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PBC as a Solution for Public Procurement Problems: Some Ethiopian Evidence

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Abstract
Public procurement in developing countries is associated with a number of problems. Performance-based Contracting (PBC) is suggested as a solution for such problems. Here, we investigate whether this suggestion can work in the public procurement of developing countries. We use qualitative data from different sources in three complementary approaches: secondary data, focus group discussion using the World Café method, and interviews. Based on the agency and transaction cost economics theories, the analysis results indicate that using PBC in public procurement is believed to minimize some of the most common problems of public procurement in developing countries. Specifically, PBC is expected to reduce problems of accountability, corruption, and cost and time overrun, and to improve quality.

1.1 Introduction

Traditional procurement systems focus on the lowest price for a fixed result. The important assumption here is that competition forces prices down and enables the buyers to get the lowest price (Kleemann, Glas, & Essig, 2012). However, price alone does not help to acquire quality results in the procurement process (Qiao & Cummings, 2003).

Over the past few decades, performance-based contracting (PBC) became a common practice in the public procurement systems of a growing number of countries. PBC has successfully been used specifically for large-scale projects in different sectors (for example, health, transport, and others) in the industrialized countries (Lenferink, Arts, Tillema, Van Valkenburg, & Nijsten, 2012; Martin, 2000).

In the setting of developed countries, a growing number of studies suggest that using PBC can help to reduce the problems associated with the traditional procurement system (Boykin, 2005; Schapper, Veiga Malta, & Gilbert, 2006; Schiele & McCue, 2006). Similarly, some research suggests this also holds true for developing countries (Larbi, 2001). But we see limited application of PBC in the public procurement system of developing countries. This research fills that gap and attempts to answer: Why is practice not doing what theory suggests?

In the context of developing countries, however, there is no clear evidence that PBC can contribute to a well-functioning procurement system. For one, there is a complete lack of empirical studies on this subject. Second, there are some less favorable characteristics of PBC that have to be dealt with too. Also, the existing governance structure in the public procurement system of developing countries does not seem capable of addressing the new contracting approaches. This is because the legal framework in most developing countries dominantly focuses on the principle of competition (more importantly competition on price) and sometimes lacks clarity on how to apply PBC, along with a lack of knowledge and skills in developing countries with respect to the PBC concepts (Ambaw & Telgen, 2017; Tineo, 2007). We begin to fill this gap by looking at actual practice and assembling empirical data on the following points:

Are the theoretical advantages recognized?

Are the theoretical risks recognized in practice? How are they appreciated/evaluated?

Thus, the aim of the study is to verify whether PBC can contribute to solving some problems in the public procurement of developing countries, taking Ethiopia as a case.

The remaining part of the paper is organized as follows: In section 2, we analyze the benefits and risks that the literature suggests are associated with PBC. Section 3 indicates the methodologies used. In sections 4 and 5, we check the potential benefits both for their occurrence and their impact on procurement practitioners in developing countries. Finally, section 6 contains the conclusion and remarks on the analysis results.

1.2 Literature Review

1.2.1 Agency Theory

Due to the difficulties of drafting contracts and agreements that state everything in the contract relationship, contracts can be considered as incomplete (Davis & Walker, 1997). This, apparently, opens the room for the contracting parties to work opportunistically. The likelihood of the contracting parties showing opportunistic behavior, as explained by Williamson (1981), is expressed in seeking self-interest with guile and working towards fulfilling their own self-interest. The self-interest-seeking agency problem is seen as one of the major problems in any set of contractual relationships. Importantly, this makes it necessary to think up and design different

approaches to contractual governance to manage the unwanted behaviors of contractors (Bergen, Dutta, & Walker, 1992), which is particularly challenging in the public procurement of developing countries.

Agency theory provides the main theoretical foundation for PBC in the public sector. Opportunistic behavior is likely to arise when either one or both of the contracting parties seeks to fulfill their own self-interest but at the expense of the other party (Brown & Potoski, 2005). This is commonly due to problems included in information asymmetry, adverse selection, and moral hazard (Nilakant & Rao, 1994). Accordingly, the contractual governance approach can vary depending on the contract that enables the procuring entity to get information and control the behaviors of contractors. Agency theory can, therefore, be used for determining the most efficient contracting approach to govern the relationship of contracting parties (Bergen et al., 1992). The choice of the contracting approach also depends on the environmental uncertainty and the costs of getting information about the behavior of the agent.

Depending on the contract used, the relationship between the contracting parties can be either behavioral or performance-based. The behavioral contracting approach can be used when the buyer is able to control the activities and processes of the contractors. In this approach, the principal usually crafts a contract that enables them to evaluate and reward the agent on the basis of information about its actual behavior (Bergen et al., 1992). However, getting detailed information on the agent's behavior can sometimes be very costly for the principal. Such problems become serious when it comes to the public procurement system of developing countries, where public procurement is practiced with lower transparency and less of an accountability system (Musanzikwa, 2013).

The performance-based contracting (PBC) approach can be used when the clients have difficulty controlling the behaviors of contractors through monitoring each and every activity. The principal crafts the contract in such a way that the agent's rewards are determined by performance outcomes (Brown & Potoski, 2005). The contractors are presented with an incentive package to perform in the best interests of the buying organization. Thus, using PBC can be considered as a solution for public procurement problems resulting from the agency problem (Nilakant & Rao, 1994). This contracting approach significantly helps to minimize the accountability challenges of public procurement in developing countries (Larbi, 2001).

1.2.2 Transaction Cost Economics Theory

Minimizing transaction cost is an important element of public procurement. In this regard, transaction cost economics theory takes an even broader perspective: Any problems related to contracting can be examined through the lens of transaction cost economics (Rindfleisch & Heide, 1997). The assumption of bounded rationality is deeply ingrained in this theory; it states that human behavior is based on rational intent, but only to a limited extent (Williamson, 1998). Human actors are acknowledged to have limited cognitive capabilities. As a result, economic actors are not capable of drafting comprehensive contracts that consider all incidents that can occur in the future (Rindfleisch & Heide, 1997). This results in incomplete contracts that lead us to incur high transaction costs for controlling for each of the unforeseen activities that might appear later, i.e. in the contract performance process.

In addition, it is instructive to see the pairing that exists between bounded rationality and uncertainty/complexity (Shelanski & Klein, 1995). Bounded rationality is always there, as "everybody is encumbered by cognitive limits rooted in the human physiological makeup" (Williamson, 1998). Thus, to economize on the bounded rationality, the contracting parties want to have a reduced level of uncertainty/complexity in the contract. That is where PBC comes in, because PBC requires the buyers only to specify the expected performance results, leaving the "how" parts to the suppliers as experts. If the purchasers define results/performance in the contract, many of the factors that can increase transaction costs do not matter anymore. In line with this, using PBC is expected to reduce the transaction cost and enhance efficiency in the contract performance process (Tineo, 2007). This in turn reduces the total cost acquisition in the public procurement system (Boykin, 2005). In developing countries, the importance of using PBC is greater since the procurement system is characterized by higher transaction cost (Ntayi, Namugenyi, & Eyaa, 2010).

1.2.3 Corruption in public procurement

The contracting approach used, either behavioral or performance-based, determines the strategies for enhancing accountability, controlling corruption, and achieving efficiency and effectiveness in the public procurement system (Bergman & Lundberg, 2013; Rindfleisch & Heide, 1997). Corruption in particular is the misuse of public resources or public offices for their private benefit, and it is perceived to be more widespread in some countries than others (Treisman, 2000). Corruption is a major issue in the public procurement system of developing countries (Achua, 2011). Achua (2011) estimated that countries annually lose 20 to 25 percent from their public spending through malpractice of public officials. Public procurement in developing countries is identified as one of the most corrupted government functions, and Ethiopia is no exception to this statement (Plummer, 2012).

In line with this, researchers confirmed that a lack of accountability in the public procurement system contributes significantly to opening opportunities for corruption (Mahmood, 2010; Mungiu, 2006). Using PBC is considered as a solution for this problem since PBC requires clearly defining the responsibilities of each of the contracting parties (Doerr, Lewis, & Eaton, 2005) and enhance accountability in the contract performance process (Patil & Molenaar, 2011). This helps to minimize opportunistic behavior by the agents and minimize corruption

in the public procurement system.

It is true that the traditional descriptive contracting system used so far in developing countries is considered to be a major contributor to the higher corruption rate in public procurement (Musanzikwa, 2013; Worku, 2010). Specifically, awarding the lowest responsive bid for procurement of software or other technology related items commonly results in products and services that are low in quality, have a high corruption risk, and are not able to meet the intended needs of the procuring entities. The lowest price selection method does not result in the best-qualified contractor or supplier for the need, since the high quality and lowest cost can never go hand in hand (Sciancalepore, Falagario, Costantino, & Pietroforte, 2011). In Ethiopia, for example, the procuring entities usually use the traditional descriptive specification, and hence the procurement function is characterized by high corruption prevalence (Plummer, 2012). They often give more emphasis to price than qualitative aspects for bid evaluation and awarding (Worku, 2010). Moreover, the approach does not prevent contractors from engaging in corruption activities since the risk of procurement is left to the procuring entity. Rather, it opens loopholes for more corruption (Jones, 2007). Achua (2011, p. 6) briefly summarizes corruption in another way with a simple mathematical equation form:

"Corruption = (Monopoly + Discretion) – (Accountability + Integrity + Transparency) and manifested where public officials' discretion is high and the government's influence on accountability, integrity, and transparency are absent or low."

There are various arguments on using PBC in the public procurement system. The first argument is that there is less corruption with PBC since the contract result is clearly defined, which leaves less room for manipulating the steps towards these results (Straub, 2009). Although there is nothing wrong with using detailed specifications for procurement of some goods and services, PBC uses qualitative criteria in addition to price for bid evaluation and awarding, and this helps to achieve the intended result (Sultana, Rahman, & Chowdhury, 2012). In addition, PBC enables organizations to assign risk and award structures, and hence the contracts and payment modalities are aligned clearly with what the procuring entities want to achieve (Buchanan & Klingner, 2007). In this contracting approach, contractors are sometimes liable for the later cost (lifecycle cost) (Kim, Cohen, & Netessine, 2007). This discourages the contractors from engaging in corruption activities in the public procurement process.

On the other hand, there is also an argument for more corruption with PBC, since PBC allows for more and widely varying bids that have to be evaluated by considering both quantitative and qualitative factors (Straub, 2009). Burguet and Che (2004) support this argument that corruption commonly occurs when the procurement entities procure new technologies and/or nonstandard goods and services, which are difficult to evaluate objectively. This increases corruption when quality features like after-sales technical service, reliability, safety, and impact of the contract would be considered as important for the contract (Qiao & Cummings, 2003). Since subjective elements may play a role, this opens the way for corruption.

Though the low-cost approach has the risk of project failure, due to fear of corruption public procuring entities are more reluctant to use the most economically advantageous tender (MEAT) approach, which contains a combination of a variety of bid evaluation criteria (Fong & Choi, 2000). However, the most economically advantageous tender (MEAT) approach is recommended for public procurement provided that there is an objective procedure that can prove to the general public that bids are evaluated and awarded using the best possible combination of various evaluation criteria (Bergman & Lundberg, 2013; Fong & Choi, 2000; Sciancalepore et al., 2011). The MEAT approach follows the performance-based contracting approach, which formally uses both quantitative (price) and qualitative (non-price) criteria to evaluate and award the tender (Straub, 2009).

In spite of the different arguments, implementing PBC in the public procurement system is considered as a useful tool to minimize the behavior of opportunism by contractors and reduce the risk of corruption (Ambaw & Telgen, 2017). This can be of special importance in the public procurement system of developing countries, where corruption prevalence is higher. However, the procuring entities need to set objective results and measurement systems to be able to minimize the risk of corruption when using PBC.

1.2.4 Risks associated with using PBC

In spite of numerous advantages of using PBC, many developing countries still have not been using it for their procurement. This may partly be explained by an attempt to minimize some of the risks associated with PBC (Gruneberg et al., 2007).

One of the risks related to PBC emanates from the lack of the required knowledge and ability by the procuring entity to define their needs using performance parameters. The public officials who are involved in procurement activities should be well trained to be able to craft measurable performance specifications and to evaluate the tender accordingly (Patil & Molenaar, 2011). However, acquiring such experts can be a challenge for the government entities. In the procurement sector of developing countries, maintaining experienced and qualified experts has been a challenge due to the low salary they receive (Musanzikwa, 2013). As a result, developing countries might be more reluctant to use PBC in their procurement system.

The other risk related to using PBC is the reluctance to give a high level of responsibility to the contractors (Doerr et al., 2005). When the public buyers are not sure about the measurement models they are using, it may

lead them to the wrong performance targets, which could be a source of dispute among the contracting parties (Gruneberg et al., 2007). Corruption is also one of the risks that could appear in the performance-based contracting system (Burguet & Che, 2004).

Taking everything into account, this section (the literature review) clarifies our understanding of the concepts of PBC and its theoretical relationships, its benefits, and the risks associated with applying it in the public procurement system.

1.3 Methodology

Now that we have identified benefits and risks from literature, the aim of this study is to check them in practice. In this study, we consider Ethiopia as a case to study the possibilities PBC offers with regard to the occurrence and impact of public procurement problems in developing countries. We do so by three separate research methods to triangulate the results. The three methods are: (1) secondary data, (2) focus group discussion using the World Café method, and (3) interviews.

First, we collected a list of existing problems in the public procurement system of Ethiopia (from the Federal Public Procurement and Property Administration Agency, and from the Public Procurement Complaint Handling Board). The researchers explained the objectives of the research and what type of data we needed to the authorized bodies and obtained permission to access the data.

The Public Procurement Complaint Handling Board (PPCHB) identifies public procurement problems based on the complaints received both from suppliers/contractors and procuring entities. Similarly, the Federal Public Procurement and Property Administration Agency (FPPAA) identify problems based on the compliance audit findings and reports from the PPCHB. The FPPA and the PPCHB gave us the required data, which cover from 2012 to 2015. After receiving the required data, we selected problems that are more closely related to PBC, and we discussed and verified the list of problems with the FPPA officials.

As a second approach, discussions with public procurement professionals were organized in a World Café method. This method helps to involve the public procurement professionals in a focus group discussion and identify practical problems and inherent risks of using PBC. It was also used to collect suggested solutions for the problems identified. In this regard, the World Café method is considered as the best approach to find detailed information, from discussions with procurement professionals in a small round table group (Hornett, 2007; Sheridan, Adams-Eaton, Trimble, Renton, & Bertotti, 2010). This method is typically organized as a number of small group discussions at different tables between knowledgeable people. Some 18 procurement professionals from different organizations were invited for the discussion; 16 of them participated in the round table group discussion. The round table discussion was conducted based on four questions. (1) What are the most common problems in the public procurement system of Ethiopia? (2) What is the next level of thinking we have to do on the problems we mentioned? (3) Could the use of PBC create change in the public procurement problems? (4) What risks are expected in using PBC in the public procurement system of Ethiopia? The participants discussed in four focus groups and rotated among four tables. Before starting the discussion, each group selected one moderator and one recorder. The moderators of each group were given the responsibility of facilitating the group discussion, prompting members to speak, and encouraging all the group members to participate freely.

The discussions took three hours over the four groups at four tables. After they finished the four round table discussions, all of the groups got together and the results of the discussions at each table were presented by each group's recorder. Then the researchers asked the participants to comment on the summary of the discussion, which is an important part of establishing the validity or congruence of the research project (Krueger, 2006). After getting feedback from the participants, we transcribed and developed codes independently of each other, then met and shared the findings through email with the participants while developing a list of themes. Working independently and collaborating with the participants of the group discussion is an important aspect of developing validity and reliability (Onwuegbuzie, Dickinson, Leech, & Zoran, 2009).

As a third approach, interviews were conducted with private organizations (contractors, consultants, and suppliers). These interviews were conducted with the managers of 10 private organizations. The agenda of the interviews was to identify (from the point of view of suppliers or contractors) the major problems in the public procurement system and to ask for suggested solutions for these problems. Each interview on average lasted about 40 minutes.

After recording the interviews, we listened to the recordings and transcribed them into text. Then we made notes about our most important impressions. For this we re-read the transcripts one by one very carefully. After transcribing the data, we labeled the relevant pieces, such as words, phrases, sentences, or sections of the transcripts. This process is called coding or indexing. Coding is very relevant because it marks themes that are repeated in several places, or perhaps points that surprise us or are stated by the interviewee as important, or points that are similar to previously published reports. The researchers took care while coding to be unbiased and stay close to the data. We sent the transcripts back to each participant by email for confirmation that the information they provided was correctly recorded and transcribed. This step-by-step process enhances the reliability of data in

qualitative research (Golafshani, 2003).

Then, the most relevant codes were chosen and categorized by the researchers either by merging related codes together or by dropping some others which were less relevant. We passed through all the codes done in the previous step and developed other new codes by merging related codes together and dropping some others. After the coding process was finished, the categories were labeled, and we decided which are most relevant and kept those categories. Finally, we compiled the results of this whole data management process and started writing the results and analysis of the research.

1.4 Results

1.4.1 Problems of public procurement from secondary data, focus group discussions, and interviews

Though public organizations are striving to achieve efficient public procurement, the qualitative data from Ethiopia showed that the sector still harbors a number of problems. The secondary data collected from the Compliance Handing Board and the FPPA related to the most common problems of the public procurement system in Ethiopia are summarized and described in Table 1-1.

Table 1-1 Common Problems and their Description

Problems	Description of the problems
Unable to design clear specification	Most public organizations are not able to craft clear specifications for their needs. They use a descriptive technical specification that does not contain clear information for the suppliers or contractors.
Poor quality of goods, works, and services procured	The quality of the goods, works, and services procured is very poor in almost all public organizations.
Public procurement risk	The risk of public procurement is left to the public organizations since most of them use descriptive technical specifications rather than performance and functional specifications.
Lack of accountability	Lack of a clear accountability system in public procurement results in high corruption prevalence in the sector.
High corruption prevalence in the sector	Procurement is identified as a highly corrupt department in the public sector. Lack of clear accountability and the use of a descriptive specification system are considered to be the causes of higher corruption prevalence.
Higher transaction cost	Public procurement is not managed by professionals in many of the public organizations and has become inefficient and ineffective. This results in a higher transaction cost.
Cost and time overrun	Most public projects in Ethiopia are not completed on time; as a result, the total cost of projects most of the time is higher compared to the beginning contract price.

As a second approach, the researchers organized focus group discussions with procurement professionals using the World Café method. The focus group discussions also identified the most common problems in the public procurement sector of Ethiopia, and these results are summarized in Table 1-2.

Table 1-2 Common Problems Identified by the Focus Group Discussions Using the World Café Method

Problems	Description of the problems
Lack of proper need identification and specification	Public organizations are not properly scrutinizing their needs in line with their work plan and are unable to specify their needs with performance and functional parameters.
Low quality of products and services acquired	The public organizations usually acquire inferior quality goods, works, and services.
Competency problem of public procurement officials	The procurement officials working in public organizations are not professionally qualified to manage the contemporary needs of the public organizations.
Lack of defined accountability	The traditional contracting system used in public organizations does not create a clear accountability system between the bidders and the procuring entity or between individuals within the public organization.
Time and cost overrun in the contract performance process	In public projects, contract extension and overpayment beyond the allocated budget is the common practice.

As can be seen from Table 1-2, most of the issues raised by the World Café focus group discussions are similar to those identified from the secondary data. This confirms the existence of such problems in the procurement system.

In addition, interviews were conducted with private companies to discuss the most common problems in the public procurement system and to suggest solutions for the problems identified. This helps us to triangulate the views of the private organizations (contractors, suppliers, and consultants) with those of the public procurement officials discussed in the World Café group and the secondary data. Thus, researchers interviewed 10 private companies from different sectors (suppliers, contractors, and consultants) which have experience participating in government tenders. The results of the interviews are presented in Table 1-3.

Table 1-3 Common Problems of Public Procurement from the Interviews

Problems in current public procurement practice	# of respondents
Lack of clear or standard specifications for the needs of public organizations	10
Lack of a clear accountability system in public organizations	9
High corruption prevalence in the public procurement system	9
Delays in payment by the procuring entity	7
Lack of professionalism among public procurement officers	5
Centralized procurement system using a long-term framework agreement discriminates against smaller companies	1

Some of the problems raised in the interview were similar to those in the secondary data and the focus group discussions. As indicated in Table 1-3, the public organizations do not have clear or standard specification and evaluation criteria that are identified by 100% of the respondents. A lack of clear accountability and a high corruption rate are ranked second, identified by 90% of the respondents. Delays in payment by the procuring entity and a lack of professionalism by public procurement officials are ranked third and fourth, as identified by 70% and 50% of the respondents, respectively.

1.4.2 Identified problems and possible solutions

For some of the identified problems, using PBC is suggested as a solution by the focus group discussions using the World Café (WC) method, the FPPA, and from the interviews. The public procurement problems and PBC contributions are summarized and described as follows in Table 1-4.

Table 1-4 Summary of Identified Problems and Possible Solutions for Using PBC

No.	Identified problems	Possible solutions for using PBC	Solutions suggested by		
			FPPA	WC	Interview
1	Unable to design clear specification based on results	Enhancing procurement professionals' capability to use PBC.	√	√	√
2	Low quality of products and services acquired	PBC is based on achieving end results; using it helps to improve the quality of the goods, works, and services procured.	√	√	
3	Risk of procurement	PBC transfers the responsibility and risk of procurement from the procuring entity to the contractor.	√	√	
4	High corruption prevalence	Using PBC enhances accountability and hence minimizes corruption prevalence.	√		√
5	Lack of defined accountability	Establishing a strong accountability system and using PBC minimizes this problem.	√	√	√
6	Time and cost overrun in the contract performance process	Using PBC allows contractors to flexibly use their own systems and methodologies during the contract performance process. This helps them exert the maximum effort to delivering the results and hence reduces cost and time overrun in the contract performance process.	√	√	
7	Higher transaction cost	Using PBC does not require the procuring entity to do frequent surveillance and hence helps them to reduce transaction cost.	√		√

1.4.3 Risks in using PBC

Though PBC solves many problems that are found in the traditional public procurement system, using it also has some risks. Some of the common risks of using PBC in the public procurement systems of developing countries are summarized below. The data from secondary sources, World Café discussions, and interviews shows us:

- The procurement professionals in developing countries lack the required skills for drafting

performance and functional specifications and are unable to evaluate the bid accordingly.

- Without having a strong check and balance system in the procurement system, using PBC could enhance corruption in public procurement since PBC uses more qualitative criteria for bid evaluation.
- The contractors may not be willing to accept the contract in PBC – If the incentive packages provided for them are not sufficient for the contractor to compensate for the level of risk taken, contractors may not be willing to take the contract.

1.5 Discussion of the Results

Our research demonstrates the challenges of public procurement in the traditional procurement system. The results of the data from different sources (secondary data, focus group discussions, and interviews) depicted in section four show consistencies with each other greater consistency and are discussed here in detail.

Problems in specification writing

Both in the World Café discussion and in the interview, it become clear that in Ethiopia, specifications are often copied either from earlier tenders or from the Internet (by IT workers) and are sometimes tailored to meet a certain specific brand. In other instances, suppliers who have special relations with public officials are involved in drafting the specifications. This is typically a potential red flag for what may be illegal collusion in the procurement process. The consequence of this is that the procuring entity misses out on the benefits of the competitive procurement process (competition in quality and price) and hence incurs a higher cost for the goods and services delivered.

The traditional approach to public procurement in Ethiopia uses descriptive and detailed specifications for goods, works and services. The aim is to assure quality and achieve the least price with a competitive tender. However, using price alone as a major selection criterion does not ensure gaining quality results for the procurement process. This is, importantly, consistent with other studies as suggested by Waara and Bröchner (2006). The descriptive specifications are drawn up using the available knowledge and experience of the procuring entities, possibly, sometimes with the help of the internal IT personnel. Using PBC is considered to be a solution for these and related problems in the public procurement system since procuring entities do not have to describe the detailed technical specification, instead simply specifying the expected results to be achieved.

Lack of clear accountability in the procurement system

The Ethiopian public sector, like any other developing country, has accountability problems. The data for this research indicates that due to a lack of clear accountability, contractors have not been accountable for problems that occur in the contract performance process. Usually, the procuring entities think that the procurement process is conducted smoothly, and they blame suppliers for supplying inferior quality goods, works, and services. However, the data suggests that the root causes of such problems, most of the time, are the lack of clear need identification and specification that would make it possible to define the responsibilities of the contracting parties. For example, in Ethiopia, in works contracts, the maintenance work starts one year after completion of the buildings and roads and the handover of the project to the procuring entity. Such maintenance might sometimes cost more than the original construction cost. This is because the traditional, descriptive specification system used so far does not make the contractor liable for such problems (Gruneberg et al., 2007; Patil & Molenaar, 2011). Rather, due to the agency problem found in the contracting system, the contractors are motivated to work towards satisfying their own self-interest by reducing the quality instead of delivering the required results for the intended purpose.

In Ethiopia, a formal institutional setup that helps to enhance accountability and integrity in the government system has been established. Some of the important institutions established, especially at the federal level, are Auditor General; Public Procurement Complaint Handling Board; Ethics and Anti-Corruption Commission; Public Procurement and Property Administration Agency; and ethics officers in each of the procuring entities. However, the result of this study's analysis shows that the actual corruption practice in the public procurement system is still high. This is because the traditional contracting system used so far does not clearly define the responsibilities of each of the contracting parties (Ntayi, Namugenyi, & Eyaa, 2010).

PBC in the public procurement system, however, solves accountability problems in the contract performance process of public procurement (Buchanan & Klingner, 2007). In line with the literature (Sultana et al., 2012), the data analysis indicates that PBC is considered as an important contracting system, which shows how responsibility and accountability has shifted over time from giving more emphasis to inputs and processes (design specifications) to focusing on outputs, quality, and outcomes (performance-based specifications). The approach defines who is accountable for what and gives little room to the contractor to deviate from the expected outcomes of the contract (Lenferink et al., 2012). This minimizes the agency problem that can appear in the contract performance process (Bergen, Dutta, & Walker, 1992). As compared to the traditional approach, PBC holds contractors accountable for providing a specific service, which can be measured in terms of "quality, outputs and outcomes" (Martin, 2000). Accountability in the PBC system means that the contractor is accountable for both the output and outcome of the contract delivery process (Bergman & Lundberg, 2013). Typically, the contractors are held responsible for fitness for purpose and for financial accountability for their contract performance, and this helps to decrease corruption

prevalence. This can also help to decrease time, transaction cost, and waste of resources in the contract administration process (Straub, 2009b). Furthermore, PBC in the public procurement of developing countries can bring a great change by enhancing accountability, which is a common problem in the system. To achieve this, however, issues such as transparency, client satisfaction, fair play (equality), and integrity are also required to be maintained together with accountability.

Corruption practice in public procurement

Public procurement is one of the key policy implementation instruments in public organizations. However, public organizations, which mobilize a large amount of the country's resources, are regarded as particularly vulnerable to corruption. Despite the efforts made by the government of Ethiopia, the data analysis results indicate that corruption prevalence is a serious problem in public procurement. The number of anticorruption strategies that have been attempted – like establishing an ethics and anticorruption agency, an ombudsman, legal protections for whistle-blowers, and an expenditure and procurement reform program, have been unsuccessful in Ethiopia (Federal Democratic Republic of Ethiopia Ethics and Anti-corruption Commission & JGAM Donors, 2013).

For these and other related problems, applying PBC in public procurement is considered as one of the key solutions. In line with the agency theory proposed by Nilakant and Rao (1994), the approach fixes the loopholes that are found in the traditional contracting system. It transfers the risk of procurement towards the contractor (Gruneberg et al., 2007; Tineo, 2007). In spite of the different arguments, the data indicates that using PBC in the public procurement system enhances accountability and transfers much of the risk of procurement, such as fitness for purpose and operational performance, towards the contractor or supplier. This can enhance accountability and reduce the practice of corruption in the public procurement system (Ambaw & Telgen, 2017).

In addition, PBC is based on assessing the performance and functional values of the bid, instead of the activities and process of the contract performance (Buchanan & Klingner, 2007). This typically encourages the bidder to work towards achieving the end results and hence hinders the contractors from engaging in corruption practices. The approach also integrates incentive and penalty packages, which have a positive influence on the behaviors of contractors in the contract performance process. This encourages the contractors to work towards achieving performance end results rather than getting involved in corruption activities with public officials. Thus, PBC in the public procurement of developing countries can be considered as an important tool to decrease the prevalent corruption practice by solving the agency problems that occur between the contracting parties.

Cost and time overrun in public procurement

In the traditional descriptive contracting system, experience and existing literature show that public organizations have some difficulties in managing quality, time, and cost effectively (Straub, 2009a). The problems become more serious when they manage more complicated projects.

Similarly, this research confirmed that there are often delays in project completion or delivery as compared to the schedule and this is one of the most common problems due to various reasons. Some of the root causes for delays in project performance are a slow contract administration process by the procuring entity (delayed decision-making, delayed payment, etc.), lack of proper need identification, and a lack of proper supervision of contract performance by the procuring entity. This inefficient traditional procurement system in the public sector contributes a lot to the cost and time overrun of public projects.

A typical example of the traditional contracting system is seen in one of the Road Upgrading Project contracts in Ethiopia. This is the actual practice raised by the focus group discussion. In this contract performance, the consultant elapsed 99.78% of the total contract time while the contractor's actual achievement was only 39.63% of the planned 99.92%. Finally, the contractor got a time extension approved. However, the gap between the remaining percentage of work and time was very large within the added time. This unnecessary delay obviously had an impact on the project cost. This required the procuring entity to pay more than the contract price for the consultant for the added time and for the contractor due to price escalation. In addition, the project was not completed on time for the purpose needed.

Furthermore, in Ethiopia, for works contracts the traditional design-bid-build (DBB) process follows two steps, separating the planning and the design phases of contracting process. Through this process, contractors are selected using the low bid approach. But this method does not give any satisfactory result because the approach does not consider results, but rather pays for the activities and processes. In line with the TCE theory, using PBC in public procurement is considered as a solution to reduce the transaction cost resulting from bounded rationality, opportunism, and risk neutrality (Ambaw & Telgen, 2017). Accordingly, the analysis results confirmed that the implementation of PBC in the public procurement of developing countries can help in reducing cost and time overrun, which is a major challenge in the system.

Quality of goods, services, and works procured

The study indicates that the traditional descriptive contracting system, which focuses on the lowest price selection method, is used widely in Ethiopia (Ambaw & Telgen, 2017). This does not help the procuring entities to select qualified contractors based on their qualifications or based on their proven ability to perform similar projects (Qiao & Cummings, 2003b). Sometimes, this traditional method of contracting includes some prequalification criteria

for improving the quality of contracting results. However, when the contractors are selected based on their competitive price, there is always the risk that the contractors will compromise on quality to reduce cost. Indeed, the probability of selecting non-qualified contractors is higher. This results in acquiring inferior quality goods, works, and services (Sciancalepore et al., 2011). It is the actual practice in Ethiopia that newly constructed buildings and roads are not properly serving the intended purpose. In addition, in many public organizations, newly bought goods are stored for long periods or not used for the intended purpose and then disposed of after a while.

On the other hand, the literature recognizes that if the contract is properly designed considering performance end results, PBC results in a reduced cost for a contract while increasing the quality of products or services (Sultana, Rahman, & Chowdhury, 2013). This is because PBC considers qualitative criteria for the selection of contractors. It also allows the procuring entity to acquire goods and services that fulfill the functional and performance requirements. The study participants recognize that PBC improves government procurement by plugging the leaks found in the traditional procurement system. It also helps them to achieve the best value for public money. More specifically, application of PBC in the public procurement of developing countries can be considered as a powerful instrument for minimizing the quality problems practiced in the system that arise due to the agency problem.

Risks of using PBC

One of the risks associated with PBC arises from a lack of the necessary knowledge to define the needs using performance parameters. The analysis results reveal that public organizations and contractors in Ethiopia have practiced for several decades using descriptive specifications. As a result, the organizations may not have the capability to craft performance specifications and evaluate the bids accordingly. In addition, due to poor performance specifications that do not clearly define the results, the contractors usually do not understand the expected results of the contract. Thus, they are not willing to accept the risk of poor performance of the contract. This results in few bidders taking part in the PBC bid, which in turn has the effect of reducing the potential benefit of competition. For this type of contract, contractors usually need better incentives to compensate for the risks they take (Patil & Molenaar, 2011).

Another risk of using PBC is using qualitative criteria for bid evaluation, which is more prone to judgmental decisions. Naturally, PBC is a contracting system that considers various characteristics of the bid for evaluation besides the price (Boykin, 2005). PBC considers qualitative aspects, which most of the time are susceptible to subjective judgmental decisions. Thus, these seem to be more open to fraud and corruption. The analysis results revealed that due to the subjectivity of the bid evaluation, there is a fear by the procuring entities that using PBC might increase the corruption prevalence, which is already high.

Furthermore, procurement professionals believe PBC transfers the risk of procurement towards the contractor. Due to a fear of such risk, contractors sometimes may be reluctant to take contracts in the PBC system. This results in few contractors involved in the public tender. This in turn becomes a favorable condition for a few risk-taking contractors to establish a monopolistic/oligopolistic system in the market. This in turn creates an opportunity for them to manipulate the price and smuggle public resources.

1.6 Conclusion and Recommendations

Public procurement is an important instrument for the governments in developing countries to achieve their objectives through acquiring the required goods and services. However, in actual practice, public procurement in developing countries is surrounded by a number of problems that can hinder it from achieving its objectives and value for public money.

To this end, the main objective of this research is to analyze how using PBC in the public procurement system could solve some of the public procurement problems in developing countries. For this, we used qualitative data from different sources (secondary sources, focus group discussions, and interviews). The data analysis result revealed that using PBC can minimize some of the most common problems of public procurement in developing countries, i.e. enhance accountability and minimize corruption, increase quality of procurement, increase efficiency, and reduce the transaction cost.

Therefore, this study offers two important contributions (from academic and practical perspectives). From the academic perspective, the study widens the theoretical research related to PBC in a transaction cost economics approach proposed by Brown and Potoski (2003), and in terms of the agency theory and uncertainty, as proposed by Nilakant and Rao (1994).

From a practical perspective, the study results provide two important suggestions to avoid the root causes of public procurement problems in developing countries. It suggests the need for using PBC in the public procurement system of developing countries. The other important suggestion from a practical perspective is that of enhancing the capacity and capability of the procurement staff. Here, strengthening the knowledge and understanding of the procurement officials who are working in the procurement process is significantly important. Creating a clear understanding of why it is important to use PBC in their procurement process has also a greater contribution to minimizing such problems. In line with this, the leadership commitment to allocating the necessary resources and their willingness to professionalize the procurement system can also play a major role in this regard.

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