accidents (Hatush, 1996).

2.1. General

Procurement is a broad concept, which goes beyond purchasing activity, whose purpose is to give the public body best value for money. Value implies right price, right quality, right time, right place, and right quantity. Moreover, lowest initial price may not equate to lowest cost over the operating life of the item procured. But the basic point is the same: the ultimate purpose of sound procurement is to obtain maximum value for money (PPAPM, 2011).

2.1.1. Terms related to public procurement process,

The public procurement manual states definitions of specific terms that are related to the public procurement (PPAPM, 2011).

“Works” mean all work associated with the construction, reconstruction, upgrading, demolition, repair, renovation of a building, road, or structure, as well as services incidental to works, if the value of those services does not exceed that of works themselves and includes build-own-operate, build-own-operate-transfer and build-operate-transfer contracts;

“Procurement” means obtaining goods, works, consultancy or other services through purchasing, hiring or obtaining by any other contractual means;

“Public body” means any public body, which is partly or wholly financed by Federal Government budget, higher education institutions and public institutions of like nature;

“Public Procurement” means procurement by a public body using public funds;

“Bid” means a stage in the procurement process extending from advertisement of or invitation to bid up to signing of contract;

“Pre-qualification” is a means for attracting potential bidders to participate, in which potential bidders are invited by a public body to submit documentation that shows the person/firm is capable of meeting the requirements of a specific future bid.

“Post-qualification” is a process undertaken by a public body at the end of the bid evaluation stage to ascertain the capability of the least evaluated bidder to perform the contract. Post qualification assessment may be done for prequalified bidders. The purpose of the post qualification is to ascertain that the lowest evaluated bidder is still capable to perform the contract.

2.2. Procurement and contract delivery systems

Procurement and Contract management has a strong relationship with construction process and stakeholders management. The main and sub tasks that determine procurement and contract management process are; the delivery system chosen, the procurement method adopted and the contract types decided will determine the construction process as well as the relationships between stakeholders involved the process (Alan C. Twort, 2004). Procurement and Contract Management involves three major processes: Contract Planning, Procurement Management and Contract Management.

- **Contract Planning:** Construction projects are components of a certain business or development demands. Contract is a customary tool used to implement formulated programs or projects. As a result, contract planning becomes part of this basic / strategic phase. Contract planning includes decisions on proposed Delivery Systems, Procurement Methods and Contract Types (C. Perna, 2009).
- **Procurement Management:** is a process of selecting individuals or organizations to carry out the intended services and / or works. Procurement Management is carried out based on the provisions made during the contract planning phase of the Procurement and Contract Process. It involves the preparation of procurement documents, their invitation and submission of tender proposals, and opening and evaluation of tenders (WBM, 2010). On the bases of results from tender evaluations, the procurement team will recommend the lowest responsive bidder for Contract Management Phase.
- **Contract Management:** is a process of reaching contractual agreement for implementation, its administration and finally concluding the contract. Similar to the procurement management process, it shall be based on the provisions decided during the contract planning phase. It involves negotiation based on tender

evaluation recommendations and signing of contractual agreement followed by its administration for contractual implementation, progress tracking, and changes, claim and disputes resolutions (C. Perna, 2009).

2.2.1. Different types of contract delivery methods

Procurement and contract delivery system is the way project owners together with project regulators and financiers determine the assignment of responsibilities to project stakeholders along the construction process. Procurement and contract delivery system is often determined during the basic planning phase of construction project. The contract strategy determines the level of integration of design, construction and ongoing maintenance for a given project, and should support the main project objectives in terms of risk allocation, delivery incentives and so on (Keith Potts, 2008)

Generally, there are six types of procurement and contract delivery systems. These are:

- Force Account
- Design Bid Build (DBB)
- Design Build (DB) or Turnkey
- Finance / Build Operate System (BOT)
- Construction/Facility Management Consultancy, &
- Alliances and Outsourcing

Such Procurement and Contract delivery systems are developed overtime and are shown in Fig. 2.1 below. The development is based on problem solving for the previous type and the Development of the Construction Industry technologically and management wise (Wubishet, 2004).

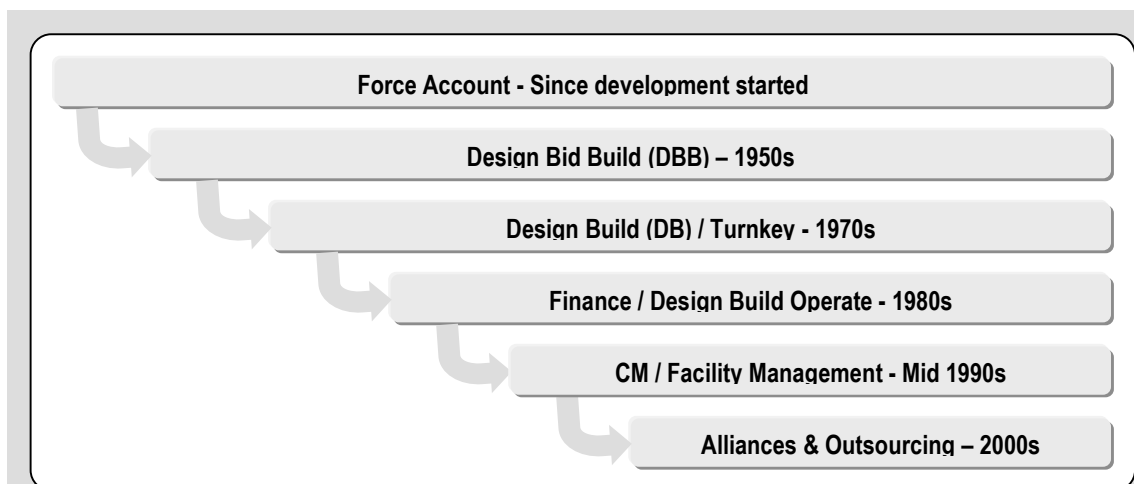


Figure 2. 1 Development of delivery systems overtime [Wubishet, 2004]

2.2.2. Force Account

When the project owners engage themselves to undertake the project, it is called a force account delivery system. Often such a system is promoted if the project owners believe that there is a comparative advantage in cost, time and quality issues. Besides, when there is a lack of capacity from the private sector to undertake very large and technologically new projects, public companies do undertake such projects using force account delivery systems (WBPGL, Jan.1999).

These days this type of delivery system is often used when projects are small and places are remote such that reaching them is difficult and in general they are not attractive enough to call the attention of bidders (WBPGL, Jan.1999).

2.2.3. Design Bid Build (DBB)

This is the most practiced type of delivery system in the construction industry. After project owners did prepare the basic planning that identifies construction project programs, they call upon the participation of design and / or supervision consultants either by tender or by negotiated contracts. This consultant will carry out the design together with the necessary tender documents which will be the bases for tendering to select contractors. These process is called Design - Bid - Build and hence the name for such delivery system.

Some of the main criticisms of the traditional DBB method of project delivery are lack of innovation, delayed completion periods, and cost overruns (Ibbs, 2003). Since, in the DBB method, the client bears most of the risks of the design and the construction aspects, there need to be better practices to assure the client's requirements are met, including quicker project completion times, and cost effective solutions.

2.2.4. Design Build (DB) / Turnkey

Design Build or Turnkey Delivery system is a response to problems associated to the last two types of delivery systems. These were promoting privatization and its business-like approach to enhance the Force Account System and reducing fragmentation, adversarial relations and Project Owners' risk which are recurrent manifestations in the DBB delivery system.

Design Build or Turnkey by principle reduces numbers of procurement processes engaged in the fragmented process and employ only one procurement process and a

single contractor to provide the entire Construction Implementation Process (Design and Construction Implementations).

Typical advantages of this system include (Marwa, May 2004):

- Reducing fragmentation and adversarial relations between designers and constructors;
- Minimizing Project owners' risk transferable due to Designers' faults;
- Accountability and entire responsibility for both design and construction which entitle the employer to receive completed project is onto a single contractor;
- Employers' responsibility to co-ordinate interfaces between different project elements is avoided;
- Single point responsibility minimizes the opportunity to claims by the contractor due to design related issues;
- Coordination between design and construction processes will also be enhanced (both in communication for constructability as well as in fast tracking); and
- The client budget or financial requirement is defined early enough in the development process.

The disadvantage of this delivery system is loss of control, cost of tender and cost of risks (Marwa, May 2004).

- Since limited supervisory role by the employer representative is practiced; which is relatively flexible and makes the employer distanced from the whole process, the employer has little chance to understand what is developed and entertain variations in requirements implying loss of control.
- Contractors in order to provide reasonable offer, their tender cost is higher than in the case for DBB delivery system. This is because they need to carryout acceptable design for project cost offers. Though it was not practiced often, employers who shared costs related to tendering are informed to get seriously considered offers. World Bank suggested a Two staged procurement method based first on technical merit and followed by financial competition and not for more than six bidders.
- The increase in risk transferred onto the contractor will be counterbalanced by the increase in contract prices which can be taken to include these costs of risks.

Projects carried out using DB delivery system are often called Turnkey Projects because a single contractor is responsible to hand over the completed facility and let the Project owner to turn the key and gets in.

2.2.5. Finance / Build Operate Transfer (BOT)

Build - Operate - Transfer is a form of procurement and contract delivery system that promotes Public Private Partnership (PPP) in which a private company is contracted to finance, design, construct, and operate for a certain period (usually 10 years) and transfer. BOT contractors look to project financiers for the realization of projects through equity contributions or credits. Such provisions are different from budgeted finances such that they involve no or limited re – course which means the project owner is not responsible for any liability other than force majeure and agreed upon claim adjustments. This obliges that projects should first be viable for revenue generation in order to payback its debts. (WBPGL, Jan.1999).

The Typical BOT contract is the process whereby a government grants a concession to a project development company to develop and operate what would normally be a public sector project, for a given period of time known as the concession period. BOT project involves a potentially complex contractual structure. The Operation period between completion and transfer gives the contractor an opportunity to verify the quality of the output of the services and works, and train the employer personnel on how to manage the facility afterwards. In some BOT contracts, defect liability period will be included in order to ensure the quality of the facility during transfer. This is because, operators in an attempt to save costs, may decrease operating and maintenance expenditures towards the end of the concession period (WBPGL, Jan.1999).

This delivery system is advantageous because of three major factors:

- It minimizes owners' scarcity of financial resources;
- It devoid of considerable risks from the project owners and lessens regulatory activities; &
- The facility is well operated and transferred with free of charge or minimum compensations to project owners.

Such delivery system requires appropriate project packaging and their clear definition. It is advisable to start with small projects and tries to develop experience

and expertise to make such delivery system successful. Most BOT projects failed because of their built up and engagement in very large projects which is an extremely risky business for contractors. Consortium of contractors is used to carry out such projects. The increasing popularity of the BOT project is largely due to a shortage of public funding and the opinion that the facility will be more efficiently managed by a private entity.

2.2.6. Construction / Facility Management Consultancy

Construction Management Consultancy Delivery System is a response to problems associated with DB and BOT where the Project Owner was not well represented for its benefit and the problem of fragmentation between Planning and Implementation. As a result, construction management consultancy firm is used to coordinate all activities from concept inception through acceptance of the facility. Facility management consultancy adds operation of facility during operation to Construction Management Consultancy (Kknocherand, 1998).

Construction Management service in such delivery system include the management activities related to a construction program carried out during the Basic Planning, Design & Construction Implementation and its completion process that contributes for the successful completion of projects. The main difference of this delivery system is that, while all the others involve only during the implementation phase after major decisions was made during the Basic planning phase of the construction process, it is involved in the whole construction processes.

Construction Management Consultancy service are particularly attractive to organizations that involve in construction physical infrastructures. Construction Management Consultants then represents Project Owners to carry out the following services:

- Feasibility studies of Construction related services
- Plan and Monitor the Triple Constraints of Project Performances
- Lead and Organize regulatory systems of the Construction Industry
- Valuation, Quantity Surveying and Procurement and Contract Management Services

2.3. Contractor pre-qualification and bid evaluation procedures

Contractor pre-qualification and bid evaluation procedures are currently used in many countries, and involve the development and consideration of a wide range of necessary and sufficient decision criteria to evaluate the overall suitability of contractors. Hatush and Skitmore (1997a) identified five main elements as common factors in the contractor selection process for all types of procurement arrangements.

These are:-

- Project packaging,
- Invitation,
- Pre-qualification,
- Short listing and
- Bid evaluation.

2.3.1. Pre-qualification:-

Among all factors the main evaluation factor is cost or price consideration that may affect the selection of a contractor. Although the lowest bidder system protects the public from improper practices, it has certain disadvantages. These include unreasonable low bids either accidentally or deliberately or unqualified contractor which cause extensive delay, cost overrun, quality problems and increased number of disputes. Over the years some modification to the lowest bidder system were made, such as reasonable bidder, public interest and prequalification list which open the door to other evaluation methods to be adopted instead of the single criterion system lowest bidder system.

2.3.2. Bid evaluation process:-

To ensure the quality of contractors, the valuation can be done beforehand with a prequalification method. Facing the owner's scrutiny regarding its competency to handle the business aspects of the operation during prequalification allows the contractor to focus on the specifics of the construction project once it has passed through prequalification and been short-listed. This also allows the owner's bid evaluation team to focus only on the specific elements of the project, without being distracted by the other business considerations. In the simplest meaning prequalification is a before tendering procedure which allows to choose the most appropriate candidates from amongst those declaring willingness to participate in the tendering. Prequalification is defined by Moore (1985) as the screening of

construction contractors by project owners or their representatives according to a predetermined set of criteria deemed necessary for successful project performance, in order to determine the contractor's competence or ability to participate in the project bid. Clough (1986) thinks that prequalification means that the firm which wants to participate in the tendering needs to be qualified before it can be issued bidding documents or before it can submit a proposal.

Pre-qualification and bid evaluation procedures involve different types of criterion to evaluate the overall suitability of contractors Hatush and Skitmore (1997a) have identified five main criteria for contractor prequalification and bid evaluation criterions.

2.3.2.1. Information for prequalification criterion

It is necessary to collect and analyse information in order to quantify objectively the criteria for prequalification and bid evaluation. This information includes that relating to the contractor's permanent place of business, adequacy of plant and equipment to do the work properly and expeditiously, suitability of financial capability to meet obligations required by the work, appropriateness of technical ability and experience, performance of work of the same general type and on a scale not less than 50% of the amount of the proposed contract, the frequency of previous failures to perform contracts properly or fail to complete them on time, the current position of the contractor to perform the contract well, and the contractor's relationship with subcontractors, or employees (Hunt et al, 1966). The assessment of contractors who have previously prequalified can, of course, be assisted by reference to previous prequalification records. In total, the information used for the assessment of criteria for prequalification and bid evaluation falls into five groups - general information which is used mainly for administrative purposes, financial information, technical information, managerial information and safety information.

2.3.2.2. General information

This concerns the administrative information relating to contractors wishing to be considered for inclusion in clients' standing lists. There is very little literature on this subject. Ng (1992) has mentioned only the name of the contractor in his list for gathering data about each contractor for the prequalification process. Seeley (1986), referring to Silva (1982), covers more information about the contractors including the legal status of the company, particulars of holding, subsidiary or associated

companies, membership of trade association and name of directors, whilst Holt et al (1994) found litigation tendency, size, age, and image of the contractor to be popular information collected from contractors although ranking 24, 27, 29 and 31 in importance among the 31 variables in their study.

2.3.2.3. Financial information

This involves financial statements and other information to check on the financial exposure of the company for both domestic and overseas contracts. Table 2.1 shows the sub criteria on financial status and most often assessed by ratio analysis, examination of bank references, credit reference and turnover history (Holt et al, 1994). Financial stability, on the other hand requires the consideration of credit ratings, bank loan arrangements, bonding capacity and financial statements (Russell et al, 1992). Furthermore, studies by Severson Ct al (1993, 1994) on predicting the likelihood of experiencing a claim, investigated trends in contractor financial data in the form of the assets, liabilities and stockholders' equity portion of the contractor's balance sheet, together with the contractor's income statement.

Table 2. 1 Measures of financial criteria [Hatush and Skitmore, 1997a]

Financial Soundness			
Financial stability	Credit rating	Banking loan & bonding	Financial status
- Current & fixed assets	- Subcontractors	- Short term loan	- Balance sheet statement
- Liquidity	- Suppliers	- Long term loan	- Income statement
- Annual turnover		- Bonds	

2.3.2.4. Technical information

This is concerned principally with the current commitment of the contractor's labour and plant resources, ability to handle the type, quality and size of work, and the ability to perform on site. 'Past experience', which includes the type and size of projects completed, is the technical information most used (Holt et al, 1994) and is assessed by visits to existing sites and by meetings to discuss, in general terms, the nature of the construction work, the programme dates and the client's requirements. Table 2.2 sub criteria on technical information which includes experience on the construction industry, plant and equipment availability, personnel deployed as technical staff and skilled crafts, and ability to different type and size of projects are listed.

Table 2. 2 Measures of Technical criteria [Hatush and Skitmore, 1997a]

Technical Abilities			
Experience	Plant & Equip.	Personnel	Ability
<ul style="list-style-type: none"> - Experience over the last five years in construction - Current & complete contracts - Complexity of work executed - Level of technology 	<ul style="list-style-type: none"> - Availability of owned construction equipment - Adequacy of plant and equipment to do the work properly & expeditious 	<ul style="list-style-type: none"> - Availability of sufficient deployed technical staffs - Availability of skilled crafts - Qualification & relevant experience of staffs 	<ul style="list-style-type: none"> - Ability to handle the offered type and size of work - Ability to control and organise contracts and efficiently integrate labour & resource - Ability to meet target dates.

2.3.2.5. Managerial information

Managerial organization and expertise are considered by identifying the contractor’s managerial approach to risk, contract strategy, claims and variations. Here Ng (1992) has listed four sources of managerial information comprising: (1) management and organisation of work, (2) resources, (3) coordination-control-response, and (4) documentation. Helmer and Taylor (1977) have classified these management variables into three fundamental areas: (1) planning (management perspective, qualification of key management personnel, use of planning tools), (2) organization (integration of activities, communication, human relations); and (3) controlling (control system, adaptability, risk assessment, subcontract management). Finally, Diekrmann (1981) has grouped the management source of information into site organization, project manager, corporate management, experienced procurement, project control, and historical performance.

Table 2.3 Sub criteria on management capabilities which are past performance, quality of work, project organization (planning, coordination, workload, subcontractors availability, work rule and policies), experience of technical personnel and management knowledge are listed under management information.

Table 2. 3 Measures of Management criteria [Hatush and Skitmore, 1997a]

Management Capability			
Past Performance and Quality	Project Management Organization	Experience of Technical Personnel	Management Knowledge
<ul style="list-style-type: none"> - Past performance - Quality control program & quality of work on past projects - Quality assurance certificate - Quality of workmanship 	<ul style="list-style-type: none"> - Experience in completion of project on schedule - Planning, Programming and General Progress, Site organization and Supervision. - Engineering coordination - Present workload & capability to support current projects. - Capability to manage subcontractors. - Capability to perform material control - Field organization, work rules, work policies 	<ul style="list-style-type: none"> - Present workload & capability of contractor key site-management personnel - Availability of first line supervisors - Staffing levels in the company including management, professional/ technical, Administrative/ clerical 	<ul style="list-style-type: none"> - Scheduling & cost control system & how it is utilized. - Material control, personnel, accounting, subcontractors, purchasing. - Level of research and development. - Risk avoidance & responsibility, including client involvement & design liability. - Productivity improvement programme. - Predicted out turn costs

2.3.2.6. Safety information

Samelson et al (1981, 1982) has focused on construction cost reduction by means of accident cost control through owner selection of safe contractors. A survey of construction site safety in Honduras (Jaselskis and Suazo, 1994) indicated a substantial lack of awareness of the importance of safety at all levels of construction industry. Questions on experience modification rating (EMR) and the Occupational Safety and Housing Administration (OSHA) incidence rate can however generate the required information about the safety performance of the contractors (Samelson and Levitt 1982). Table 2.4 shows different sub criterions and their corresponding measurements on health and safety requirements.

Table 2.4 Measures of Health and Safety criteria [Hatush and Skitmore, 1997a]

Health and Safety			
Safety	Experience Modification Rate (EMR)	OSHA Incidence rate	Management safety accountability
<ul style="list-style-type: none"> - Past performance - Quality control program & quality of work on past projects - Quality assurance certificate - Quality of workmanship 	<ul style="list-style-type: none"> - Financially rewarding or penalizing employers according to their accident claims. 	<ul style="list-style-type: none"> - Present workload & capability of contractor key site-management personnel - Availability of first line supervisors - Staffing levels in the company including management, professional/ technical, Administrative/ clerical 	<ul style="list-style-type: none"> - Who in the organization receives and reviews accident reports, and what is the frequency of distribution of these reports. - Frequency of safety meetings for field supervisors. - Compilation of accident records by foremen & superintendents and the frequency of reporting. - Frequency of project safety inspection and the degree to which they involve project managers & field superintendents. - Use of an accident cost system measuring individual foremen & superintendents as well as project managers.

2.4. International practices in lowest bid bidder and other bid award system

The customary practice of awarding contracts to a lowest bidder was established to ensure the lowest cost for completing a project. In public construction works, this practice is almost universally accepted since it not only ensures a low price but also provides a way to avoid fraud and corruption (Irtishad, 1993). While the low-bid procurement system has a long-standing legal precedence and has promoted open competition and a fair playing field, a long-standing concern expressed by owners and some of their industry partners is that a system based strictly on the lowest price provides contractors with an incentive to concentrate on cutting bid prices to the maximum extent possible (instead of concentrating on quality enhancing measures), even when a higher cost product would be in the owner's best interest, which makes it less likely that contracts will be awarded to the best performing contractors who will deliver the highest quality projects.

As a result, the low-bid system may not result in the best value for money expended or the best performance during and after construction. Moreover, the traditional low-bid approach tends to promote more adversarial relationships rather than cooperation or coordination among the contractor, the designer and the owner, and the owner generally faces increased exposure to contractor claims over design and constructability issues (Rizwan, 2008).

The public procurement process spans the whole life cycle from initial conception and definition of the needs through to the end of the useful life of an asset or the end of a contract. Many countries have introduced some modifications to the initial concept of "lowest bidder" criterion and established procedures for the bids evaluation process (Hegazy and Moselhi, 1994; Herbsman and Ellis 1992; Mosehi, 1990; Merna and Smith, 1990; Martinelli, 1986; Hardy, 1978). The variations in these procedures, however, still serve the common objective of selecting a qualified contractor on competition basis.

The Public Procurement Law in the EU countries has changed several times. In 2004 two EU Directives were implemented, enabling a codification of rules and procedures across EU countries.

All EU member states have implemented the Directives in their national legal systems. According to the Directives public procurement should be awarded on the basis of disinterested criteria, which ensure compliance with transparency, non-discrimination, equal treatment, and with guarantee that tenders are evaluated in circumstances of effective competition. Therefore, it is allowed to use only two criteria of contract award: “the lowest price” and “the most economically advantageous tender” (MEAT).

In the case where the contract is awarded on the basis of the most economically advantageous tender, from the Contracting Authority point of view, the criteria which are related to the particular public procurement might be based on disinterested criterions which are: quality, price, technical merit, aesthetic and functional characteristics, environmental characteristics, running costs, cost-effectiveness, after-sales service and technical assistance, delivery date and delivery period or period of completion. To see the criterions set and the evaluation process sample bid evaluation by MEAT method attached in the annex-II part.

The appointment of the contractors in selected EU countries, related to the works for the completion or part construction and civil engineering work. Two types of standard procedures were taken into consideration: open procedure and restricted procedure. Table 2.5 shows the proportion of procurement processes in each analysed country by means of identifying the number of appointments based on the ‘price criterion’, and those based on ‘the most economically advantageous tender’ criterion.

As shown on Table 2.5 below, countries like France, UK, Spain, Italy have shown steady tendency of selecting MEAT, where only a low number of tenders were selected based on price only criterion. The proportion of MEAT offers range from 91.1% in France to 62.5% in Spain.

The conducted analysis proved that in many countries the selection of a contractor it is not strictly linked with the price and that the applied criteria allow for choosing the most economically advantageous tender.

The analysis shows that between 2010 and 2013 in seven out of thirteen EU countries the price criterion prevailed in the open tender procedures, while in six

other countries the tenders based on the selection of the most economically advantageous offers predominated (Janusz, 2014).

Table 2. 5. Chosen contract award criteria in EU countries. [Janusz, 2014]

Country	Criteria Year	Open procedure				
		2010	2011	2012	2013	Average
France	MEAT	91.70%	91.00%	90.50%	91.00%	91.00%
	Lowest Price	2.90%	3.10%	2.90%	2.80%	2.90%
	Not Specified	5.40%	5.80%	6.70%	6.30%	6.10%
UK	MEAT	88.80%	87.50%	84.10%	88.70%	87.20%
	Lowest Price	8.50%	8.50%	12.20%	9.90%	9.80%
	Not Specified	2.70%	4.00%	3.70%	1.40%	3.00%
Ireland	MEAT	98.20%	89.30%	74.30%	60.50%	80.60%
	Lowest Price	1.80%	10.70%	25.70%	38.20%	19.10%
	Not Specified	0.00%	0.00%	0.00%	1.30%	0.30%
Spain	MEAT	86.60%	81.90%	81.00%	78.60%	82.30%
	Lowest Price	4.70%	6.60%	5.70%	7.90%	6.20%
	Not Specified	8.80%	11.50%	12.40%	13.50%	11.50%
Italy	MEAT	59.90%	64.00%	64.80%	61.30%	62.50%
	Lowest Price	35.50%	32.80%	27.80%	32.50%	32.20%
	Not Specified	4.60%	3.20%	7.40%	6.20%	5.30%
Portugal	MEAT	73.50%	70.10%	56.60%	59.60%	65.00%
	Lowest Price	6.90%	5.60%	12.50%	11.50%	9.10%
	Not Specified	19.60%	24.30%	30.90%	28.90%	25.90%
Czech Rep.	MEAT	66.90%	56.00%	42.10%	23.60%	47.20%
	Lowest Price	33.10%	43.90%	57.80%	75.80%	52.70%
	Not Specified	0.00%	0.10%	0.10%	0.60%	0.10%

In Ghana, two types of evaluating bid methods are widely used in the building construction industry. One is the lowest evaluated tender price, and the other is multi-criteria quantitative method. However, the selection of the contractor based on the lowest tender which is supposed to be used for selection of contractors for government projects as requirement contained in the Public Procurement Act may be one of the major reasons causing project delivery problems, as Contractors often quote low prices and subsequently attempt to reduce the quality of work and hope to be compensated by submitting claims (Hatush, 1998).

In Egypt, the methods used for contractors' evaluation and selection shows that the single stage tendering method is used for smaller projects (project size < 1 Million LE). However, for medium-size, large, and mega projects, two-stage tendering is used for contractors' evaluation and selection. The first stage, the prequalification stage, identifies those companies to be considered suitably qualified and experienced to

undertake the project. The second stage, the bidding stage, a detailed assessment of all responsive bids (bid evaluation) is made in order to award the contract to the best bid. Also the point system is widely used in evaluating the contractors' bids in both the pre-qualification and the bid evaluation stages.

Weights used for bid evaluation process are shown based on project type and project size, Table 2.6 shows average weights used for bid evaluation when projects are classified by project type in Egypt and Table 2.7 shows average weights used for bid evaluation when projects are classified by project size in Egypt.

Table 2. 6 Average weights used for bid evaluation classified by project types

	Buildings	Utilities	Industrial	Electro-Mech.	Others
Technical (%)	31	40	43	48	50
Financial (%)	69	60	57	52	50

Table 2. 7 Average weights used for bid evaluation classified by project size

	<1 M	1-5 M	5-10 M	10-20 M	> 20 M
Technical (%)	0	30	32	38	40
Financial (%)	100	70	68	62	60

2.5. Ethiopian public building procurement

Currently, building construction boomed on expansion and new constructions of social infrastructures mainly school, hospital and sectorial office facility building projects are extensively under construction in Addis Ababa city. Since public bodies mainly keep the general public interest, bid evaluation process and contractor selection follows the public procurement legal frame work procedure.

2.5.1. Regulatory frame work

The national procedure followed by public procurement units has legal and national regulatory frame work.

- Financial proclamation No, 57/1996, of December 1996, which constitute the procurement law.
- Financial regulations, No,17/1997, effective since July,1997
- The Ministry of Finance & Economic Development Directives, which entered into force on 8th day of June 2010.
- The Ministry of Finance & Economic Development Procurement Manual

Public procurement units should follow the approved procurement method listed on (PPD, art. 33), open tendering, restricted tendering, requests for quotations, single-source or direct procurement, requests for proposals, and two-stage tendering. Except, as otherwise provided in the proclamation, and on the directive, public bodies shall use open bidding as the preferred procedure of procurement. Public bodies may use a method other than open bidding only where conditions for use of such other method stipulated in the proclamation and on the directive are satisfied.

A Public Body using a method of procurement other than open bidding, pursuant to (MFEDPD, art.33/3) shall record a statement of the grounds and circumstances on which it relied to justify the use of that method.

2.5.2. Bid evaluation process and setting criteria

Selection of a successful bidder shall be carried out in either of the following two methods, notwithstanding that the bid evaluation criterion varies from one type of procurement to another:-

- Setting the minimum technical requirement and selecting the bidder with the **lowest evaluated bid** from among the bidders meeting such minimum technical requirements, or
- Indicating clearly in the bidding document the criteria to be applied to determine the functional or economic value of the procurement and the **relative weight** to be ascribed to each criterion and selecting the bidder with the **highest cumulative result** by conducting evaluation based on these criteria. [PPAD, clause 16.8.2, 2010]

2.5.3. Evaluation Methodology and Criteria

After confirming the bids comprise all mandatory documentary evidence establishing the bidder's qualification the public body will rule on the legal, technical, professional, and financial admissibility of each bid, classifying it as compliant or non-compliant with qualification requirements set forth in the bidding documents;

According to the methodology defined in the (PPAPD), the public body shall select the successful bid by applying the following method:

- A. The Bid that is found to be substantially responsive to the professional, technical, and financial qualification requirements, technically compliant in relation to the technical specifications, and with the lowest price.
- B. The Bid that is found to be substantially responsive to the professional, technical, and financial qualification requirements, technically compliant in relation to the technical specifications, and with the lowest evaluated bid, The lowest evaluated Bid shall be the bid offering better economic advantage ascertained on the basis of factors affecting the economic value of the bid.

Evaluation and Comparison of Bid Price

In the financial evaluation, the highest point shall be given to the lowest priced Bid, and conversely, the lowest point shall be given to the highest priced Bid; among technically qualified Bids. The points given to other Bidders shall be determined depending on their price offers. From the total merit points to be given for proposals submitted by Bidders in a bid for procurement of Works, the share of Technical Proposal shall be percent and the remaining percent shall be the share of the Bid Price.

The formula for determining the financial score has given in Eq.2.1

$$FS = \left(\frac{LFP}{CFP} \right) 100 \quad \text{[Eq.2.1]}$$

Where:

FS = the Bid Price Score;

LFP = the lowest Bid Price;

CFP= The Bid Price under consideration

The Public Body shall then add the technical score to the Bid Price score to determine the aggregated (total) Bid score and final ranking of Bids by applying the following method:

For each Technical Proposal its technical evaluation score shall be normalized according to the highest evaluated technical score that will get 100 points according to which other scores of technical criteria shall be proportionally ranked. Normalization is the transformation that is applied equally to every element in the group of data so that the group has a specific statistical characteristic.

The Public Body shall apply the following formula (Eq.2.2) for the normalization of values of the technical evaluation results:

$$TSN = \left(\frac{CTP}{HTP} \right) 100 \quad [Eq.2.2]$$

Where:

TSN = Normalized Bid Technical Proposal Score;

CTP = the technical evaluation score for the Bid under consideration

HTP = the highest evaluated Technical Proposal score

The Public Body shall award the contract to the Bid that has the highest point in the total sum of results of the technical and Bid Price evaluation.

2.6. Summary of Literature Review

Lowest bid award has been discouraged in all EU countries, whereas based on disinterested selection criterion the Most Economically Advantageous Tender (MEAT) is promoted to award (Janusz, 2014).

In Denmark, the two highest and the two lowest tenders are excluded and the closest to the average of the remaining bids is selected. A similar procedure is used in Italy, Portugal, Peru, and South Korea, but only the lowest and highest are disqualified (Herbsman and Ellis 1992).

In Saudi Arabia, the lowest bidder is selected provided that his bid is not less than 70% of the owner's cost estimate (Martinelli 1986), which helps to exclude abnormally low price tenders. France excludes low bids which appear abnormally low and consequently may cause implementation problems (Henriod and Lanteran 1988). In Egypt, bid evaluation process and contractor selection method differ based on project volume and project type.

In Ethiopian public bid evaluation and contractor selection are based on lowest bid bidder ward system. Consequently, is no control for abnormally low price offer which the procurement manual considers, financial offer provisions like price thresholds.

The literature review has showed that the current procurement & bid evaluation process in public procurement units strictly follow awarding the project to least price offer from responsive bidders. The lowest price approach is generally suitable for the

rather straight-forward procurements of short-term, low-level services or goods of a standard specification, such as some stationery or linen.

In the services sector, this approach may be useful for the procurement of clearly-specified services or works which have sufficient mandatory aspects that would allow a simple choice on the basis of the lowest cost. The “lowest-price” system sometimes is subject to misuse, as it provides bidders with the opportunity of submitting an aggressive bid with a very low price and the wish to renegotiate any unreasonable risks incurred later. Usually, awarding the contract to the lowest possible construction price increases the costs in use, maintenance and life cycle costs (EIC, publication 2011).

According to Mechigeaw (2012) material shortage, equipment shortage, cash flow shortage and manpower shortage are major factors that affect the construction work progress on those projects evaluated on his research data.

In addition, in a survey conducted in the Oromiya regional state, non-existence of real competition during contractors’ selection; excessive time overruns; compromising quality; and escalation of the final project cost from the estimated cost were the major problems associated with the existing approach of delivery method projects (Lemma, 2006).

Poor initial funding of the project by the contractor and lack of timely delivery of resources materials, machineries and workforces are also the major factors identified as causes of delays during the construction phase in Ethiopian construction industry (Abdo, 2006).

Mechegiaw (2012), studied lowest bidding bid award and project performance on public building projects, then he found low quality of work, excessive delay and on some projects an extent of structural failure had observed and he had concluded these poor performance mainly arise from selection of contractor on lowest bid bidder award system.

Looking the above research findings, this research mainly focus on searching additional public bid evaluation process factors that appears on the current practice. A pilot survey conducted in the form of interview. Eventually the process factors found are categorized to client-related, consultant-related, contractor - related, policy or regulatory body-related and ethics-related factors are identified.

3. RESEARCH METHODOLOGY

Generally, the research is developed as an initial mile stone for examining the various aspects of the problem under consideration;

3.1. Research Type

This research tries to describe how public building procurement is processed and what factors are affecting the bid evaluation process on the ground of selecting stakeholders actively participate on public projects. Also, it implements more of descriptive, exploratory and qualitative analysis with little quantitative approach.

3.2. The Study Approach

This study has firstly choose public procurement units found in Addis Ababa as target group and cover the industry stake holders involved in the procurement process. The approach that was adopted to conduct the research process was a desk study on sample projects and support with questioner surveys using both structured and non-structured questionnaire having descriptive outputs.

3.3. The Research Scope and Limitations

As it has been notified in the previous section, the target population of the research is public procurement units found in Addis Ababa, which are currently involved on vast construction of non-residential public building projects. This focused study doesn't include building procurement experiences on private developers and NGO's involved infrastructure construction projects as well as experience on regional areas. Hence, this has created a great deal of shortage on variables and problem complexity to the analyses of the research output. To this end, this research decided to be an initial milestone for future similar research conduct on the area.

3.4. Design of the Research Instrument

The research instrument used in this research is project desk study with semi-structured questionnaire. The questionnaire was designed in such a way that it has three parts. The first part is back ground information of the respondents', which help

to see experience and exposure of the respondent that makes the research data trustworthy or qualifying to proceed further analysis. The second part is designed to ascertain whether the listed factors are recognized by the bid evaluation process participant. The third part is designed to assess degree of impact and frequency of occurrence of the listed factors on the non-residential public building bid evaluation process. In addition project desk study is conducted on two public procurement units, from these Addis Ababa University and Ministry of Health four projects from each has been studied to comprehend the research output with actual data.

3.5. Research Population and Sampling

A total of 64 questionnaires distributed among professionals who are working for public client, contractors and consulting offices at a distribution shown on the Table 3.1. The questionnaire distributed to each respondent in person and collected in the same way.

Table 3.1 Questionnaires distributed to each party and returned back

Respondent	Distributed	Returned	Non-responding	Responding
Client side	17	14	3	11
Consultant side	20	16	1	15
Contractor side	27	19	4	15
Aggregate	64	49	8	41

Respondents are selected on a special focus to meet the target group, thus client side respondents are those who have been working on the tender preparation, project follow up, and related areas in the client counterpart. They are from Ministry of Health, Ministry of Education in the case of Addis Ababa University construction project office, Addis Ababa Housing Construction and Development Bureau. Consultant side respondents are professionals who have been working at a position of contract administration, technical manager and general managers of private consulting firms of class 2 and above Architects and engineers consulting firms. Also some of them are construction management consultants. The contractor side respondents are selected from contractors currently engaged in the construction of public building projects and actively participate on the current public building project tenders. The respondents are working at apposition of general manager, project manager, technical manager and office engineer.

All the respondents have an experience of minimum seven years as a general experience in the sector and three years particular experience on public procurement and construction contract related works. Results are obtained in the detailed study and findings are summarized as conclusions of the study. Finally, the results will be present and interpretation as well as discussion will follow on the research findings. Consequently conclusions will be drawn and recommendations will also forward to summarize the study.

3.6. The research process

The research problem, initiated from observations and discussion with professionals working in the industry particularly the sector where projects that are suffering in the public building project procurement. The research basic information is assessed in pilot survey coupled with the literature review part of the research. The pilot survey and work on literature review has helped in the assessment and identification of variables.

Once the variables are identified, research instrument preparation, and data collection have been executed in their order. Consequently, analysis of the data obtained from questionnaires and desk studies have processed with simple statistical approach, examining, tabulating and categorizing based on the chosen measurement scale. After the collected data is analysed, the findings and results are discussed. Finally, the research conclusion and recommendation drawn based on the analysis and result output.

4. PROJECT DESK STUDY

Constructions of non-residential public building projects are under construction on many parts of Addis Ababa city. Looking the project size and annual construction project budget (more than five hundred million birr) have been chosen Ministry Education and Ministry of Health selected as public procurement units found in Addis Ababa for the study. The volume of building projects that the public unit undertake helps to see the trend and the gaps predominantly prevail in the bid evaluation and contractor selection process.

Table 4.1 presents lists of projects and their corresponding status on which their bid evaluation process studied in the desk study, which has become an input to analyze the current bid evaluation trend for non-residential public building projects found in Addis Ababa.

Table 4. 1 List of projects studied on desk study

S. No	Project Name	Location	Status	Client
01	Geophysics building	AAU natural science faculty (4 kilo campus)	Under construction	Ministry of Education (In the case of Addis Ababa University)
02	Communication & journalism building	AAU Journalism campus	Under construction	
03	Dormitory building	AAU Medical Faculty (Tikur-Anbesa campus)	On bid evaluation process	
04	Academic complex	AAU Technology faculty	On bid evaluation process	
05	B+G+6 apartment building	St. peter TB specialized hospital	Under construction	FDRE Ministry of Health
06	B+G+3 hospital bldg.	St. peter TB specialized hospital	Under construction	
07	Warehouse, workshop & fence construction	St. peter TB specialized hospital	Under construction	
08	G+6 building	St. Paul specialized hospital	Under construction	

Project – 1

1. Project Information

Client	Addis Ababa University
Project	Geophysics Building Project at Natural Science Faculty
Contractors Category	GC-1 or BC-1
Project Value (Eng. Estimate)	275,000,000.00
Tender type	International Competitive Bid (ICB)

2. Attended Contractors' / Bidders

S. No	Company attended	Category	Remark
01.	Contractor A	GC-1	
02.	Contractor B	GC-1	
03.	Contractor C	BC-1	
04.	Contractor D	BC-1	
05.	Contractor E	GC-1	
06.	Contractor F	BC-1	
07.	Contractor G	BC-1	
08.	Contractor H (Foreign company)	Not stated	

3. Technical Evaluation Criteria's

S. No	Evaluation Criterion	Sub-criterion	Rating	Remark
01.	Bid document completeness	Signing & Sealing	R / NR	
		Bid security - Type - Amount - Address	R/NR	
	Qualification information			
02.	Annual volume of construction over the past five years	Annual volume of construction work over the past five years (required amount at least <u>275,000,000.00</u>)	R/NR	- Audited report (internal / external not specified) - Income from affiliated companies'

Bid Evaluation Process on Non-Residential Public Building Projects in Addis Ababa

				exclusion not shown.
03	General experience in the industry.	Firm experience in the construction industry (minimum two years)	R/NR	
04	Experience in similar nature of work over the past ten years.	Minimum required value 275,000,000.00	R/NR	- Employer supporting evidence. - Evidence checking against project duration not confirmed.
Remark:- One bidder(Contractor E) has failed the requirement on SBD section 3.4.2 (02. Annual volume of construction works over the past ten years at least 275,000,000.00 birr)				

Financial Evaluation

S. No	Bidders	Financial offer after arithmetic check	Rebate	Bid bond	Arithmetic check	Remark
01	Contractor A	296,915,953.90		500,000.00	All bidders document have no significant arithmetic error.	
02	Contractor B	355,895,633.60		"		
03	Contractor C	217,068,248.05		"		
04	Contractor D	314,428,561.00		"		
05	Contractor F	368,213,428.16	5%	"		
06	Contractor G	576,729,370.66		"		
Remark:- Contractor H has been objected from further evaluation due to not submitting the requested two copies of document. <ul style="list-style-type: none"> - The Least offer is given by Contractor C = 217,068,248.05 - Engineering estimate = 275,000.000.00 - Average offer is = 268,624,888.46 - The project is awarded to – Contractor C (on least offer bases) 						

Project -2

1. Project Information

Client	Addis Ababa University
Project	School of Journalism and Communication Building.
Bid Opening Date	Tir 25/2009
Contractors Category	GC-1 or BC-1
Project Value	
Project period	

2. Attended Contractors' / Bidders

S. No	Company attended	Category	Remark
01.	Contractor A	GC-1	
02.	Contractor B	GC-1	
03.	Contractor C	GC-1	
04.	Contractor D	BC-1	
05.	Contractor E	GC-1	
06.	Contractor F	GC-1	

3. Technical Evaluation Criteria's

S. No	Evaluation Criterion	Sub-criterion	Rating	Remark
01.	Bid document completeness	Signing & Sealing	R / NR	
		Bid security - Type - Amount (500,000.00) - Address	R/NR	
	Qualification information			
02.	Annual volume of construction over the past five years	- Annual volume of construction work over the past five years minimum required amount - 311,000,000.00 for local contractor & 622,000,000.00 for international contractors.	R/NR	- Audited report (internal / external not specified) - Income from sister companies or from other source exclusion not shown.

Bid Evaluation Process on Non-Residential Public Building Projects in Addis Ababa

03	General experience in the industry.	- Firm experience in the construction industry (minimum two years)	R/NR	
04	Experience in similar nature of work over the past ten years.	- Minimum required value 778,000,000.00 from one project and 389,000,000.00 from two projects both for local contractors - Minimum required value 778,000,000.00 from one project for international contractors.	R/NR	- Employer supporting evidence. - Evidence checking against project duration not confirmed.
05	Restriction on past or current performance from Addis Ababa University	- Shall be responsive for unjustified delay not greater than 40%.	R/NR	- Consultant /client supporting letter, one Bidder has become Non responsive.
<p>Remark:- As we can see from the above data annual volume of construction (minimum required) is lesser than the minimum required on experience on similar nature of work.</p> <ul style="list-style-type: none"> - R = Responsive - NR= Non-responsive 				

Financial Evaluation

S. No	Bidders	Financial offer after arithmetic check	Rebate	Bid bond	Arithmetic check	Remark
01	Contractor E	1,339,078,574.50		500,000.00	On three bidders each, more than 10,000,000.00 birr arithmetic error difference has found.	
02	Contractor F	994,682,426.12		"		
03	Contractor A	952,031,225.08		"		
04	Contractor C	813,827,805.95		"		
05	Contractor D	893,044,323.15		"		
<p>Remark:- Contractor B has been objected from further evaluation due to failed the technical evaluation.</p> <ul style="list-style-type: none"> - The Least offer is given by <u>Contractor C</u> = 813,827,805.95 - Engineering estimate = 778,274,724.41 - Average offer is = 998,532,870.80 - The project is awarded to – Contractor C (on least offer bases) 						

Project -3

1. Project Information

Client	FDRE Ministry of Health, Public Health Infrastructure
Project	St. Peter Hospital Work shop, Guard House and Comp. Fence constr.
Bid Opening Date	August/2013
Contractors Category	BC/GC-4

2. Attended Contractors' / Bidders

S. No	Company attended	Category	Remark
01.	Contractor A	BC	
02.	Contractor B	BC	
03.	Contractor C	BC	
04.	Contractor D	BC	
05.	Contractor E	GC	
06.	Contractor F	BC	
07.	Contractor G	BC	
08.	Contractor H	BC	

3. Technical Evaluation Criteria's

S. No	Evaluation Criterion	Sub-criterion	Rating	Remark
01.	General experience in the industry.	- Firm experience in the construction industry at least two projects of similar nature and having project cost not less than 6 million birr. - Building with one or more story.	40%	In PPA procurement manual general experience referred as only to firm experience in the construction industry for two years as a contractor.
02	Methodology and work schedule	- Work method statement. - Work schedule. - Site Visit & Site organization - Safety & environment	10%	Required objectives to be defined on the statement and schedule evaluation not stated, hence evaluation will be subjectively.
03	Equipment & machinery required	- Concrete mixer 360lts capacity – 1pc - Pick up 6qtls capacity – 1pc - Poker vibrator – 2pcs	10%	

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04	Manpower required	- Site Engineer having six years' experience on building structures of similar projects.	10%	- Signed CV's and testimony of the candidate.
05	Financial Capacity of the bidder	- Company profitability of for the last three years- (3%) - Availability of working capital (Unconditional loan facility) -(4%) - Annual turnover (audit report for average turnover not less than 9 million birr) – (18%)	25%	-
06	Bid document completeness	- Signing & Sealing - Compiled orderly	5%	
<p>Remark: - Only Four contractors have passed the technical evaluation and from those one contractor has failed</p> <ul style="list-style-type: none"> - Contractor G – 91.26% - Contractor H – 79.50% - Contractor C – 77.39% - Contractor D – 71.38% 				

Financial Evaluation

S. No	Bidders	Financial offer after arithmetic check	Rebate	Bid bond	Arithmetic check	Remark
01	Contractor C	7,759,481.86	6%	30,000.00		
02	Contractor G	12,364,081.86		"		
03	Contractor D	11,048,737.36		"		
<p>Remark:- Contractor H has been objected from further evaluation due to failed Financial document number of copy.</p> <ul style="list-style-type: none"> - The Least offer is given by <u>Contractor C</u> = 7,759,481.86 - Average offer is = 10,390,767.03 - The project is awarded to – Contractor C (on least offer bases) 						

Project -4

1. Project Information

Client	FDRE Ministry of Health, Public Health Infrastructure
Project	St. Peter Hospital G+6 Apartment building
Bid Opening Date	April/2013
Contractors Category	BC/GC-1

2. Attended Contractors' / Bidders

S. No	Company attended	Category	Remark
01.	Contractor A	BC	
02.	Contractor B	GC	
03.	Contractor C	GC	
04.	Contractor D	BC	
05.	Contractor E	BC	
06.	Contractor F	BC	

3. Technical Evaluation Criteria's

S. No	Evaluation Criterion	Sub-criterion	Rating	Remark
01.	General experience in the industry. a. Past experience ...20% b. Works at hand10%	- Firm experience in the construction industry at least two projects of similar nature and complexity with six or more stories having or equivalent to 30 million birr. - List of projects completed 70% and more	30%	-For projects having 26 – 30 million will get 75% point. -For projects having 20 – 25 million will get 50% point. -Below 20million
02	Methodology and work schedule	- Work method statement. - Work schedule. - Site Visit & Site organization - Safety & environment	15%	
03	Manpower required	- Project manager2.5%	10%	- Signed CV's and testimony of the

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		<ul style="list-style-type: none"> - Project engineer2.5% - Quantity surveyor.....2% - Chief surveyor1.5% - Forman.....1.5% 		candidate.
04	Equipment & machinery required	<ul style="list-style-type: none"> - Formwork – 2000m² - Steel scaffolding – 3000m² - Dump truck – 5 (10m³ capacity each) - Excavator with jack hammer(0.25m³) - Loader 1.2m³ and above.....1pc - Roller with 5tone and above....1pc - Concrete mixer 750lts capacity – 3pc - Pick up 6qtls capacity – 2pc - Poker vibrator – 3pcs - Carrier truck 70qtls and above.....1pc - Mobile crane 20tone and above....1pc - Generator 30KVA.....1pc 	15%	<ul style="list-style-type: none"> - Specified equipment & machinery less than five years full point. - 75% for equipment 5 -10 years old - 50% for equipment 10 -15years old - Above 15 years old n point will be given. • There is no point will be given for any rented or leased equipment and Machineries
05	Financial Capacity of the bidder	<ul style="list-style-type: none"> - Company profitability of for the last three years- (3%) - Availability of working capital (Unconditional loan facility) - (5%) - Annual turnover (audit report for average turnover not less than 40 million birr) – (17%) 	25%	<ul style="list-style-type: none"> - Annual turnover not factored. - Evidence checking against project duration not confirmed.
06	Bid document completeness	<ul style="list-style-type: none"> - Signing & Sealing - Compiled orderly 	5%	
<p>Remark: - Only three contractors have passed the technical evaluation, the rest failed due to submission of original audit report.</p> <ul style="list-style-type: none"> - Contractor A – 74.70% - Contractor B – 90.28% - Contractor C – 70.25% 				

FINANCIAL EVALUATION

S. No	Bidders	Financial offer after arithmetic check	Rebate	Bid bond	Arithmetic check	Remark
01	Contractor A	27,686,687.88				Responsive
02	Contractor B	35,111,928.38				Responsive
03	Contractor C	40,803,281.70				Responsive
Remark:- - The Least offer is given by <u>Contractor A</u> = 27,686,687.88 - Average offer is = 34,533,966 - The project is awarded to – Contractor A (on least offer bases)						

Table4. 2 Financial offer price consistency evaluations

Front and Back loading comparison of the least offer versus engineering estimate

Description	Work Item	Engineering Estimate			Contractor A's offer		
		Amount	Item %	Cum. %	Amount	Item %	Cum. %
Substructure	Excavation & earth work	910,894.55	3.21	3.21	695,475.15	2.51	2.51
	Concrete work	2,118,190.07	7.47	10.68	2,021,930.15	7.30	9.81
	Masonry work	521,900.00	1.84	12.52	551,540.00	1.99	11.81
Superstructure	Concrete work	7,663,932.79	27.02	39.54	7,717,649.29	27.87	39.68
	Block work	1,318,503.68	4.65	44.19	1,201,044.20	4.34	44.02
	Roofing work	784,735.29	2.77	46.96	674,610.03	2.44	46.46
	Carpentry & joinery	886,920.00	3.13	50.08	1,058,125.00	3.82	50.28
	Metal work	1,667,040.00	5.88	55.96	2,123,122.00	7.67	57.95
	Finishing work	7,158,605.20	25.24	81.20	6,031,406.65	21.78	79.73
	Painting	826,155.02	2.91	84.11	815,412.40	2.95	82.68
	Sanitary installation	3,505,702.00	12.36	96.47	3,003,825.00	10.85	93.53
	Electrical installation	1,000,524.40	3.53	100.00	1,792,548.00	6.47	100.00
		Total	28,363,103.00			27,686,687.87	

Figure.4. 1 Graphical presentation of where front or back loading appears

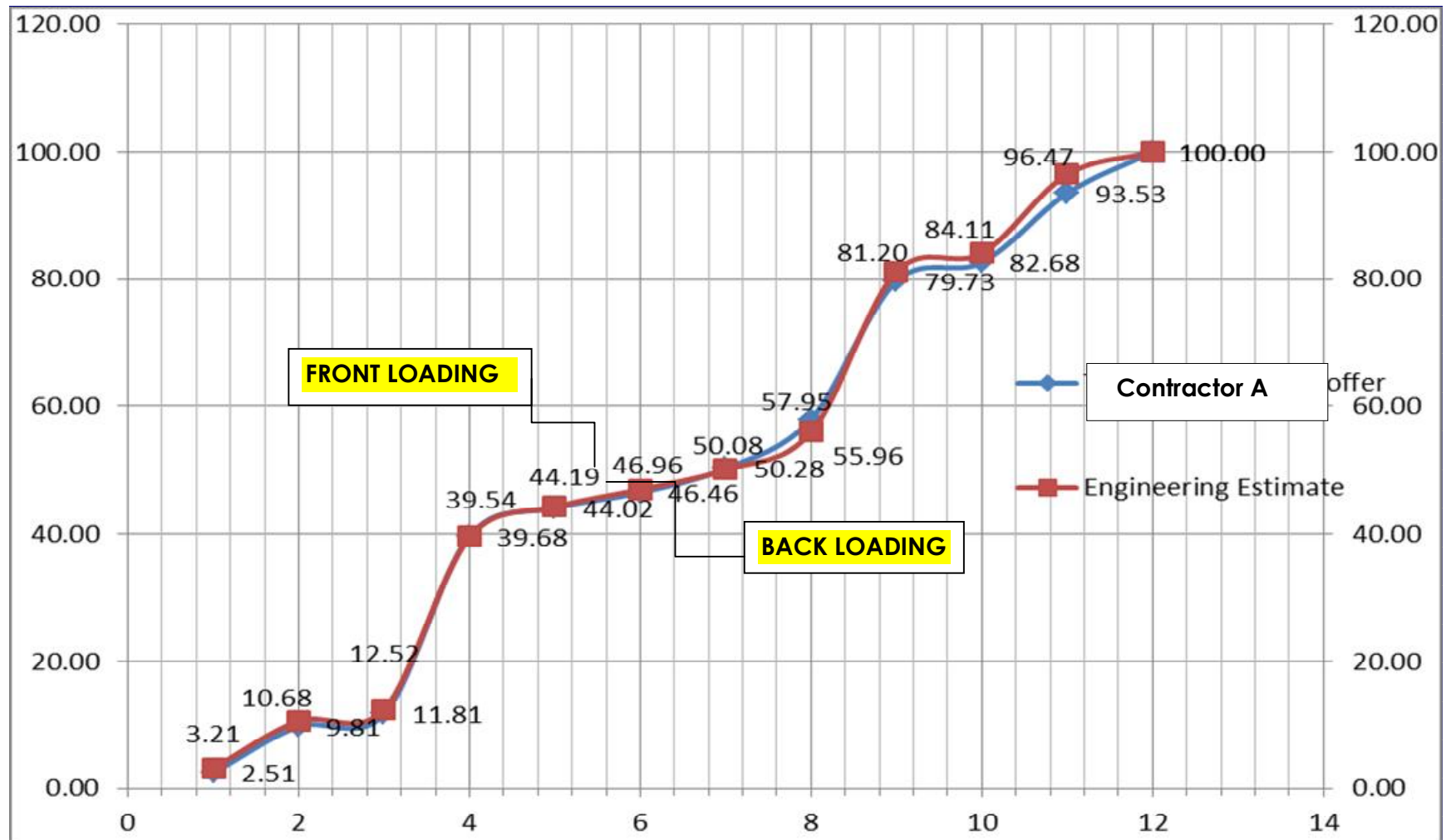


Table 4.2 and Figure 4.1 demonstrate, checking sample financial offer for front and back loading evaluation against the engineering estimate. Main items are distributed horizontally and their corresponding amount distribute vertically, So that the selected bidders' offer plotted against the engineering estimate. On this particular case the given bidder unit prices are evenly distributed or consistent, which means unit items are promising to sustain their cost until the project is completed.

If a bidder offer is front loaded, the contractor will get the project over all return in the earlier stage of the work. Therefore the project will be vulnerable to delay and termination on the later works. On the other hand if ones offer is back loaded, then the project may face financial suffer at earlier stage and the work may not roll by its own finance.

4.1. Summary of desk study findings

From projects reviewed FDRE Ministry of Education (in the case study Addis Ababa University) and FDRE Ministry of Health, the following findings are listed in the technical and financial evaluation of the construction projects tender process.

4.1.1. In FDRE Ministry of Education (in the case of Addis Ababa University)

In Addis Ababa University projects, only four criterions in the technical evaluations were set on must meet ground. Experience on similar nature of work in the last ten years was set by project amount which is near to engineering estimate of the tender under evaluation but the required amount for this criterion was not factored to consider inflation rate and currency exchange rate to adjust the specific executed time to the current value.

Since project costs would naturally vary from place to place and the effects of inflation would mean that projects tendered some time ago would have different cost financial evaluation offer checked against arithmetic error and rate consistency (front or back loading). Profiles to those that have been tendered more recently, the tenders under evaluation shall be rebased to a tender price index of inflation and further adjusted to a common location index. So that indexing is necessary in order to consider time and location variance for different projects under evaluation.

In the financial capabilities criteria, annual construction turnover requirement did not excluded revenue from affiliated companies, like income from machinery rent, quarry and sales in plant production. As well as in the financial capabilities criteria, company profitability on the tender under evaluation not checked for **ratio analysis**, which helps to see how healthy the financial aspect of the company. In addition the financial offer is evaluated only to arithmetic error checking, whereas checking rate for major items and consistency of unit price on the offer (front or back loading) not checked.

Moreover, technical capability criterions like requirements on equipment required, manpower deploy, work schedule and methodology propose not included.

4.1.2. In FDRE Ministry of Health (in the case of St. Paul and St. Peter hospitals)

The bid evaluation process in the ministry of health projects showed that evaluation criterions were set on point weighted rate bases. But ratings were subjective, for example on the technical capability requirements, weight given for equipment required were allotted different for equipment proposed on owned and lease bases. Whereas the contractor can lease for equipment requested more than the minimum required for construction licence registration by MoUDC.

Furthermore, in the financial capabilities evaluation annual construction turn over required did not excluded revenue from affiliated companies, like Income from machinery rent, quarry and plant production sells. In addition, detail evaluation points on equipment condition not stated. Besides, evaluation content as well as point given for schedule and work methodology not shown clearly. Therefore this practice will lead to subjective or illogical bid evaluation result.

In general, the tendering process in Ministry of Health projects has better bid evaluation process than the Addis Ababa University in view of evaluation criterion setting, also have better financial document evaluation mechanism.

However, the gaps found on both projects are, health and safety criterions are not include technical requirements, exercise or practise on post-qualification checking to the winning bidder in all projects not found in the assessment. As well as on huge and complex project tender evaluation, contractor's in house design staff not requested.

5. DATA COLLECTION AND ANALYSIS

5.1. General

In this section of the research, data collected in the form of questionnaires. As project desk study conducted on previous chapter, it will help us to see the appropriateness of bid evaluation criteria's as well as the strict use of the assigned evaluation criteria's during bid evaluation process. Therefore to comprehend trends of the bid evaluation process as well as to get additional information on the current factors that highly affect the bid evaluation process, a pilot survey in the form of an interview was conducted with concerned public procurement agency directorate and number of construction management professionals (who have sufficient experience and involved on a number of public building bid evaluation processes).

Hence factors are identified and questionnaires are developed to rate factors for degree of impact and frequency of occurrence on bid evaluation process. From the interview, factors are identified and they fall into five major categories:-

- I. Client-related factors
- II. Consultant-related factors
- III. Contractor-related factors
- IV. Public procurement Policy-related factors
- V. Ethics-related factors

Table 5.1 Identified process factors influencing the current public bid evaluation

I. Client-related factors

- Preparation of procurement plan & project packaging
- Appropriateness of scope definition
- Understand the influence of contractor selection on project success.
- Involvements of technical personnel in the evaluation team
- Training and seminars on the enhancement of public procurement process.
- Time allotted to bid evaluation process

<p>II. Consultant-related factors</p> <ul style="list-style-type: none"> • Completeness of bid and design document • Capability to lead or guide the procurement process • Attention given to the selection of appropriate contractor • Timely submission of design and tender document
<p>III. Contractor-related factors</p> <ul style="list-style-type: none"> • Understand project scope and submit responsive offer • Confidentiality of submitted document • Submission of consistent price quotation (unit rates) • Continuous improvement on reasonable & comprehensive tender document preparation
<p>IV. Procurement policy and regulatory body-related factors</p> <ul style="list-style-type: none"> • Availability of technical evaluation criterion on procurement manual • Availability of minimum threshold on financial offer for further evaluation. • Only encourage open tender procurement tender.
<p>V. Ethics-related factors</p> <ul style="list-style-type: none"> • Favouritism in providing influential information, (bidder get criterion information before the bid float, so that he will get sufficient time to fulfil the criterion at the time of bid submission.) • Conflict of interests on tendering • Collusive practice of participant

Table 5. 2 Questionnaires distributed to each party and returned back

Respondent	Distributed	Returned	Non-responding	Responding
Client side	17	14	3	11
Consultant side	20	16	1	15
Contractor side	27	19	4	15
Aggregate	64	49	8	41

Statistically, 76.56% of the questionnaire returned of which 64.06% of the data is responsive to analyze further evaluation, whereas the remaining 12.50% are non-responding data and omitted from further analysis. Thus the responsive data portion from the returned is acceptable to analyze the data and summarize the result.

5.2. Method of Data Analysis

Relative Weight Analysis is a useful technique to calculate the relative importance of predictors (independent variables) when independent variables are correlated to each other. It is an alternative to multiple regression technique and it addresses the multi-collinear problem and also helps to calculate the importance rank of variables. It helps to answer “Which variable is the most important and rank variables based on their contribution to R-Square.

The Relative Index (RI) is a statistical method which is used to determine the ranking of different determinant factors. As the survey was designed to investigate the relative importance of various determinant factors, the method was adopted in this study within various groups, the RII of Likert five –point scale, ranging from 1 (None) to 5 (very high) was adopted and transformed the relative importance indices’ for each process factors as follows;

$$RII = \frac{\sum W}{A*N} = \frac{1*n_1+2*n_2+3*n_3+4*n_4+5*n_5}{5*N} \quad [Eq. 5.3]$$

Where W is weighting given to each factor by respondents ranging from 1 to 5. (n_1 = number of respondents for none, n_2 = number of respondents for neutral, n_3 = number of respondents for moderate, n_4 = number of respondents for high, n_5 = number of respondent for very high). “ A” is the highest weight (that is 5 in this case), and N is the total number of respondents. The RII value had a range between $0 < RII \leq 1$. The highest value of RII, the more influential process factor and it is the major problem in the process.

The process determinant factors were grouped into five categories. These groups were client related factors, consultant related factors, contractor related factors, public procurement policy related factors and ethics related factors. Analysing the process factors based on their category is essential to take an action on it. Ranking of the factors under the above categories were shown below turn by turn. The factors under each category were ranked by their relative weight index and discussions on each group of factors were made afterward.

5.2.1. Clients (Public procurement units) related factors – clients have a major role in the preparation, implementation, and process management until contractor selection concluded. Under this group of client-related factors including preparation of appropriate procurement plan and project packaging, appropriate scope definition,

understanding the influence of contractor selection on project success, assigning a sufficient number of technical personnel in bid evaluation team, allotting sufficient time to bid evaluation are listed factors obtained from interview and questionnaires.

Table 5.3 shows client side response to section II parts of the questionnaire confirms that client side factors are known by the respondents, all the respondents' responds that, bid evaluation process directly affect project performance and determine the procurement success. Seventy seven percent responds as, annual procurement plan is prepare only for fiscal year budget approval and did not incorporate elements of the procurement plan. Eighty five percent responds that on most public building bid evaluation teams have less technical capabilities. Eighty one percent responds that the time given for bid evaluation is sufficient but focused task execution and timely completion of the evaluation process is a major problem on many procurement units.

Furthermore, twelve percent of the respondent says the consultant involves on the bid evaluation process and he or she will lead the process. There is no reference to evaluate time for bid evaluation process is shot or not. Even though there is a record of the bid evaluation process, there is no experience of reviewing and taking remedial measures on the gaps and problems seen previously, not to redone on the upcoming tender evaluation. Only eighteen percent of the respondent answered as there is a short term training and seminar on the effective procurement process given for the procurement department staffs or engineering division personnel at every three or two years interval. Whereas most public procurement units did not have such capacity building practices for their procurement division.

All most all (ninety two percent of the respondent) replied that, they fix the project duration what is provided by the consultant or they fix by referring the project period took by other similar project and they don't apply any scientific breakdown to assume the project period, even for the one which is provided by the consultants. On the other hand two particular respondent replied, they fix the project period, adjusting to meet to the budget disbursement with the approved fiscal year budget.(for example if the budget is approved by MoFED is for two years disbursement then, the project period will be fix as two years).

Table 5. 3 Client side responses on section III part of the questionnaire

S.No	Factors	Degree of impact					Frequency of occurrence					Degree of impact			Frequency of occurrence		
		5	4	3	2	1	5	4	3	2	1	Mean	RII	Rank	Mean	RII	Rank
01	Incomplete procurement plan.	7	3	1			2	6	2	1		4.545	0.909	4	3.818	0.764	8
02	Inappropriate project packaging.	2	6	3			2	5	3	1		3.909	0.782	10	3.727	0.745	9
03	Inappropriate project scope definition.	8	3				3	6	1	1		4.727	0.945	3	3.818	0.800	6
04	Under estimating the influence of contractor selection to meet project objective.	7	2	2			6	3	2			4.455	0.891	6	4.364	0.873	3
05	Less assignment of technically capable personnel in the bid evaluation team.	2	5	4			2	6	3			3.818	0.764	11	3.909	0.782	7
06	Less or insufficient time allotting to bid evaluation.	9	2							10	1	4.818	0.964	2	0.000	0.382	12
07	Setting subjective criterions	7	3	1			5	3	3			4.545	0.909	4	4.182	0.836	5
08	Selecting lowest bidder from least responsive offers by avoiding technical score form further evaluation process.	6	3	2			4	6	1			4.364	0.873	8	4.273	0.855	4
09	Less practice of procurement training and seminars	2	7	2			10	1				4.000	0.800	12	4.909	0.982	1
10	Favouritism in providing influential information	10	1				8	3				4.909	0.982	1	4.727	0.945	2
11	Conflict of interests on tendering		5	4	2			3	5	2	1	3.273	0.655	17	2.818	0.582	11
12	Collusive practice of participant	5	4	2				7	4			4.273	0.855	11	3.636	0.727	10

Table5. 4 The three most frequently occurring and having higher degree of impact on the public bid evaluation rated by client side respondents are

S. No	Identified factors	Degree of impact		Frequency of occurrence	
		RII	Rank	RII	Rank
01	Favouritism in providing influential information	0.982	1	0.945	2
02	Inappropriate project scope definition	0.945	3	0.800	6
03	Setting subjective criterion on bid document	0.909	4	0.836	5

5.2.2. Consultant-related factors – consultants have significant role in the preparation, implementation, and process management until contractor selection concluded in public building construction bid. Under this group of consultant-related factors including preparation of appropriate procurement plan and project packaging, appropriate scope definition, understanding the influence of contractor selection on

project success, completeness of bid and design document, capability to lead or guide the procurement process, timely submission of design and tender document, allotting sufficient time to bid evaluation process are listed factors obtained from interview and questionnaires.

Table 5.5 shows consultant side response on section II parts of the questionnaire confirms that consultant side factors are known by the respondents, seventy four percent of the respondent replied that, the company they work for participate in public building project design & supervision tender. Most of the time the consultant engaged to the work after the client secured both the design & construction budget. Therefore there is no chance to modify the client procurement plan immediately. Eighty seven percent replied as, scope definition on the client procurement plan needs modification or adjustment, because in many project execution the initial and final project scope after realization is too different, Therefore scope definition needs more modification. As well as the procurement method they follow is always competitive open bidding on the bases of least bidding.

All respondent responds as 'open bidding with two envelopes.' All respondent agree with 'neglecting technical evaluation after first screening and selecting the least responsive bidder will definitely affect the bid evaluation result. Fifty three percent of the respondent replied that most subjective criterions are set on the technical qualification criterion of a bid document, only twenty seven percent replied as it is on the financial qualification criterion, whereas the rest twenty percent responded as it is on the managerial qualification criterion. Where seventy four percent replied as, the only way to refrain from awarding a contract to a bidder with unreasonably low offer is to cancel the tender, whereas the remaining twenty seven percent replied as they will let to award the contract to the bidder.

Table 5. 5 Consultant side responses on section III part of the questionnaire

S.No	Factors	Degree of impact					Frequency of occurrence					Degree of impact			Frequency of occurrence		
		5	4	3	2	1	5	4	3	2	1	Mean	RII	Rank	Mean	RII	Rank
01	Incomplete procurement plan.	6	7	2			9	3	3	1		5.818	0.853	6	6.182	0.850	1
02	Inappropriate project packaging.	11	4				6	5	3	1		6.455	0.947	3	5.545	0.813	4
03	Inappropriate project scope definition.	13	2				3	11	1			6.636	0.973	1	5.636	0.827	3
04	Under estimating the influence of contractor selection to meet project objective.	5	6	3	1		4	7	2	2		5.455	0.800	7	5.091	0.773	7
05	Less assignment of technically capable personnel in the bid evaluation team.	9	6					12	3			6.273	0.920	4	5.182	0.760	8
06	Less or insufficient time allotting to bid evaluation.		5	7	3				11	4		4.273	0.627	11	3.545	0.547	12
07	Setting subjective criterions	8	5	2			7	4	2	2		6.000	0.880	5	5.182	0.813	4
08	Selecting lowest bidder from least responsive offers by avoiding technical score form further evaluation process.	12	3				8	2	5			6.545	0.960	2	5.727	0.840	2
09	Less practice of procurement training and seminars	6	4	2	3		4	7	4			5.273	0.773	9	6.000	0.800	6
10	Favouritism in providing influential information		7	5	2			6	7	2		4.273	0.671	10	4.455	0.653	10
11	Conflict of interests on tendering		4	7	4			4	9	2		4.091	0.600	12	4.636	0.627	11
12	Collusive practice of participant	6	4	3	2		3	7	1	4		5.364	0.787	8	4.545	0.720	9

Table 5. 6 The three most frequently occurring factors with a higher degree of impact on the public bid evaluation rated by consultant side respondents are

S. No	Identified factors	Degree of impact		Frequency of occurrence	
		RII	Rank	RII	Rank
01	Inappropriate project scope definition	0.973	1	0.827	3
02	Selecting lowest bidder from least responsive offers by avoiding technical score form further evaluation process.	0.960	2	0.840	2
03	Inappropriate project packaging	0.947	3	0.813	4

5.2.3. Contractor related factors – contractors are main stakeholders in participation of bidding along the evaluation process until the project comes to realization. Under this group of contractor related factors includes understand project scope and submit responsive offer, confidentiality of submitted document,

submission of consistent price quotation for financial offer are some of the listed factors obtained from interview and questionnaires.

Table 5.7 shows contractor response on section II parts of the questionnaire confirms that contractor side factors are known by the respondents, 80 % of the respondent responds that most of the time they work hard on the financial offer.

Half of the respondent chooses subjective criterion lay on technical qualification criterion where as 32% choose financial qualification criterion and the rest choose on both technical and financial qualification criterion. 28 % respondent responds as, they choose front loading as their strategical perspective for preparation of financial offer, 72% prepare their financial offer on consistent or even unit rate pricing. 62% respondent responds as, timely completion is the most unfulfilled project objective on many projects that are secured on least bid bases, while 38% responds as timely execution and execution of each item within the cost are problems faced on projects owned on least bid bases. 53.33% of the respondent replied that most subjective criterions are set on the technical qualification criterion of a bid document, 26.67% replied as it is on the financial qualification criterion, whereas the rest 20% responded as it is on the managerial qualification criterion. 84% responds as they update material and labour cost only during bidding time, 16% choose update the price regularly from 3 to 6 months' time. Only 16% respondent desponds as they update company profile regularly. Most of the respondent replied as, on many tender document technical requirements range are similar, so once company profile is compiled it works for many project tenders.

Almost all respondent chooses, open bidding with two envelopes and two stage bidding is their preference in bid evaluation. 62% respondent responds as they are not getting project on least bid bases, the rest choose as they are getting project on such base. 84% responds as the project won on least bid bases suffer financial constraint. 72% responds as financial constraint and quality problems are the main features of projects won on least bid bases. 62% of the respondent responds as the selected document that passes prequalification evaluation will pass post-qualification evaluation, whereas the rest reply as it will not pass post qualification evaluations.

Table 5. 7 Contractor side responses on section III part of the questionnaire

S.No	Factors	Degree of impact					occurrence					Degree of impact			occurrence		
		5	4	3	2	1	5	4	3	2	1	Mean	RII	Rank	Mean	RII	Rank
01	Submission of untrue document composition		6	5	4			7	6	2		4.273	0.627	12	4.545	0.667	9
02	Not fully understand project scope.	3	7	2	3			8	4	3		5.000	0.733	9	4.545	0.667	9
03	Inappropriate project scope definition.	5	6	4			4	8	3			5.545	0.813	8	5.545	0.813	6
04	Under estimating the influence of contractor selection to meet project objective.	7	5	3			9	5	2			5.818	0.853	4	6.455	0.888	3
05	Less assignment of technically capable personnel in the bid evaluation team.	6	8	1			7	5	3			5.909	0.867	3	5.818	0.853	5
06	Less or insufficient time allotting to bid evaluation.		5	8	2			4	6	5		4.364	0.640	11	3.455	0.587	12
07	Setting subjective criterions	7	6	3			9	4	2			6.182	0.850	6	6.091	0.893	2
08	Selecting lowest bidder from least responsive offers by avoiding technical score form further evaluation process.	9	6				10	4	1			6.273	0.920	2	6.273	0.920	1
09	Less practice of procurement training and seminars	4	7	3				8	5	2		5.182	0.814	7	4.273	0.680	8
10	Favouritism in providing influential information	11	4				8	4	3			6.455	0.947	1	5.909	0.867	4
11	Conflict of interests on tendering	2	5	8				8	3	4		4.909	0.720	10	3.727	0.653	11
12	Collusive practice of participant	7	6	1	1		4	8	2	1		5.818	0.853	4	5.455	0.800	7

Table 5. 8 The three most frequently occurring factors with a higher degree of impact on the public bid evaluation rated by contractor side respondents are

S. No	Identified factors	Degree of impact		Frequency of occurrence	
		RII	Rank	RII	Rank
01	Favouritism in providing influential information.	0.947	1	0.867	4
02	Selecting lowest bidder from least responsive offers by avoiding technical score form further evaluation process.	0.920	2	0.920	1
03	Less assignment of technically capable personnel in the bid evaluation team.	0.867	3	0.853	5

From Table5.4, Table5.6 and Table5.8 the most influential process factors occurring in the public building bid evaluation process related to all stakeholders involved in the construction industry are summarized and ranked from first to tenth. Their RII value

also used to rank their weight of influence in the process. Table 5.9 has listed their rank accordingly.

Table 5. 9 The most ten factors influencing public building bid evaluation process

S. No	Identified factors	RII	Rank
01	Favouritism in providing influential information to bidders	0.982	1
02	Inappropriate project scope definition	0.973	2
03	Selecting lowest bidder from least responsive offers by avoiding technical score form further evaluation process.	0.960	3
04	Inappropriate project packaging	0.947	4
05	Setting subjective criterion on bid document	0.909	5
06	Incomplete procurement plan.	0.909	6
07	Under estimating the influence of contractor selection to meet project objective.	0.891	7
08	Less assignment of technically capable personnel in the bid evaluation team.	0.867	8
09	Collusive practice of participant	0.855	9
10	Less practice of procurement training and seminars	0.814	10

- The above findings showed that inappropriate scope definition, inappropriate project packaging as well as incomplete procurement plan are the most influential technical problems that should be done during the pre-bid preparation work but their gap influence the bid process as well as their effect extend during the project execution time. Their effect has been manifested as excessive delay, variations more than the allowable limit. On completed project, significantly shown by un-integrated service and functional requirement on operating building facilities.
- Selecting lowest bidder from least responsive offer, setting subjective criterions, under estimating the influence of contractor selection to meet project objective and less assignment of technically capable personnel in bid evaluation team are the most influential problems that are related to bid document preparation as well as capacity and attitude related problems on the bid evaluation team. These problems are observed on many public projects bid evaluation process.
- Favouritism in providing influential information to bidders, collusive practice of participants are the most influential problems that are mainly related on ethical conduct of bid participation and evaluation process.

6. CONCLUSIONS AND RECOMMENDATIONS

6.1. Conclusions

This study has been conducted to identify main and influential factors which hinder the bid evaluation process as well as affecting appropriate contractor selection in non-residential public building projects in Addis Ababa. A number of literatures had been reviewed; desk study of selected projects bid evaluation process reviewed and a questioner survey were conducted to identify bid evaluation process factors of non-residential public building projects in Addis Ababa.

1. The study shows that absence of minimum bid evaluation technical criterion and sub criterions in the procurement manual has lead the public procurement units to exercise different scope of requirements for similar projects. As well as setting subjective criterion on bid evaluation has become the fifth most influential problem on the current bid evaluation and contractor selection process non-residential public building projects.
2. Procurement plan, project packaging and project scope definitions have been given lower attention by clients and consultants during the pre-bid preparation time and these have become major technical gap on the current non-residential public building procurement process.
3. Favouritism in providing influential information to bid participant, collusive practice between participants are the most influential ethical problems. On a number of bid evaluation claim events, the regulatory body (PPAPA) investigations claim and sort out most incidents arise from unethical conduct.
4. There is no equilibrium between equipment and machinery required for contractor's license registration by ministry of construction and to that of particular project tender requirements for the given class contractor.
5. Absence of minimum financially offer threshold on the public procurement regulation, projects are awarded to abnormally low offer on least offer bases and apparently those projects are suffering financial and quality problems.

6.2. Recommendations

Many of the gaps and problems identified can be deducted by modifying and applying provisions on the public procurement regulation and drawing practical perspective on the procurement manuals. Furthermore,

1. Regulatory body shall set minimum technical criteria required for public building bid on the procurement manual which helps to avoid subjective criteria as well as to help to accustom uniform evaluation procedure.
2. Minimum financial threshold shall be set in the procurement regulation. At least not to award projects to offers lower than 60% of the engineering estimate.
3. Capacity building efforts should be applied by providing effective procurement training and seminars to stakeholder staffs especially to client and consultant side professionals (where the process mainly led by them).
4. Modern record management system in public procurement units should be applied to easily avail sufficient and appropriate information to any concerned body for previous performance records of contractors and consultants.
5. There is an increasing rate of accident and injuries in Ethiopian construction industry. But health and safety requirements have not given serious attention on bid evaluation criterion setting. To minimize the risk to hazard and injury on construction projects, health and safety criteria shall be included in tender documents.
6. Post-qualification evaluation should be done in all tender awards, as it helps to counter check the prequalification evaluation process and confirms that selection of contractor in the bid process is appropriately done.
7. To see performance of the bid evaluation process, tender evaluation audit should be done by the regulatory body, the current audit process should include appropriateness of criteria as well as procedure followed should be checked.
8. Further study should be conducted to advance the bid evaluation and contractor selection process.

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ANNEX - I

Questionnaire Survey

General Information

This research survey is designed to fulfil an academic research paper requirement for the partial fulfilment of M.Sc. degree in Construction Technology and Management at the Addis Ababa University. I can assure you that the research data will only be used for academic purposes. Particular mentioning of names will not be required anywhere. Your open and prompt response is highly grant value of the survey. For any clarification on this questionnaire, please contact the researcher on **+251 9 11 425526 (Fitsum Gebru)**

Objective of the research

- To identify factors, those highly affect the bid evaluation process of non-residential public building project.
- Evaluate trends of bid evaluation process identify the gaps.
- To identify best international practices in construction industry and recommend adaptation of the best practices.
- To recommend amendment points on the public procurement manual.

General Definitions

“Public body” means any public body, which is partly or wholly financed by Federal Government budget, higher education institutions and public institutions of like nature.

“Public Procurement” means procurement by a public body using public funds.

“Bid” means a stage in the procurement process extending from advertisement of or invitation to bid up to signing of contract.

Section I. General background

Questionnaire to respondents', which help to see experience and exposure of the respondent that makes the research data confidential or qualifying to analyse further.

1.1. Name of organization: _____

1.2. Type of organization:

Employer Contractor Consultant

Other (Please specify) _____

1.3. Your general work experience on construction industry

< 5 years 5 – 10 years > 10 years

1.4. Your work experience in relation to construction project procurement and bid evaluation process?

< 5 years 5 – 10 years > 10 years

1.5. Your Name, Title and Contact address:

Name (optional): _____

Job Title: _____

Contact address (optional): _____

E-mail: _____

Tel: _____

Section II.

Questionnaire to client side professionals, which help to ascertain whether the listed factors are recognized by client professionals.

1. Do you think bid evaluation process directly affect project performance?
 Yes No
2. Do you prepare annual procurement plan?
 Yes No
3. Does your organisation procurement plan specifies or contained the following elements?
 - 3.1. Procurement delivery system Yes No
 - 3.2. Form of contract Yes No
 - 3.3. Scope of project Yes No
4. Does project packaging section of your procurement plan incorporates
 - 4.1. Boundaries or interface with other projects Yes No
 - 4.2. Resource required Yes No
 - 4.3. Specific criteria Yes No
5. Members of bid evaluation team are capable against
 - 5.1. Technical capacity to evaluation process Yes No
 - 5.2. Having exposure to construction bid evaluation Yes No
6. If You choose No, please write the reason

7. Time given for the bid evaluation process mostly is
 Excess Sufficient Short
8. There is a practise of mitigating problems which are observed on previous bid evaluation experience? Yes No
9. Is there a trend to document previous bid evaluation process challenges for review and future reference? Yes No
10. Is there an opportunity to have training or seminars on procurement process or bid evaluation process in the organization? Yes No

11. How do you calculate or what do you assume to fix project construction period

11.1. Scientific ground (technical computation)

11.2. Provided by consultant

12. If it is provided by the consultant, by what mechanism do you check its appropriateness?

a. Scientific ground

b. Simply accept time provided by consultant

c. Other means

13. Please specify the mechanism you deploy the appropriate

Section III.

Questionnaire to client side professionals, which help to assesses degree of impact and frequency of occurrence the listed factors on bid evaluation process.

S/ No	Factors under evaluation	Degree of Impact on bid evaluation					Frequency of Occurrences					
		Very High	High	Moderate	Low	None	Very High	High	Medium	Low	None	
1	Incomplete procurement plan.											
2	Inappropriate project packaging.											
3	Inappropriate project scope definition.											
4	Under estimating the influence of contractor selection to meet project objective.											
5	Less assignment of technically capable personnel in the bid evaluation team.											
6	Less or insufficient time allotting to bid evaluation.											
7	Setting subjective criterions											
8	Selecting lowest bidder from least responsive offers by avoiding technical score form further evaluation process.											
9	Less practice of procurement training and seminars											
10	Favouritism in providing influential information											
11	Conflict of interests on tendering											
12	Collusive practice of participant											

Section II.

Questionnaire to consultant side professionals, which help to ascertain whether the listed factors are recognized by consultant professionals.

1. Do your company (the company you work for) often participate in public building design & supervision tender? Yes No
2. Do your company try to review client procurement plan for the project hired?
 Yes No
3. If your answer is yes, which area needs adaptation more?
 - 3.1. Project scope
 - 3.2. Procurement method
 - 3.3. If there is any other please specify _____

4. What types of procurement method you used in most public building construction tender?
 - 4.1. Open bidding with two envelopes and two stage bidding
 - 4.2. Open bidding with two envelopes and single stage bidding
 - 4.3. Single envelope and single stage
 - 4.4. Tender with prequalification and shortlisting
5. Neglecting technical evaluation after screening least responsive bidders may affect contractor selection? Yes No
6. On which qualification criterion of the technical evaluation subjective criterion avail most?
 - 6.1. Technical qualifications Yes No
 - 6.2. Financial qualification Yes No
 - 6.3. Management qualification Yes No
 - 6.4. Health and Safety Yes No
7. What strategical perspective you follow to screen unreasonable least offer?

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8. On which project objectives do construction companies incapable to meet when they get project on least bid bases?

8.1. Complete project on time

Yes

No

8.2. Executing the work to the required standard

Yes

No

8.3. To execute each item with in or under its price

Yes

No

9. How do you determine minimum qualification criteria in preparing public building construction tender? _____

10. What do you suggest the controversial or un-parallel setting of minimum criteria for contractor registration by Ministry of Construction verses public procurement units for tendering? _____

Section III.

Questionnaire to consultant side professionals, which help to assesses degree of impact and frequency of occurrence the listed factors on bid evaluation process.

S/ No	Factors under evaluation	Degree of Impact on contractor selection					Frequency of Occurrences				
		Very High	High	Moderate	Low	None	Very High	High	Medium	Low	None
1	Incomplete procurement plan.										
2	Incompetent project packaging										
3	In adequate project scope definition.										
4	Incomplete or incomprehensive tender document.										
5	Incapability to lead or guide bid evaluation process in the client side.										
6	Less or insufficient time allotting to bid evaluation.										
7	Adopting two envelope but single stage evaluation process.										
8	Selecting lowest bidder from least responsive offers by avoiding technical score for further evaluation process.										
9	Choosing only open bidding than other bidding methods.										
10	Favouritism in providing influential information										
11	Conflict of interests on tendering										
12	Collusive practice of participant										

Section II.

Questionnaire to contractor side professionals, which help to ascertain whether the listed factors are recognized by contractor side professionals.

1. Do your company often participate in public building construction tender?
 Yes No
2. Do you agree that all tender documents submitted by a contractor are truly confidential?
 Yes No
3. On which offer you work hard to prepare competent document?
 Financial Technical Both
4. On which qualification criterion of the technical evaluation, clients put more subjective criterion?
 - 4.1. Technical qualifications Yes No
 - 4.2. Financial qualification Yes No
 - 4.3. Management qualification Yes No
 - 4.4. Health and Safety Yes No
5. What strategical perspective you follow when you prepare the financial offer?
 - 5.1. Front loading Yes No
 - 5.2. Back loading Yes No
 - 5.3. Even or consistent rating Yes No
6. On which project objectives do your company incapable to meet most
 - 6.1. Timely completion Yes No
 - 6.2. Quality of work to the required standard Yes No
 - 6.3. To execute each item with in or under its price Yes No
7. If there is any other than the above, please specify _____

8. How often your company update material and labour market price
 Every month 3 to 6 months only on bidding time

9. There is an exercise of updating company profile and other technical document at regular interval Yes No

10. If it is not updated regularly, please write the reason not to do so

11. In which bidding system your company have better chance to win the bid participated.

11.1. Open bidding with two envelopes and two stages bidding.....

11.2. Open bidding with two envelopes and single stage bidding.....

11.3. Tender with prequalification and shortlisting.....

12. Does your company often won projects on bases of least bidder?

Yes No

13. If your answer is yes, does the project has progressed or completed by its own financial budget? Yes No

14. What factors mainly affect project progress that had been secured on least bid bases?

14.1. Financial constraint Yes No

14.2. Meeting the required quality Yes No

15. Do your technical offer submitted for bid evaluation, confidently pass post qualification evaluations? Yes No

16. If your answer is No, on which technical section you will expect to fail?

16.1. Qualification of management & key staffs of the organization

16.2. On qualifications of proposed site staffs.....

16.3. On proposed equipment & machinery to be used.....

16.4. Financial standing of the company.....

16.5. In all of the above.....

Section III.

Questionnaire to contractor side professionals, which help to assesses degree of impact and frequency of occurrence the listed factors on bid evaluation process.

S/ No	Factors under evaluation	Degree of Impact on contractor selection					Frequency of Occurrences				
		Very High	High	Moderate	Low	None	Very High	High	Medium	Low	None
1	Submission of untrue document composition										
2	Not fully understand project scope.										
3	Inappropriate project scope definition.										
4	Under estimating the influence of contractor selection to meet project objective.										
5	Less assignment of technically capable personnel in the bid evaluation team.										
6	Less or insufficient time allotting to bid evaluation.										
7	Setting subjective criterions										
8	Selecting lowest bidder from least responsive offers by avoiding technical score form further evaluation process.										
9	Less practice of procurement training and seminars										
10	Favouritism in providing influential information										
11	Conflict of interests on tendering										
12	Collusive practice of participant										

ANNEX - II

**SAMPLE BID EVALUATION DOCUMENT
ON MEAT EVALUATION METHOD**

Source: The Commercial Toolkit At:-

(<http://aof.uwh.diif.r.mil.uk> or <http://www.gov.uk/acquisition-operating-framework>)

Annex B

Evaluating 'Lowest Price'

1. This is where you accept the lowest priced tender that is technically and commercially compliant. The technical and commercial elements are a simple PASS / FAIL test. You must not use any other scoring method, and any considerations such as quality, security etc. must be part of the minimum technical requirement.
2. After you have identified the compliant tenders, the lowest priced tender is chosen. This method of evaluation is used for simple requirements typically goods and services where you have a standard technical performance, such as Commercial off the Shelf (COTS) items.

Choosing the successful tender

3. The successful tender is the least expensive tender classified as 'commercially compliant' and 'technically compliant' during the tender evaluation.
4. Table 1 demonstrates the evaluation results based on 'lowest price' where the winning tender is Tender D.

Tender	Technically Compliant	Commercially Compliant	Price	Outcome
A	Yes	Yes	£1,235,732	Unsuccessful tender, technically and commercially compliant but with higher price
B	No	Yes	£950,000	Unsuccessful tender, technically non-compliant
C	Yes	Yes	£1,356,721	Unsuccessful tender, technically and commercially compliant but with higher price
D	Yes	Yes	£1,189,621	Successful tender, lowest priced, technically and commercially compliant tender
E	Yes	No	£1,798,598	Unsuccessful tender, commercially non-compliant

5. This type of Tender Evaluation is compatible with Reverse Auction Type A.

Annex C

Most Economically Advantageous Tender (MEAT) Evaluating Technical and Price using a Percentage Score

1. This method can be used for the majority of requirements. It is the method used in examples provided by the EU Commission in the DSPCR guidance, chapter 15,
2. You must state in the tender documentation that the commercial element is a simple PASS / FAIL test with regard to whether the tender meets the minimum commercial requirements as was stated in the tender documentation.
3. The technical elements are marked against the individual award criteria and totalled. Anything below the minimum total technical mark (in this example 140) will be considered technically non-compliant, and will not be allocated a technical score. The technical score is the score given in comparison to the best compliant technical tender.
4. Where a tender is commercially non-compliant you will not allocate a technical score. During the tender evaluation as the commercial and technical evaluations are carried out at the same time bids may receive a technical mark.
5. The evaluation is out of 100 (as this represents 100% of the total score) and in this example the split is 60/40 technical / pricing. You allocate a score of 60 to the best technically compliant tender and calculate the technical scores of the other tenders using a percentage (%) difference method. You allocate a score of 40 to the lowest price and calculate a score for the price on the remaining tenders using a percentage (%) difference method. This ensures that you treat the technical and pricing scoring in the same way and produce a consistent result.

Scoring Technical

6. You must take care to ensure that the scoring method you use is fair and reasonable, proportionate and does not discriminate in favour of any tenderer.
7. The technical scores for this example are worked out using the following calculation. The calculation uses tender C's marks, from Table 2.1, as an example.

$$\begin{aligned}\text{Technical Score} &= \text{Total Available Marks} \times \frac{(\text{Tender Technical Mark Highest})}{\text{Technical Mark}} \\ &= 60 \times (153/176) \\ &= 60 \times 0.869\end{aligned}$$

$$\text{Technical Score} = 52.16 \text{ (52.2 rounded to one decimal place)}$$

Scoring Price

8. You use a similar calculation for price. Again, the following calculation uses tender C as an example:

$$\text{Pricing Score} = \text{Total Available Marks} \times \left(\frac{\text{Lowest Priced Technically and Commercially Compliant Tender}}{\text{Tender Price}} \right)$$

$$\begin{aligned} &= 40 \times (\text{£}1,189,621 / \text{£}1,356,721) \\ &= 40 \times 0.877 \\ &= 35.07 \text{ (35.1 rounded to one decimal place)} \end{aligned}$$

9. The technical and pricing scores are shown for all 5 tenders in table 2.1.

Table 2.1

Tender	Technical Mark	Technical Score	Commercial Compliance	Price	Pricing Score
A	176	60	Yes	£1,235,732	38.5
B	112	0	Yes	£950,000	Not scored, technically non-compliant
C	153	52.2	Yes	£1,356,721	35.1
D	151	51.5	Yes	£1,189,621	40
E	196	0	No	£1,798,598	Technically compliant but not allocated a score as commercially non-compliant

Running a Reverse Auction with this percentage score method

10. This percentage score method is compatible with Reverse Auction (RA) Type B. Usually a Reverse Auction is based on price, however when using this evaluation strategy the RA will be run using a scoring methodology. This works by the technical element receiving a score and the price receiving a score as shown in this Annex. During the RA the tenderer will input a price, and the auction website will automatically allocate a score. The tenderers will see the lowest price, the resultant total scores and their ranking.

11. The split between technical and price will be taken into account when the calculations are worked out for the RA.

Choosing the successful tender

12. The technical and pricing scores are added together to give a total score that takes account of all award criteria. The successful tender is the one with the highest total score classified as 'commercially compliant' within the stated budget. In this example, the score for Tender A is $60 + 38.5 = 98.5$, which makes it the winning tender when all other scores are calculated.

13. Table 2.2 demonstrates the evaluation results using the percentage score method for the 'MEAT - combined technical and price' evaluation.

Table 2.2

Tender	Technical Score	Price	Pricing Score	Total Score	Outcome
A	60	£1,235,732	38.5	98.5	Successful tender, technically and commercially compliant, highest total score
B	0	£950,000	0	0	Unsuccessful tender, technically non-compliant so cannot be awarded the contract
C	52.2	£1,356,721	35.1	87.3	Unsuccessful tender, technically and commercially compliant, lower total score
D	51.5	£1,189,621	40	91.5	Unsuccessful tender, technically and commercially compliant, lower total score
E	0	£1,798,598	0	0	Unsuccessful tender, commercially non-compliant so cannot be awarded the contract

14. If you have two tenders that have the same score, where you stated how this would be dealt with in the tender documentation (See Tender preparation and Management CPS), then you must follow that process. Where you did not state in the evaluation criteria how you will deal with this situation, you must ask all compliant tenderers for a Best and Final Offer (BAFO) in accordance with the Tender Evaluation CPS.

Annex D

Most Economically Advantageous Tender (MEAT) Evaluating Technical, Commercial and Price using a Percentage Score

1. You must state in the tender documentation that the commercial element is split into two parts, the mandatory element as a PASS / FAIL test (i.e. it has met the minimum commercial requirements stated in the tender documentation) and the non-mandatory element receives a score in the same way as the pricing and technical elements scoring.
2. The technical elements are marked against the individual award criteria and totalled. Anything below the minimum total technical mark (in this example 140) will be considered technically non-compliant, and will not be allocated a technical score. The technical score is the score given in comparison to the best compliant technical tender.
3. Where a tender is commercially non-compliant you will not allocate a technical score. During the tender evaluation as the commercial and technical evaluations are carried out at the same time bids may receive a technical mark.
4. The evaluation is out of 100 and in this example the split is 50 / 30 / 20 technical / commercial / pricing. The technical elements are marked against the individual award criteria and totalled. Anything below the minimum total technical mark (in this example 140) will be considered technically non-compliant.
5. You must take care to ensure that the scoring method you use is fair and reasonable, proportionate and does not discriminate in favour of any tenderer. Scores for price should be directly proportional to percentage price difference.
6. For a 50 / 30 / 20 split, a score of 50 is allocated to the best technically compliant tender and the technical scores for the other tenders are calculated using a percentage (%) difference method. A score of 30 is allocated to the best commercial score and the commercial score for the other tenders is calculated using a percentage (%) difference method. The lowest priced tender is allocated a score of 20 and the pricing score for the remaining tenders is scored using a percentage (%) difference method. This method ensures that you treat the technical, commercial and pricing scoring in the same way and produce a consistent result.

Scoring Technical

7. The technical scores for this example are worked out using the following formula. The formula uses tender C as an example.

$$\begin{aligned}\text{Technical Score} &= \text{Total Available Marks} \times \frac{(\text{Tender Technical Mark})}{\text{Highest Technical Mark}} \\ &= 50 \times (153/176)\end{aligned}$$

$$\begin{aligned}\text{Technical Score} &= 50 \times 0.869 \\ &= 43.47\end{aligned}$$

Scoring Commercial

8. The same calculation is used for the commercial element, again using tender C as an example.

$$\begin{aligned}\text{Commercial Score} &= \text{Total Available Marks} \times \frac{(\text{Tender Commercial Mark})}{\text{Highest Commercial Mark}} \\ &= 30 \times (149/168)\end{aligned}$$

$$\text{Commercial Score} = 30 \times 0.887$$

$$= 26.61$$

Scoring Price

9. Using tender C as an example, the pricing score is worked out using the following calculation.

$$\text{Price Score} = \text{Total Available Marks} \times \frac{(\text{Lowest priced Technically \& Commercially Compliant Tender})}{\text{Tender price}}$$

$$= 20 \times (\pounds 1,189,621 / \pounds 1,356,721)$$

$$= 20 \times 0.877$$

$$= 17.54 \text{ (17.5 rounded to one decimal place)}$$

10. Table 3.1 demonstrate the results for all 5 tenders.

Tender	Technical		Commercial		Price	Pricing Score
	Mark	Score	Mark	Score		
A	176	50	168	30	£1,235,732	19.3
B	112	0	90	0	£950,000	Not scored, technically non-compliant
C	153	43.5	149	26.6	£1,356,721	17.5
D	151	42.9	167	29.8	£1,189,621	20
E	196	0	0	0	£1,798,598	Technically compliant but not allocated a score as commercially non-compliant

Running a Reverse Auction with this percentage score method

10. This percentage score method is compatible with Reverse Auction (RA) Type B. Usually a Reverse Auction is based on price, however when using this evaluation strategy the RA will be run using a scoring methodology. This works by the technical element receiving a score and the price receiving a score as shown in this Annex. During the RA the tenderer will input a price, and the auction website will automatically allocate a score. The tenderers will see the lowest price, the resultant total scores and their ranking.

11. The split between technical and price will be taken into account when the calculations are worked out for the RA. Due to the price being a significantly smaller factor, RAs would only be applicable for tenders valued at £250k or above.

Choosing the successful tender

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12. The technical, commercial and financial scores are added together to give a total score that takes account of all award criteria and the successful tender is the highest scoring tender classified as technically and commercially compliant within the stated budget. Here, the score of Tender A is $50 + 30 + 19.3 = 99.3$, which makes it the winning tender.

13. Table 3.2 demonstrates the evaluation results using the percentage score method for the 'MEAT - combined technical, commercial and price' evaluation.

Table 3.2

Tender	Technical Score	Commercial Score	Price	Pricing Score	Total Score	Outcome
A	50	30	£1,235,732	19.3	99.3	Successful tender, technically and commercially compliant, highest total score
B	0	0	£950,000	0	0	Unsuccessful tender, technically non-compliant so cannot be awarded the contract
C	43.5	26.6	£1,356,721	17.5	87.6	Unsuccessful tender, technically and commercially compliant, lower total score
D	42.9	29.8	£1,189,621	20	92.7	Unsuccessful tender, technically and commercially compliant, lower total score
E	0	0	£1,798,598	0	0	Unsuccessful tender, commercially non-compliant so cannot be awarded the contract

14. If you have two tenders that have the same score where you stated how this would be dealt with in the tender documentation, (See [Tender preparation and Management CPS](#)), then you must follow that process. Where you did not state in the evaluation criteria how you will deal with this situation, you must ask all tenderers for a Best and Final Offer (BAFO) in accordance with the Tender Evaluation CPS.

Annex E

Evaluating MEAT – Lowest Total Value Tender

1. This method of evaluation converts the weaknesses in the technical score into a cost to the MOD. Therefore you must state in the tender documentation that the evaluation will include the costs that MOD will incur for managing the processes to supporting each proposal. This is used where MOD is expecting different solutions, therefore making it difficult to mark the tenders in the traditional manners.
2. When using a Reverse Auction with this method, the Reverse Auction will convert the strengths of the technical scores into a discount, either in a percentage or costed reduction. This reflects the overall value of each bid, and rewards additional technical merit.
3. You must state in the tender documentation the minimum technical requirements and how the technical requirements will be scored. This evaluation is unusual in the fact that you add the costs the MOD will incur for managing the process to the tender price to give a total cost to the MOD.
4. To work out the internal costs to the MOD, the acquisition team need to review the performance, time and cost parameters of the project. How this affects the evaluation is as follows:
 - a. Performance – Tenderer A may offer higher skilled staff to complete the task, this will cost more, however a higher skill set should reduce the time it takes to complete the task and reduce the involvement from the MOD to ensure delivery of the requirement.
 - b. Time – If tenderer B offers additional staff at peak times to give an improved delivery date, this may mean the MOD can save money on storage or start using the building / equipment sooner and so reducing maintenance costs.
 - c. Cost – This is the cost of the tender and the cost of the performance and time parameters. This will give a total cost to the MOD and the cheapest value tender is considered acceptable.
5. Using this evaluation method the technical evaluation must identify any items that the MOD will have to provide instead, such as paper costs, Government Furnished Assets, management, technical support to the project etc.. Although you cannot know exactly how much a particular element may cost the MOD before you receive the tenders, the acquisition team should research and have a rough idea of costs for a particular set of skills, a piece of equipment etc. These costs should be stated in the evaluation and the following caveat applied:

“The costs in the evaluation are indicative costs only, true internal costs can only be identified after careful evaluation of the tenders”
6. You must take care to ensure that the scoring method you use is fair and reasonable, proportionate and does not unfairly discriminate in favour of any tenderer. Scores for price should be directly proportional to price difference.

Commercial Compliance test

7. You will check that the tender complies with the mandatory commercial requirements of the contract documents. You should not use a scoring method for these elements. It is a simple PASS / FAIL test for those elements specified as mandatory in the contract documents.

8. On completion, you will pass all compliant tenders to the Tender Evaluation Panel for technical evaluation. These must not have any prices in, as this may inadvertently affect the scoring.

Technical Evaluation

9. The tender must satisfy the minimum technical standards to achieve technical compliance (in this case a minimum score of 140 must be achieved). You must not change the minimum standards communicated to the tenderers in the tender documents.
10. Any technical considerations, such as quality, safety, and sustainability may be scored so long as they were stated in the original tender documentation.

Running a Reverse Auction with this total value method

11. This total value method is compatible with Reverse Auction (RA) Type B. The Reverse Auction, instead of adding a cost where the requirement is lacking, will reward those tenders with high technical scores. Each tender is given a price or percentage discount, based on the technical evaluation. This discount will then be applied to prices submitted during the RA. When the tenderer inputs a price, the computer will automatically reduce that price to take into account the discount awarded on the basis of their technical score. The resultant price is the Comparator price. The tenders see the lowest line item prices, together with the lowest adjusted Comparator price total, and their ranking for each.

Choosing the successful tender

12. You will price those elements the MOD has to provide and this cost is "added" to the total cost to the MOD to give the best value tender. This is illustrated in table 4.1 below.

Table 4.1 Cont'd

Tender	Technical Score	Cost to MOD	Price	Total Cost MOD	Outcome
A	176	£340, 536	£1,235,732	£1,576,268	Unsuccessful tender, compliant but total cost to MOD higher than tender D
B	112	£850,435	£950,000	£1,800,435	Unsuccessful tender, non-compliant
C	153	£340,218	£1,356,721	£1,696,939	Unsuccessful tender, compliant but total cost to MOD higher than tender D
D	151	£128,780	£1,189,621	£1,318,401	Successful tender as it has the total the lowest combined cost to the MOD.
E	196	£35,000	£1,798,598	£1,833,598	Unsuccessful tender, commercially non-compliant.

Annex F

Evaluating Most Economically Advantageous Tender (MEAT) – The Best Technical Tender that is Affordable

1. This is where the tender with the highest technical score is awarded the contract, so long as they are within budget. This type of evaluation is rare and is normally used where the solution is highly technical or complex.
2. In this example, the budget is £1.6M, which you **must** state in the tender documentation. You must include the following words in Section D of the DEFFORM 47 if you are using this award criteria:

‘The contract shall be awarded to the best technical tender that is within budget. The budget for this procurement is £XXX, XXX.00. Any tenders received that are in excess of this budget will be automatically deemed non-compliant.’
3. Where you use this method, evaluation of the commercial element is usually simple PASS / FAIL test. The technical elements are scored and if necessary weighted. When using this method you must state the minimum technical score and any tender below the score (in this example 140) will be considered technically non-compliant.
4. You may score any technical considerations, such as quality, safety, sustainability so long as you stated this in the original tender documentation.

Choosing the successful tender

5. The successful tender is the highest scoring tender classified as ‘commercially compliant’ within the stated budget.
6. Table 5 demonstrates the evaluation results based on ‘MEAT – the best technically affordable tender’ where tender A is the winning tender.

Table 5

Tender	Technical Mark	Commercially Compliant	Price	Outcome
A	17	Yes	£1,235,732	Successful tender, highest technical score that is within the budget
B	112	Yes	£950,000	Unsuccessful tender, technically non-compliant, as mark was less than the required 140.
C	153	Yes	£1,356,721	Unsuccessful tender, technically compliant but with lower technical score.
D	151	Yes	£1,189,621	Unsuccessful tender, technically compliant but with lower technical score.
E	196	No	£1,798,598	Unsuccessful tender, deemed non-compliant as over budget.