

**MECHANISMS FOR ENHANCING RESPONSIVENESS
OF BIDS IN PUBLIC CONSTRUCTION
PROCUREMENT**

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Mechanisms for Enhancing Responsiveness of Bids in Public Construction Procurement

The development of the socio-economic growth of a country is greatly impacted by the local construction industry. Compared to private sector investments in construction such as apartments, luxury hotels, shopping complex, etc. public sector investments such as the development of infrastructures, public utilities are playing a major role in the socio-economic development of a country. Timely completion of a public construction project as per given criteria mostly depends on the contractor and the contractor is selected by evaluating the bids which received through a process called “Bidding Process”. To select a responsible contractor, the level of responsiveness of the submitted bids shall be high. Yet the problem is whether there are any mechanisms within the Sri Lankan public procurement system to enhance the responsiveness of bids receiving in order to select a responsible contractor.

Developed countries in the world do have specific mechanisms to increase the effectiveness of their public procurement system which enhances the responsiveness of bids received leading to select a responsible contractor. Improving the legal framework for public procurement, using different market approaches, practicing alternative awarding criteria such as Most Economical Advantageous Tender (*MEAT*) instead of lowest bid price criteria, introducing innovative awarding methods, negotiation, adopting technological developments, etc. are some of advance steps taken by the developed countries to enhance the responsiveness of receiving bids.

This study is discussing how these advance mechanisms can be utilised within the Sri Lankan public procurement system to enhance the responsiveness of bids receiving for a public construction project. A research framework was built by collecting information from books, journals, dissertations, conference papers etc.

The outcomes of this research depict the impact of a research framework on the factors impacting the responsiveness of bids and areas of development to the selected mechanisms which suit the local context. Finally, the outcome of this research was recommended to implement within the Sri Lankan public procurement system.

Keywords: Responsiveness, Responsible, Bid, Contractor, Public Procurement

To my family

*Who always encouraging me to win the goals in my
career.....*

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LIST OF ABBREVIATIONS

BAFO	Best And Final Offer
BOQ	Bills Of Quantities
CIDA	Construction Industry Development Authority
GDP	Gross Domestic Product
GoSL	Government of Sri Lanka
LCC	Life Cycle Cost
MEAT	Most Economical Advantageous Tender
MEP	Mechanical Electrical Plumbing
NPA	National Procurement Agency
NPC	National Procurement Commission
TEC	Technical Evaluation Committee
VFM	Value For Money
WTO	World Trade Organization

1.0 INTRODUCTION

1.1 Background

Sri Lanka as a developing country has a great impact from the construction industry towards the development of socio-economic growth (Jayalath & Gunawardana, 2017). Compared to private sector investments in construction such as apartments, luxury hotels, shopping complex, etc. public sector investments such as the development of infrastructures plays a major role in the socio-economic development of the country. According to Samarppuli and Schokman (2001), the development of infrastructure facilities is considered to be an important requirement to speedup the economic growth in all sectors of the economy such as agriculture, manufacturing, trade, and services. Furthermore, the Institute of Policy Studies of Sri Lanka (IPSSL, 2010) says, Sri Lanka as a country which is in the post-conflict stage, there is a strong requirement for the increased development of infrastructure facilities for the country to accelerate economic growth and provide upgraded standards of living. Even though the benefits of the public sector developments return to the community, to implement those developments, the government is spending the tax money collected from the public. Therefore there is a concern how fast these developments can be delivered back to the community to feel the benefits, once the procurement process initiated.

The success of construction projects is a elemental issue for many governments, users, and societies (Alzahrani & Emsley, 2012). Construction projects and their success are closely related to contractors (Alzahrani & Emsley, 2012). Thus selecting the best-suited contractor at the period of evaluation is vital to the project. Puri and Thiwari (2014) state that construction contractors have a significant influence on success of the projects. Thus, it is always vital to select a suitable contractor for the process of construction management. The selection of construction contractors is very often conducted during tendering (Puri & Thiwari, 2014).

Herbsman and Ellis (1992) say, evaluation of bids focusing on the ‘main’ criterias of cost, time and quality as measured by the bid price, time for completion and quality of earlier project completed respectively and according to the Hardy (1978), this infers

that the bid which is winning is fully responsive to the contract in addition to the bidder's being sufficiently well qualified to undertake the contract.

However, contractors as the bidders shall take into the account many factors when they develop their bidding strategies (Barr, 1990). According to Boughton (1987), factors of developing a bidding strategy by a contractor in descending order of significance are; clearness and detail of specifications, past experience with similar work, confidence in subcontractor bids, project location, number of competing bidders, project duration, complexity, market condition, magnitude of project, opportunity for follow on work, relationship with employer, competitors bid history, confidence in external events (interest rates, inflation, etc.). Apart from above, when considering the local context, the government of Sri Lanka stipulates specific procedures that need to be followed in consulting, contracting, procurement and supplies in government projects (Anonymous, 2017). National Procurement Agency (NPA) guidelines which are published by the finance ministry of Sri Lanka outlines the terms and conditions that need to be followed when procuring any kind of public sector development. According to NPA (2006), the supreme purpose of good procurement system is to obtain maximum value for money. To obtain that, any bidder who wishes to submit a bid for a government construction project needs to adhere to the exact procedures of the NPA guidelines and if not that bid will be considered as a non-responsive bid. In addition to all of the above, stick into the local legal system, structure of the duties and levies, approvals from different authorities, following quality management systems and standards, adhering to audit mechanisms, etc. are key concerns establishing the bidding strategy by the contractor. Submitting a bid that meets all the requirements of the project is known as "**responsive bid**". American Institute of Architects (AIA, 2006) defines a responsive bid as an unequivocal offer given by the bidder to do everything needed by the construction and specified in the bid documents, without exception. The further responsive bid will lead to select the "**responsible contractor**" who is the one that has financial and technical capabilities, all the equipment, materials and workforce and can execute and complete the work specified in the contract documents, demonstrated to the satisfaction of the employer (AIA, 2006). In Sri Lankan context it is very challenging to find a responsive bid that encapsulates all the requirements of a

project and thus acquiring a responsible contractor has become problematic since the local procurement process does not have mechanisms to enhance the responsiveness of the bids. In addition, Boughton (1987) says, most of the time both parties are looking at the area of lowest bid price and concentration on the factor “responsiveness” gets reduced due to that.

According to Barr (1990), contractors may reduce the estimate of their bids in various ways to gain competitiveness on the jobs they bid. Further contractors will not be able to focus on all the factors to compile a bid due to tight deadlines imposed by the employer. Thus bidding period is a crucial time for all the contractors who are eager to submit a responsive bid. Further as a consequence of submitting non-responsive bids, losing more money from government treasury for recalling the bids or else end up with unsuccessful and low-quality projects due to the selection of a improper contractor to award the contract can occur. All these results will delay the public right to enjoy the benefits of these projects.

Therefore, enhancing the responsiveness of receiving bids is very important when procuring public construction projects by the Government of Sri Lanka. Employers and the bidders need to work together to enhance the responsiveness of the bids to select a responsible contractor for the project. Recalling the bidding process, failing to meet obligations by the contractor after contract gets awarded are some of the critical issues which arise when responsiveness of the bids get lowered and as an effect of that extended time for completion and wasting public money can occur. Thus implementing proper mechanisms to enhance the responsiveness of bids received from the bidders to select a responsible contractor, in the public procurement process is always crucial.

1.2 Problem Statement

The level of responsiveness of the bids submitted by the bidders is a crucial factor when the government procuring construction projects for the benefits of the public. By enhancing the responsiveness of bids aid to increase the quality of the procuring process in many ways such as; minimises the evaluations process, minimize the probability of recalling the bidding process, minimises the legal issues, provide the

responsible or best-suited contractor for the project, established the value for the public money, encourages to return the benefits of the project to public as planned, etc. As a result of these enhancements, the sufferings of the stakeholders of a project will come to its minimum level.

There are only few significant researches done related to the public construction procurement process in Sri Lanka, such as the Suitability of government bid evaluation procedure for building projects in Sri Lanka by the Sumanarathna and Perera (2015), Gaps in public procurement process in Sri Lankan construction industry by the Gunawardhana and Karunasena (2014), E-tendering framework for public procurement in Sri Lanka by Amarapathy, Jayasena and Ranadewa (2013) etc. Yet there is no any research done in Sri Lanka in related to the responsiveness of bids submitted for public construction projects, though other countries are increasingly researching on this area.

Currently, the government receives bids from different types of bidders related to different projects, yet there is no mechanism to enhance the responsiveness of these bids. Thus implementing mechanism/s to enhance the responsiveness of bids received to select the responsible contractor, can provide absolute benefits to the public without causing additional cost and delay to all interested parties.

1.3 Aim and Objectives

1.3.1 Aim

This research aims to investigate the necessary improvements for the public procurement process to enhance the responsiveness of bids received for construction projects.

1.3.2 Objectives

The following are the objectives of the research to achieve the above mentioned aim.

1. Critically review the notion of “responsiveness” in relation to a bid and contractor selection in the public procurement process

2. Explain the significance of a strong public procurement system towards selecting responsive contractors with special reference to pros-and-cons of non-presence of a such
3. Appraise the factors which have an impact on enhancing the responsiveness of the bids submitted for construction projects
4. Scrutinise the different public procurement systems to uncover the possible changes that can enhance the responsiveness of bids submitted for construction projects
5. Devise mechanisms for improving the public procurement process to enhance the responsiveness of bids submitted for construction projects

1.4 Research Methodology

The literature survey was carried out to gather information on the importance of enhancing responsiveness of the bids to select a responsible contractor and the problems arise when the responsiveness is low in the submitted bids. Books, magazines, journals, paper articles, electronic media and the internet were used as resources for the literature survey. Field data collections were conducted to find out the appropriateness of using mechanisms in the literature survey, within the Sri Lankan procurement system to enhance the responsiveness of the bids by using expert interviews. A research framework was designed and used to gather the data using semi-structured interviews that are related to the research area. The conclusions and recommendations were drawn by fetching all these data into one platform.

1.5 Scope and Limitations of the Research

Enhancing the responsiveness of the bid proposals is very important when the government procuring construction projects and it will bring benefits to all the stakeholders involved in that process. But taking into account all the key parties will be an extending the scope of the research. To overcome this issue, this research will be only focusing on the competent procurement specialists involved with the public procurement process. Since the public sector has a significant contribution to the construction and it follows special guidelines and procedures to ensure value for public

money, therefore this research only focusing on public construction projects where the source of funds is Government of Sri Lanka. Further, this research will rely on a combination of three (03) major areas known as public procurement, the responsiveness of bid proposals and mechanisms used by other countries to enhance the responsiveness of the bid. Therefore there will not be resources that can extract required information directly. Because of that, this research will heavily depend on advices, opinions and the instruction given by the key parties.

1.6 Chapter Breakdown

This research is focusing on enhancing the responsiveness of bids to select a responsible contractor for public construction projects. According to chapter break down (*See Figure 1.1*) Chapter 01 of this research gives start to the research problem by making the background with information of relevant areas. Then, aim and objectives were defined to find out solutions for the research problem. The scope and research methodology were show up in the same chapter. Chapter 02 is focusing on the literature review for this research problem and within this chapter, it is expected to find about objectives one, two and three. The research methodology is introduced in Chapter 03 and it is all about the process of data and information gathering which helps to make precise decisions. Further, this chapter is covering Objective two, three and four.

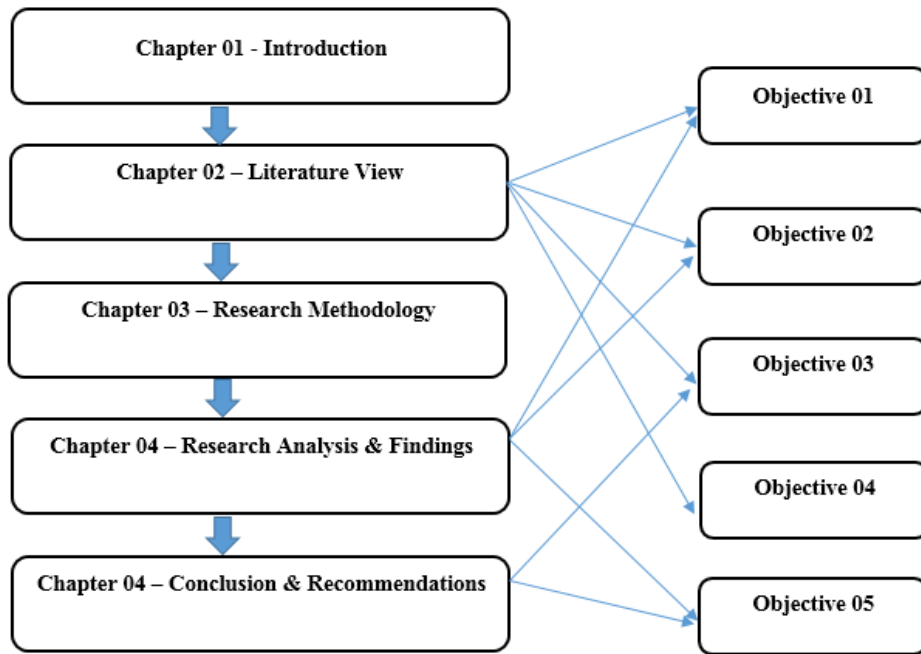


Figure 1.1: Chapter breakdown

The next chapter is research analysis and findings which use data and information gathered within the Chapter 03. As an output, this chapter is giving decisions by processing collected information. Objective three and four are going to accomplish in this chapter. Conclusions and recommendations are mention in the final chapter and objective four is going to be accomplishing under this Chapter.

2.0 LITERATURE SYNTHESIS

2.1 Introduction

Chapter 01 explained the background, scope, aim, and objectives to make the link with the research problem. Chapter 02 focusing on developing the research further by bringing the current knowledge into the stage. A comprehensive literature review is undertaken in this chapter to cover the areas known as the public construction procurement system, the responsiveness of bids, factors impact on the responsiveness of bids, consequences of selecting an unsuited contractor and mechanisms used to enhance the responsiveness of bids. This chapter will bring all above mentioned areas into one platform and make links in between by using current knowledge in each area. The results will make out the theoretical framework of this research.

2.2 Public Construction Projects

The government of any country is the most significant construction client, who plays a major role to implement construction projects known as infrastructures (Dlungwana, Nxumalo, Huysteen, Rwelamila & Noyana, 2002). According to Austroads (2014), the impact of infrastructures (including buildings) towards the social and economic standing of a country cannot be measured. The reason behind this is, these construction projects are connected with all other important areas of a country such as transportation, trading, education, health, sanitary, energy, etc. This proves by the World Economic Forum (WEF, 2016) that says, infrastructures link with the day to day lives of every person and it linked with almost all other industries, as all economic value creation occurs within or by means of buildings or other “constructed assets”. Strategically planned and managed the investment in public infrastructure acts a significant role in aiding economic development and providing the capacity to compete with the the growing demand for services that accompanies strong population growth (Austroads, 2014).

Implement infrastructures, it requires significant capital expenditure. Lall and Anand (2008) say constructing infrastructure is a capital intensive process and it requires long term finance and long gestation period. Further, local revenues that collect from the

public as taxes and intergovernmental grants are not generally adequate to fund for this larger capital investment and in such cases, the government has to borrow debt for a longer period (Eichler, Wegener & Zimmermann, 2012). Since infrastructure projects are designed to go for a significant period of time, to obtain benefits of such projects will also take a considerable period of time (Eichler et al., 2012).

Al-Zahrani and Emsley (2012) state that, “the success of construction projects is a fundamental issue for most governments, users and communities” (p.1212). Successful infrastructure project can benefit to all the interesting parties and it upholds the level of the country. Large and efficient infrastructure is crucial for confirming the effective functioning of an economy as it is a key concern determining the location of economic movements and the types of movements or areas that can develop (WEF, 2011). There are many factors that helps to project success. Construction projects and their success are heavily reliant on contractors (Yaweli, Shouyu & Xiangtian, 2005). According to Yaweli, et al. (2005), the selection of the right contractor will not only confirm the overall quality of the project but also ensure the opportunity of saving on costs. Thus responsible contractor is essential to execute a project in proper procedure and complete the project at the time.

Hamouda (2015) contends, selecting a contractor is the process of choosing the most suitable contractor to perform the project under given criteria and it is considered as a critical part of the construction process since it affects the progress and success of the project. There are different methods to select a responsible contractor for a construction project. But when the government plays the role of the employer, there will be certain rules and procedures that need to be followed to select the responsible contractor for a selected project.

2.2.1 Public construction procurement processes of different contexts

According to NPA (2007), government procurement or public procurement is the procurement of goods, works and services and construction on behalf of a public authority, such as a government agency.

Public procurement is essential since the government alone cannot produce all the inputs for the goods, works, and services they need to provide for the country. The process of public procurement does have a sequential and mandatory set of activities to procure public construction projects and this process might differ from country to country. Figure 2.1 shows the activities in the public procurement process related to the Western Cape Provincial Treasury.

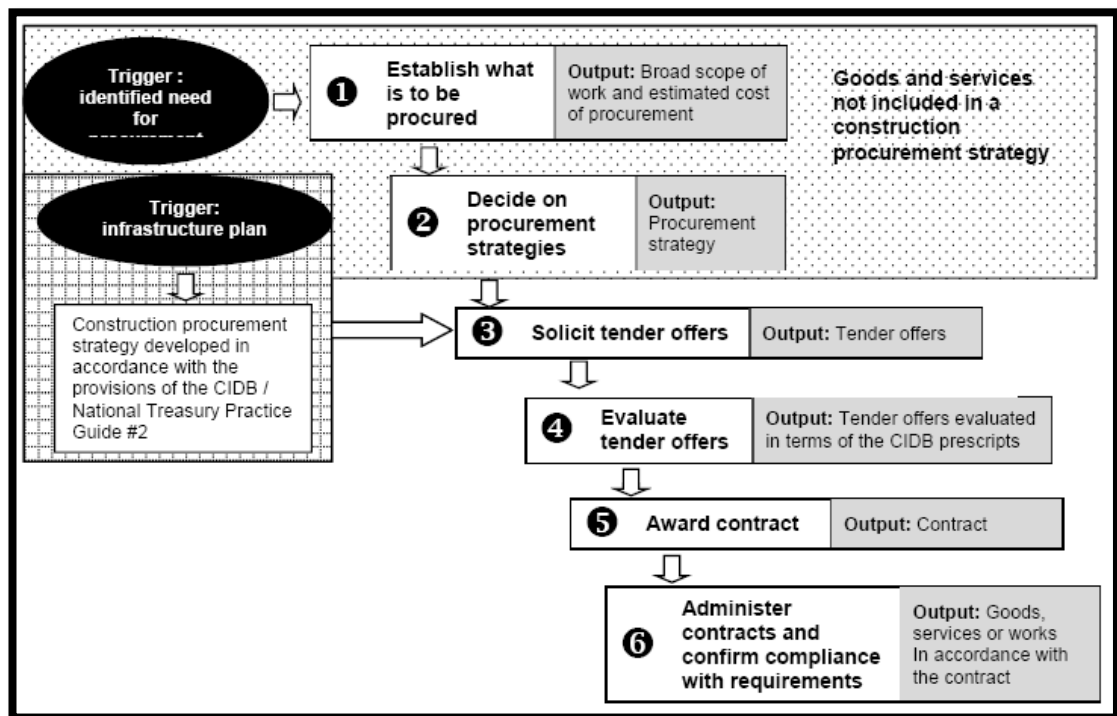


Figure 2.1: Activities in the public procurement process

Source: Western Cape Provincial Treasury (2012)

Further, Western Cape Provincial Treasury (WCPT, 2012) clarifies about the public procurement,

Procurement may be regarded as the process that creates, manages and fulfills contracts. Procurement commences once a need for goods, services, or engineering and construction works has been identified and ends when the goods are received, the services or construction works are completed. Procurement processes and procedures need to be managed and controlled. Accordingly, governance activities need to be linked to the milestones in the procurement process. At the same time, policies are required to govern the usage and application of certain procurement procedures, requirements for recording, reporting and risk management, and procedures for dealing with specific procurement-related issues, etc.(Preface, para. 2)

Moreover ultimate objective of the public procurement is to ensure pure, efficient and effective procurement processes with a clear explanation of accountability and responsibilities of the various characters within the process and the assurance of transparency (WCPT, 2012).

Procuring construction projects by the government is one of the major areas the government is focusing on public procurement. There are different ways of procuring construction projects by different governments (See *Figure 2.2*). The public procurement system of WCPT shows the different activities processing when procuring construction projects and different types of decisions need to take within that process including the relationships among the procurement activities.

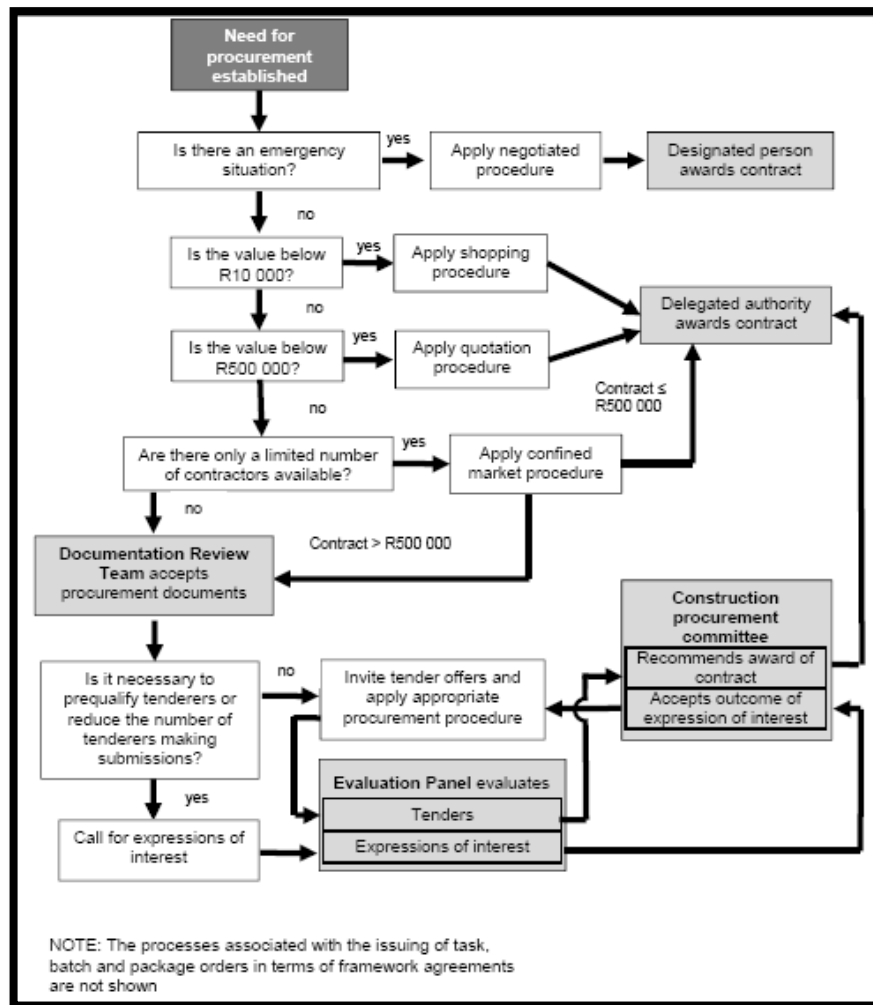


Figure 2.2: Public construction procurement system: Western Cape Government

Source: Western Cape Provincial Treasury, (2012)

Even though there are different procurement processes for different governments, the major concern of all those systems is to select a responsible contractor. Ali (2011) says, the success of any construction project is considered a complementary process and if anybody who is participating in the project, is erroneously chosen, that decision will definitely impact the success of the project. As an example, Elsayah (2016) described the situation in the Libyan construction industry as follows, “a large number of projects have been failed because of a lack of competence and ability of the contractors. This may have been due to the absence of appropriate selection criteria which allowed selection of “the wrong” contractor” (p.3). Thus the public procurement

system of a country should have a precise procedure to select the responsible contractor for a specific project.

2.3 Responsiveness of a Bid

The selection of a responsible contractor by any public procurement system solely depends on the “responsiveness” of a bid submitted by a bidder for a given project. The dictionary meaning of the word responsiveness is “meet the needs of someone or something” and when it combines with the word “bid” it can be defined as, “a responsive bid is one that materially complies with the form or content requirements of the bidding documents” (Construction services, 2014, Responsive and nonresponsive bids, para. 1). This has been further illustrates Purdy (2011) by saying, if a bid contains complete set of submittals, properly signed, attached all required documents qualifications are met, no discrepancies, no late submission and in overall complies with all requirements of the bidding document or solicitation, then it is called as a fully responsive bid. But the issue is, complying with the terms and conditions given in the bidding documents, is that the only requirement to declare a bid is responsive. According to Purdy (2011), the responsiveness of a bid is a vast area and it is not only complying with the given terms in the tender. Verma (2017) says “as a procuring entity or official, very often we come across such a situation where some of the bidders do not fully comply with the technical specifications and other requirements given in the bid document” (para.1). Yet there is an issue whether the technical specifications all alone can determine the responsiveness of a bid. Verma (2017) further state, by stipulating ‘technical specifications’ of equipment, goods or work in the bid document, client normally requests client’s ‘minimum technical specification’ requirement, which the final product should ‘substantially’ meet and it does not mean client anticipate bidders to quote such a product, which comply with every minor detail of the minimum technical specifications. There might be deviation as well which, if the bid is accepted it may not compromise the standard functioning or usage of the final product. Many employers view their bidders' performance as lacking in the crucial areas of quality and cost development, delivery performance, adoption of new technology adoption, and financial health (Quick & Kanellos, 2005). Lysons and Farrington (2006) define bidding as a procuring procedure whereby

potential bidders are invited to submit a firm and unequivocal offer of the price and terms which on acceptance shall be the basis of the subsequent contract. Yet Lysons (2001) says the intention of the bidding process is to allow the procuring of works or services to be obtained in the right condition, quality, quantity, price and time.

However, in reality, it is very difficult to find a bid that satisfies all the requirements and does not have any single deviation in it compared to the requirements in the bidding documents. NPA-Manual (2006) says,

A bid that complies fully with the requirements of the bidding document may be an extremely rare instant. What is important is how critically the departure will affect the outcome of the procurement. Hence, during the bid evaluation substantially responsive concept is used rather than following fully responsive bids (p.114).

This “substantiality” will be measured on the basis of how much bid is deviate from the requirements of the bidding documents and by deciding, does the deviation is material or non-material. Anonymous (2013) says, in normally nonmaterial deviations are those that substantially comply with the bid requirements and do not affect the price of the bid, time, or terms and material deviations are which affect the price of the bid time or terms and give the bidder an unwanted gain or benefit over another bidder. According to NPA-Goods (2007), Instructions to Bidders- Sub Clause 29 says,

A substantially responsive Bid is one that conforms to all the terms, conditions, and specifications of the Bidding Documents without material deviation, reservation, or omission. A material deviation, reservation, or omission is one that:

- (a) affects in any substantial way the scope, quality, or performance of the Goods and Related Services specified in the Contract; or
- (b) Limits in any substantial way, inconsistent with the Bidding Documents, the Purchaser’s rights or the Bidder’s obligations under the Contract; or

(c) If rectified would unfairly affect the competitive position of other bidders presenting substantially responsive bids. (pp. 13-14)

Bids, which have material deviations, will be disregarded, and bids, which have non-material deviations, will be considered. According to NPA-Manual (2006),

Major (material) deviations by the bidder result in a finding of “non-responsiveness” and consequent rejection of the bid. Bids with minor (non-material) deviations, on the other hand, are considered as “substantially responsive” and are, therefore, evaluated and considered for contract award. (p.116)

The bidders who submit the bids, which comply with the requirements, stated in the bidding documents is known as “*substantially responsive bidder*”. According to the Rowles and Cahalan (2019), “substantially responsive bidder” or “responsive offeror” is “a person or entity who has submitted a bid or proposal that comply in all material respects to the requirements lay down in the invitation for bids or requests for proposals”(para. 4).

2.3.1 Factors impact on the responsiveness of a bid

Watt, Kayis, and Willey (2010) contended, selection of a contractor is possibly one of the most critical actions performed in a procuring process, the effectiveness of selection is directly connected to the project success and the achievement of specified objectives. Further Alhazmi and McCaffer (2000) say, the selection of a right contractor will uplift the probability of completing a construction project successfully and there are high chances to achieve the employer’s goals, and keep the balance in the cost, time and quality. Therefore it is extremely crucial to select a responsible contractor in the process of construction management. This demonstrates that the wrongful selection of a contractor to a specific project can bring unpredicted harmful consequences.

Calling for the responsive bids is the first step of the selection of a contractor and the procurement process to select a contractor is a formal process that needs to be followed by procedural and legal requirements. Lindskog, Brege and Brehmer (2009)

emphasises, public procurement is in almost all circumstances and countries regulated by particular legislation that is stricter than the private sector's procuring activities. Further according to Jaskowski, Biruk and Bucon (2010) state, the selection process encompasses examining, screening and determining if bidders can be accepted as responsible contractors. The efficiency of this procurement process heavily depends on the responsiveness of the bids submitted by the bidders (Jaskowski et al., 2010). According to Rowles and Cahalan (2019), most of the bids submitted by the bidders are not responsive to different aspects. There are different factors that lead to the impact on the responsiveness of the bids and led bidders to submit a bid that only focuses to become the lowest bidder (Fernando, 2019). Additionally, Rowles and Cahalan (2019) state, when there is no true competition, it leads to select a non-responsive bid and ultimately contract will be award to an improper contractor. Thus though there are a set of procedures to receive bids, awarding a contract to a responsible contractor still might be a problem for any government due to the responsiveness of the bids.

The process which invites the bids from interested contractors to carry out particular construction work is called tendering and it is a common procurement method to employ a contractor to a construction project (Stafford & Davis, 2010). Epema, Michelotti, and Streefkerk (2011) describes 'tendering' as, "a procedure for granting orders for works, services, and deliveries. Tendering is a prescribed part of the purchase process of public sectors" (p.11). According to Aanbesteden (2010), A tendering is a procedure that use by an employer to call competition in the market and from that employer tries to select a contractor with whom he wants to sign a framework agreement or to whom he plans to award a contract. Figure 2.3 depicts the tendering procedure in the public procurement process.

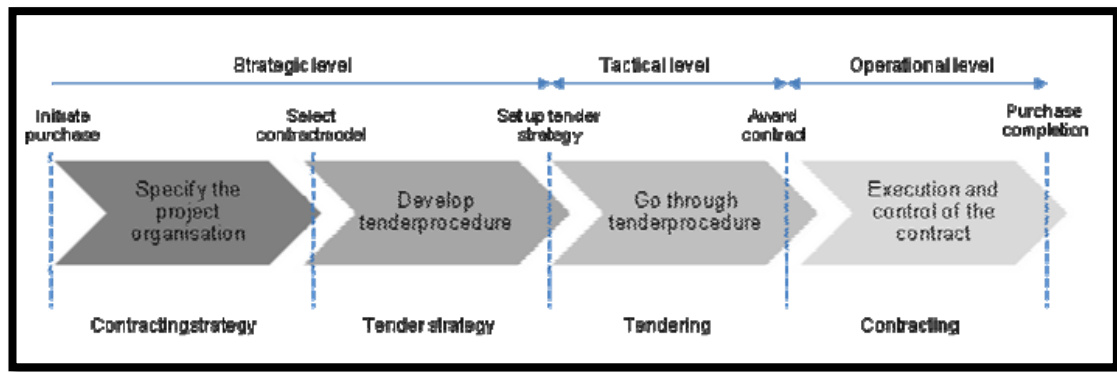


Figure Error! No text of specified style in document..3: Tender process

(Source: Essers (2006))

Evaluating a tender and selecting a responsible contractor stays to be an area of significant importance and interest to public authorities after calling the bids for tender (Watt, Kayis & Willey, 2009). Though the evaluation process is significant to select the right bidder will be difficult if all or most the bids have lower responsiveness to the requirements of the project. Even though Enyinda, Ogbuehi, and Udo (2011) state, selecting the most suitable contractor is vital to the success of any public construction projects and Anagnostopoulos and Vavatsikos (2006) state selecting a responsible contractor constitutes important decision for public authorities since contractors are performing an important role in construction projects, enhancing the responsiveness bids is foremost important aspect to consider before all those proceedings. There are crucial factors that make an impact on when enhancing the responsiveness of receiving bids and those are as follows.

2.3.1.1 Transaction cost theory

Li, Arditi, and Wang (2013) state,

The actual cost of a construction project does not consist of only the production cost. The costs of preparing a bidding document, estimating, drawing up a contract, administering the contract, and dealing with any deviations from contract conditions are also important. These costs are known as transaction costs in the study of economic organisations. (p.548)

According to Waara and Brochner (2006), transaction cost theory is related to the analysis of construction projects. The basic theory of transaction cost is that the choice of outsourcing the work rather than doing the work in-house is decided by the relative cost incurred by the organisation and in construction, the decision of “make or buy” always leads to a contract (Lingard, Hughes & Chinyio, 1998). Dropping the costs of engaging in a contractual relationship (transaction costs) increases the value of production and generally applied techniques for selection of contractors may not reduce the costs of contracting (Murdoch & Hughes, 1992). Due to the complicated and high-risk environment of a construction project, debatable decisions can be made in the pre-contract phases such as planning and design and disagreements, conflicts, disputes, variations, and claims that can occur in the construction phase. These issues direct to an increase in transaction costs (Li et al., 2013).

Considering the construction industry there are two (02) types of transaction costs. Those two (02) types of transaction costs are ex-ante and ex-post. Williamson (1975) highlights the costs related to Ex-ante as, the costs of tendering, negotiating and preparing the contract while the costs related to Ex-post costs may have occurred through the performing and administering of the contract or of resolving disputes arising from the contract.

Dahlman (1979) contended that the major reason for the transaction cost is of obtaining a lack of information. Additionally, information is defined somewhere else as a primary source of high transaction costs (Casson 1994; Holstrom & Tirole 1989). Li et al. (2013) argued that fully packed information is a source of transaction costs and thus information that is freely available can be used to reduce transaction costs. Though, information is only available at a cost.

It is hypothetically possible to gather perfect information of all the responsive bidders to select a responsible contractor (Holt, Olomolaiye & Harris, 1995), yet according to Li et al. (2013), the ex-ante transaction cost for collecting such perfect information would be very high. Thus most of the governments are not focusing on collecting such information, due to the high ex-ante transaction cost. On the other hand, the client’s bounded rationality needs to be high, where a little information about bidders is

available prior to the award of a contract. Moreover, Li et al. (2013) say, in this kind of situations the client would be defenseless due to a high risk of opportunistic behavior on the part of contractors. This means according to Chang and Ive (2007) when contract cannot cover all possible contingencies which incurred during the construction, the contractor might decline to repair defects found in construction, may go for an additional payment due to price fluctuations/inflation or other cost implications, may fall behind planned time for completion and may either refuse to accelerate the works and may bring the design issues and claim for unrealistic rates to rectify them. Therefore considering the transaction cost theory to enhance the responsiveness of bids received is a crucial part of implementing public projects, but yet due to the cost of obtaining perfect information most governments are neglecting or allocating a low level of concern to this area. Therefore this has been impacting as a factor to enhance the responsiveness of bids to select a responsible contractor for public projects.

2.3.1.2 Contract awarding methods

There are many methods of awarding a contract to a contractor. According to Khan and Khan (2015), commonly used contract awarding methods are,

- a) Competitive Lowest Bidding Method (Price basis).
- b) Competitive Average Bidding Method (Price basis).
- c) Multi-Parameter Bid Method (Basing on quality, time, price and “other” factors).
- d) Negotiated Bid Method (Competitive).
- e) Negotiated Bid method (Non-Competitive).
- f) Bidding on Cost/Time.

Among these methods competitive lowest bidding method (price basis) has been practiced as the most common method to award a contract to a contractor. This has been also said by Irtishad (1993) by saying, “the customary practice of awarding contracts to the lowest bidder was established to ensure the lowest cost of completing a project”(p. 9). Moreover, the competitive lowest bidding method (price basis) is the most popular and attractive method related to public procurement. The reason for this

contended by Khan and Khan (2015) as it is commonly recognised that, the best method to save public money and protect the public interest is competitive lowest bidding method. Even though people are used to practicing this method it has become a real challenge when selecting a responsible contractor due to its drawbacks. Also due to low/poorer quality, the amalgamation of many variations/change orders, and impact towards negative relationships/reputations, extended time for completion, and increased contract price of the overall project, this traditional technique has been criticised in the last two decades (Khan & Khan, 2015). According to Letarge, Quezon and Macarubbo (2016), stakeholders of the construction industry have identified that accepting the least bid price does not assure the best value. Further, the type of bid has a major impact on the success of construction projects. Selecting the lowest priced bidder as the responsive bidder will provide an incentive for contractors to cut their bid prices to greatest possible level instead of focusing on enhancing the final quality standards of the outcome (Hatush & Skitomer, 1997). Because of this, there is a question, how the lowest bidder is going to achieve the quality of the final product with the offered lowest price. Yet still, most public authorities are used to follow this method without concern about the problem of selecting a responsible contractor, since the lowest bidding method does have a direct influence on the responsiveness of bids. Additionally, different countries are using other types of awarding methods such as lowest average bidding, multi-parameter bidding to overcome issues that affect the responsiveness of receiving bids based on the scenarios.

2.3.1.3 Legal and regulatory framework

Article 156c (1) of the 19th amendment to the constitution of democratic socialist republic of Sri Lanka, gives the power to National Procurement Commission (NPC) to “formulate fair, equitable, transparent, competitive and cost-effective procedures and guidelines for the procurement of goods and services, works, consultancy services and information systems by the government institutions” (NPC, 2017, p 5). The public procurement process in Sri Lanka is ruled by two (02) guidebooks known as (i) National Procurement Guideline and (ii) National Procurement Manual used with supplementary financial regulations. South Asia Regional Procurement Unit (SARPU, 2003) states, despite the financial regulations and the guidelines, Sri Lanka does not

have a separate law for public procurement. American Association of Political Consultants (AAPC, 2014) highlights, “there is an absence of a proper legal framework where procedure, accountability, transparency and remedies could be articulated” (para. 2). Due to this absence of procurement law, bidders do have the delusion of that, bid with the lowest price will always get selected despite the decisions of procurement process are based on several aspects that contain the technical compatibility, bidder’s financial position or strength, Most Economically Advantageous Bid (MEAT), past records /experiences and financial evaluation of the submitted bid. Moreover, Gunarathne (2008) states, National Procurement Agency (NPA) which has been formed to streamlined the Sri Lanka public procurement, is originally formulated by a cabinet memorandum dated May 6, 2004, and AAPC (2014) highlights this factor as, “The NPA is not an agency formed under a legislative framework but carries on work under the direction of the Cabinet of Ministers”(para. 2). Not having a codified legislative framework and the involvement of the minister’s directions for the public procurement process has a negative impact on getting a responsive bid and selecting a responsible contractor for the public construction projects. Figure 2.4 illustrates the areas that need to be covered within the legal and regulatory framework related to public procurement.

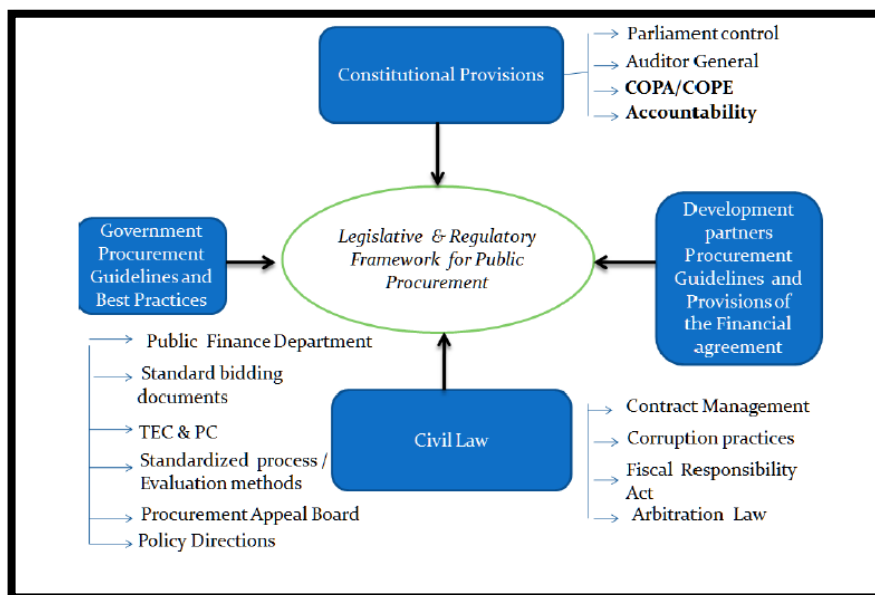


Figure 2.4: Legislative and regulatory framework

2.3.1.4 Procurement procedures and practices

The NPA guidelines and the manual are the two (02) main documents that set out the procurement procedures and the practices of public procurement in Sri Lanka. Gunwardene and Karunasena (2016) state, the events of the public procurement can be generally categorised as the risk assessment process, selection of source, evaluation of alternative solutions, contract award, payment, and managing the contract up to the completion of the defect notification period. Sri Lankan public procurement procedures and practices are touching most of the above-mentioned areas, but area of training and development bidders, area developing standard bidding and contract documents according to the type of procurement, timely revising the guidelines, empowering e-procurement, establishment of a procurement accreditation system, introduction of a code of conduct/ethics oversight, implementing a tracking system for procurement actions and database of contractors/suppliers, reformation the process of registration of contractors/suppliers, introducing systems for technical and performance auditing, introducing new of regulations for blacklisting, etc. has been restricted to certain level.

2.3.1.5 Lack of audit and anti-corruption measures

Mapesa and Kibua, (2006) state, public procurement audits play a vital role when understanding the adding value to public procurement in terms of ensuring public accountability, transparency in process, safeguarding from the procurement malpractices, and improving upon past procurement performance. Audit exercises could not discover and report weak and corrupt procurement practices due to poor auditing process (Sri Lanka Auditor General's Department [SLAGD], 2016). Additionally, SAGD (2016) states poor auditing practices can also cause a “waste of public resources, lack of fair and transparent procurement process, lack of public accountability, and failure to comply with procurement rules and procedures” (Procurement auditing, para. 2). According to the article 154 of Sri Lankan constitution, it mandate that the auditor general shall review the accounts of all the government departments, cabinet minister's offices , the commission of judicial service, the commission of public service, the commissioner of parliamentary

administration, the secretary-general and the commissioner of elections, local authorities, public corporations, and trades or other undertakings delegated in the government by law. Yet Wijeratne (2019) states, the Sri Lankan constitution does not have any specific provision to conduct frequent/systematic audits in the areas of technical and performance in related to publicly financed projects. Further, there has been growing discussion within the public related to the bribe issues recently, specially about the government transactions and procurement. Several inevitable public projects have been abandoned due to bribery issues and most of the bidders have been tempted to give bribes to win the bidding process or people who have involved in the process are making the bidders give bribes to win the bidding process.

Lanka Business Online (LBO, 2017) states, Sri Lanka public procurement has been led to increased corruption due to corrupted practices included within the system. Nafeel (2016), further highlights the above factor with an example which, “the practice of accepting unsolicited proposals for large, high-value projects that circumvent the process stipulated by the government’s Procurement Guidelines, and altering specifications to suit the supplier” (para. 18). Mattala airport project, Hambantota harbor project, ongoing Uva Uma Oya project etc. good examples for a basic single source, unsolicited proposals without competitive bids and also these projects are one to one transactions with vast cost and would be a severe burden on the public (Jayasuriya, 2019). This explains that malpractices within the public procurement process, limit the selection of best-suited bidders and when it comes to the construction industry, this limitation has a critical impact on the successful completion of construction projects. Even though countries like India had address these types of issues in terms of the law (Ex: Larson & Toubro Ltd Vs. Gujarat State Petroleum Corporation) Sri Lanka is still under progress to implement anti-corruption measures to avoid such situations. Thus lack of auditing process and anti-corruption measures has been a great challenge when obtaining responsive bids to select a responsible contractor.

2.3.1.6 Enhancing competitiveness and participation

According to the NPA Guidelines and SAGD (2016), one of the complementary principles in public procurement is *competition*. SAGD (2016) further describes, **Competition** means,

Having multiple demands for limited resources creates competition. Having more than one participant trying to win creates the potential for competition. The objective of competitive processes is to provide all eligible prospective offers with timely and adequate notification of the procuring entity's requirements and an equal opportunity to tender for the required goods, civil works, and services. Procurement Units should ensure that restrictions are not placed on the competitive processes limiting the pool of potential bidders. (Complementary principles, para.5)

SARPU (2003) states, the Sri Lankan, the construction industry needs to reach its full potential capacity to cope with the country's development programs. Even though CIDA has been conducting training programmes for the construction industry in the recent past to improve the domestic contractors' knowledge on public procurement there are only a few contractors which can be recognised as the contractors who won the large scale of bids in the Sri Lankan construction industry (Anonymous, 2018). Thus there is a lacuna of participation in public procurement by the domestic contractors due to various reasons. Another good example of a lack of participation in the public procurement system is delay payments by the government to the contractors. Fernando (2019) says,

Sri Lanka's economy is likely to have an adverse impact from a potential slowdown in construction sector activities, as over 3500 small and medium-sized construction firms employing over 1.6 million people are yet to receive their payments worth billions of rupees for State-contracted construction projects last year, a construction industry body warned. (para.1)

Due to these types of issues contractors get discouraged to involve in public procurement and these interferences have disturbed the above describe competition in the aspect of low participation which also leads to barred to receive responsive bids.

2.3.1.7 Lack of knowledge in the area of public procurement

Knowledge in public procurement practices and procedures, guidelines, manuals, standard forms of contracts, rules and regulations in public procurement, limitations and restrictions in public procurement, the law of the country, etc. is critical when involving with the public procurement (Fernando, 2019). Yet most of the times it is very hard to find the bidders who have the perfect knowledge in these areas and due to those bidders are practicing their own bidding methods when involving with public procurement. As an example, some of the bidders take bid security guarantees in their own formats or else conditional guarantees which lead to getting rejected from the bidding process. This unawareness of the public procurement process has caused a great impact on getting responsive bids to select a responsible contractor.

2.3.2 Consequences of selecting of an unsuited contractor

Yilmaz and Ergonul (2011) say the notion of project success does not have a common and firm explanation due to changing views of different parties involved into the project such as the client, the architect, the contractor, the quantity surveyors and engineers in construction sector and each project stakeholder will have their own judgment of success and the definition of success which vary from project to project. Generally, a project is considered successful if it is delivered at the right time, price and quality (Skitmore, Martin & Peter, 1995). Thus the selection of suitable contractors is a very significant task as the contractor plays a crucial role in the progress and success of the project. There are many downsides when the unsuited contractor gets select for a particular project. According to the Eriksson and Westerberg (2009), selection of an unsuitable contractor to a project can affect the following areas,

- a) project budget
- b) scheduled time for completion

- c) quality
- d) environmental balance
- e) day to day life of the inhabitant
- f) health and safety of the work environment
- g) benefits received after completion of the project

Impacts of selecting improper contractor not limited to above areas but also gives rise to certain legal issues, relationship issues with the stakeholders, and problems in good faith, and decreases the reputation of the parties (Chan & Chan, 2004).

Furthermore, entrance of new contractors to the government construction might be restricted due to poor performance of the existing contractors (Ugochukwu, 2013) and the reason behind this is that clients are increasing the number of terms on their benefits by the experience gain from poorly performed contractors which ultimately cause higher level of risk to newly entered contractors (Ali, 2011). This will cause enough burden to newly entering contractors especially as they have a lack of financial strength and due to the same reason, they will give up with bidding to the government projects. This is a huge disadvantage in the perspective of government since the government will lose expected competitiveness in the bidding procedure in future projects and lose good contractors who have the ability to do perform well.

Merna and Smith (1990) say, dragging the development of the country backward and delaying certain milestones, which are planned to meet by the government in the future, is another challenging area due to this improper selection of the bidders. Since all the government planned projects are interlinked to each other and the consequences of delaying each project will be affected by the other projects in an indirect manner. Thus awarding the projects to suitable and capable contractors will lead the country to meet its development goals.

Enyinda et al. (2011) say, “Successful completion of either a private sector or government projects depends on the proper selection of the most suitable contractor or set of core contractors” (p.10). Thus, it is always important to select the best contractor to avoid the above-mentioned outcomes or consequences.

2.4 Advantages of Enhancing the Responsiveness of the Bids

The responsiveness of the bids is a critical factor to select a responsible contractor. In view of a contractor, a bid or not bid for a project is one of the critical and recurring decisions taken by the contractor in the construction industry (Dzeng & Wang 2016). According to Pellicer, Garcia-Segura and Sanz, (2014), not bidding to a project will lose the chances to winning probability, opportunity to make the profit, enhance their market position and reinforce the relationship with other stakeholders. On the other hand, bidding for the project and get lose will result in loss of time, money, effort and other important resources that could have been used for a better option (Bageis & Fortune 2009). Moreover, Lin and Chen (2004) say, repetitively losing bids could result in a bad reputation. Additionally, failing constantly with bidding or failing to obtain more projects to the organisation will cause trouble due to their poor financial situation. Kerzner (2009) says, getting a new project will feed to the lifeblood of the organisation, which considerably differs from old-fashioned supplier businesses with their highly specialised marketing, human resources and customer involvement operations. Also as project-oriented businesses, future investments will determine the survival of the construction companies (Akalp, 2016). Therefore bidding to prospective projects is very important for any contractor.

A bidder can win by bidding to a project due to various reasons. According to Harris, McCaffer, and Edum-Fotwe (2006), “sometimes a bidder wins when he thinks his price is high; sometimes a bidder loses when his price is dangerously low”(p.2). Yet can a bidder bear these uncertainties up to its maximum? Since the law provides parties to enter into a bad bargain, there are very few sanctions for a bidder to get out of the contract once he has priced a bid and submitted that. This means the successful bidder is bound to do the works according to agreed rates and prices. Thus it's bidders' responsibility to submit a responsive bid that had the ability to win from the bidding and undertake the works without causing any loss to the organisations once the contract gets awarded. Therefore, there is a high influence on the bidder to submit a responsive bid in the bidding procedure.

NPA guideline and manual 2007, describes the objectives of a sound procurement system. In a nutshell, those value for money, transparency, accountability, fairness, openness, competition and professionalism. On the other hand, it is not common for the local procurement system but also valid for the international context. Ghana Public Procurement Act (2003) states, to achieve a good procurement system following objectives are utmost importance: professionalism; transparency; value for money; competitiveness and accountability. Additionally, Lynch (2019) says, the ultimate goal of the public procurement is to select the responsive bidders and award the contract to the qualified and responsible contractors for the provision of construction to support the nation and public service operations in accordance with principles and procedures established in the public procurement rules. Further Anonymous (2018) states, well-completed construction projects not only give the benefits for the public but also market the brand name of the government who support to implement that. Therefore the influence of enhancing the responsiveness of bids is critical to achieving all of the above situations in a good manner.

2.5 Mechanisms Used to Enhance the Responsiveness of Bids

Different public procurement processes in different regions of the world have set their own mechanisms to enhance the responsiveness of bids. Additionally, as per the World Trade Organisation (WTO) treaty on Government Procurement Agencies (GPA), it is essential for countries to upgrade their public procurement process to cope with the internationalisation of the market (WTO, 2017) and yet public procurement process of developing countries strongly depends on the traditional or integrated method of procuring which ultimately leads to focus only on bid price, open market approach, submitting hardcopies, less use of technology, avoiding negotiation process etc.(World Economic Forum [WEF], 2016). WEF (2016) states, these stereotype and historical mechanisms which used to receive bids only concentrating on the initial construction costs and however neglect the total cost of ownership, seriously inhibited innovation, productivity improvements.

Ohono and Harada (2006) states, in Japan public procurement system has already upgraded to evaluate the technical advantages of the proposal other than the bid price

and Japan has done this reformation by adding new features like reduction of cost and increased transparency in placing an order to receiving process in normal traditional open and competitive bidding system. There are many developed countries which have upgraded their public procurement system by incorporating mechanisms to enhance the responsiveness of bids such as United Kingdom (UK), United State of America (USA), France, Sweden, Germany, etc. (Ohono & Harada, 2006). The below table (See *Table 2.1*) emphasises the details of public procurements systems used in few developed countries and below mentioning mechanisms were extract from those advance public procurement systems which is used by different countries in the world.

Table 2.1: Details of public procurement systems established in Japan, the United States, and Europe

	Japan	United States	EU	United Kingdom		France	Germany		Sweden	
1. Basic law and regulation	Public Accounting Law	(FAR) Federal Acquisition Regulation	EU directive (2004/18/EC)(Targeting each public work with a total construction cost amounting to 6,242,000 euros or more)	Public Works Contract Regulations (PWCR)		Code of Public Contracts (CMP)	Procurement regulations for public works (VOB)		Public procurement act (LOU)	
2. Characteristics and problems of the Systems traditionally implemented tendering and contracting systems	Lack of competition due to designated competitive bidding and collusive bidding	After a contract is awarded to a bidder who proposed the lowest bid price, changes are often made to the contractual terms, which eventually raise the construction cost.		After a contract is awarded to a bidder who proposed the lowest bid price, the Contractual terms are often changed at the construction period, which eventually, raises the construction cost ("claim culture").		There have been no serious problems. Efforts are being made to promote the use of Technical capabilities owned by the private sector by discontinuing price-based bidding.	There have been no serious problems. Because the state governments are quite independent of the federal government, their staff members are not always familiar with the EU directive. The VOB should be more strictly complied with.		Local governments have strong authority, and it is necessary to make them comply with the LOU in a unified manner.	
3. Current tendering systems: Basic system	1. Open and competitive bidding 2. Designated competitive bidding 3. Discretionary contract	1. Simplified acquisition procedures 2. Sealed bidding 3. Competitive negotiated proposals	1. Open procedure 2. Restricted procedure 3. Negotiated procedure 4. Competitive dialogue procedure	(1) For contracts at or above the Threshold 1. Open procedure 2. Restricted procedure 3. Negotiated procedure	(2) For Contracts below the Threshold 1. Open procedure 2. Restricted procedure 3. Negotiated procedure	The following procedures are used for contracts amounting to 230,000 to 5.9 million euros 1. Bidding procedure 2. Negotiated procedure 3. (exceptional) 4. Competitive dialogue procedure Procedures can be chosen freely for contracts amounting to less than 230,000 euros	(1) For contracts at or above the Threshold 1. Open procedure 2. Non-opened a procedure 3. Negotiated procedure	(2) For Contracts below the Threshold 1. General competitive bidding 2. Restricted procedure 3. Free Hand Procurement	(1) For contracts at or above the Threshold 1. Open procedure 2. Restricted procedure 3. Negotiated procedure	(2) For Contracts below the Threshold 5. Simplified procedure 6. Selective Procedure 7. Direct Procurement
4. Current tendering systems: Negotiability	Not negotiable	Negotiable for (3)	Negotiable for (3) and (4)	Negotiable (even after bids are submitted)		For (1), inquiries can be made Regarding the reasonability of the price and the work. Except for clearly erroneous estimates, the details of bids cannot change.	For (1) and (2), inquiries can be made only for the reasonability of the price and the work. Except for clearly erroneous estimates, the details of bids cannot be Changed.		For (1) and (2), negotiations can be conducted for standardizing the specifications among bidders.	
5. Current tendering systems: Criteria for awarding a contract	Lowest bid price	(2) Lowest bid price (3) Best value	(1) Lowest bid price (2) Most economically advantageous tender	(1) Lowest bid price (2) Most economically advantageous tender (The basic rule is to "maximize VFM.")		(2) Most economically advantageous tender	(2) Most economically advantageous tender		(1) Lowest bid price (2) Most economically advantageous tender	

Source: Ohono and Harada, 2006

2.5.1 Legal framework for public procurement

Cholopray (2020) says,

The significance of procurement legal and regulatory framework is to clearly define the rules that govern the procedures and processes of every aspect of public procurement management and ensure the achievement of the principles of public procurement to the fullest. The legal and regulatory framework for procurement in every country is also usually intended to support the economic development policies of that country (para. 1).

Further AAPC (2014) says the legislative framework essential for transparency in public procurement and good governance stresses the transparency in every corner of government. Once transparency and accountability on public procurement are well established, it could certainly amplify governments' chances of getting notified by the donors, international financial institutions such as IMF, IFC, ADB, World Bank and of course the international community (AAPC, 2014). Implementing transparency in the public procurement process prevents corruption, fraud, waste etc. Xavier (2019) says "Many countries have, during the start of the 21st century, enacted laws, or amended laws with respect to public procurement to prevent fraud, waste, corruption or protectionism and cronyism"(para. 3). Even countries in the south Asian region like Malaysia, Philippines etc. are trying to implement procurement law within their country to reinforce their public procurement system and establish the transparency of the procurement system. Xavier (2019) says, "With the recent call for the enactment of public procurement law, it is time for Malaysia to seriously consider such enactment and whatever the reasons, the need for regulation is essential in Malaysia"(para. 1). There are many countries that have enacted a procurement law in their countries. Murniati (2019) states, There are more than 27 countries which enacted their own procurement law system or amended prevailing regulations due to an increase of issues in the public procurement process. Further, Xavier (2019) says, objectives of public procurement can only be accomplished with clearly codified guidelines, rules and regulations.

2.5.2 Market approaches

The market approach is the strategy of approaching prospective contractors in the industry by the procurement entity (World Bank, 2017). According to the Government of South Australia (GSA, 2017) states,

Public authorities need to determine the most appropriate market approach strategy based on their business need and up to date knowledge of the market for the goods and services. In general, a market approach strategy may be undertaken as either a single-stage or multi-stage process. (p. 3)

The single-stage market approach allows one to award a contract at the end of the process and this is commonly used when the market is steady, competitive and requirements can be clearly established (GSA, 2017). Further (GSA, 2017) says, a multi-stage market approach is used when there is a lack of clarity about requirements, limited understanding of supply market, shortlisting to reduce costs to suppliers and public authority and security issues. There different types of market approaches such as open, limited, competitive dialogue, Best and Final Offer (BAFO) etc.

2.5.3 Criteria for awarding a contract

As per Sigma (2011), “the award criteria are the criteria that constitute the basis on which a contracting authority chooses the best tender and awards a contract” (p. 1). Public procurement systems in the world mainly emphasize two (02) main awarding criteria known as the lowest bid price criterion or the Most Economical Advantageous Tender (MEAT) criterion (Sigma, 2011). Further Hrnčirova and Ochrana (2015) state, awarding criteria signifies the crucial instrument in selecting the best offer.

In the lowest bid price criterion, the procurement entity award the contract to the bidder who offers the lowest bid price which complies with the conditions in the bidding documents and bids received to the procuring entity are evaluated using the specified set of criteria (Sigma, 2011). Rosenbaum (1992) states, price is the only parameter which will be mainly evaluated under this criterion and other specific parameters such as quality, time, safety measure would not be taken account under this criterion. Moreover Sigma (2011, p.3) states,

The lowest price criterion has the benefit of simplicity and rapidity, but it presents some limits, including the following:

- i. It does not permit the procuring entity to consider qualitative aspects. Other than the quality aspects specified within the specifications, which are mandatory to meet by every bidder, the quality of the product or service is going to be procured is not a key factor to evaluation.
- ii. It does not permit the procuring entity to consider innovation and innovative resolutions. It is compulsory for bidders to comply with the specifications which issued with bidding documents.
- iii. Even though there is requirement of take into account operations after service, it does not permit the procuring entity to consider the Life Cycle Costs (LCC) of the product or service going to be procured.
- iv. In an event of lowest price criterion is using, only the direct cost or the initial purchase price of the product or service which are compliant with the specifications are going to be considered.

MEAT is a newly identified awarding criteria used by different procurement entities to enhance the responsiveness of bids received to select a responsible contractor. The MEAT criterion enables the procuring entity to consider -sub-criteria that reflect qualitative, technical and sustainable aspects of the bid submission as well as price when deciding on an award decision (Crescent Purchasing Consortium [CPC], 2015). According to Sigma (2011, p.3),

The MEAT criterion, as opposite to the lowest price criterion and it gives a number of benefits, including in specially the followings:

- i. It allows procuring entity to consider qualitative aspects. The MEAT criterion is normally applied when quality is a vital requirement for the procuring entity.
- ii. It permits procuring entity to consider innovation or innovative resolutions. This has significant impact for small and medium-sized enterprises (SMEs), which are the source of innovation and important research and development activities.

- iii. When there is requirement of take into account operations after service, it permits the procuring entity to consider Life Cycle Costs (LCC) of the products or services going to be procured and not only the direct cost or initial purchase price of a product or service which are compliant with the given specifications.

There are many parameters can be used under this awarding criteria and CPC (2015) mentions those as quality, price or cost using a cost-effectiveness approach, technical merit, aesthetic and functional characteristics, accessibility, social characteristics, environmental characteristics, innovative characteristics, after-sales service and technical assistance, delivery conditions such as date, process and period.

2.5.4 Contract awarding methods

Subsection 2.1.2.2 has provided a brief introduction about the topic of contract awarding methods related to challenges face when selecting a responsible contractor. According to Khan and Khan (2015), followings are the contract awarding methods practiced in other public procurement systems:

2.5.4.1 Competitive lowest bidding method (price-basis).

The commonly accepted method for contractor selection process in construction projects. Getting the minimum possible price for a specific project is the main purpose of competitive bidding (price-based) and this method attempts to assure that all the participants gets an equal opportunity to bid, minimises collusion while saving the public money (Khan & Khan, 2015). According to Sweet (1989), “it also necessitates protecting against nepotism, favoritism, extravagance, corruption and fraud” (p. 34). Further, there should be a clearly distinct benchmark to help the evaluating committee to decide whether responsive bids has been received by the committee and the bidders are appear to be responsible (Khan & Khan, 2015).

2.5.4.2 Competitive average bidding (price-based)

This method is built on the basis that the bid which nearest to the mean of all the bid prices is treated as the finest bid, and not bid which the price is lower or higher (Khan & Khan, 2015). Moreover, Khan and Khan (2015) say according to this method bids

far lower than the mean bid are taken as th unrealistically underbid. The bids which are greatly higher than the average are taken as the unrealistically overbid. Even though this method has been evolved up to some extent from the traditional contract awarding methods, still this method is based on the bid price in the bid. Though this average bidding mechanism uses different parameters to calculate the mean bid or use a different measures for selecting the finest bid, yet this technique only consider the price only (Irtishad, 1993).

2.5.4.3 Multi-parameter method

According to Herbsman and Ellis (1992) “this is model-based competitive bidding which not only caters to cost but also considers other parameters as proposed by Herbsman and Ellis; they named it the multi-parameter bidding procedure” (p. 138). Khan and Khan (2015) state, Herbsman and Ellis have proposed the main parameters of this method shall be: bid price, time for completion and quality in line with the minor parameters based on the client’s prefernce. Tarricon, (1993) says, “ in this method, a “total combined cost “will come up after applying all these factors and the total combined costs of all the bids are then compared to pick the best bidder” (p. 139).

2.5.4.4 Innovative methods

Public procurement systems of different countries have formed their own methods to award a contract based on nature, complex, risk involvement, specific constraints related to the project.

A. Bidding on Cost/ Time

All the bidders who participate in the bidding process need to require to calculate two (02) values known as the estimated cost for the construction project and the estimated duration for completion of the project. The successful bidder is who submits the lowest Total Combined Bid (TCB) using below equation (Herbsman Ellias & Cosma, 2001).

$$\text{TCB} = \text{ECC} + (\text{DRUC} \times \text{EPD})$$

Where:

TCB = Total Combined Bid;

ECC = Estimated Construction Cost for the Project;

DRUC = Daily Road User Cost;

EPD = Estimated Project Duration for Project Completion;

B. Lane Rental Method

As per the Herbsman et al., (2001) lane rental method is,

Each bidder is required to submit their cost estimate of the work to be performed, along with the amount of time needed for lane closures during the construction period. The total cost of the project is the sum of the cost estimate of the work to be performed plus the cost of all essential lane closures. The lowest total aggregate cost estimate will determine who will be the successful bidder. Upon commencement of construction, whenever lane closures are required, the contractor will pay to the owner those charges in accordance with a predetermined schedule of lane closure fees. (p.233)

2.5.5 Possibility of negotiation

Public procurement systems in different countries ensure that the procurement process meets all the objectives specified within it to prevent fraud corruption and maximise the value for money. Therefore Smith (2017) states,

Because of this, negotiation is often not encouraged during the core supplier identification and selection process, because it is seen to bring some element of subjectivity into the processor to give more scope for a corrupt buyer or seller to win business through unfair means. (para.1)

Yet negotiations provide much information for both parties if it has been correctly used and most of the contract awarding methods indirectly add high cost to the procurement process since there is no process to discuss for both the parties on the same table (Tadelis & Bajari, 2006). If the nature of the project is too complex, it is better to have a negotiation process with the prospective bidders before selecting a contractor and it provides a better outlook about the project for all the parties (McAfee, Preston & John, 1986). Even though the local public procurement system has restricted the negotiation process, it has been used by most developed countries with care and diligence. Additionally, Smith (2017) says “in practice, even the open or restricted processes often do require a degree of possibly informal negotiation” (para. 7).

2.5.6 Adopting technological enhancements

The world is currently passing the digital age of it (Wikipedia, 2020). The impact of technology has been effective in all industries by changing its nature. The public procurement system of other countries has already adopted these changes into their system by introducing a paperless procurement process by utilising the power of the internet, online database related to contractors, artificial intelligent procurement systems etc. (Khan, 2020). According to Aberdeen (2005),

Procurement professionals should identify and implement technology that aides the procurement process and supports the overall strategy of the organization. The technology should create measurable results (linked to Return on Investment) including, reduced transaction costs, improved process efficiency, a reduction or elimination in “maverick spending”, increased contract compliance, improved transparency, reduced cycle times and improved inventory costs. Technology can also increase supplier access to bid opportunities which can result in increased competition, diversity and inclusion of suppliers. (p. 1)

Technology in procurement can be identified as a broad topic. Chartered Institute of Purchasing and Supply (CIPS, 2019, p.1) explains technologies which currently used by the different countries related to procurement are as follows,

- i. E-commerce (e-sourcing, e-procurement, e-purchasing, e-auctions, e-tender, electronic payment solutions)
- ii. Marketplaces/business exchanges
- iii. Contract registers/databases
- iv. Knowledge portals/supplier databases
- v. Business intelligence E-invoicing / e-payables ERP (Enterprise Resource Planning) systems
- vi. MRP (Materials Resource Planning)/Inventory systems

The above list of developments expresses that technology has almost taken out the procurement system of other countries to facilitate the procurement process in a more efficient and effective way.

2.6 Research Framework

Enhancing the responsiveness of bids to select a responsible contractor is vital in the public procurement process. Even though NPA guideline and manual is ruling out the public procurement process to streamline the procuring mechanism of the construction projects, still there is a huge lacuna in the area of enhancing the responsiveness of bids. After ending 30 years of war, which makes troublesome to the general public, currently, Sri Lankan citizens are suffering from the issues related to the development of the country. Development of the country also includes the development of public utilities or else infrastructure to give a better life to the public. Yet current local context is another way around where development of public utilities and infrastructures are dragging to a long-time period, a development which has already completed possess less quality or operation time is comparatively low, developments are not fit for the required purpose, etc. Thus enhancing the responsiveness of bids to select a responsible contractor can solve most part of these problems related to the public construction projects.

Research framework which depicted in below figure (see *Figure 2.5*) focusing on adoptions of the mechanisms described under the Subsection 2.4 in lining with the Sri Lankan context to enhance the responsiveness of the bids by overcoming the following challenges,

1. Transaction Cost Theory
2. Awarding Methods
3. Legal and Regulatory Framework
4. Procurement Procedures and Practices
5. Lack of Audit and anti-corruption measures
6. Enhancing competitiveness and participation
7. Lack of knowledge in the area of Public Procurement

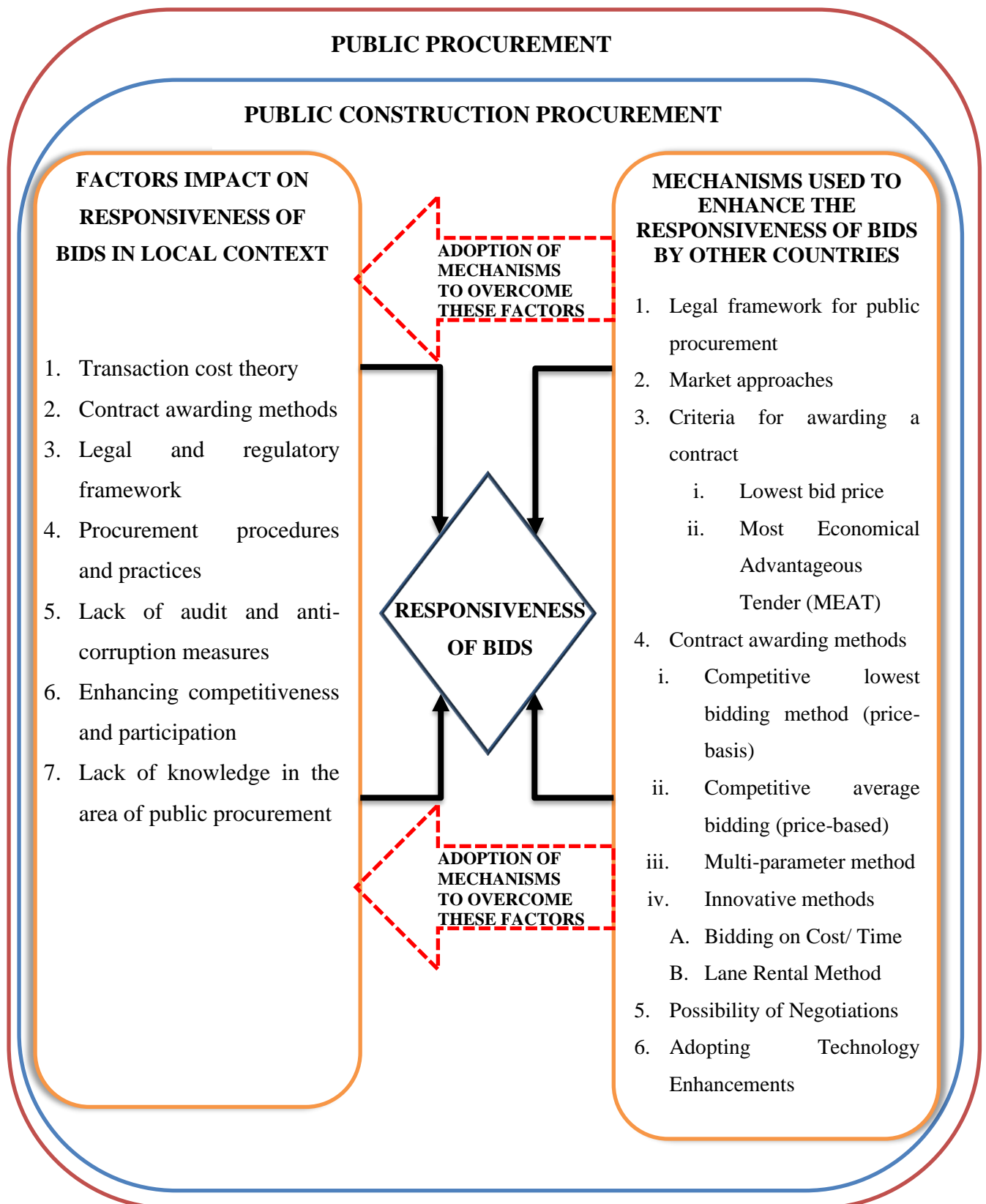


Figure 2.5: Research framework

Further, this research is scrutinising mechanisms used for research framework to find out how these mechanisms can be reforms or develop to enhance responsiveness bids to select a responsible contractor by minimising above mentioned challenges.

2.7 Summary

The first half of this chapter describes public construction projects and the procurement process of different contexts by providing the details extracted from procurement systems in different countries.

The second half of this chapter describes the responsiveness of a bid, factors impact on the responsiveness of a bid and mechanisms used by other countries to enhance the responsiveness of the bids. Finally, this study in this Chapter implements the research framework to find out the adoption of those mechanisms within the local context to enhance the responsiveness of bids.

3.0 RESEARCH METHODOLOGY

3.1 Introduction

The research is focused on enhancing the responsiveness of bids receiving to select a responsible contractor for public construction projects. Discussions on Chapter 02 explain the literature background related to the topic and this chapter explains the methodological framework used to the research. Research philosophy, research approach and data collection method will be elaborated under this chapter.

3.2 Research Philosophy

Kothari (2004) described research philosophy as a trusted mechanism to gather, analyse and interpret data related to the concerning problem. Saunders, Lewis and Thornhill (2009) state research philosophy had three (03) different perspectives known as Epistemology, Ontology, and Axiology. Epistemology focuses on acceptable knowledge in a field of study and it is subdivided into two (02) concepts known positivism which knowledge needs to be scientific and interpretivism which knowledge needs to be the opinion of the people. Ontology focuses on the nature of reality and it is subdivided into two (02) concepts known as subjectivism which knowledge is predetermined and objectivism which knowledge is not predetermined. Axiology focus on values incorporates with the study and it is subdivided into two (02) concepts are known value-free which researcher's values are not incorporated into the analysis and value-laden which researcher's values such as knowledge and experience are incorporated into the analysis.

This research is focusing on enhancing the responsiveness of bids received to select responsible contractors for public construction projects. Since there are different mechanisms practiced by different public procurement systems to enhance the responsiveness of bids, this study has a pre-determined framework. Hence this research will emphasise on qualitative analysis of each technique. In addition, the researcher's knowledge and experience will involve this research due to the subjective nature of the data collection and analysis.

Therefore, the research philosophy of this study should be interpretivism with respect to the epistemological way of thinking about the research philosophy, subjectivism with respect to the ontological way of thinking about the research philosophy and value-laden with respect to the axiological way of thinking about the research philosophy.

3.3 Research Design

According to the Wyk (2008) research design is an overall plan to link conceptual research problem to appropriate realistic research. The complete design for this research is showed in Figure 3.1.

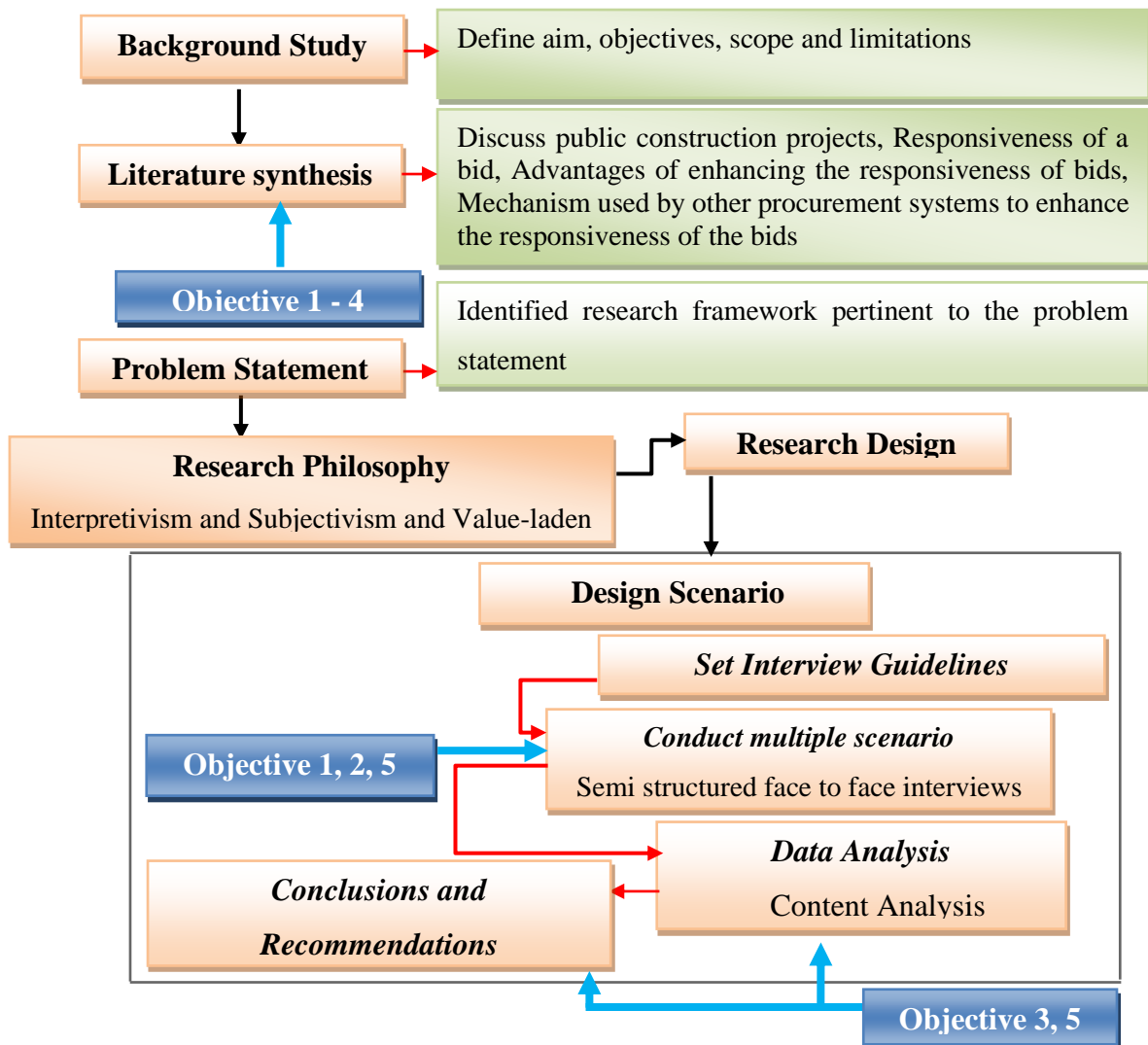


Figure 3.1: Research design

3.4 Research Approach

According to the Naoum (2007), quantitative which reflect objective nature and qualitative which reflect the subjective nature of the research are two (02) main research approaches. Due to descriptive nature and practical utilisation in related to the research framework, the qualitative research approach is choosed for this study. Further, this study is neither about establnishing or testing a theory and this research is focused on fundamental areas of prevailing methods and possible reformations of those methods to enhance the responsiveness of bids to select the responsible contractor.

3.5 Research Technique

Data collection and data analysis methods can be identified as research techniques. Below topics are better describe the research techniques used in this study.

3.6 Data Collection

Since this research is conducting on the adoption of already implemented methods that suit to the local context, this can be categorised as an exploratory research. Saunders, Lewis and Thornhill (2009) says, to get a good indepth knowlegde about phenomenon or attain a new insight, exploratory research can be used. Since this research is conducting on the adoption of already implemented methods which suite to the local context, interviews are selected as the prime data collection technique. Interviews will be undertaken to introduce the topic with its background and interviewee's explanations on prevailing methods and possible reformations will be recorded separately.

This study will require ideas from industry experts who are competent in the public procurement system of the local construction industry. Therefore, by using purposive sampling method respondents were selected from specified areas who are having experience in the construction industry. Interviews were conducted face to face and all details of the interviews were recorded for ease of the data analysis stage.

3.7 Data Analysis

Westbrook (1994) states content analysis is known as one of the frequently used method in qualitative researches for data analysis. Hence it has been used to analyze the data gathered from the interviews.

3.8 Conclusion Drawing

Based on the results generated through the data analysis phase, reformations need to be done for prevailing methods that were suggested to implement in the construction industry.

3.9 Summary

This chapter discussed the research methodology adopted for the study. Findings from the literature and similar researches are conveying the most suitable option need to adopt by this kind of research will be the qualitative research approach. In additionally this chapter will discuss preferred data collection and data analysing techniques to undertake this research successfully.

4.0 RESEARCH ANALYSIS AND FINDINGS

4.1 Introduction

The previous chapter described the research methodology used to undertake this research. This Chapter discusses and analyses the data collected through semi-structured interviews from experts who are competent in the public procurement process, in line with the research problem.

4.2 Profile of Respondents

The public construction procurement process is a complex process that has many procedural works. Thus, when exploring an area of public construction procurement, professionals who deeply involved in this process have a great level of impact on the final outcome of the research. This impact comes with their experiences in the public procurement, knowledge of procurement, level of involvement in the area of procurement, decisions making ability at the stage of procurement etc. Therefore only the procurement specialists who have a high level of involvement in the public construction procurement have been chosen to collect the data for this research. Below Table will depict the background of selected respondents (see *Table 4.1*).

Table 4.1: Background of professionals

Respondent Code	Area of Expertise	Designation	Nature of Employment	Experience
R01	Chartered Quantity Surveyor	Managing Director	Consultancy	22 Years
R02	Chartered Quantity Surveyor	Contract / Procurement Specialist	Contractor	16 Years
R03	Chartered Engineer	Project Director	Consultancy	20 Years
R04	Chartered Engineer	Deputy General Manager	Consultancy	16 Years
R05	Chartered Quantity Surveyor	Senior Quantity Surveyor	Contractor	9 Years

An interview guideline which has been used to collect the data is attached as Appendix A for further reference.

4.3 Influences of Public Construction Procurement to Sri Lankan Economy

Prior to going for the area of the research problem, it's important to know the importance of the public construction procurement process to the economy of Sri Lanka. It will give the lead to the research topic and why the research problem is crucial in the current context of the country.

R01 elaborated “*Construction industry contributes about 9% to GDP of the country. And when it comes to private and public investments towards the construction industry, more than 75% of the investments are done by the Government of Sri Lanka (GoSL).*” R01 used statistical data to highlight the importance of public construction procurement. Analysing R01’s quotation, it depicts the public construction procurement contribute about 6.75% to GDP of the country and it is a considerable amount compared to all other sectors which contribute to the GDP of the country. Thus the continuation of the healthy public construction procurement process is vital for the Sri Lankan economy. R02 adds more to the above by stating, “*Developing different types of infrastructures, roads and bridges are important to generate a niche for the private sector to make investments for constructions like commercial buildings, apartments, hotels, office complex etc. Those constructions will deliver the opportunities to private sector contractors to enhance their growth and contribute to the national GDP.*” R02’s idea on the importance of public construction projects shows the impact of the private sector contractors on their day to day work. As per R01’s statistical data contribution of 2.25% to GDP is done by the private sector construction organisations. It infers, without the involvement of the public sector constructions this percentage would be a lesser amount than the current amount. Thus R02 statement, determines public construction procurement does have a significant impact on the private sector construction.

R05 states, “*Public constructions are initiated by government institutions, different states of the country such as the provincial council, urban council, pradeshiya saba, etc. and community centers, bridges, small roads etc. also comes under the public*

constructions. Public constructions provide opportunities for medium and small scale contractors to maintain their cash flow and in present nearly 95% of the medium and small level contractors are surviving from this types of projects” R05 directs that public constructions are key mode for the medium and small level contractor to find their opportunities to survive in the market. Inversely it infers, if initiation of public constructions were discouraged or not properly handled, it will make an impact on the wellbeing of medium and small level contracting organisations. Additionally, it might cause the move to the lower level of construction companies and lose the stability of the construction industry.

R04 compared the importance of the government procurement process by comparing it with the situation of Singapore. R04 stated *“Public constructions are so critical to the national economy. Therefore the government should pump the money to the construction industry continuously and according to the status of the economic cycle. As an example in Singapore, when there is a recession period in the private sector contribution to the construction industry, the government is pumping money to the construction industry to keep the industry steady. Once the private sector comes to its boom government slowdowns this process and this keeps the equilibrium in the construction industry of Singapore.”* Singapore is a high-income country in the Asian continent which rapidly developed within a shorter period from the status of low-income countries. R04 stressed the activities of the government of Singapore towards the construction industry and how important those maintain those activities within the country to enhance the level of Sri Lanka within the Asian region. According to the above statement, public construction procurement is the key to balance the construction industry within a country. By varying different inputs to public construction, the whole construction industry of a country can be manipulated or controlled. From a different perspective, an entire economy of a country can be influenced in a good or bad manner by changing few levers of public construction. Moreover above statement infers, developed countries in the Asian region like Singapore carefully monitor and handle the public construction process time to time to get the maximum benefit for the country’s economy and as a neighboring county in

the same region, Sri Lanka too needs to follow a similar procedure to gain that advantage.

Outcomes generated from Nvivo in related to the importance of public construction procurement to the Sri Lankan economy is attached as Appendix C.

4.4 Responsive Bid and Its Impact on Public Construction Procurement

As per the literature synthesis, the responsiveness of a bid is crucial when selecting a responsible contractor. Respondent for this research brought different perspectives to validate the importance of enhancing the responsiveness of bid for selecting a responsible contractor.

R01 describes “*Responsive bid is a bid which fully satisfies three (03) main criteria called cost, time, quality while adhering to the legal constraints and the employer requirements. But obtaining a responsive bid is challenging and due to that NPA guidelines introduce the substantially responsive bid concept. Under this concept, a bidder does not need to satisfy all the requirements to its fullest level and can have minor deviations compared to qualifications request in the bidding document. If 100% responsiveness considered in the bid evaluation, 99.99% of bidding processes would be failed.*” R01 differentiates a responsive bid and a substantially responsive bid by referring to the NPA guidelines. As per the R01 statement, it is rare to find the highly responsive bids and inversely it infers that it’s difficult to adhere to all the requirements into its fullest mode when submitting a bid. Furthermore, it determines that even the regulatory bodies such as NPA know this issue and they brought the concept substantially responsive bid.

R03 states “*NPA documents do mention boundaries to decide substantiality of a bid by categorising list of major and minor deviations within the NPA guidelines. But the problem is up to which point these deviations assist to decide the substantial complying of a bid to the bidding qualifications. As per my personal view, these deviations should be changed according to the characteristics of a project such as the nature of the project, complexity, magnitude, involvement of technology for the project, etc.*” R03 explanation on the responsiveness of bids combined with the NPA guidelines is

revolutionary and innovative. Having one single framework to decide the substantiality of bids received for different types of construction projects will not provide the best result at the end. According to nature and the characteristics of a project, these major and minor deviations need to be revised or modified. Furthermore, this indirectly infers having a different set of procedures for different categories of projects is important to select the increase in the responsiveness of bids.

R02 explained, *“to increase the responsiveness of a bid which we submit, we consider the concept of zero errors. In that process, we recheck arithmetical functions to avoid arithmetical errors, revisit the checklist given with bidding document, scrutinize the bid with NPA guidelines and other rules and regulations which are not mentioning in the bidding documents. Here we are trying to minimize the gap between information received and not received. The amount of information not received will be priced as a risk. This process does have considerable cost and this cannot be accepted from each and every bidder who practiced only to submit documents mentioning within the bidding documents due to transaction cost. But when all the bidders are trying to submit information only mention within the bidding document, will lead to select a non-responsive bid even though that bid has qualified according to the NPA guidelines. Therefore there should be options to evaluate bids submitted relevant to different types of projects”* R02 as a professional working in contracting organization described the way that their organization use to increase the responsiveness of submitting bids. R02 examines a bid from different views such as error-free price, the document needs to be submitted with the bid, compatibility with the NPA guideline and procedures, complying with the local rules and regulations, etc. This process shows, how R02 handles the transaction cost for a certain bid by controlling information asymmetry. By analyzing R02’s explanation, it indirectly says, R02 does have qualified staff to analyse every single information. Additionally, this type of scrutinising cannot be accepted from every bidder due to a lack of qualified staff to undertake such type of work. Even though a bid said to be substantially responsive since it complies with all the requirements in the bidding document if all the bidders include in the bidding process is only focusing to submit what requesting in the bidding document, the final selected bid might be non-responsive. The reason for this was

explained by the R05 by stating *“Considering operation and maintenance cost is highly important in the present context. A bidder can offer an item that has a comparatively high price than another bidder. But if we take operation and maintenance costs, the item which has a high price would have less amount than the other. But how many employers are evaluating life cycle cost in a selected bid? 95% of the employers are only focusing on the capital cost which might lead them to select a non-responsive bidder by thinking of he is the lowest bidder. Even NPA guidelines also not much focusing on this area. Therefore bidders only submit what is a request by the bidding document and do not consider this type of crucial factor since they know employers don’t make concern about it.”* Areas like operation and maintenance had an enormous impact on some public construction projects. According to the R05 explanation, most of the bidders are trying to lower their bid price since employers are mainly focusing on the capital cost of a bid and less focus on the life cycle cost. This also interprets that, bidders only tries to submit what bidding document requests and keep less concern about other crucial factors. Not mentioning straight conditions for the above scenarios within the documents NPA guidelines, manual etc. might be the reason to give less concern by the bidders and employers. This infers that though employer select one substantially responsive bid by evaluating all the submitted bids, ultimately selected bid might be a non-responsive due to not considering other critical factors which are not directly requesting in the bidding document but need to be taken in to account at the time of preparing the bid. Thus R05’s statement better explains the R02’s statement above.

Moreover R02 statement *“As per my personal view these deviations should be changed according to characteristics of a project such as nature of the project, complexity, magnitude, involvement of technology for the project, etc.”* was comply with the R03 statement which mentioning *“Therefore there should be options to evaluate bids submitted relevant to different types of projects”*. This interprets having one framework for all scenarios is less effective when selecting a responsive bid. Therefore the framework needs to be modified or reverse as per the scenario. It can increase the responsiveness of finally selected bid than the current situation. Analysis of Nvivo

software for a responsive bid and its impact on public construction projects are attached to Appendix D.

4.5 Responsible Contractor's Role in the Public Construction Procurement

According to R04 *“according to my view responsible contractor should have the ability to cope with required inevitabilities of a given project and need to meet three main areas of time, quality and cost”* This statement construe the fact if any contractor can achieve the time, cost, quality while coping the requirements of a project, that contractor can be categorised as a responsible contractor. Yet R02 explains other competencies that a responsible contractor must have *“Responsible contractor must have the ability to withstand any unfair situation arise due to employer or any other stakeholder of the project. Accepting every condition of the employer and undertaking works beyond the contract, is not a sign of a responsible contractor”* This statement depicts the idea, the responsible contractor shall have the ability to reject any conditions brought by the employer which prejudice the contractor's rights as per the contract. This also infers the contractor should have expertise within the organization to fight against unfair terms of the employer, good financial stability, experience, number of projects within the hand. Inversely it says, a contractor who is accepting all the terms of the employer is not good for the relevant project and the construction industry. Once the contractor does that, cash flow, program, resource utilisation, etc. start to deviate and to overcome this contractor need to pump more money and resources towards the project. Once the breakeven point exceeded that effect will impact on all the projects handled by the contractor. Therefore to keep the progress of every project healthy and live contractor need to be aware of conditions need to accept and the conditions need to be rejected. This should be one of the major areas need to be focused on when selecting a responsible contractor.

R05 elaborates *“Both employer and the contractor should have strong positions within the contract to the success of the project. Arbitration/ litigation history one of the evaluation criteria giving in the NPA guideline and most of the time those records used against the contractor to reduce the marks at the evaluations. Additionally some technical committee evaluation members' don't know how to evaluate such a record*

even though it has been requested in the bid. If the judgment of those records is in favor of the contractor, then it depicts the strong position of the contractor and the contractor has to carry out those proceedings until the decision is in his favor. It gives a message to the employer, the contractor to the contract is strong enough to raise legal proceeding if there is something unfair within the contract.” This statement construes that a responsible contractor should have the ability to guide an employer rather than accepting all the conditions of the employer. As an example, an employer might bring variation to the project which is actually not a variation as per the contract. As a responsible contractor, informing it is not a variation to the contract yet it is a new contract that will aid the employer to run the project smoothly. The moreover above statement also infers if a contractor can challenge critical decisions of a project such as the decision of awarding the contract, technical evaluation committees will make their maximum effort to choose the responsive contractor without having any error in the process. Delivering a project at the right time with the right quality is very important in public construction. Therefore it is not only the employer who needs to motivate the contractor yet the contractor also motivates the employer to fulfill relevant obligations stipulated in the contract. There is a high possibility of manipulating the contract by a one-party if another party is weak from their side. Public contracts are more tend to be manipulated as per reason incidents within the country. Therefore having strong parties to the contract can avoid these types of manipulations in public contracts and it always leads to the success of the final project.

4.6 Enhancing the Responsiveness of Bids to Select a Responsible Contractor

Literature synthesis explained critical factors which have an influence on a bid when choosing a responsible contractor. Further in the theoretical framework, certain key methods were found which have been used by different countries to enhance the responsiveness of bids and select a responsible contractor. Those key methods were introduced to the respondents and as a result of that respondents commented how far those methods were applied to the local context. Below figures (See *Figure*) illustrate the nodes and attributes of the nodes codified using Nvivo software to analyse above topic.



Figure 4.1: Nodes that depicts mechanisms to enhance the responsiveness of bids

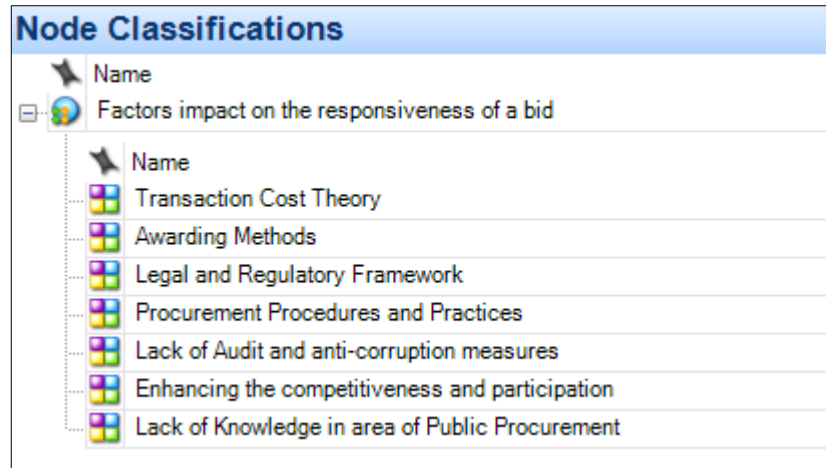


Figure 4.2: Attributes of each mechanism

4.6.1 Legal framework for public procurement

R02 idea on the impact of improving the legal framework for public procurement as follows “*Sri Lanka does need a strong, evolving and active legal framework for public procurement. If there is such a system we can expect a transparent procurement process up to awarding a contract to a suitable contractor. It also encourages contracting organisations to involve more with public procurement.*” R02 who is working for the contracting organisation see the benefit of improving the current legal framework for public procurement. According to R02, the legal framework for procurement need to be “Strong” and “Evolving”. This inversely says the current framework is not strong and evolving. Therefore there are numbers of loophole where a person can do any fraudulent activity and due to that the trust in the public procurement process, especially from the sides of bidders, will be decreased and few fraudulent activities in public procurement process will decrease the amount of

participant to the bidding process. This infers one major reason for lack of competition in the bidding process due to less trust in the public process. If local regulatory bodies can improve the regulatory framework for procurement, then it will help to enhance the competition level in the bidding process. R02's idea has been confirmed by the R01 by determining the factor *"Improving the legal framework for procurement is important, but at the same time, basic law should be developed to make the punishments to wrongdoers. Otherwise, there is no point in improving the legal framework for procurement."* R01 view on developing a legal framework for procurement shall be done while doing the developments to the common law of the country. Having a gap between the common law of the country and the legal framework for procurement can again make certain excuses for the wrongdoers to escape from their punishments. Therefore improving both systems at once is important then there will be minor ambiguities in which a wrongdoer can justify the wrong done. Additionally, a system cannot go further without having certain penalties or punishments for the culpable works. Therefore establishing a proper method to make punishments is important when it comes to public procurement since its public money ultimately gets wasted or misused due to undertaking illicit work within the public procurement process.

R03 had a different idea of improving the legal framework for public procurement, as per R03 *"Improving legal framework for public procurement is important. But what I suggest is we currently have most of the required rules and regulations in different places for public procurement and what we don't have is act passed from the parliament for public procurement. We need to look at other countries that have a separate act for the public procurement and the areas which we can use within those acts. Then we can adopt those areas to our actions and have our own act for public procurement."* R03 who is working in the government sector, much focusing on having act which has been passed by the parliament. Sri Lanka currently using NPA guidelines and manuals, regulations issued by the finance ministry and regulations in the government institutions to handle the public procurement process. Yet it is always better to have one common law for public procurement rather than using discrete laws in the country for public procurement. Furthermore, when there is an act for

procurement it will reduce the discrepancies in the public procurement and loopholes to escape by the wrongdoers. By agreeing to R03, R05 says *“Bringing a procurement law at the once will not be able to suit the public procurement process since we still have the primary level of the procurement process. I like to suggest introduce the specific laws for key areas in the public procurement process such as the law for corruption, law for auditing, law for public procurement complaint process, etc.”* R05 narrow down the concept of having an act for procurement mentioned by the R03. Bringing an act at once to the public procurement process will lead to a lot of difficulties. Yet introducing laws for the specific areas and make it passed by the parliament as an act which is key to the public procurement process will give a better advantage by giving time to improve the laws in those specific areas and introduced new laws from time to time.

4.6.2 Market approaches

R01 his idea on this regard as *“NPA guideline refer to these approaches as procurement methods. My idea is these approaches need to decide on nature, complexity, magnitude, experience level, finance capability, number of contractors in the industry who can do such type of work, etc. The open and limited bidding procedure is good for if the construction project is not too complex, ordinary by nature, there are enough contractors in the market to do such work, etc. Even a two-stage bidding procedure is good for the above type of work. But it needs to be decided based on the time allocated for the procurement process. When it goes to projects which are unique and special in the nature such as constructing a power plant, dam and railway project etc. we need to go for special types of bidding procedures such as two envelope system with negotiations, two-stage bidding process.”* This infers market approach needs to be selected according to the characteristics of a project and all the market approaches will not be fit for every project. As per R01’s idea open and limited approaches are best suited when the project is less complex, ordinary by nature there is a number of bidders are available in the market to handle such type of work. The true intention of these two (02) methods in achieving competitiveness. That feature can achieve up to its fullest is only when there is an increased number of participants to the bidding process and since most bidders in the market are doing the ordinary and less complex

work, the proposed project should be such nature. Other approaches such as two-stage, are applicable for such nature projects but it might not be effective when considering the inputs such as time, cost and resources which need to be allocated to such process to procure this nature of the project. Both two (02) envelope and two-stage approaches are well fitted if the project is unique in its nature and needs to be the local industry does have few amounts of experience about such type of work. Also, R01's explanation shows the inbuilt negotiation process within these systems can increase the effectiveness of these systems.

R03 agrees to above idea and adds few more feature need to be incorporate with those systems to improve them by stating *"Incorporating mandatory prequalification process for open bidding process will screen unwanted participants in the process."* An increased number of participants involved in a bidding process ensures maximising the competitiveness and aids to find the most responsive bid. Yet the final outcome can be deviate, if most of the participants are not eligible and not submitting a responsive bid. Therefore adding a screening process such as incorporating a prequalification system into an open approach can remove the unwanted participants from the process and select the only eligible bidders for bid. R03's adduce of incorporating mandatory prequalification system is a satisfactory step to remove unwanted bidders and obtain the responsive bids.

All R02, R04, and R05 agree to the above statements and additionally, R05, states *"Best And Final Offer (BAFO) is another method used in developed countries. This is mostly used by property developers due to the high competition. In this method due to high-level competition owner requests from the top bidders to submit their BAFO with favorable conditions to the owner."* R05 suggests a new market approach that is currently used by the property developing sector in developed countries. As per R05's explanation, this method can be used to take advantage when there is high competition for a project. A procuring party can demand his terms and conditions to a high level which helped lower the bid submitted by the bidder. Yet the disadvantage is how far this method will increase the responsiveness of the submitted bid.

4.6.3 Criteria for awarding a contract

Respondents gave their explanations and ideas on the applicability of the lowest evaluated bid and most economically advantageous bid in relation to public construction in Sri Lanka.

As per R03, *“In Sri Lanka, public procurement governed by the NPA manual and the guidelines. Those documents are mostly focusing on the concept of the substantially responsive lowest bid submitted by a bidder. But considering the lowest bid concept in each and every scenario will not give the required results or the value for money as mentioned in the objectives of the guideline. There might be bidders who priced the BOQ with low rates to win the bid. But once the contract gets awarded that contractor will send continuous notices for claims which invoke legal proceedings and extend the time for completion. Thus I believe the concept of the lowest bid should be optional which should only be used in the projects such as less complex and typical type of projects”* The idea of the R03, depicts, evaluating the bids submitted on the basis of the lowest bid is not a feasible and applicable method to for every project. It should be optional and differ according to project type, characteristics, and nature. Bids that are winning under the lowest bid criteria can lead to claims culture and the selected contractor can extend the project than the intended time period. Even though NPA guideline and the manual stated the lowest bid concept is maximizing the value for money, that concept shall be optional based on the project nature.

R01 express *“The concept of **MEAT** is a good criterion to call for bids when there are multiple characteristics need to be considered when selecting a responsive bid. Therefore this should be introduced to the local procurement guidelines as an optional criterion just like the traditional lowest bid concept”*. R04 adds to the above statement *“MEAT concept shall not only focused on the criteria price and the quality but also focus on the project delivery time, environmental impact such as using of green building concepts, using recycled construction waste, emission of CO₂, etc., adopting sustainability concepts, life cycle costing.”* Both R01 and R04 explanations demonstrate that the concept of MEAT does have an impact on public procurement. Since that concept focusing on multiple areas than the price, the responsiveness of the

bid gets increased and as an outcome of this, the project will get the most responsible contractor. This also infers the MEAT concept improves the positive impact for multiple areas in a project such as a bidder who proposed green building techniques and using recycled building waste will reduce the environmental pollution which has been currently one of the major concerning areas in Sri Lanka. Additionally, in the present amount of intervention of mechanical, electrical, information and telecommunication equipment to the construction industry is very high and when calling for bids related to that equipment, it is not enough to look only at the capital price. The evaluation committee also shall look at the life cycle cost of that equipment to select the responsive bid.

4.6.3.1 Contract awarding methods

Respondents had different comments, explanations, and complications about the methods of awarding and for research purpose interviewer has guided them through the awarding criteria discussed above.

R03 stated *“If the awarding criterion is are lowest bid price concept, then the defined contract awarding method is substantially responsive lowest bid method. Also as described at the beginning, using substantially responsive lowest bid methods would also go with the lowest bid price concept. But in both of these situations, the competition shall be a real one.”* R03’s explanation brought the idea of having real competition when receiving the bids. If the competition is abnormal or generated one by collusion or else manipulated, there will not be a real competition. Applying the lowest bid or average bid method in such a scenario will misguide the evaluators when doing their evaluations. Therefore R03’s statement also interprets to apply these two (02) methods the competition shall not be an unrealistic one or it should be true competition. Those conditions are satisfied then substantially responsive lowest bids and average bid methods are in line with the awarding criteria known as the lowest price.

By agreeing to R03’s statement, R05 describes the ideas about varied forms, *“considering only the price can be a one-way calling bid under the lowest bid price concept. But going beyond the idea of price, we can evaluate the whole life cycle cost*

of each bidder. Both of these ways are good methods to award the contract.” And R04 adds to this, *“Considering whole life cycle cost to award a contract is most suited for MEP type projects”*. Above statements sub deduces, situations varied forms can be used. Traditionally under the lowest bid price criteria, considering the price is the main way of selecting a responsive bid, yet evolvement of the construction with time, currently many mechanical, electrical, plumbing, information and communication systems were introduced into the field of construction. There are a number of manufacturers worldwide who produce similar systems with different qualities and prices. Also, there are many agents inside Sri Lanka, who brought those systems with different warranty conditions. Thus considering the capital cost to select a bidder is only a part of the evaluation and it will be completed after considering the life cycle cost of each system. Thus considering the life cycle cost appropriate method for the award the contract when procuring system which affected by its lifecycle cost.

R01 stated, *“MEAT criteria need to evaluate against the crucial factors relevant to the type of the project.”* This explanation deduces, that according to the nature of the project, there can be a couple of factor or factors which will be critical for the project. Those factors might be price, quality, time, qualifications and the competence of the recruiting staff or combination of any of these mentioned or not mentioned factors. R03 made an addition to these statements by describing *“evaluators need to set appropriate weight for selected factors based on their impact and importance to the project.”* This infers to maintain the balance of each factor according to the impact of the factor, there should be a weighting system and that will bring the best outcome for the project.

Further R03 stated one way of weighting which neutralises the impact of the price and give the priority to other important factors, *“Method of price neutralizing used by the EU countries. In that system we give 25: 75 price-quality ratio and process happen as the following table”*.

Table 4.2: Price neutralizing method

Bidder	Price Percentage	Quality Percentage	Calculation	Final Amount
X	80%	35%	(25 x 80% + 75 x 35 %)	46.25
Y	30%	90%	(25 x 30% + 75 x 90 %)	75

As per above *Table 4.2*, the bidder who offers a bid with the high price and high quality gets the chance to win the bid than the bidder who offers a bid with low price and low-quality properties. As per R03, this is only neutralising the price parameter, this can be expanded to neutralise the multiple parameters as according to the impact of them to the project requirements.

R02 commented on the methods that need to be used to achieve the MEAT criteria, *“Most of the time quality and the time are the next critical factors after the price in public procurement. As a contractor’s person, I have met once a project which considers price, time, quality and competence of the key staff are the critical factors of the project. In their person who meets less price, minimum quality requirements, intended duration and minimum competency requirements in their key staff get the average marks in the evaluation. A person who meets high price, less quality than minimum quality requirements, intended duration and less competency than the minimum competency requirements in their key staff gets lower marks in the evaluation. The Person who meets less price, high quality than minimum quality requirements, less duration than intended duration and high competency than the minimum competency requirements in their key staff gets the highest marks in the evaluation”*. R02 explained the actual scene where the MEAT concept has been applied and as per R02’s explanation other than the factors price, quality and competency level of the key staff, a bidder who offers less time period for the project is also getting points at the evaluations. Applying these type of methods allow the

employer to finish their projects earlier as per the requirements and allow the public to enjoy the benefits of those project immediately.

R04 states the suitability of price/quality technique as an awarding method, *“from the described methods price/quality ratio, price/quality/time ratio techniques will mostly be suited for civil type projects since the major areas of civil projects are civil, MEP and finishers.”* R05 confirms the above explanation from a different point of view *“price and quality based methods are when there are number alternatives for a product. When there are lots of alternative options then the price will be varied as per the quality range. Again quality will be determined by the on the manufacture, country originated, quality standards following, etc. Additionally, I think projects which majorly use materials in its basic form such as bricks, cement, timber, roofing materials, ironmongeries etc. shall use this technique”*. If the major part of a project incorporates items that have many options and those items do have basic functions, then the major concern of the interesting parties would be the level of quality and affordable price. Such projects can be awarded based on the price/quality method. By adding to this R01 states, *“using time as a factor inside the awarding technique means, delivering the project within the given timeline or urgency of the project is a crucial factor for the procuring party”*. This infers that, if the procuring party needs to finish the project within a given time or if the procuring party willing to accept bids that expedite the project and complete it before the given duration, time can be introduced as a factor within the awarding method. R01 further states *“Before use time as a factor, first we need to identify the relationship between time and other factors. Unless we won’t be able to achieve the project as we accepted.”* As per R01’s idea, the relationship between time and the factors is very important. Reducing allocated time is increasing the cost proposed for the project. Also reducing the time might lead to a decrease in the quality of the project. Thus keeping the balance between the time and other factors that can deliver a better project. Moreover, the above statement indirectly infers when using time as a critical factor in the awarding method, there should be certain limitations. As an example, there should be a limit to reducing the time by a bidder who proposes less time duration than the intended period. Otherwise, bidders

can propose abnormal durations which lesser than the intended time, just to win the bid.

R04 stated, *“Even the life cycle cost can be a parameter compared to quality and time. We can use formulas such as LCC/quality or LCC /quality/time according to the requirement of the project.”* This infers formulas where the price is a factor or parameter can be replaced by the life cycle cost factor. If the items incorporated into the project going to be used for considerable years, then it is better to use LCC as a parameter than the price.

Additionally, R03 stated, *“I think quality and life cycle cost describe in here should be as a whole. As an example quality should be decided based on all the factors which matter to the quality of that project. Quality might include technical merits, functional characteristics, aesthetic requirements, social and environmental impact, innovative methods, contracting organization grading, the competence level of the staff, etc.”* This says, when comes to basic parameters of a formula, those parameters need to be subdivided into factors, that have an impact on it. Then those subdivided factors can be considered to evaluate and finally by adding the marks obtain by those factors can decide the ultimate score of the relevant parameter. This makes the process more transparent and can be easily understood by anyone who goes through that.

R04 and R01 state, *“Those awarding methods can be used to decide the MEAT criteria”* and R02, R03, and R05 agree to this by adding *“weighting is the main way to decide MEAT criteria and points and percentage are the most used method to do that. But I think there should be provisions to rate those parameters by other values such as “bad, good, very good” or “*, **, ***”*”. Awarding methods like price or LCC/quality and price or LCC /quality/time is a good way to evaluate the MEAT criteria since they have multiple parameters to decide about the MEAT criteria. Yet for weighting purpose evaluators can use both numerical and non-numerical values as per the situation.

4.6.3.2 Innovative contract awarding methods

Public construction procurement needs to have innovative contract awarding methods that gives more benefits to all the parties and aid to select the most responsive bid. Additionally, those methods shall have the ability to give the advantage to the general public to enjoy the benefit of a project as soon as possible and remove the disturbance during the construction period too. Therefore each selected technique has been tested with two (02) respondents due to the time constraints of each respondent.

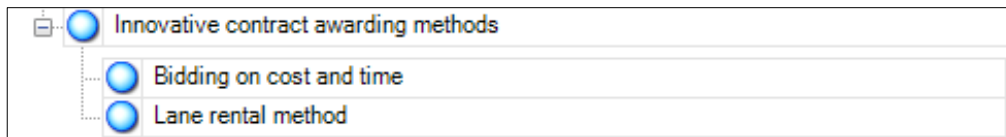


Figure 4.3: Nodes that depicts innovative contract awarding methods

4.6.3.2.1 Bidding on cost/time

$$\text{TCB} = \text{ECC} + (\text{DRUC} \times \text{EPD})$$

Where:

TCB = Total Combined Bid;

ECC = Estimated Construction Cost for the Project;

DRUC = Daily Road User Cost;

EPD = Estimated Project Duration for Project Completion;

R01 further said, *“This type of method is good for road and highway projects. But if we can get relevant cost details how much the public will spend their money, due to non-implementation of certain public utilities, then we can use this formula for any of public construction.”* When the government is not providing certain utilities does means it will be the ultimate cost to the general public who use those facilities. Thus by doing a feasibility analysis, if the government can find out the average cost per day which costs for the general public due to possessing the current facility, then this formula can be used to select the responsive bid.

By agreeing to this R02 states, *“This Daily Road User Cost (DRUC), bit similar to the delay damages method in the contract. Just like it’s difficult to calculate the exact amount for delay damages per day, there will be difficulty in calculating the DRUC amount.”* R02 explanation showed the difficulty of utilising this type of method in public procurement. Calculating DRUC accurately is a difficult task since there are lots of direct and indirect cost involvements are linked with the DRUC. Thus collecting all those cost information will not be an easy task when using this type of method. Further R02 stated, *“There is another complication, the bidders will try to put abnormal construction periods to this formula, just to win the bid”*. By analysing the R02’ statement, this can be identified as a major disadvantage arises with this method. Bidders who really wanted to get this project may underestimate the project duration in order to increase their winning chances. Since this method is only focusing on cost and time, this underestimating the project duration can create unusual competition among the bidders and the bidder who predict the actual time period can lose his chances of winning. R01 makes a suggestion for this issue by stating, *“Estimating minimum time period which can reduce the project timeline would help to avoid the problem of underestimating the project time”*. This statement infers before going to this method procuring entity shall prepare the minimum time period which can be proposed by the bidder. Then the bidder or bidders who propose to reduce the time duration less than the estimated amount can be rejected to avoid unusual competition.

R01 states, *“Since this method is majorly focusing on reducing project time, there might be quality issues. Also, the contractor might go for variations and claims under this method.”* R01 statement shows another major shortcoming of this method which related to the quality of the final product. One of the main areas which get impact due to the reduction of project time is its quality. Therefore procurement entity needs to find a method to ensure the expected quality of the final output. Further reduction of time will expose the project to more contractual issues such as notices to claim additional time and cost, instructions for variations, etc. The procuring party needs to be precise when preparing bidding documents, drawings, specifications, etc.

R02 stated, “According to the project requirement we can include parameters like life cycle cost or safety, etc.” R02 suggested developing this formula by adding new parameters such as life cycle cost or safety measures.

4.6.3.2.2 Lane rental method

R03 stated, “This method is good for any public construction which creates traffic in the road due to its construction works. By this method, we can find a contractor who creates the minimum disturbance to the road users.” As per R03’s idea, this type of method is an aid to select the bidder who makes less disturbance to road users while doing his construction works. Traffic is one major issue which road user has to bear when there is an ongoing construction happens in the road or nearby the road. As a result of traffic, wasted fuel increasing, air pollution, sound pollution, carbon dioxide increasing and most importantly wasted time of road users are happening. Therefore proposing this type of method can reduce those types of complications due to ongoing constructions.

R04 stated, “This is a good method for issues arises to road users due to ongoing constructions. But when thinking about the contractor’s position, how many contractors will like to pay an amount back to the owner due to lane closures.” The one main function of this method is paying back to the employer, as per the lane closure hours. R04 concerns how many contractors will like to follow such a method since there can be unforeseeable situations, which cannot be bypass within the allocated time in the formula. Indirectly it means, the contractor will tend to claim for additional time repeatedly which can put an end to the ultimate objective of this formula. Thus if this formula is going to use the procuring party needs to give full information about the site including underground details, hydrological conditions, physical obstructions, permission to work in nights, etc.

R05 stated, “The lane closure amount for peak and off-peak hours is determined by the procuring party. Thus when preparing those amounts there should be a basis for them like when allocating delay damages for the contract. Otherwise, it would be unfair for the contractor. ” This infers when preparing the amounts for lane closure hours there should be a proper basis to calculate those amounts. When it comes to

calculating delay damages, as per the standard form of contracts, it should be a probable pre-estimated loss that needs to be deducted from the contractor as a result of the contractor's culpable delay. Similarly, these lane closure amounts need to be a probable pre-estimated loss, which needs to be paid by the contractor back to the employer. Unless it would be a disadvantage to the contractor when he has to pay more than what he has really estimated at the time of bidding.

4.6.3.3 Summary of awarding methods

Below *Table 4.3* depicts the summary of the discussion related to awarding methods.

Table 4.3: Summary of awarding methods

Awarding Criteria	Contract Awarding method	Evaluation Criteria	Suggested Evaluation Techniques
Lowest Bid Price Criteria	Competitive Lowest Priced Bid	Price	
		Life Cycle Cost	
	Competitive Average Bid	Price	
		Life Cycle Cost	
Most Economically Advantageous Tender (MEAT) criteria	Multi-Parameter Method	Price / LCC :	Weighting
		Quality	Price Neutralizing
		Price / LCC :Quality	Weighting
		:Time	Price Neutralizing
	Innovative Methods: Bidding on Cost/ Time	Price / LCC :Quality	Weighting
		:Time : Safety measures	Price Neutralizing
	Innovative Methods: Lane Closure	Project Cost + Proposed Duration	
		Project Cost + Time Required for Lane Closure	

4.6.4 Possibility of negotiations

R05 states, *“Negotiation process does have many advantages such as knowing better the parties, enhancing relationships, get to know about each other’s strengths and weakness, etc. Having inbuilt negotiation process is good for public procurement. Then the procuring party can discuss key constraints of the project such as price, quality and time with potential bidders. All the parties can clarify grey areas and procuring entities can receive the most responsive bid.”* R05 described the advantages of negotiations and how those advantages can be utilised once the negotiation process incorporated into market approaches. Since the Negotiation process is a face to face discussion, it makes more awareness to procuring entities about the bidders than the bid submitted by the bidders. Also, negotiations allow lowering the risk of the project, since parties can clarify the areas which incomplete in the sense.

Agreeing to the above R02 stated, *“But it needs to be understood, negotiation cannot be used with every market approach in a similar way. As an example, Negotiation is suiting for the competitive lowest bid concept to reduce the final value. In MEAT negotiation can be used to clarify the functional requirements of the project. Also, the negotiation process should be an optional process and based on the procuring parties’ requirements it should bring to action.”* This statement explains the negotiation process cannot be used to discuss all the factors in a bid. It should be used based on the awarding criteria. Then the procuring party can negotiate what is the most important things to the success of the project. Further negotiation should be optional not a mandatory thing process.

R05 states *“Getting best result by using negotiation process with the increased corruption inbuilt in the public procurement won’t be easy. Even the participants will get discouraged. Therefore negotiation process should design, that corruption should not penetrate the process”*. As per R05’s idea corruption is the one of major concern which discourages the application of negotiation in public procurement. Face to face discussion with the procuring party and the bidders can lead to deceit actions. Thus the application of negotiation has been limited to its minimum level by the Sri Lankan government in the public procurement process.

R01 brought a solution for above by stating, *“I suggest there should be two independent competent committees when there is negotiation is happening. One committee shall involve directly with the negotiation process and another committee shall scrutinise the process after it gets ended and before going to the tender board.”* As per R01’s idea two (02) independent competent committees should appoint to the negotiations process. One committee shall directly negotiate with the bidders, in parallel those outcomes shall be review by the other committee. Then there will be a two-stage assessment for the negotiation process which makes the negotiation process more transparent and accountable.

4.6.5 Adopting technological enhancements

The followings are the comments made by each respondent regarding the adoption of technological enhancements to receive responsive bids.

R01 states *“One reason to spread the corruption within the public procurement systems is, not having a proper link between relevant authorities. If there is a proper link between institutions like CIDA, NPC, Building Department, Finance Ministry, Banks, etc.”* This statement interprets the regulatory bodies in the construction industry, public bodies and private institutions shall be connected together. Then the procuring party can refer to relevant details of a bidder before awarding the contract and not only for procuring party other interested parties such as bidders, the general public, government auditors, etc. shall allowed to obtain the information they need. R02 also agreed to this and added the factor, *“When all the systems are linked together, a party in the bidding process cannot do wrong things. As an example “If there is a proper system a procuring party can verify from the bank when a bidder is submitting a letter of credit facilities from a bank.”* This example says that when receiving a bid, certain things need to be clarified from relevant authorities without causing any delay to the procurement system if there is a proper linked system.

R02 stated, *“When there is a linked system, it’s very difficult to do deceit work or produce forge records since the same information has been recorded in several places.”* This statement infers if all the relevant bodies are connected to each other then it is very difficult to do corrupted works because the information has been retained

in databases of all relevant institutions. Therefore inserting forge information or changing contents of the information is impossible since it can be caught very easily. Therefore a system linked to all the relevant bodies has the ability to minimise the corruption in public procurement.

R05 states about the importance of e-procurement for public procurement, *“Newly issued NPC guidelines introduce the concept of e-procurement. Since most of the countries in the world have been practicing this concept to enhance the effectiveness of the procurement process and minimize corruption in the procurement process. Sri Lanka still not using e-procurement but recently website named “Promise” has been launched to initiate e-procurement in Sri Lanka. ”*These statements explain the requirement of initiating the e-procurement process. The NPA guideline and manuals are currently practicing in Sri Lanka and NPC guidelines and manuals are not yet practiced within the country. NPA documents do not have provision for electronic procurement, though NPC documents do have such a provision. Moreover R05 states, Sri Lanka currently has a website to initiate an e-procurement system. Thus there should be a legal provision given by the relevant authorities to do the procurement as through an electronic system.

R02 states, *“There should be a system which records the details of contractors who involved with government projects, who is the procuring entity, does project has been satisfactorily completed or not, cost and time details, etc.”* R02’s idea shows the importance of having separate updated and online databases relevant to public projects with important details. Such a system can help when selecting a responsible contractor by looking at his past performance with public projects.

4.6.6 Summary of findings related to mechanisms

The below table shows the major enhancements suggested by the respondent for the above-discussed factors and Appendix E shows the Nvivo outcome for the impact of each mechanism to the factors affecting for enhancing the responsiveness of the bids.

Table 4.4: Summary of findings related to the mechanisms

Key Factor	Areas for Improvements
Legal framework for public procurement	Introducing procurement law for Sri Lanka
	Passed an Act for Public Procurement process
Market Approaches	Integrate optional negotiations process for two envelope system and two-stage bidding system
	Integrate mandatory Prequalification process for open market approach method
	Introduce Best And Final Offer (BAFO) method
Criteria for Awarding	Include both lowest bid criteria and Most Economically Advantageous Tender (MEAT) criteria for local procurement guidelines.
	Introduce separate awarding methods related to the awarding criteria (<i>See Table 4.3</i>)
Possibility of Negotiations	Include negotiation as an optional process to the procurement guidelines
	Select the elements to be negotiated based on the parameters of the awarding methods Ex: Lowest Bid criteria – Negotiating factor is price or matters related life cycle cost MEAT criteria - Negotiating factors can be price or matters related life cycle cost or quality or time or safety measures
	Use two competent technical committee to evaluate and administrate negotiation process.
Adopting Technology Enhancements	Create a system that connects bodies relevant to the construction industry such as CIDA, regulatory bodies, banks, and government institutions to link all the distributed data into centralised version.
	Introduce provision for e-procurement to prevailing guidelines to effectively use currently built e-procurement system called “ <i>Promise</i> ”
	Build a system or a database that records the information of the contractors involved with public construction projects.

4.7 Suggestions to Enhance Public Procurement to Receive Responsive Bids

Followings are the suggestions made by the respondents to improve the public procurement to receive responsive bids,

1. Introduce Contract A/B law system to local public procurement system
2. Introduce an Artificial Intelligence system for local e-procurement website
3. Introduce a scoring system for contractors who completed public construction. Then next time at the evaluation procuring party can allocate a weighted amount for those contractors.
4. Having two pre-bid meetings. First one at the start of the bidding period and the second one in the middle of the bidding period.
5. Improve the debriefing system in the current system by giving more time and an extensive level of information to bidders who were not selected.
6. Appoint construction-related professionals who have the competency in the area of procurement as a Technical Evaluation Committee (TEC) Members.
7. Introduce Public procurement as a core subject that comprehensively covers the area of NPA guidelines, manuals, financial regulations, acts and laws related to local procurement, etc.

4.8 Discussion

Based on the research analysis followings are the summary of findings and improvements can be done to the mechanisms by incorporating the suggestions given by the experts.

Table 4.5: Impact of the identified mechanisms on the factors impacts the responsiveness of bids

Identified Mechanisms	Factors: Impacts on Responsiveness of Bids						
	TC	AM	LR	PP	LA	EC	LK
Legal framework for public procurement	M	H	H	H	H	H	H
Market Approaches	M	H	N/A	L	N/A	H	L
Criteria for Awarding	M	H	N/A	H	N/A	H	N/A
Contract Awarding Methods	L	H	N/A	H	N/A	H	N/A

Possibility of Negotiations	H	L	N/A	M	L	M	M
Adopting Technology Enhancements	L	L	M	M	H	H	M

H – High

M – Medium

L – Low

Not Applicable – N/A

TC - Transaction Cost Theory

AM- Awarding Methods

LR - Legal and Regulatory Framework

PP - Procurement Procedures and Practices

LA - Lack of Audit and Anti-Corruption Measures

EC- Enhancing the Competitiveness and Participation

LK- Lack of Knowledge in area of Public Procurement

Table 4.5 shows, the impact of mechanisms in the research framework on the discussed in the literature synthesis which has an impact on enhancing the responsiveness of a bid to select a responsible contractor. Each mechanism might impact several factors in a different manner. However, the following improvements related to the mechanisms need to be established to enhance the responsiveness of procuring bids which depicted in Table 4.6 and Table 4.3.

Table 4.6: Improvements for identified mechanisms

Identified Mechanisms	Areas for Improvements
Legal framework for public procurement	Introducing procurement law for Sri Lanka
	Passed an Act for Public Procurement process
	Introduce Contract A/B law system to local public procurement system
Market Approaches	Integrate optional negotiations process for two envelope system and two-stage bidding system
	Integrate mandatory Prequalification process for open market approach method
	Introduce Best And Final Offer (BAFO) method

Criteria for Awarding & Methods of Contract Awarding	Include both lowest bid criteria and Most Economically Advantageous Tender (MEAT) criteria for local procurement guidelines.
	Introduce separate awarding methods and evaluation techniques in related to the awarding criteria (<i>See Table 4.3</i>)
	Introduce a scoring system or points table for contractors who completed public construction. Then next time at the evaluation process procuring entity can allow additional score or points for those contractors
Possibility of Negotiations	Include negotiation as an optional process to the procurement guidelines
	Select the elements to be negotiated based on the parameters of the awarding methods Ex: Lowest Bid criteria – Negotiating factor is price or matters related life cycle cost MEAT criteria - Negotiating factors can be price or matters related life cycle cost or quality or time or safety measures
	Use two competent technical committee to evaluate and administrate negotiation process.
Adopting Technology Enhancements	Create a system that connects bodies relevant to the construction industry such as CIDA, regulatory bodies, banks and government institutions to link all the distributed data into centralised version.
	Introduce provision for e-procurement to prevailing guidelines to effectively use currently built e-procurement system called “ <i>Promise</i> ”

	Build a system or a database that records the information of the contractors involved with public construction projects.
	Introduce an Artificial Intelligence system for local e-procurement website
Improving Procedural Process of the Public Procurement	Conduct two pre-bid meetings. First one at the start of the bidding period and the second one in the middle of the bidding period.
	Introduce different sets of minor and major deviations based on the nature, complexity or magnitude of the project
	Enhance the Debriefing System
	Appoint construction-related professionals who have the competency in the area of procurement as a Technical Evaluation Committee (TEC) Members

4.9 Summary

This chapter describes the process of analysing collected information from the interviews. Nvivo software was used to code information with relevant topics and discussion was made out under those topics. Factors included in the research framework were discussed with professionals who are competent in the area of construction procurement and outcomes of those discussions were tabulated. Further, it was revealed that there are discussed factors related to the framework that can be enhanced and can be introduced to the local public procurement system to enhance the responsiveness of bids to select a responsible contractor.

5.0 CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This chapter is focusing on developing the conclusions and making the recommendations based on previous chapters. Conclusions and recommendations solely represent information gathered through the research. Moreover, this chapter suggests further research areas where future researchers should focus on.

5.2 Summary of the Study

Enhancing the responsiveness of bids is very important to select a responsible contractor for public construction works. Different public procurement systems worldwide use different types of methods and techniques to enhance the responsiveness of bids that received to select a responsible contractor. The literature synthesis of this study has identified the factors which impact on the responsiveness of the bids and what are the mechanisms used by other countries to mitigate the adverse impact on those factors. Further, all these mechanisms have been classified into specific areas and descriptively described by encapsulating that information to formulate the research framework.

Data collection was carried out based on semi-structured interviews and interview guideline focused on the area of procuring bids in public procurement system, existing challenges facing when procuring bids, the adoption of research framework within the local public procurement system, the impact of research framework to the factors that affect to the responsiveness of bids, which were identified in the literature synthesis and suggestions of the respondents to further improve the identified mechanisms with relevant to the local context. All the respondents were industry experts who were involved with the public procurement system for more than eight (08) years at least. Each respondent explained ideas by combining their local and/or overseas experience into that. Final conclusions and recommendations were drawn based on the information gathered through the literature synthesis and interviews combined with the researchers' experience in the public construction procurement.

5.3 Conclusions

Responsiveness is a major area that needs to be focused on in relation to the bidding and contractor selection process in public procurement.

- **Objective One**

Literature synthesis explains the notion of “responsiveness” and the research analysis describes the methods of evaluating the responsiveness of the bids submitted in the local public procurement process. However based on both literature and the analysis it can be concluded that responsiveness of bids submitted for different projects shall be evaluated based on the different sets of parameters which is unique to each project and there cannot be stereotype conditions or guidelines used to evaluate the responsiveness of the bids submitted for projects in different nature such as buildings, railways, harbors, airports, urgent projects, safety concerning projects, etc. Therefore NPA documents shall introduce different sets of conditions to evaluate the responsiveness of bids submitted for projects in different natures.

- **Objective Two**

Having a strong public procurement system is beneficial for the government, the public and other stakeholders who are involved in the local construction industry. In the international context, countries like Singapore strengthen their public procurement system to overcome the impacts that affect the construction industry during different economical stages of the country and the world. The ultimate objective of introducing different types of mechanisms to public procurement by other countries to enhance the effectiveness of the public procurement system to receive a better outcome. Yet according to the literature synthesis and the experts' explanations it can be concluded, currently, Sri Lanka does not have advance mechanisms inside the public procurement system to strengthen it up and enhance the performance it to get a better outcome. Further, it can conclude the adoption of advance mechanisms to the local public procurement systems, that used by different countries is foremost important.

- **Objective Three and Four**

This study is focusing on the area of enhancing the responsiveness of bids received for public construction projects and it can be concluded according to the literature synthesis and the research analysis, the mechanisms inside the research framework do have different impacts on the factors which affect on the responsiveness of a bid. Further, this impact can be categorised as high, medium, low and not applicable based on the interconnection between the mechanism and the factor (See *Table 4.5*).

- **Objective Five**

Further as per the research analysis when adopting these mechanisms to local procurement systems, there will be both pros and cons. As an example adopting innovative contract awarding methods like lane rental will enhance the responsiveness of bids and meantime there is a likelihood of incorrect interpretation of using this method, erroneously calculation of necessary inputs for the lane rental formula and problem of collecting accurate raw data to establish the required inputs due to novelty of these mechanisms to the local public procurement system. Those disadvantages related to the mechanisms can be directly affected by the responsiveness of the bids even though this research has mentioned those mechanisms are successfully utilised by other countries. Thus it can be concluded, the mechanisms stipulating within the research framework can be further improved into different areas as per the suggestions mentioned within the *Table 4.3* and the *Table 4.6* and those improvements need to be tested within the selected public construction projects environments by the NPC prior to introducing those mechanisms to the local public procurement system.

5.4 Recommendations

Public procurement system of Sri Lanka currently governed by the NPA guidelines, manual and financial regulations. These documents are comprehensively describing the procedures of the local public procurement system. NPC and CIDA are two main governing bodies which regulate the actions in related public procurement system in Sri Lanka. Therefore this research recommends to both NPC and the CIDA to incorporating the findings in *Table 4.3* and *Table 4.6* with necessary improvements

into the guidelines, manuals, CIDA act after due consultation with industry experts. Further research recommends the above governing bodies initiate a sound discussion on the public procurement law and compel the government to enact a comprehensive act in related procurement law.

The further researcher recommends making an experiment to measure the effectiveness of the innovative methods introduced in Table 4.3 before incorporating those methods into the NPA guidelines and manual.

5.5 Limitations of Research

There is number of limitations were aroused when undertaking this research. This research was based on enhancing the responsiveness of procuring bids in the local public procurement process to select a responsible contractor. There were different techniques or methods used in different public procurement systems to enhance the responsiveness of bids. Even though some of those techniques were not suited to the local context, since Sri Lanka does not have a proper legal system for the public procurement process to make the punishment for wrongdoers and also most importantly, Sri Lanka is still a developing country in the region.

This study only considered construction industry professionals who are competent in the public procurement process and have extensive years of experience in the public procurement arena. Further, the mechanisms selected for the research framework are already been practicing by other countries to enhance their public procurement systems. Thus the researcher has assumed findings in this Chapter can be incorporated into the Sri Lankan public procurement system after having further experiments on those findings.

5.6 Further Research Directions

Followings are identified research directions which can be done as further researches with related to the public procurement process,

- ✓ Develop different sets of parameters to test the responsiveness of bids submitted for different nature projects in local public procurement process.
- ✓ Impact of Contract A/B law system for local public procurement system

- ✓ Effect of enacting Schedule of Payment (SOP) act in Sri Lanka
- ✓ Competencies required for procurement professionals who are involved with public construction works.
- ✓ Key areas need to be integrated into the procurement law of Sri Lanka.

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APPENDIX A: INTERVIEW GUIDELINE

General Information

Name of the interviewee:

Date of interview:

Organization (Optional):

Designation of the Interviewee:

Section 01: Identification of background information

1. Could you explain about your working experience in terms of followings?
 - a. Specialization area(s)
 - b. Number of years of experience in the field
 - c. Involvement with the government construction projects

SECTION 02: PUBLIC CONSTRUCTION IN SRILANKA

2.1 Public construction procurement process

1. What is the impact of public construction procurement process to country as a whole
2. What is the connection between responsiveness of bid and the public procurement process?
3. Does NPA documents set out the framework to receive responsive bids?

2.2 Challenges in selecting a responsible contractor

1. What is the role of a “Responsible Contractor”
2. What are the challenges faced when selecting a responsible contractor?
 - i. Transaction Cost Theory
 - ii. Awarding Methods
 - iii. Legal and Regulatory Framework
 - iv. Procurement Procedures and Practices

- v. Lack of Audit and anti-corruption measures
 - vi. Enhancing the competitiveness and participation
 - vii. Lack of Knowledge in area of Public Procurement
3. What is the mean by responsiveness of a Bid
 4. Do you think Submitting a responsive bids will aid to select a responsive bidder
 5. Do you know techniques used by the other countries to receive or submit a responsive bid?

SECTION 03: ENAHNCING THE RESPONSIVENESS OF BIDS TO SELECT A RESPONSIBLE CONTRACTOR

3.1 Respondent's idea about best ways to enhancing the responsiveness of a bid

1. What is your idea about impact of the Legal framework for public procurement?
2. What is your idea about impact of the **market approaches**?
 - i. Open procedure,
 - ii. Restricted procedure,
 - iii. Negotiated Procedure,
 - iv. Two stage bidding procedure,
 - v. Two envelope procedure
 - vi. If any please mention
3. What is your idea about impact of **possibility of negotiations**?
 - i. Bake- off method
 - ii. If any please mention
4. What is your idea about impact of **criteria for awarding a contract**
 - i. Most economical advantages bid
 - ii. Lowest bid price
 - iii. If any please mention
5. What is your idea about impact of **contract awarding a techniques**
 - i. Competitive Lowest Bidding Method (Price-basis).
 - ii. Competitive Average Bidding Method (Price-basis).

- iii. Multi Parameter Bid Method (Basing on quality, time, price and “other” factors).
 - iv. Negotiated Bid Method (Competitive).
 - v. Negotiated Bid method (Non-Competitive).
 - vi. Bidding on Cost/Time Method.
 - vii. Lane Rental Method
 - viii. If any please mention
6. What is your idea about impact of **adopting technological enhancements**
 - i. E- Procurement
 - ii. If any please mention
 7. What would be the best combination/s of above methods

SECTION 04: INTERVIEWEE’S SUGGESTIONS

4.1 Respondent idea about enhancing the responsiveness of bids to select responsible contractor

1. Can it be done within the Sri Lankan context
2. How beneficial it would be country like Sri Lanka.
3. Do you have any experience that how it has been practiced in the developed countries

APPENDIX B: CODING STRUCTURE USED FOR ANALYSIS

Nuwantha_Misc.mxp - NVivo

File Home Create External Data Analyze Query Explore Layout View

Workspace Refresh Open Properties Edit Paste Copy Merge Clipboard

Item Properties Edit Paste Copy Merge Clipboard

Paragraph Paragraph Styles

Select PDF Selection Text Region

Find Find

Insert Replace Delete

Spelling Spelling

Proofing Proofing

Look for: Search in Nodes

Clear Find Now Advanced Find

Nodes

Name

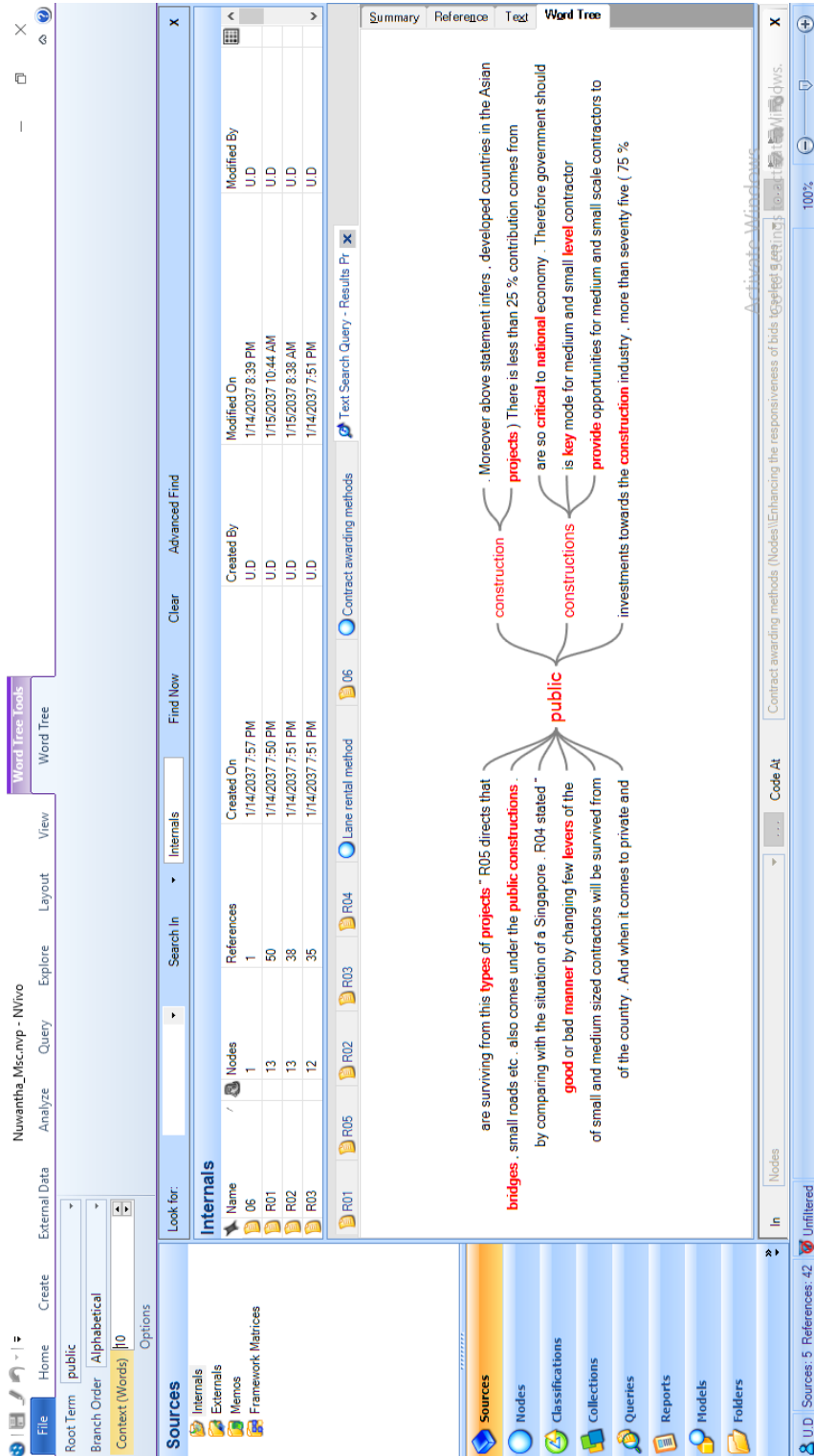
- Importance of public construction procurement to Sri Lanka economy
- Responsive bid and its impact on public construction procurement
- Responsible contractor's role in the public construction procurement
- Enhancing the responsiveness of bids to select a responsible contractor
- Legal framework for public procurement
- Market approaches
- Criteria for awarding a contract
- Contract awarding methods
- Contract awarding methods
- Innovative contract awarding methods
- Lane rental method
- Bidding on cost and time
- Possibility of negotiations
- Adopting technological enhancements
- Suggestions to enhance the public procurement process

Name	Sources	References	Created On	Created By	Modified On	Modified By
Importance of public construction procurement to Sri Lanka economy	5	10	1/12/2037 10:20 PM	U.D	1/15/2037 10:59 AM	U.D
Responsive bid and its impact on public construction procurement	5	15	1/15/2037 9:39 AM	U.D	1/15/2037 11:01 AM	U.D
Responsible contractor's role in the public construction procurement	5	12	1/12/2037 10:22 PM	U.D	1/15/2037 11:01 AM	U.D
Enhancing the responsiveness of bids to select a responsible contractor	0	0	1/12/2037 10:22 PM	U.D	1/15/2037 9:43 AM	U.D
Legal framework for public procurement	5	15	1/12/2037 10:24 PM	U.D	1/15/2037 12:43 PM	U.D
Market approaches	5	19	1/12/2037 10:24 PM	U.D	1/15/2037 12:43 PM	U.D
Criteria for awarding a contract	5	11	1/12/2037 10:24 PM	U.D	1/15/2037 12:43 PM	U.D
Contract awarding methods	5	11	1/12/2037 10:25 PM	U.D	1/15/2037 12:43 PM	U.D
Contract awarding methods	5	35	1/12/2037 10:27 PM	U.D	1/15/2037 11:01 AM	U.D
Innovative contract awarding methods	0	0	1/12/2037 10:27 PM	U.D	1/12/2037 10:44 PM	U.D
Lane rental method	5	9	1/12/2037 10:28 PM	U.D	1/15/2037 11:01 AM	U.D
Bidding on cost and time	5	15	1/12/2037 10:30 PM	U.D	1/15/2037 11:01 AM	U.D
Possibility of negotiations	5	11	1/12/2037 10:31 PM	U.D	1/15/2037 12:43 PM	U.D
Adopting technological enhancements	5	14	1/12/2037 10:31 PM	U.D	1/15/2037 12:43 PM	U.D
Suggestions to enhance the public procurement process	5	9	1/12/2037 10:32 PM	U.D	1/15/2037 11:01 AM	U.D

Activate Windows
Go to Settings to activate Windows.

U.D 15 Items Unfiltered

APPENDIX C: IMPACT OF PUBLIC CONSTRUCTION PROCUREMENT



Nvivo word tree diagram for impact of public construction procurement to Sri Lankan Economy

Nuwantha_Msc.nvp - NVivo

File Home Create External Data Analyze Query Explore Layout View

Workspace

Go Refresh

Open Properties Edit

Item

Clipboard

Cut Copy Merge

Paste

Format

Paragraph

Styles

Advanced Find

Clear

Find Now

Search In Internals

Look for: Internals

R01 R02 R03 R04 R05

Contract awarding methods

Importance of public construct

Word Frequency Query Result

Summary Word Cloud Tree Map Cluster Analysis

Word Frequency Query

responsive	guidelines	deviations	requirements	maintenance	complexity	evaluating	transaction
conditions	substantiality	mentioning	arithmetic	qualifications	boundaries	comparatively	constraints
			considered	categorizing	challenging	introduces	scrutinize
					characteristics	regulations	technology

Activate Windows
Go to Settings to activate Windows.

100%

Sources

- Internals
- Externals
- Memos
- Framework Matrices

Sources Nodes Classifications Collections Queries Reports Models Folders

U.D. 24 Items

Nvivo tree map diagram for impact of responsive bids on public construction procurement

APPENDIX E: IMPACT OF RESEARCH FRAMEWORK

The screenshot displays the NVivo software interface with the following components:

- Top Panel:** File, Home, Create, External Data, Analyze, Query, Explore, Layout, View.
- Left Panel:** Reports, New Report, Run, Extract, Model, Visualizations, Node Classification Sheets, Classification Sheets.
- Main Window:**
 - Look for:** node classifications
 - Table:**

Name	Type	Created On	Created By	Modified On	Modified By
Legal and Regulatory Framework	Text	1/15/2037 11:47 AM	U.D	1/15/2037 12:15 PM	U.D
Procurement Procedures and Practices	Text	1/15/2037 11:48 AM	U.D	1/15/2037 12:15 PM	U.D
Lack of Audit and anti-corruption measures	Text	1/15/2037 11:48 AM	U.D	1/15/2037 12:18 PM	U.D
Enhancing the competitiveness and participation	Text	1/15/2037 11:50 AM	U.D	1/15/2037 12:17 PM	U.D
Lack of Knowledge in area of Public Procurement	Text	1/15/2037 11:50 AM	U.D	1/15/2037 12:17 PM	U.D
 - Bottom Panel:** Sources, Nodes, Classifications, Collections, Queries, Reports, Models, Folders.
 - Right Panel:**
 - Criteria for awarding a contract:**
 - 1: Adopting technological en... (Low)
 - 2: Contract awarding methods (Low)
 - 3: Criteria for awarding a con... (Medium)
 - 4: Legal framework for public... (Medium)
 - 5: Market approaches (Medium)
 - 6: Possibility of negotiations (High)
 - Criteria for awarding a contract - Coding by Factors im:**
 - 1: Transaction Cost Th... (Low)
 - 2: Contract awarding methods (High)
 - 3: Criteria for awarding a con... (High)
 - 4: Legal framework for public... (High)
 - 5: Market approaches (High)
 - 6: Possibility of negotiations (Low)
 - Criteria for awarding a contract - Nodes clustered by word siml:**
 - 1: Adopting technological en... (Medium)
 - 2: Contract awarding methods (High)
 - 3: Criteria for awarding a con... (High)
 - 4: Legal framework for public... (High)
 - 5: Market approaches (High)
 - 6: Possibility of negotiations (Low)

Nvivo outcome for the impact of each mechanism to the factors affecting for enhancing the responsiveness of the bids

Node Classifications

Name	Type	Created On	Created By	Modified On	Modified By
Legal and Regulatory Framework	Text	1/15/2037 11:47 AM	U.D	1/15/2037 12:15 PM	U.D
Procurement Procedures and Practices	Text	1/15/2037 11:48 AM	U.D	1/15/2037 12:15 PM	U.D
Lack of Audit and anti-corruption measures	Text	1/15/2037 11:48 AM	U.D	1/15/2037 12:18 PM	U.D
Enhancing the competitiveness and participation	Text	1/15/2037 11:50 AM	U.D	1/15/2037 12:17 PM	U.D
Lack of Knowledge in area of Public Procurement	Text	1/15/2037 11:50 AM	U.D	1/15/2037 12:17 PM	U.D

Factors impact on enhancing r

	A : Transaction Cost Th...	B : Awarding Methods	C : Legal and Regulator...	D : Procurement Proced...	E : Lack of Audit and ant...	F : Enhancing the comp...	G : Lack of Knowledge i...
1 : Adopting technological en...	Low	Low	Medium	Medium	High	High	Medium
2 : Contract awarding methods	Low	High	Not Applicable	High	Not Applicable	High	Not Applicable
3 : Criteria for awarding a con...	Medium	High	Not Applicable	High	Not Applicable	High	Not Applicable
4 : Legal framework for public...	Medium	High	High	High	High	High	High
5 : Market approaches	Medium	High	Not Applicable	Low	Not Applicable	High	Low
6 : Possibility of negotiations	High	Low	Not Applicable	Medium	Low	Medium	Medium