Public procurement in developing countries is associated with a number of problems. Performance-based Contracting (PBC) is suggested as a solution for such problems. It is believed that the use of PBC can assist the efficient utilization of the public resources. Here, we investigate whether this suggestion can work in the public procurement of developing countries. Survey, interviews, focus group discussion and factual analysis of procurement guidelines and contracts are used to collect data for this research.

Performance-Based Contracting in Public Procurement of Developing Countries

Baynesagn Asfaw AMBAW

INVITATION
You are cordially invited to attend the public defense of my PhD thesis titled

Performance-Based Contracting in Public Procurement of Developing Countries

On Thursday, 2nd of November, 2017
At 12:45 in the collegezaan 4,
Waaarier building,
University of Twente,
Enschede, The Netherlands.

A brief overview of the research will be given at 12:45

Baynesagn Asfaw AMBAW
b.a.ambaw@utwente.nl
PERFORMANCE-BASED CONTRACTING IN PUBLIC PROCUREMENT OF DEVELOPING COUNTRIES

Baynesagn Asfaw AMBAW
PERFORMANCE-BASED CONTRACTING IN PUBLIC PROCUREMENT OF DEVELOPING COUNTRIES

DISSERTATION

to obtain
the degree of doctor at the University of Twente,
on the authority of the rector magnificus,
prof.dr. T.T.M. Palstra,
on account of the decision of the graduation committee,
to be publicly defended
on Thursday the 2nd of November 2017 at 12:45

by

Baynesagn Asfaw AMBAW

Born on 25th of March 1974

in Bahirdar, Ethiopia
This dissertation has been approved by:

Supervisor: Prof.dr. J. Telgen
Graduation Committee

Chairman and Secretary:

prof.dr. Th.A.J.Toonen
Dean Faculty BMS

Supervisors:

Prof. dr. J. Telgen
University of Twente

Members:

Prof. dr. H. Schiele
University of Twente

Prof. dr. P. de Weerd Nederhof
University of Twente

Prof. dr. B. Vos
University of Tilburg / Economie

Prof. dr. E. Manunza
University of Utrecht/

Prof. dr. R. Torenvlied
University of Twente

Prof. dr. C.M. Harland
Politecnico de Milano/

Supply Management
Table of Contents

<table>
<thead>
<tr>
<th>Table of Contents</th>
<th>viii</th>
</tr>
</thead>
<tbody>
<tr>
<td>List of Tables</td>
<td>xii</td>
</tr>
<tr>
<td>List of Figures</td>
<td>xiii</td>
</tr>
<tr>
<td>1  CHAPTER 1. INTRODUCTION AND OVERVIEW</td>
<td>1</td>
</tr>
<tr>
<td>1.1  Introduction</td>
<td>1</td>
</tr>
<tr>
<td>1.2  General Background</td>
<td>1</td>
</tr>
<tr>
<td>1.3  Research Focus Areas and Objectives</td>
<td>4</td>
</tr>
<tr>
<td>1.4  The Studies</td>
<td>5</td>
</tr>
<tr>
<td>1.4.1 Assessing the application of PBC in the public procurement system of developing countries</td>
<td>5</td>
</tr>
<tr>
<td>1.4.2 Extent of PBC application and the factors underlying its low practice in developing countries</td>
<td>6</td>
</tr>
<tr>
<td>1.4.3 PBC as a solution for public procurement problems: Some Ethiopian evidence</td>
<td>7</td>
</tr>
<tr>
<td>1.4.4 PBC in the rules and regulations of the public sector procurement</td>
<td>7</td>
</tr>
<tr>
<td>1.4.5 Willingness of procurement officials on using PBC for public procurement</td>
<td>8</td>
</tr>
<tr>
<td>1.5  Methodology</td>
<td>9</td>
</tr>
<tr>
<td>1.6  Significance of the Study</td>
<td>12</td>
</tr>
<tr>
<td>2  CHAPTER 2. PERFORMANCE-BASED CONTRACTING IN PUBLIC PROCUREMENT: LITERATURE REVIEW AND ANALYSIS</td>
<td>13</td>
</tr>
</tbody>
</table>
2.1 Introduction
2.2 Literature Reviewed and Methods Employed
  2.2.1 Methods employed
  2.2.2 Description of literature reviewed
2.3 Concepts and Definitions of PBC
2.4 Integrating Performance, Payment, and Rewards (Incentives and Penalties)
2.5 Theoretical Analysis
  2.5.1 Agency theory
  2.5.2 Transaction cost economics theory
2.6 Advantages of PBC
2.7 Disadvantages of PBC
2.8 Conclusion

3 CHAPTER 3. THE PRACTICE OF PERFORMANCE-BASED CONTRACTING (PBC) IN DEVELOPING COUNTRIES’ PUBLIC PROCUREMENT: THE CASE OF ETHIOPIA
  3.1 Introduction
  3.2 Literature Review
    3.2.1 The meaning of PBC
    3.2.2 Characteristics of PBC
  3.3 The Methodology Employed
    3.3.1 Procurement laws
3.3.2 Procurement contracts 66
3.3.3 Interviews 68

3.4 Results 70
3.4.1 Analysis of the procurement laws 70
3.4.2 Results of the contract analysis 74
3.4.3 Results of the interview analysis 78

3.5 Discussion of the Results 81
3.6 Conclusion 89

4 CHAPTER 4. PBC AS A SOLUTION FOR PUBLIC PROCUREMENT PROBLEMS: SOME ETHIOPIAN EVIDENCE 91

4.1 Introduction 92
4.2 Literature Review 94
4.2.1 Agency theory 94
4.2.2 Transaction cost economics theory 96
4.2.3 Corruption in public procurement 97
4.2.4 Risks associated with using PBC 101

4.3 Methodology 102
4.4 Results 106
4.4.1 Problems of public procurement from secondary data, focus group discussion, and interviews 106
4.4.2 Identified problems and possible solutions 110
4.4.3 Risks in using PBC 112
<table>
<thead>
<tr>
<th>4.5</th>
<th>Discussion of the Results</th>
<th>113</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.6</td>
<td>Conclusion and Recommendations</td>
<td>122</td>
</tr>
<tr>
<td>5</td>
<td>CHAPTER 5. REVIEW OF PUBLIC PROCUREMENT LAWS RELATED TO PBC</td>
<td></td>
</tr>
<tr>
<td>5.1</td>
<td>Introduction</td>
<td>125</td>
</tr>
<tr>
<td>5.2</td>
<td>Analysis of the Legal Framework</td>
<td>126</td>
</tr>
<tr>
<td>5.2.1</td>
<td>The World Bank procurement guidelines</td>
<td>126</td>
</tr>
<tr>
<td>5.2.2</td>
<td>Performance-based contracting in the procurement directives of the EU</td>
<td>129</td>
</tr>
<tr>
<td>5.2.3</td>
<td>Performance-based contracting in the procurement rules and procedures of the AfDB</td>
<td>133</td>
</tr>
<tr>
<td>5.2.4</td>
<td>PBC in the public procurement law of Ethiopia</td>
<td>136</td>
</tr>
<tr>
<td>5.2.5</td>
<td>PBC in the public procurement laws of the US government</td>
<td>138</td>
</tr>
<tr>
<td>5.3</td>
<td>Summary</td>
<td>142</td>
</tr>
<tr>
<td>6</td>
<td>CHAPTER 6. USING PERFORMANCE-BASED CONTRACTING (PBC) IN PUBLIC PROCUREMENT: THE CASE OF ETHIOPIA</td>
<td></td>
</tr>
<tr>
<td>6.1</td>
<td>Introduction</td>
<td>145</td>
</tr>
<tr>
<td>6.2</td>
<td>Theoretical and Conceptual Framework</td>
<td>146</td>
</tr>
<tr>
<td>6.3</td>
<td>The Methodology Used</td>
<td>156</td>
</tr>
<tr>
<td>6.3.1</td>
<td>The research sample and measurement</td>
<td>156</td>
</tr>
<tr>
<td>6.3.2</td>
<td>Model specification</td>
<td>157</td>
</tr>
<tr>
<td>6.4</td>
<td>Results of the Analysis</td>
<td>158</td>
</tr>
<tr>
<td>6.4.1</td>
<td>Descriptive analysis of respondents’ characteristics</td>
<td>158</td>
</tr>
</tbody>
</table>
List of Tables

Table 2-1 Nature of the Studies Reviewed 19
Table 2-2 Research Focus 20
Table 3-1 Basic Differences between the Two Contracting Approaches 60
Table 3-2 The Contents of the Procurement Laws in Relation to PBC 73
Table 3-3 Composition of Contracts with Respect to Type of Procurement

Table 3-4 Practice of PBC System

Table 3-5 Number of Contracts Collected Across the Procuring Entities

Table 3-6 Reasons for Low Practice of PBC

Table 3-7 Interview Results for Respondents from Organizations that are Not Applying PBC

Table 3-8 Different Views of Respondents Using PBC and Respondents Not Using PBC

Table 4-1 Common Problems and their Description

Table 4-2 Common Problems Identified by the Focus Group Discussions Using the World Café Method

Table 4-3 Common Problems of Public Procurement from the Interviews

Table 4-4 Summary of Identified Problems and Possible Solutions in using PBC

Table 5-1 Summary of the PBC Content of the Different Procurement Laws, Guidelines, Rules, and Directives

Table 6-1 Respondents’ Procurement Experience and Education

Table 6-2 Statistical Reliability

Table 6-3 Computation of Degrees of Freedom

Table 6-4 Hypotheses Test Results

List of Figures

Figure 2-1 Procedures for Selecting Articles

Figure 2-2 Number of Articles and Year of Publication

Figure 2-3 The Different Standards of Specification
<table>
<thead>
<tr>
<th>Figure</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>2-4</td>
<td>The Conceptual Model for Performance-based Contracting and Descriptive Specification</td>
<td>22</td>
</tr>
<tr>
<td>2-5</td>
<td>Summary of the Conceptual Definitions of PBC</td>
<td>28</td>
</tr>
<tr>
<td>3-1</td>
<td>Summary of the Interview Respondents</td>
<td>69</td>
</tr>
<tr>
<td>6-1</td>
<td>Technology Acceptance Model</td>
<td>148</td>
</tr>
<tr>
<td>6-2</td>
<td>Conceptual Model for the Willingness to Use PBC</td>
<td>156</td>
</tr>
<tr>
<td>6-3</td>
<td>A Causal Model of Willingness to Use PBC</td>
<td>163</td>
</tr>
</tbody>
</table>
**List of Abbreviations**

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>AfDB</td>
<td>African Development Bank</td>
</tr>
<tr>
<td>CPP</td>
<td>Confidence of Procurement Professionals</td>
</tr>
<tr>
<td>ETB</td>
<td>Ethiopian Birr</td>
</tr>
<tr>
<td>EU</td>
<td>European Union</td>
</tr>
<tr>
<td>FAR</td>
<td>Federal Acquisition Regulation</td>
</tr>
<tr>
<td>FBS</td>
<td>FixedBudgetSelection</td>
</tr>
<tr>
<td>FPPA</td>
<td>Federal Public Procurement and Property Administration Agency</td>
</tr>
<tr>
<td>GDP</td>
<td>Gross Domestic Product</td>
</tr>
<tr>
<td>ICB</td>
<td>International Competitive Bidding</td>
</tr>
<tr>
<td>LCS</td>
<td>List Cost Selection</td>
</tr>
<tr>
<td>MEAT</td>
<td>Most Economically Advantageous Tender</td>
</tr>
<tr>
<td>NCB</td>
<td>National Competitive Bidding</td>
</tr>
<tr>
<td>OBC</td>
<td>Output-based Contracting</td>
</tr>
<tr>
<td>OI</td>
<td>Organization Intention</td>
</tr>
<tr>
<td>PBC</td>
<td>Performance-based Contracting</td>
</tr>
<tr>
<td>PBP</td>
<td>Performance-based Procurement</td>
</tr>
<tr>
<td>PEU</td>
<td>Perceived Ease of Use</td>
</tr>
<tr>
<td>PU</td>
<td>Perceived Usefulness</td>
</tr>
<tr>
<td>PWS</td>
<td>Performance Work Statement</td>
</tr>
<tr>
<td>QCBS</td>
<td>Quality and Cost-Based Selection</td>
</tr>
<tr>
<td>RFQ</td>
<td>Request for Quotation</td>
</tr>
<tr>
<td>RO</td>
<td>Research Objective</td>
</tr>
<tr>
<td>SEM</td>
<td>Structural Equation Modeling</td>
</tr>
<tr>
<td>TAM</td>
<td>Technology Acceptance Model</td>
</tr>
<tr>
<td>TCET</td>
<td>Transaction Cost Economics Theory</td>
</tr>
<tr>
<td>UN</td>
<td>United Nation</td>
</tr>
<tr>
<td>WB</td>
<td>World Bank</td>
</tr>
<tr>
<td>WU</td>
<td>Willingness to Use</td>
</tr>
</tbody>
</table>
1 CHAPTER 1: INTRODUCTION AND OVERVIEW

1.1 Introduction

Procurement is one of the important functions of government. A large portion of the government expenditure, which has a huge impact on the economy, passes through this function: The estimated outlay for procurement accounts for 15% of GDP worldwide and up to 80% of the government budget of developing countries (Ssennoga, 2006; Thai, 2001; Tineo, 2007). So the immediate effect of public procurement on the economy is huge. Also through its procurement policy, the public sector has an effect on the quality and structure of the market and the incentives of firms to compete more or less fiercely in the long term (Federico, 2002).

1.2 General Background

Public procurement practice, especially in developing countries, is focused on the least cost approach to selection (Tineo, 2007). This is at least partly due to the fact that fraud and corruption is a very serious problem in the system (African Development Bank, 2012; Schapper, Veiga Malta, & Gilbert, 2006). Using least cost avoids the need to make judgments on qualitative aspects of bids, thus eliminating one opportunity to bias the selection result. The simple approach of least cost, however, does not always provide a satisfactory result. In their quest for the least cost bid, suppliers tend to ignore the quality-related aspects, as Hannah et al. (2010) point out. In practice, they tend to
offer and deliver nothing but the minimum required quality and sometimes even less than that. This results in buying low-quality goods and services. However, quality is another issue that helps to achieve the ultimate goals of procurement (Brown, Potoski, & Van Slyke, 2009; Qiao & Cummings, 2003).

For such problems, performance-based contracting (PBC) is considered to lead to efficiency and effectiveness, to enhance accountability and minimize corruption, and to achieve other goals of public procurement (Ang, Groosman, & Scholten, 2005). PBC is a procurement method based on a contract in which the results are expressed in terms of outputs or outcomes (Sengooba, McPake, & Palmer, 2012). Martin (2005) clearly states that PBC is an attempt to transform the contracting system away from the traditional input-based specification – i.e. telling the contractors how they will perform the contract – towards outputs, outcome, or quality – i.e. telling the contractor the expected end results and giving them more freedom to decide how to do it.

In line with different theoretical perspectives, application of PBC in public procurement has many benefits. It transfers some risk of procurement from the contracting authority to the contractor (Gruneberg, Hughes, & Ancell, 2007; Tineo, 2007), who is generally more of an expert on the issue at hand (Agency Theory). Also it helps to minimize the probability of opportunism by the contractor (Agency Theory) (Hensher & Stanley, 2008), allows for enhancing innovation rather than restricting the suppliers by providing detailed technical specifications (Transaction Cost Economics Theory) (Berkowitz,
Gupta, Simpson, & McWilliams, 2005), and reduces the costs of the transaction, as less surveillance is required (Transaction Cost Economics Theory) (Buchanan & Klingner, 2007). Furthermore, the application of PBC enhances accountability in the procurement system since the system clearly defines the responsibility of each contracting party (Agency Theory) (Boykin, 2005) and achieves the procurement objectives of the organization as a whole (Berkowitz et al., 2005; Hannah et al., 2010; Tineo, 2007). In the PBC approach, the contractors are responsible for the methods applied and the results achieved, and hence any misunderstanding related to specification as well as accountability in contract performance failure are more likely to be minimized (Hypko, Tilebein, & Gleich, 2010; Ssennoga, 2006). The net results of PBC, therefore, can be a reduction of total cost of procurement, on-time delivery of the goods and services required, and fewer performance deficiencies by the contractor (Straub, 2009; Straub & van Mossel, 2007).

But there are some possible drawbacks associated with PBC as well. By its very nature, PBC requires the buying agency to evaluate the various characteristics of the offers in addition to the cost. In fact, the way to achieve the desired outcome or result may differ between suppliers (Boykin, 2005). This evaluation process involves a qualitative aspect, which requires subjective judgments (Straub & van Mossel, 2007; Tineo, 2007) and henceforth seems more prone to fraud and corruption. This may hamper the application of PBC. Another possible factor may be due to the fact that PBC is relatively new and
hence little known in developing countries and the purchasing agents may lack the skills to properly apply PBC.

Even so, we expect PBC to have potential in developing countries too for ensuring the efficient utilization of their limited resources. But whatever scientific literature on PBC exists is focused on developed countries (e.g. mainly the US, The Netherlands, Canada, UK, Germany, Australia, etc.) (Gruneberg et al., 2007; Kleemann, Glas, & Essig, 2012; Martin, 2005, 2007; Straub, 2009) and does not address the nature and extent of PBC in developing countries. Of course, we take the existing research into consideration but this research focuses on filling the gap on the application of PBC in developing countries.

1.3 The Research focus areas and Objectives

This research is focused on the application of PBC in the public procurement system of developing countries. We define five research objectives (ROs) that focus on this common issue. The first objective (RO1) mainly deals with the theory behind and the theoretical knowledge of PBC aspects, based on the existing literature. More specifically, it analyzes the concept and definitions of PBC by different authors, analyze the relevant theories in relation to PBC, and explore advantages and disadvantages of PBC in public procurement, specifically in the context of developing countries. In the subsequent research objectives (RO2-RO5), we focus on understanding the extent of the application of PBC and comparing it with the traditional contracting system, and we clarify the factors underlying the low use of PBC in the public procurement system of developing countries.
(RO2), the extent to which the application of PBC can minimize the existing challenges of public procurement in developing countries (RO3), to what extent PBC concepts are included in the rules and regulations of some selected international institutions and countries (RO4), and the perceptions of public officials on the application of PBC in the public procurement system (RO5). This research seeks to contribute to our knowledge and understanding of how performance-based contracting in the public procurement system of developing countries can be applied. Based upon these findings, we conclude this study with some suggestions to improve the applicability of performance-based contracting in the public procurement system of developing countries, taking Ethiopia as an example.

1.4 The studies

1.4.1 Assessing the application of PBC in the public procurement system of developing countries

To address RO1, Chapter 2 is designed to analyze the existing body of literature related to PBC. It focuses on the exploration of the concepts and definitions of PBC in relation to public procurement. Mainly, it aims to clarify the concepts of PBC and to point out the advantages and disadvantages of using PBC in the public procurement system of developing countries.

The papers pertinent to the topic were critically reviewed. More importantly, (1) the concept of PBC is examined from different angles (i.e. performance, pay, incentives, and transaction cost), and (2) the advantages and disadvantages of using PBC are explored. Then (3) the
results of the review are discussed based on two important theoretical perspectives, agency theory and transaction cost economics theory. Agency theory and transaction-cost economics theory conceptually complement each other to determine if the contracting approach is performance or behavioral, as well as the related cost of the transaction.

The analysis shows that the number of published research papers on PBC increased over the last decade, but the research is still limited to developed countries and specific to a few economic sectors. In addition, the literature does not show what is going on in the public procurement of developing countries. The insights from these theoretical perspectives may help to determine the type of relationships between the contracting parties – i.e. either behavioral or performance. Furthermore, developing a sharp definition of PBC helps pave the way to detailed studies on the topic in the consecutive chapters in the context of developing countries.

1.4.2 Extent of PBC application and the underlying factors for low practice in developing countries

Chapter 3 deals with the practice of PBC in the public procurement system of developing countries. To address RO2, we examine the extent of PBC application and the reasons for the low practice of PBC in the public procurement system of developing countries. This is done through a factual analysis of the public procurement laws and contracts and through interviews with public procurement practitioners. In Ethiopia, the analysis shows that PBC is barely used in the public
procurement system. This is partly due to the lack of a clear legal framework and the lack of knowledge and skills among procurement professionals to understand the concept of PBC and apply it.

1.4.3 PBC as a solution for public procurement problems: Some Ethiopian Evidence

Chapter 4 addresses RO3 by qualitatively analyzing public procurement problems in developing countries to see if PBC can contribute to their reduction or even elimination. The data required for this research work was collected from different sources, i.e. from secondary sources, focus group discussions using the World Café method, and interviews with private organizations. The study uses the agency and transaction cost economics theories to discuss the data. Based on these theories, the analysis reveals that a number of problems in the public procurement system of developing countries can be minimized by using PBC.

1.4.4 PBC in the rules and regulations of the public sector procurement

Chapter 5 addresses RO4 through an analysis of the contents of the procurement rules and regulations of some selected international organizations and countries in relation to PBC. In this chapter, we analyze the PBC contents of the procurement rules and regulations of the World Bank, African Development Bank, and European Union, the public procurement laws of the US government, and the public procurement laws of the Ethiopian government. The most pertinent features of the procurement policies with relation to PBC are checked
and analyzed. This is because these organizations are the main sources of the government budget in Ethiopia. Assessing these procurement rules and regulations helps to determine PBC’s applicability in the public procurement system in Ethiopia. The overview clearly suggests that PBC is systematically promoted and cited in the public procurement legal framework of many countries and international organizations. However, some procurement rules and regulations are not adequately provided to enable the users to successfully implement PBC in their procurement system. This study contributes to the identification of the missing elements in the procurement rules and regulations and provides suggestions for the responsible bodies for further improvements.

1.4.5 Willingness of procurement officials to use PBC for public procurement

Chapter 6 addresses RO5 by examining the perceptions of procurement officials and especially their willingness to use PBC in the public procurement system of developing countries. The willingness of procurement professionals to use PBC is mainly examined based on two important perceptions, namely perceived usefulness and perceived ease of use. Perceived ease of use is considered as the procurement professionals’ perception of the amount of time and effort required to use the newly adopted system; meanwhile, perceived usefulness is the procurement professionals’ perception that using the newly adopted system will enhance individuals’ performance at their workplace (Conrad, Michalisin, & Karau, 2012).
The study builds on the technology acceptance model to discuss factors influencing the willingness of procurement professionals to use PBC in their procurement system. Davis’s (1989) Technology Acceptance Model is adopted to show the influence of perceived usefulness and perceived ease of use on the willingness of procurement professionals to use PBC. Also, the model is customized to include organizational intention to use PBC and to check whether the organization’s intention to use PBC has an influence on the willingness of procurement professionals to use PBC. Structural equation modeling is used to empirically examine the effects of different variables (i.e. perceived usefulness, perceived ease of use) on the willingness to use PBC in the public procurement system of developing countries. For this research, survey data from 203 respondents was collected and analyzed using Amos (SPSS). The results showed that procurement officials perceived PBC as useful and easy to use in public procurement in cases where training on how to apply PBC was provided. Thus, procurement officials are willing to use PBC in their procurement system. Understanding the willingness of procurement professionals to use PBC is imperative in order to take any corrective measures in the application process.

1.5 Methodology

Multiple methodologies are employed throughout this study. Each of the chapters follows different methodologies to collect the required data and analysis. Accordingly, the methodologies employed in each of the chapters are presented here.
Chapter 2 involves a comprehensive systematic review of the previous research works. This section provides a quick view of the iterative procedure followed during the analysis of PBC literature written in the English language. We used Google scholar to search for literature sources from 1990 to 2012. Mainly, the Science Direct, Justor, and Sage databases were used to find the resources. Keywords such as performance-based contracting, performance-based procurement, outcome-based procurement, and functional specification, as well as titles and abstract information, were used for searching the sources. Lists of references obtained from selected articles, sections of books, and conference proceedings were also used to identify additional resources for this research work.

For Chapter 3, a two-phase approach was chosen as a research design. In the first phase, a factual analysis of the procurement guidelines and the contracts used by Ethiopian public agencies was carried out to determine the extent to which PBC is allowed, regulated, and practiced in the sample organizations. In the second phase, personal interviews were conducted with key informants to find out the reasons underlying the existing level of practice of PBC in the public organizations.

To test the research hypotheses for Chapter 4, validated data collection tools (questionnaires) were adapted from published literature to ensure reliability. Except for some minor modifications to measure individual procurement professionals’ perception of using PBC in the public procurement system, the structure remains the same. The items were developed with a seven-point Likert scale ranging from (1)
strongly disagree to (7) strongly agree, and participants were asked to report their opinions on the scale. The questionnaires were physically distributed to public procurement officials and their managers who are working in federal ministries in Ethiopia. A total of 400 printed questionnaires were personally distributed to the participants. They were randomly selected from an estimated total number of 560 officers. The data collected was analyzed using SPSS/Amos.

In Chapter 5, we consider Ethiopia as a case to determine 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 with contractors, consultants, and suppliers.

Finally, in Chapter 6, the public procurement laws of different countries and international organizations (Ethiopian government, US, World Bank, African Development Bank and the European Union) are analyzed in detail. This is because these countries and institutions are the main sources of funding for developing countries, and specifically for the Ethiopian government, and analyzing these procurement laws helps us to determine the level of PBC application in the government procurement of the country. In addition, to strengthen our argument, we consulted different database sources and reviewed the pieces of literature related to PBC.
1.6 **Significance of the Study**

All the chapters can be read independently, and as a consequence there might be some repetitions. Accordingly, each one of them sheds light on some aspects of PBC. Taken together, they enhance our knowledge and understanding of PBC. This study has practical significance for policy-makers and theoretical significance for academics. The study provides recommendations to policy-makers on how to apply PBC to achieve the best value for public money in the public procurement process of developing countries. Both government and contractors will benefit from this study by better understanding the concept of PBC and adopting the system so as to improve their procurement practice. Other non-governmental organizations may also use the findings to come up with better ways of applying PBC in their procurement system.

The research will also be of significant value for future researchers, academics, and professionals who might be interested in the same area of study, specifically in the public procurement practice of developing countries. In addition, the study shows how agency theory and transaction cost economics theory can be applied together and complements each other to determine the behaviors of contractors in the contract performance process.
Abstract

PBC is becoming an interesting topic and draws the attention of many researchers. This is evident in the fact that the number of research outputs has been increasing for the last decade. However, comprehensive and systematic review of previous research indicates that the research outputs pertinent to the topic are limited to specific
sectors and areas. More importantly, the research results do not clearly show whether the findings will work in the context of developing countries. This sector and area-specific empirical research outlook hinders the development of a general theoretical framework for PBC. Thus, it confirms that this research area is still under-theorized and needs more research and investigation, especially as regards its applicability in the context of developing countries.

2.1 Introduction

Establishing an effective and efficient procurement system that can manage the program needs of the government has become a challenge. The simple approach of least cost does not always provide a satisfactory result. Under the least cost method, suppliers or contractors tends to deliver no more than – and sometimes less than – the minimum required quality. These problems are particularly serious in many of the public procurement contracts in developing countries. As a result, the procurement practice of the public organizations seems to be less efficient and effective. For such problems, nowadays, performance-based contracting (PBC) and/or functional specification
approaches are considered to be very helpful to enhance their efficiency and effectiveness (Martin, 2005). Yet despite such theoretical prescriptions, the relevance to and/or effectiveness of this system in the context of developing countries has barely been investigated. Therefore, this research paper aims to contribute to the existing body of literature and to policy-making by exploring the concept of performance-based contracting and analyzing its importance when applied to the public procurement system of governments, particularly in developing countries where the use of public resources seems to be less efficient.

This study involves a comprehensive literature review on PBC related to public procurement, focusing specifically on its applicability in the context of developing countries. A previous literature review by Selviaridis and Wynstra (2015) provides an overview of the PBC literature that focuses on classification of the research by discipline, which we can draw on in this work for general notions. Our research adds some more ideas and focuses on public procurement within the context of developing countries, operationalizing PBC definitions to clearly delimit our research in the subsequent chapters. By doing so, it paves the way to subsequent detailed studies on the topic in the context of developing countries.

The rest of the paper is organized into eight sections. The second section describes the methodology, while section three provides a description of the papers reviewed. Sections four and five present the definition and concepts of performance-based contracting and a discussion of the payment and reward schemes of PBC, respectively.
Section six focuses on an analysis of PBC in terms of the different theoretical perspectives, mainly agency and transaction cost economics theories. The advantages and disadvantages of applying PBC are described and analyzed in sections seven and eight, while the last section contains the conclusion of the analysis.

2.2 Literature Reviewed and Methods Employed

2.2.1 The methods employed

The study involves a comprehensive systematic review of the previous research works. This section provides a quick view of the iterative procedure followed during the analysis of the PBC literature written in the English language. The resources used for this research were identified through searches in Google Scholar from the databases of 1990 to 2012. Mainly, the Science Direct, Justor, and Sage databases were used. Key words such as performance-based contracting, performance-based procurement, outcome-based procurement, and functional specification, as well as titles and abstract information, were used for searching the sources. Lists of references obtained from selected articles, sections of books, and conference proceedings were also used to identify additional resources for this research work. The procedure followed in searching the research articles is presented in Figure 2-1.
2.2.2 Description of literature reviewed

The research articles found to be relevant for the analysis include both quantitative and qualitative studies. About 69% of the articles are qualitative studies with a description of the concepts of PBC in detail, and the other 31% of the articles use quantitative approaches. The majority of the studies have a strong empirical basis on which to discuss the risks and opportunities of PBC. They simply describe the practice, however, instead of testing hypotheses based on the general theoretical framework. The articles qualified for this literature review focus on different themes. The themes mainly include performance-based contracting, performance-based logistics in defense, outcomes-based contracting, risks and benefits of PBC, and measurement and incentive issues in PBC. A very small number of articles focus on other issues (for example, the issue of trust and accountability between contracting parties in PBC).

As shown in Figure 2-2, the analysis of the research indicates that PBC as a research topic is increasingly drawing the attention of
researchers. During the last decade (2002–2012), about 78% of the resources (n = 50) have been published in peer-reviewed journals.

![Figure 2-2 Number of Articles and Year of Publication](image)

The other important finding of this research review is that PBC studies conducted so far have included a variety of economic sectors, mainly social services, health care services, defense logistics, and construction.
As depicted in Table 2-1, the majority (87.5%) of the articles published are empirical studies. Table 2-2 illustrates that the majority of the studies were conducted in developed countries, predominantly the US, as well as The Netherlands, the UK, Australia, Germany, Canada, and Sweden. Only a few (6%) of the studies were conducted in developing countries. Most of the studies are focused on the public sector, and there is a limited focus on the private procurement system. Most of the studies are published in the Journal of Public Procurement, Academy of Management Journal, and Journal of Public Administration Review, Journal of Construction Management and Economics, Journal of Administration in Social Work, and Journal of Purchasing and Supply Management. Meanwhile other studies are published in different types of journals, and the remaining few are conference proceedings.

Source: Computed by the authors
Table 2-2 Research Focus

<table>
<thead>
<tr>
<th>Research areas</th>
<th>Number</th>
<th>Percent</th>
<th>Research sector</th>
<th>Number</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Developed countries</td>
<td>60</td>
<td>93.75%</td>
<td>Public sector</td>
<td>57</td>
<td>89%</td>
</tr>
<tr>
<td>Developing countries</td>
<td>4</td>
<td>6.25%</td>
<td>Private sector</td>
<td>7</td>
<td>11%</td>
</tr>
</tbody>
</table>

Even though the studies in performance-based contracting have been increasing, as shown in Table 2-2, almost all (94%) of the relevant research articles were conducted in developed countries, and many of the studies are related to some specific sectors. Therefore, the research results do not clearly show whether the research findings can work in the context of developing countries, or in both the public and private sectors. This sector and area-specific empirical research outlook hinders the development of the general theoretical framework of PBC. Our illustration of the studies conducted in relation to PBC shows that this research area is still under-theorized and needs more research and investigation, especially in terms of its applicability in the context of developing countries.

2.3 Concepts and Definitions of PBC

PBC relies heavily on the specification of output or outcome. In the context of procurement, a specification can be defined as a statement of the needs of a purchaser. It defines what the purchaser wants to buy and, accordingly, what the supplier or contractor is required to provide (Peter, 2003). Specifications can be simple or complex depending on
the requirements of the purchaser. The success of the procurement process depends heavily on the content of the specification, which contains a true and accurate statement of the buyer’s requirements. In addition to being used as a means of conveying the goods, works, or services required, specifications serve as a base for any future contract document that might result from offers received from the contractors (Sabnis, 2005).

![Figure 2-3 The Different Standards of Specification](image)

Specifications could be categorized as technical, functional, or performance. A technical specification specifies or describes the product or service’s physical characteristics and the way it is produced, constructed, or provided (Honore, Simoes, Moonesinghe, Kirbey, & Renner, 2004; Peter, 2003). It outlines exactly how the contractor must perform the service or how the product is made and from which material it is made. It describes the details of the inputs needed and the processes through which it is made or provided. A functional specification specifies what a product is to do and describes the purpose of acquiring goods, works, or services (Arrowsmith, 2010). Meanwhile, a performance specification describes what is to be achieved at the end of the contract period or at the interim (Martine, 2000). It specifies the measurable results in terms of outputs and outcomes of the contract and related payment schemes.
PBC refers to a contracting approach that can be expressed in terms of outputs or outcomes, which enables purchasers to measure the contract results using different parameters, rather than merely inputs, processes, and the means by which activities and tasks are done (Hannah, Ray, Wandersman, & Chien, 2010). More specifically, it is a contract in which the results are expressed in terms of outputs or outcomes with clearly defined standards (Honore et al., 2004; Kashiwagi, 1999; Ssengooba, McPake, & Palmer, 2012). Similarly, Buchanan and Klingner (2007) define a PBC as “a contract that focuses on measuring the end results (expressed in terms of output or outcome) rather than the processes and the inputs used.”

![Figure 2-4 The Conceptual Model for Performance-based Contracting and Descriptive Specification](image)
The definition of PBC provided by Behn and Kant (1999) is slightly different from the definition of Honore et al. (2004), Martin (2000), and Martin (2005) in that performance-based contracting is conceptualized as an activity that only specifies what results are to be achieved or produced, leaving the contractor or the producer to flexibly choose the best way to produce the expected results of the contract. In contrast, Martin’s definition requires the clients to clearly set metric standards that enable them to measure the outputs or outcomes of the contract at the outset (in terms of quality, quantity, timeliness, accomplishments, impacts, etc.) and also to design inspection plans to make sure that the predesigned standards are met. More importantly, this type of contracting encourages the contracting parties to put more focus on results and on achieving the mission outcomes of the contract. On the other hand, the approach discourages prescription and activity-oriented procurement contracts (Buchanan & Klingner, 2007), which have been used so far in many of the public organizations. In his study on human service contracting, Martins (2005) conceptualized performance-based contracting more broadly as “an attempt to move human service contracting away from its historical reliance on input and process, or design specifications (telling contractors how to perform the work), in favor of outputs and outcomes, or performance specifications (telling contractors what is expected and leaving the how-to up to them).”
Patil and Molenaar (2011) define and explain performance-based contracting as an approach that is similar to Martin’s (but in the construction sector perspective) as:

The contractors’ primary motivation is that, unlike the traditional specifications where an owner specifies how the design is to be done and construction quality is to be ensured, performance specifications define the performance of the end-result without telling the contractors how to do the work. ‘Tell me what you want, but don’t tell me how to do it,’ is how the approach is described, the suggestion being that the traditional prescriptive or method specifications restrict contractors’ freedom to be innovative.

The most important issue here is that the results to be achieved should be specified by the purchaser and agreed upon by both the contracting parties. For example, to procure a simple dry erase marker, the purchaser is required to define the end result that he/she needs. For example, it might specify “fine-tip dry erase markers; strong tip that does not soften or spread ink; fast-drying ink; easy to clean; certified non-toxic by marker industry standards (like ISO),” without prescribing from which material and how it is made. Therefore, the concept of performance-based contracting needs the practice of new thinking and working towards achieving the end results rather than just describing the details of the means and processes as has usually been done so far in the descriptive approach.

As shown in Figure 2-4, contractors (in performance-based contracting) are required to deliver some pre-agreed results, which are
specified in their contract document as standards. Here, the term “results” or “the end result” refers to an output or outcome, which is specified in the contract document as a “result” and agreed upon by both contracting parties. It means that the performance is expressed in terms of an output or outcome or a combination of these. Standards refer to mutually agreed parameters set in the contract document (i.e. service volume, units of service, results, impacts, and accomplishments, or a combination of them) and used as a base for evaluation and measurement of the contract performance.

In the same way, Ng and Nudurupati (2010) define outcomes-based contracting as a contracting system “that allows the firm or the contractor to pay only when the firm or the contractor has a delivered outcome, rather than just for activities and processes.” Honore, Simoes, Moonesinghe, Kirby, and Renner (2004) provide a similar definition of outcomes-based contracting, but give more emphasis to the payment scheme, as this form of contractual agreement focuses on the payment that should be made after the confirmation of achieving the mutually agreed-upon results stated in the contractual agreement.

According to Arrowsmith (2010), functional specification is a form of specification that explains what the usability of the product or a service should be, rather than how the service will be implemented or how the product could be produced in the contract performance process. In this conceptualization of functional specification, the emphasis is on the purpose for acquiring a product, rather than describing the materials which the product is made of as well as its dimensions and size. For example, to procure the dry erase maker that
we have seen above in the PBC definition, the purchaser is required to state the functional specification, as dry erase markers for use on porcelain and dry erase boards, glasses, unpainted metal and glazed ceramics, and leave to the producer from which material he/she can produce it and what the size and dimensions have to be.

Based on the various conceptualizations reviewed above, PBC focuses on the outputs and outcomes, which are required to be measured and clearly defined in terms of the results achieved instead of what is done. It deals with what the goods or the facilities are required to do or what the services provided are expected to achieve as the pre-designed results, without prescribing how the goods are to be produced, how the facilities are to be constructed, or how the services are to be provided. The performance targets may not always necessarily represent the outcomes; however, it should fully support the achievement of the outcomes of the program.

Table 2-3 Summary of the Conceptual Definition of Performance-based Contracting by Different Authors

<table>
<thead>
<tr>
<th>Points Raised by the Definition</th>
</tr>
</thead>
</table>

26
<table>
<thead>
<tr>
<th>Authors</th>
<th>Output</th>
<th>Outcome</th>
<th>Result</th>
<th>Payment</th>
<th>Standard</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kashiwagi (1999)</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Behn &amp; Kant (1999)</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Martin (2000)</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>Honore et al. (2004)</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Martin (2005)</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>Buchanan &amp; Klingner (2007)</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ng &amp; Nudurupati (2010)</td>
<td>✓</td>
<td></td>
<td>✓</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Arrowsmith (2010)</td>
<td>✓</td>
<td>✓</td>
<td></td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Patil &amp; Molenaar (2011)</td>
<td></td>
<td>✓</td>
<td></td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Sengooba et al. (2012)</td>
<td>✓</td>
<td>✓</td>
<td></td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>Gordon Hannah et al. (2010)</td>
<td>✓</td>
<td>✓</td>
<td></td>
<td></td>
<td>✓</td>
</tr>
</tbody>
</table>

As shown in Table 2-3, different authors define PBC, outcomes-based contracting, and functional specification in different ways. Even
though they seem to focus on somewhat different areas, the core idea contained in the conceptualizations remains unaltered and deals with the same theme, i.e. achieving the pre-designed and agreed-upon results of the contract, and the payment scheme is attached to the achieved results. While some of the authors give more emphasis to the outputs or outcomes, others focus on results or meeting standards to measure the results, effecting the payments, and arranging incentive packages and penalties. In essence, they are all saying the same thing differently.

The contents of all the conceptual definitions are similar to the definition of performance-based contracting. The analysis implies that all the definitions indicated above tend to differ in their focus on certain aspects of performance-based contracting (either the public or

![Figure 2-5 Summary of the Conceptual Definitions of PBC](image-url)
the private sector). Thus, we prefer to use PBC as a governing concept for all of the concepts of the definitions above.

Therefore, in this paper, we prefer to define PBC more precisely as a form of contracting where the end results of the contract are expressed in terms of measurable outputs, outcomes, or a combination of these, and contractors are paid only when it is confirmed that the agreed-upon results are achieved, rather than paid for the inputs used, and the activities done.

2.4 Integrating Performance, Payment, and Rewards (Incentives and Penalties)

Under PBC, the payment depends on the performance results achieved, as compared to one or more pre-defined measuring standards that are set in the contract document. Nowadays, payment for performance has been emphasized more in various service delivery activities, specifically by those who are outsourcing the service delivery to private contractors (Glas, Essig, & Kleemann, 2012). It is used as one of the means of enhancing motivation and hence achieving the performance standards expected from the contractors (Lenferink, Arts, Tillema, van Valkenburg, & Nijsten, 2012; Mannion & Davies, 2008). Many studies also highly recommend using PBC in the public service delivery activities of developing countries. More importantly, it is increasingly advocated and considered as a means to improve effectiveness for achieving specific health care targets of the Millennium Development Goals (Eldridge & Palmer, 2009; Mannion & Davies, 2008).
In the PBC system, the performance standards and measurement units should be defined in the contract document and agreed upon by both contracting parties (Doer, Lewis, & Eaton, 2005). The performance of the contractors will be assessed or evaluated on the basis of the output or outcome standards set in the contract document. Depending on the contract, the payments of the contract are designed to be effected at the interim point or at the end of the contract period as per the assessed performance results (Hypko, Tilebein, & Gleich, 2010). In addition to the performance results achieved, incentives can also be provided for quality innovations and the risk of high investment by the contractor. Eldridge & Palm (2009) elaborated on the situation as follows: The payments to the contractor may include either financial or non-financial incentives for exceeding the minimum performance standards or penalties for performing below the minimum performance standards.

Non-financial incentives could be in the form of future contract extensions, priority consideration in future contract opportunities, reputational enhancement, the minimizing of attentive monitoring mechanisms, self-esteem feelings for superior achievement, and recognition given for good performance achieved (Van Slyke, 2006). Penalty packages such as financial penalties and a lack of goodwill for future contracts make a positive contribution in influencing the behavior of the contractor to achieve the contract objectives. However, the country’s public procurement laws must allow the application of such incentives and penalties. This, in turn, requires amending the public procurement laws and designing clear measuring standards.
The literature suggests that clear criteria for evaluating the performance of contractors determine the amount to be paid and can be either absolute or relative measures (Shen, 2003). However, Heinrich (2007) states that the objectives of the contracts are not always clearly defined, and there is no one justifiable measure of the contractor’s performance that satisfactorily describes the distinctive characteristics of the value of the services provided.

Under the PBC approach, Becker (2008) suggests that both contracting parties can harmonize (align) their objectives instead of acting in pursuit of their individual interests. For example, factory workers who get paid per unit of product that they produce more than the minimum standards of a product can achieve better results than one who is paid on a monthly salary basis only. This means that the contractors are motivated by the financial gains that they generate to maximize their utility and, as a result, can achieve the objectives of the principal that are stated in the contract. On the other hand, if a penalty applies when the contractors score below the minimum required performance standards, it may encourage them to perform better and to work hard to achieve the minimum performance standards so as to not lose their utility gain (for fear of penalties). Towards this end, both incentives and penalties have to be applied in parallel so as to balance the performance of the contractor to at least achieve the minimum performance standards defined in the contract.

It should be noted, however, that it is not important to use performance-based specification for all types of procurement activities (Ang, Groosman, & Scholten, 2005). Hybrid (i.e., technical, functional,
and performance) specifications can be used and become the best solution for commonly used items as long as verification by acceptable solutions can be provided for the contract. As a result, such contracts may not need to include any compensation packages, as long as the purchaser is able to control and clearly evaluate the activities of the contractor.

To provide the incentives that would encourage the contractor to work towards the objectives of the principal, the principal should design a clear system for collecting information, evaluating, and rewarding the contractor (Doer et al., 2005). The incentive system should be clear, precise in measuring the results, and communicated in a timely manner to the contracting parties.

2.5 Theoretical Analysis

This study undertakes a systematic and extensive review of the literature and examines the concept of PBC and the transaction cost economics theory. The insights from the agency and the transaction cost economics perspectives may help in understanding the relationships between the contracting parties. This is because the two theories can explicitly deal with performance, pay, transaction cost, and other issues such as risk of opportunism in the contract relationship processes. Both theories focus on the management tools to be used (i.e., monitoring, trust, incentives, and penalties) in the relationship of the contracting parties to influence the behaviors of the contractor and make the contractor work towards the interests of the purchaser (the
principal) with a minimum transaction cost. The details of the theories are discussed and analyzed below.

2.5.1 Agency Theory

According to Van Slyke (2006), the agency theory is based on two main assumptions. The first is the existence of a conflict in the goals of the two contracting parties – the wealth-maximization goal of the principal and the utility-maximization goal of the agent. The second is created due to the existence of information asymmetry, in which the agent has more information than the principal about the contract relationship. The agent can, therefore, take advantage of this information asymmetry to fulfill their own self-interest rather than being loyal to the common objectives of the contracting parties. This, in turn, leads to moral hazard problems (Eisenhardt, 1999; Johnson & Medcof, 2007; Tate, Ellram, Bals, Hartmann, & van der Valk, 2010). PBC may also involve adverse selection problem, which emanates from a pre-contractual opportunism behavior due to the existence of information asymmetry.

These agency problems – asymmetric information, adverse selection, and moral hazard – are created due to the difference in the goals of the two contracting parties and to the principal’s lack of information that would allow it to observe whether the agent is behaving appropriately (Eisenhardt, 1999; Nilakant & Rao, 1994). As a result, these agency problems are assumed to be the main problems found in the principal-agent contractual relationship (Eisenhardt, 1999; Tate et al., 2010; Van Slyke, 2006). The concepts of information
asymmetry, moral hazard, and adverse selection as applied in PBC are explained in the sub-sections that follow.

**Asymmetry of information**

In the process of the contract relationship, there are some pieces of information that have a significant effect on the contract performance and are known to one party and not to the other (Van Osnabrugge, 2000). In such type of contract relationships, asymmetry of information occurs. Such asymmetry of information becomes a very serious concern for the principal if the agent uses the information for his/her own personal benefit rather than the overall organizational collective objectives. In such a way, the principal usually faces some challenges and designs various monitoring systems to make sure that the agent uses the information advantage for the benefits of both parties and not for the agent’s own personal interest (Kivisto, 2005).

To manage this type of information gap between the agent and the principal, the principal may choose different contracting options. According to Johnson and Medcof (2007) and Bergen, Dutta, and Walker (1992), the contracts can be based either on the behavior-based contracts approach (descriptive approach) or on the performance-based contracts approach. Behavior-based contracts (descriptive approach) define the behaviors of the agent, and payments are effected when the agent lives up to the agreed-upon behavior. If the contract is performance-based, it specifies the expected performance, and payments are effected when the agent achieves the desired results. The choice by the principal of which contracting option to use depends on
the presence of private information on the side of the agent, but not at the disposal of the principal, and on the risks associated with the opportunistic behavior of the agent (Eisenhardt, 1999; Saam, 2007).

The behavioral approach assumes a complete flow of information, in which the principal has full information on what the agent is doing (i.e. the principal is buying the agent’s behavior). If this assumption of perfect information is fulfilled, then the behavior-based contracting approach becomes efficient and workable (Eisenhardt, 1999). In this approach, the principal must specify and design a detailed specification and monitoring system so as to limit any tricky behaviors by the agent (Kivisto, 2005; Van Osnabrugge, 2000). However, this approach requires the principal to incur very high costs of monitoring and control. This cost of monitoring may include expenses for the establishment of interim reporting procedures, a budgeting system, and additional layers of a management system for checking the performance of the agent (Saam, 2007).

The behavior-based contracting approach becomes feasible if and only if the principal clearly understands the agent’s behavior (Saam, 2007). Since the agent is paid for the behavior shown rather than the results achieved, this approach transfers the risks to the principal (Logan, 2000). For small projects, the behavior of the agent can be monitored, making this approach workable. The approach is less feasible in the case of large projects; as such projects require long bureaucratic procedures and a higher cost as compared to small projects (Tate et al., 2010).
In the performance-based approach, the principal may not need to monitor each and every activity or behavior of the agent. Instead, performance-based contracting requires establishing appropriate contractual incentives or penalties that will be attached to the performance of the agent (Kivisto, 2005). This approach may help the principal reveal the agent’s concealed behavior in the contracting relationship and change the agent’s behavior towards the interests of the principal. It is believed that the PBC approach is very effective for curbing the agent’s opportunism behavior through the setting of standards and the provision of incentive and penalty packages in relation to the results to be achieved (Eisenhardt, 1999).

In the presence of contractual relationship problems (principal-agent problems), PBC is considered to be the best option to redirect the agent’s behavior towards the achievement of the principal’s objectives. The approach allows the purchaser to evaluate the contract in terms of outcomes and outputs, to monitor the performance reporting requirements, and to put into effect the incentive and penalty packages depending on the level of satisfaction of the principal (Van Slyke, 2006). Furthermore, the approach focuses on aligning the goals of the agent with the principal and shifting the risks of the principal towards the agent (Eisenhardt, 1999; Tate et al., 2010).

Since PBC rewards the agent when the agent meets or exceeds the mutually agreed performance standards, it has a strong tendency to minimize any unnecessary behavior by the agent in the contract relationship (Kivisto, 2005). Usually, principals are risk-averse. The risk aversion measures taken by the principal and the conflict of goals
of the principal and agent are negatively correlated to the traditional contracting (behavioral contracting) approach and positively correlated to the PBC approach (Logan, 2000). Therefore, the PBC approach is considered to be the best option for a principal that seeks to minimize the problem caused by information asymmetry (Van Slyke, 2006). However, the choice of a contracting approach depends on the cost that can be incurred for managing the behaviors of the agent and the cost of measuring the outcomes, as well as the extent of transferring the risk towards the agent (Eisenhardt, 1999).

Adverse selection

When there is an asymmetry of information in the selection process of the qualified and capable agents that can perform the contract as per the standards set, a pre-contractual problem of adverse selection arises (Johnson & Medcof, 2007). The knowledge of the principal about the agent’s performance in the contract course of action is neither perfect nor complete, even though the principal may assume complete knowledge about the agent’s characteristics and capabilities in the future contract performance relationship. Due to the asymmetries of information, the principal may not completely know what information the agent has and whether or not the agent wants to utilize it for the best interest of the principal. Therefore, adverse selection becomes a serious problem if selection is made on the basis of information pertinent to the agent’s interests and ability that is intentionally distorted by the selected agent (Kivisto, 2005), as the principal is unable to verify the knowledge, technical skills, and abilities of the agent either at the time of bargaining and hiring or at the time when the
agent is performing the contract (Eisenhardt, 1999). In other words, had the selection not been based on information that was intentionally distorted by the selected agent, the principal might have selected another agent. On the other hand, due to the risk preferences and goal incongruence between the contracting parties, what the principal needs to be performed by the agent may make it relatively costly for the agent to accept and undertake the contract. It may require the agent to allocate too much time, effort, and other resources. Therefore, agents may not accept and perform the contract, or they may accept but not perform in the best interest of the principal. In such a case, monitoring of the activities of the agent becomes more difficult and expensive for the principal. To manage these contractual problems, the principal has to design incentive and compensation schemes that will typically reveal the concealed information and actions of the agent (Eisenhardt, 1999; Saam, 2007). To organize these incentive packages, the principal might design a contract that specifies how the agent is evaluated and rewarded in the contract performance process. This enables the principal to get the necessary information to reward the agent on the basis of his contractual behavior (Bergen, Dutta, & Walker, 2001).

Moral hazard in PBC

If the agent doesn’t perform as per the agreed-upon contract after the contract is signed, a moral hazard problems occurs (Van Osnabrugge, 2000). In other words, the agent inflicts a moral hazard upon the principal when the agent does not make an effort as per the contract agreement and hampers the principal’s interest (Eisenhardt, 1999; Nilakant & Rao, 1994; Tate et al., 2010).
Measuring the results of the performance of the contract and linking the results with the financial and non-financial incentives have an effect on the behavior of the agents, i.e. to shift the hidden objectives of the agent towards the objectives of the principal (Glas et al., 2012). The behavioral change of the agents resulting from the incentives can make a positive contribution to achieving the mutual objectives and hence can deliver the desired improvements in the quality of the product or services and the performance as required.

In addition, designing a performance-based contract that gives a financial and non-financial incentives package to the agent might reduce the cost of transaction (cost of monitoring and administration) for the principal. Furthermore, it encourages the agents to perform in the best interest of the principal, which then becomes the agent’s own interest when they benefit from the incentive schemes (Eldridge & Palmer, 2009; Mannion & Davies, 2008; Van Slyke, 2006). Van Slyke (2006) argues that principals who arrange clear financial and non-financial incentive schemes in the contract relationship with the agent would experience less agent opportunism and contractual goal deviation as compared to contracts that do not have such incentive packages.

The implication of a performance-based contract that involves incentive packages is that it reduces the magnitude of the moral hazard caused by the agent. Therefore, from the discussion so far, it can be argued that PBC fits with the agency theory and solves the agency problems of asymmetry of information, adverse selection, and moral
hazard. More importantly, it helps to minimize the risks in the public procurement system that can emanate from asymmetry of information.

2.5.2 *Transaction Cost Economics Theory*

The other important theory used for performance-based contracting is the Transaction Cost Economics Theory (TCET). This theory makes behavioral assumptions in predicting firms’ choice of the governance structure of their contracts with other organizations (market, hybrid, or hierarchy). The theory is based on the idea that the risk of opportunism is innate to many of the transactions in any organization because of bounded rationality and risk neutrality (Brown & Potoski, 2003; Chiles & McMackin, 1996; Hill, 1990). Opportunism is self-interest-seeking behavior with cunning intelligence (Gruneberg, Hughes, & Ancell, 2007). Because parties in the contract have difficulties in knowing and fully predicting all the possible future scenarios (Brown & Potoski, 2003), there are at least some individuals who tend to act in their own self-interest and are assumed to be opportunistic. As a result, it is difficult for the principal to fully spell out all the possible conditions in the contract. Therefore, as the contracts are not complete enough to manage their relationship, the contracting organizations must be careful in managing the risk of opportunistically behaving contractors (Brown & Potoski, 2003; Chiles & McMackin, 1996; Doer et al., 2005; Geyskens, Steenkamp, & Kumar, 2006).

In the assumption of the behavior of bounded rationality, where human behavior is assumed to be essentially rational but to a limited level, there are cognitive limitations when human actors are involved,
and contracts become incomplete. Due to the uncertainty of the future (ex ante in a contract) and the complexity of the contract, as performance cannot be easily verified (ex post in a contract) because of bounded rationality, organizations must specify the type of contract and employ contract performance evaluation options, either market, hierarchical, or a combination of these (Chiles & McMackin, 1996). That means the more reduced the level of uncertainty is or the more reduced the complexity of the contract is, the more economized the bounded rationality becomes. Chiles and McMackin (1996) and Gruenberg et al. (2007) clearly define uncertainty as the inability to accurately forecast the future scenarios in the contract relationship. Examples of such uncertainties are volume, technological, and behavioral uncertainties.

Volume uncertainty emanates from being unable to precisely define the volume of the required product. That is, either it is in excess of the requirement or it is out of stock. As is the case in the procurement of ever-changing IT equipment, technological uncertainty emanates from being unable to precisely forecast the future technological changes in the contract relationship as technology becomes obsolete or not fit for the purpose. These uncertainties can result from unpredictable changes in the standards required or the specifications of a component or end product or from the general technological advancements of a product. Behavioral uncertainty is created because of problems in the performance evaluation of the contract. This is due to uncertainty (in ex-post contract performance) as
to whether or not the contractors will comply with the contractual agreement and, hence, with the best interest of the principal.

It is also important to determine the relationship within trust and bounded rationality in the contract performance process. Trust in a contractual relationship is believed to be a very important instrument to create cooperation and collaboration arrangements in performing the contract. Trust between the contracting parties helps to establish more comprehensive, accurate, and timely information exchange; to enhance acceptability of the information for influencing others; and to have a more relaxed controlling system. As a result, it minimizes the behavioral uncertainty (complexity of the contract) and leads to a more economized bounded rationality (Geyskens et al., 2006). The more trust there is in the contractual relationship, the less the cost of transaction, including the cost of contract negotiation, monitoring, and enforcement.

It is assumed that the risk of opportunism is one of the central assumptions underlying the Transaction Cost Economics Theory. Organizations respond to the risk of service characteristics, goal incongruence, and non-competitive markets and engage themselves in appropriately monitoring these risks (Trevor, Brown & Potoski, 2003). However, an organization must choose among the different options for monitoring the contract and invest efficiently with minimum transaction cost so as to have useful information about the contractor’s performance or behavior. Depending on the nature of the risk, they can choose either the behavioral approach or the performance approach of contracting, whichever is more efficient for them and entails the
minimum transaction cost to appropriately monitor the risk of the contract. However, to effectively achieve the objectives of the contract, the principal has to design an optimal contract that can determine how the risks inherent to the contract are fairly shared between the contracting parties, instead of only in the interests of one party.

Generally, PBC fits with transaction cost economics theory, because of the bounded rationality, opportunism, and risk neutrality in the contractual relationship, and it helps the contracting parties to choose any governance options. Accordingly, PBC helps to minimize the cost of transaction that can be created due to bounded rationality, opportunism, and risk neutrality. More specifically, the introduction of PBC approaches in the public procurement system of developing countries can help them to achieve procurement efficiency and a reduction in corruption practices, as inefficiency and corruption are the major challenges in their procurement systems.

2.6 Advantages of PBC

There seems to be disagreement in some literature regarding the advantages of applying PBC. However, in line with the agency and the transaction cost economics theories, the application of PBC has several benefits for the contracting parties (in both the public and private sector). Its importance is by far greater if it is applied in the public procurement system of developing countries. Some of the most important benefits of PBC are discussed as follows:

First, PBC allows the suppliers or the contractors to apply their own alternatives and innovative ways to deliver the products or the services.
It helps the suppliers or contractors to bring their own expertise, creativity, and resources to the bid process without restricting them to pre-determined ways and procedures (Ng, Maull, & Yip, 2009). This means that the supplier or the contractor is not required to instruct explicitly on how to perform the task as long as the results are achieved (Honore et al., 2004). This flexibility encourages the contractors to minimize the service delivery time or the production costs and to find alternative means to win the competition through quality and price (Gooden, 1998; Straub, 2009). This approach can be very important in the public procurement of developing counties. That is because the approach facilitates innovation and technology as well as knowledge transfer by allowing the contractors to bring their own ideas without being limited by predetermined specifications.

Second, the application of PBC encourages the contractors to achieve the predesigned objectives. It requires the contractors to work hard and to achieve good performance results (Buchanan & Klingner, 2007; Doer et al., 2005). In addition, integrating incentive and penalty modalities in this contracting approach has a positive influence on the behaviors of the contractors in achieving the pre-designed results of the contract (Johnson & Medcof, 2007). As a result, the application of PBC improves contract performance in the public procurement process, and more specifically in that of developing countries, where contract extension and, consequently, project cost overrun have been common practices.

Third, PBC is a very important instrument in creating a sense of trust between the contracting parties. The system clearly defines the
responsibilities of all contracting parties and enhances a trustful relationship. It has been confidently suggested throughout the literature that creating trust between contracting parties reduces the information costs and leads to an increase in the effectiveness of the contract (Davis & Walker, 1997; Doer et al., 2005; Jeffries & Reed, 2000). Trust between the contracting parties enhances the possibility of revealing the hidden information from the principal and minimizing the cost of monitoring incurred by the principal (Saam, 2007). In addition, it reduces the risk of opportunism and misunderstanding (Buchanan & Klingner, 2007).

In addition, the application of PBC reduces the cost of transaction in the procurement process. Since the contractors or suppliers are expected to deliver the results of the contract that is designed at the outset, the application of PBC can decrease the time and effort exerted by the purchaser for monitoring each of the processes and activities of the contractors (Buchanan & Klingner, 2007). Ultimately, the cost of transaction for monitoring of the contract can be reduced (Jeffries & Reed, 2000). However, a trustful relationship is not a common practice in the contracts for public procurement. More specifically, this type of relationship is not a common practice in the public procurement system of developing countries, where the traditional procurement system is commonly used. The application of PBC improves trust and the partnership relationship between the contracting parties in the public procurement system of developing countries, consequently reducing the cost of monitoring and the risk of opportunism in the contract performance process.
Fourth, the application of PBC helps public organizations to minimize the requirement for a variety of technical expertise. Organizations procure a wide variety of things, ranging from pencils and pens to the construction of buildings and roads, social services, laboratory equipment, and chemicals. The design of the specifications of many of such goods, works, and services requires specialized technical knowledge and expertise in different fields of study. Technical know-how is also required for monitoring each and every activity of the contractor when the traditional procurement system is used. Using PBC helps public organizations to minimize the number of specialized technical experts needed for each and every subject of procurement, as the suppliers or contractors bears responsibility for designing the technical specifications and the means of production. Furthermore, its application provides welcome relief for a public organization in developing countries where finding and maintaining such technical expertise is a major challenge.

Fifth, PBC helps in transferring the risk and responsibilities of the procurement to the supplier or the contractor. It does so by giving more emphasis to results, designing and monitoring performance targets, and creating a flexible work environment for contractors (Honore et al., 2004; Straub, 2009). However, for such a risk transfer to happen, the contractor has to be compensated with a risk premium payment (Gruneberg et al., 2007; Tate et al., 2010).

With flexible contracts, contractors can find more opportunities to use the best options for delivering the results of the contract. Therefore, what is expected from the purchaser is a clear definition of the
requirements and the metrics for measuring the performance of the contract. Other than that, the supplier or contractor should take the full responsibility to come up with workable solutions to meet the measurable standards that are agreed upon (Boykin, 2005). For example, if the purchaser utilizes a prescriptive specification to procure a unit of photocopy equipment, and the acquired equipment does not perform correctly as expected, it can be because of the following reasons: (1) lack of capacity to describe the details of the specification by the purchaser, (2) the opportunistic behavior of the contractor, performing in such a way as to maximize their own utility, or (3) the risk associated with being unable to predict the future performance of the product.

As a result, the risk of the procurement is forwarded to the purchaser, since the purchaser is required to clearly define the specification and systems for monitoring the performance of the contractor. However, if the purchaser writes a performance specification (based on measurable results) and leaves the technical details to the contractor, the contractor or supplier can operate properly in order to meet the pre-specified performance standards.

Accordingly, the use of performance-based contracting in the government procurement system is considered an important weapon to minimize the probability of opportunistic behavior by the agents and consequently reduce the risk of procurement. Its importance is far greater if it is applied in the public procurement system of developing countries, where most of their procurement has been managed by using
the traditional, prescriptive system and usually results in the procurement of inferior quality goods, works, and services.

Sixth, the use of PBC is a very important tool to enhance performance and accountability in the procurement process (Buchanan & Klingner, 2007; Eldridge & Palmer, 2009; Kettner & Martin, 1993; Larbi, 2001). This is because the PBC system clearly determines who is responsible for carrying out which task and for achieving the desired results. The determination of responsibilities can in turn enhance accountability in the system (Hypko et al., 2010). As a result, corruption prevalence can be reduced. Due to the fact that a lack of accountability and corruption are some of the major problems prevalent in government procurement systems, adopting and applying performance-based contracting can be the best management tool for restructuring and improving the performance of public organizations and for enhancing accountability and reducing corruption in the public procurement system (Kim et al., 2007; Larbi, 2001; Van Duren & Dorée, 2010).

Therefore, adopting and applying PBC can be one of the solutions for reducing corruption in the public procurement system, and more importantly in the government procurement system of developing countries, where corruption prevalence has become a challenge in the system.

2.7 Disadvantages of PBC

Even though the application of performance-based contracting in the procurement system has many benefits, the following points have
been suggested by some literature sources as pitfalls to using performance-based contracting.

First, PBC requires the public officials to be more trained and experienced in techniques of setting measurable metric standards (Boykin, 2005; Buchanan & Klingner, 2007). Allowing the producers or contractors to come up with workable solutions for government problems does not mean leaving everything to the suppliers or contractors. The contractors are not always expected to act in the best interest of the government (Buchanan & Klingner, 2007). Therefore, the government officials should always be well schooled and experienced so as to design measurable metrics for the results and be able to evaluate the performance results based on the standards set. Finding well trained and experienced experts who are able to design metric standards and evaluate the results of contracts can be one of the major challenges faced by the government procurement system. This problem becomes very serious when it comes to the public procurement system of developing countries, where paying good salaries and maintaining well trained experts have not been practiced.

Second, in the PBC approach, both contracting parties want to achieve the pre-agreed performance results stated in the contract document and need to work trustfully so as to achieve the mutually agreed performance objectives. Getting away from the traditional thinking and creating a trustful relationship between the contracting parties can be one of the management challenges in performance-based contracting (Ng et al., 2009). More specifically, the resistance of public officials to the approach is expected to be strong, especially in
developing countries, where most of the public officials are culprits in corruption practices through loopholes in the traditional procurement system.

Third, in PBC, the contractors may not willingly accept the risk of the contract. Especially if the incentive packages included in the contract are not sufficient for the contractor to compensate the level of risk taken, contractors may not be willing to take on the risk of the contract. This unwillingness to take on the risks can manifest in the form of fewer bidders voluntarily participating in the bid when PBC is used (Gordon Hannah et al., 2010) and hence a reduction of the potential benefits of competition (in terms of quality and price). As a result, monopolistic or oligopolistic opportunities can be created for some risk-taking contractors and suppliers, and hence public organizations can be exploited unnecessarily. To minimize such risk of opportunistic behaviors, the principal has to provide a high-powered incentive package to the contractor (Hypko et al., 2010). However, this can increase the cost of transaction for the principal in public and private organizations in both developing and developed countries.

Fourth, PBC may not be in line with the pillars of public procurement principles (i.e. equity and fairness, etc.). Public organizations have many objectives in their procurement law. Some of these objectives can be effectiveness, efficiency, transparency, equity, fairness, and achieving the best value for money. Giving equal chances to all eligible bidders in the government procurement process is one of the fundamental principles to be applied. On the other hand, performance-based contracts with incentive packages in them may
provide extensions of contracts, give preference for future contracts, or offer financial rewards for those contractors who achieve or exceed the minimum standards set in the contract. This kind of incentive provisions may contradict these fundamental principles and laws of public procurement and can be considered as a pitfall for the PBC approach.

Fifth, PBC may not be a good approach for contracts that require a longer period to evaluate the results of the contract. It can be the best option only as long as the principal is able to specify the output/outcome and able to measure it periodically (in the short-term as well). Consider a case of a consultancy contract in which an agricultural researcher agrees to supply his research skills to develop new varieties of seeds or animal breeds in the coming 10-15 years. How can his/her performance be measured until then? How can the principal pay for him/her? In such circumstances, performance-based contracting becomes less feasible and effective.

2.8 Conclusion

PBC has become an interesting research area and is drawing the attention of many researchers, as a result of which research outputs pertaining to the topic have been growing over the last decade. However, the review provided in this paper indicates that most of the studies thus far are focused on specific sectors and areas. Therefore, it can be concluded that PBC is under-researched and needs more rigorous and general future study.
Our literature analysis show that performance-based contracting has the power to change the behaviors of the contractors and to focus more on the performance results, instead of inputs and throughputs, enabling the end results of the contract to be achieved. Since the approach is expected to deliver results, PBC requires the purchasers to evaluate only the performance end results, rather than monitoring each task and activity. This helps to minimize the efforts and time required for monitoring the performance of the contractors at each level of activities. Consequently, it reduces the cost of monitoring of the contract. Due to PBC’s greater flexibility, contractors can use their own knowledge and innovation. It also helps them to minimize their production cost and to increase the quality of their products and services.

The application of performance-based contracting has become an important instrument to minimize the problems that have challenged the traditional procurement system. It minimizes public procurement problems, especially problems like contract risk, accountability, long period contract extension, and cost overrun of public projects. It is also considered as an important tool for public organizations, more specifically in developing countries, to introduce accountability and responsibility issues, so as to reduce the prevalence of corruption in their procurement systems. Though using performance-based contracting has some drawbacks, PBC has an enormous amount of benefits for public procurement when it is properly applied.
CHAPTER 3: THE PRACTICE OF PERFORMANCE-BASED CONTRACTING (PBC) IN DEVELOPING COUNTRIES’ PUBLIC PROCUREMENT: THE CASE OF ETHIOPIA

Abstract

Performance-based Contracting is widely accepted as a useful tool. It is believed that the use of PBC can assist the efficient utilization of public resources. The objective of this research is to assess the extent of PBC application and the obstacles to applying it in the public procurement systems of developing countries. Interviews and factual analysis of procurement guidelines and contracts are used to collect data for this research. The analysis results indicate that the majority of public organizations have not yet used PBC even though it is allowed by the law. This is due partly to lack of clarity in the procurement laws and lack of capacity to use PBC.
3.1 Introduction

Since the last decade, public organizations have developed a long-term view of adding value to their procurement process and have adopted new ways of contracting (Claassen, van Weele, & van Raaij, 2008). Literature suggests that buyers, regardless of whether they are buying goods or services or works, need to add value or achieve an expected outcome with their procurement (Boykin, 2005; Eldridge & Palmer, 2009; Heaviside & Price, 2001). They have become aware that procurement has a strategic responsibility that can play a pivotal role in managing public resources, improving good governance, integrating commerce between and within countries, and enhancing economic development. For achieving these and other organizational objectives more efficiently and effectively, public organizations have started to use performance-based contracting (PBC) for their procurement process (Martin, 2007).

Applying PBC in the public procurement system is believed to be a better option for achieving the expected objectives (Hypko, Tilebein, & Gleich, 2010; Kim, Cohen, & Netessine, 2007). However, very few public organizations use it, believing it to be a riskier contract with low
levels of predictability of the contract results while leaving more responsibility to the contractor (Hypko et al., 2010). However, in recent years, PBC has become a common practice in many government organizations (Becker, 2008; Hannah, Ray, Wandersman, & Chien, 2010; Hypko et al., 2010). It is based on specifying how the finished products or services should perform over the agreed time period (Patil & Molenaar, 2011). The approach describes what should be achieved in terms of results, but not exactly how the producers or service providers should achieve the results or fulfill the requirements of the clients (Anna, 2008). In other words, the procuring entity tells the supplier/contractor what they want to be done, not how the contractor has to do it (Sumo, van der Valk, & van Weele, 2012). In this contracting approach, the contractor is only paid when he/she has been successful in achieving the pre-determined and mutually agreed objectives (Heinrich & Choi, 2007). As a result, it minimizes the risk for the buyer of the money spent.

Using this contracting system, however, demands the procuring entities to have the required technical knowledge and skills with regard to how to spell out their requirements and manage the contract, and to be able to evaluate the end results (Brown & Potoski, 2003). This helps them to become more successful in contract performance and adds value for both the client and the contractor (Tineo, 2007). However, much of the public procurement in developing countries specifically is still contracted out based on input or process specifications (i.e. the traditional approach) and employs inefficient procurement practices (Becker, 2008; Kleemann & Essig, 2013). In addition, many major
public projects in developing countries face cost and schedule overruns and require a huge amount of extra budget to complete (Doer, Lewis, & Eaton, 2005). For example, this is a common practice in Ethiopia in most public projects (Quinot & Arrowsmith, 2013; World Bank & Ethiopian Government, 2010).

Ethiopia is making a large investment in infrastructure as one of the key contributions to the country’s development plan. About 62% of the annual budget is expended on procurement for infrastructure development in transport, energy, water, agriculture, education, health, and other sectors (Quinot & Arrowsmith, 2013). This comprises about 15% of the GDP of the country. Transport alone constitutes 30% of the annual budget expenditure. For example, the Ethiopian Roads Authority signs a large number of contracts annually committing over ETB 29 billion. However, the Ethiopian public procurement system has so far been characterized by the traditional procurement approach (World Bank & Ethiopian Government, 2010), considering price as the main evaluation criteria. Using a least cost approach as evaluation criteria avoids having to make judgments on qualitative aspects of bids, thus eliminating one opportunity for bias in the selection process. This, however, results in inferior quality products or works, project performance delays and cost overruns (Quinot & Arrowsmith, 2013). All of these procurement risks are mostly left to the public buyer once the goods are supplied. Of course, suppliers/contractors have paid for the activities but not for the results achieved (Patil & Molenaar, 2011). These issues make it crucial for us to empirically examine the public procurement practice of Ethiopia. The results of this empirical study
help the procuring entities to understand the concepts of the PBC approach and to make use of it as a valuable contracting option. One of the reasons for this is that the traditional procurement system does not grant any motivation scheme for the contractors to innovate new ideas, to enhance efficiency, and to reduce the cost and time required for the contract (Shen, 2003). Rather, they intentionally delay the project performance time to enable them to request additional costs in the form of price escalation.

The rest of the paper is outlined as follows: Section 2 provides a literature review and analysis, Section 3 indicates the methodologies employed for the research, and Sections 4 and 5 present the results and discussion of the data, respectively. In addition, Section 6 includes the conclusion and some remarks on the results.

3.2 Literature Review

3.2.1 The meaning of PBC

A specification is defined as a statement of the needs of the buyer. It is a description of needs — what the buyer wants to buy — through which the buyer and the seller communicate. The specifications should be simple enough to be understood by the supplier or contractor and correctly and clearly express the needs of the buyers (Sabnis, 2005). More specifically, performance or functional specifications describe what results the supplier has to achieve for the procuring entity, whereas the technical specification describes the detailed technical requirements and process of the contractor (Guo, Minchin, & Ferragut, 2005).
Some researchers underline that using detailed technical specifications does not create a level playing field for the contractors to flexibly perform their contracts innovatively (Gruneberg, Hughes, & Ancell, 2007). It does not allow them to include newly innovated concepts and ideas in the contract execution process so as to make the products and constructions fit for the contemporary technological demands of the public organizations (Lawther & Martin, 2005). In addition, the system does not give any relief to the procuring entity from the procurement performance and functionality risks.

On the other hand, PBC is an approach to contracting that moves from the historical reliance on inputs and processes (telling the contractors how to perform the task) to the outputs, quality, and outcome that enable them to measure the end results (Kleemann, Glas, & Essig, 2012). The performance results, which are agreed to be measured, based on outputs, qualities, and outcomes, are tied with the contractor’s compensation when the contractor achieves or exceeds its performance targets (Berkowitz, Gupta, Simpson, & McWilliams, 2005). To balance the performance of the contractors, however, there should be a penalty commensurate with the compensation when the contractor’s performance is below the performance targets (Kestenbaum & Straight, 1995; Mannion & Davies, 2008). The incentive schemes for the performance achieved can be offered in terms of lump sum money, contract extensions, or recognition given for good performance (Shen, 2003). On the other hand, the contractor should be penalized if the performance is below the required level.

*The difference between PBC and traditional types of contracting*
Transforming from the traditional contracting system to PBC entails the introduction of significant differences in the contracting process (Hypko et al., 2010). “It involves changes in the basic role of the contracting parties in the contracting system, the assumptions on which the contract is based, the incentive schemes the contract is designed to award, and the expectations from the contract” (Hypko et al., 2010). The traditional contracting system specifies how the contractor should perform the contract (Boykin, 2005), whereas PBC defines only what results the contractor should achieve, leaving the contractor more flexibility to determine the best way to achieve the results expected by the buyer (Van Mossel & Van der Valk, 2008). In contrast to the traditional approach, PBC is believed to encourage creativity and innovation by allowing contractors to decide on their own how to perform the task to achieve the expected results (Rosenthal, Fernandopulle, Ryu Song, & Landon, 2004). Scholars agree that when the contractors are free to choose how to perform the contract, but provided with clearly defined expected performance targets, they can design new ideas to fulfill the contract while reducing cost and time (Johnson & Medcof, 2007; Lawther & Martin, 2005).

The PBC system leads to the creation of long-term relationships and cooperation between the contracting parties (Johnson & Medcof, 2007; Lawther & Martin, 2005). Researchers agree that PBC is a long-term contracting system in which the contract relationship lasts through the performance period instead of ending after the goods are delivered or the service is rendered, as in a traditional contracting system (Claassen et al., 2008; Greiling, 2006; Kettner & Martin, 1993). For example, for some
contracts, the outcomes or impacts are not easily identified. A longer period of time is needed to measure the impacts of the contract (Claassen et al., 2008; Greiling, 2006; Kettner & Martin, 1993). This longer contract duration influences the behaviors of the contracting parties in their relationship. It enhances their commitment to the success of the contract through cooperation and collaboration, whereas a traditional, regulatory contracting system focuses more on the applicability of rules and regulations in the contract performance process (Claassen et al., 2008). It is adversarial in nature, always refers to the contract provisions, and focuses on fulfilling the requirements of the law rather than on the results.

On the other hand, collaboration creates better communication between the contracting parties. It enhances togetherness, as both are working for one result, and it helps them work together to solve any problem that may arise during the contract performance period. Thus, under PBC, contracting parties can access and optimally utilize complementary resources as well as share information. As a result, it has a positive impact on the innovation of novel ideas and technologies. The differences in the two contracting approaches are summarized and presented in Table 3-1.

*Table 3-1 Basic Differences between the Two Contracting Approaches*

<table>
<thead>
<tr>
<th>Descriptive Contracting</th>
<th>Performance-based Contracting</th>
</tr>
</thead>
<tbody>
<tr>
<td>The contractors are usually paid</td>
<td>The contractors are paid for the</td>
</tr>
</tbody>
</table>

60
<table>
<thead>
<tr>
<th>for the inputs and activities</th>
<th>results achieved</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adversarial relationship</td>
<td>There is a more cooperative relationship between contracting parties</td>
</tr>
<tr>
<td>Applying the regulations</td>
<td>Payment for results influences contractors’ behavior</td>
</tr>
<tr>
<td>influences contractors’ behavior</td>
<td>The risk of procurement is transferred to the contractor</td>
</tr>
<tr>
<td>The risk of procurement is left to the buyer</td>
<td>The risk of procurement is left to the buyer</td>
</tr>
<tr>
<td>High certainty of results</td>
<td>Low certainty of results</td>
</tr>
</tbody>
</table>

**3.2.2 Characteristics of PBC**

We analyzed the literature to explain the characteristics of PBC in the public procurement system. Buchanan & Klinger (2007) note that PBC explicitly consists of three major characteristics that make it different from the traditional contracting system: (i) There are clear and precisely defined objectives and performance indicators by which the contractors’ performance can be measured, (ii) There should be performance indicators and a data collection system to assess the results of the contractor, and (iii) Performance leads to consequences for the contractor, such as provision of rewards or imposition of sanctions. Similarly, Tineo (2007) describes the three important elements of PBC that differentiate it from traditional input-based contracts. These are (i) designing performance specifications, (ii) proving performance compliance, and (iii) making payment only when the desired performance results are delivered.
Generally, the selected literature was reviewed in relation to PBC. The literature review helped us to identify the most common characteristics of PBC. Based on that, we consider a contract to be performance-based if it has the following important characteristics:

- It clearly defines the performance expectations (indicators) of the buyer (clearly understood baselines vs. expected results) without stating technical matters (Becker, 2008; Doer et al., 2005; Ng, Maull, & Yip, 2009).
- It establishes a proper data collection and evaluation system based on the indicators (Buchanan & Klingner, 2007; Kleemann et al., 2012; Ng et al., 2009).
- Performance leads to consequences for the contractor (payment, incentives, or disincentives) (Becker, 2008; Kleemann et al., 2012; Rosenthal et al., 2004; Shen, 2003).

However, if the contract clearly defines performance expectation but misses either one or two of the others, it is considered that the PBC is partly applied and, importantly, that the concept has cascaded to the organization but has not been fully implemented. Furthermore, if all three criteria are not fulfilled in the contract, it is considered that the PBC concept is not known and not applied by that public organization. Essentially, the traditional system is used for their procurement activities.

Here, incentives and disincentives (penalties) in PBC mean that the contractors can be provided a reward for good performance, quality innovations, and the risk of high investment by the contractor (Shen,
The rewards can also be financial or non-financial. On the other hand, disincentives mean that in the PBC contracting approach, the contractors are penalized if they perform below the performance requirement.

Furthermore, there is also a contracting system that contains both technical and performance specifications simultaneously (Guo et al., 2005). It is used when the buyers clearly know their needs but want to be able to control the behaviors of the contractors in the contract performance process. However, the risk of the procurement is still left to the buyers (Gruneberg et al., 2007). In addition, like traditional contracting, it does not allow the contractors to flexibly perform their contracts and hence it restricts innovation.

Similarly, the Federal Acquisition Regulation (FAR) of the United States of America subpart 37.6 states some important issues as mandatory elements of PBC. Some of these elements are (i) performance work statement (PWS), (ii) measurable performance standards, (iii) assessment methods for contractor performance against performance standards, and (iv) the use of positive and negative performance incentives when appropriate.

A number of studies have been conducted on PBC-related issues. The majority of the studies to date are not supported by strong empirical evidence, but instead focus more on the theoretical aspects of PBC (Hannah et al., 2010; Lam, Chan, & Chan, 2007; Ng & Nudurupati, 2010; Shen, 2003; Straub & van Mossel, 2007; Tineo, 2007). In addition, the extent to which PBC is practiced in the context
of developing countries has not been assessed in a systematic manner through independent research. If practiced, its effectiveness as compared to the traditional approach has not been evaluated. If not practiced, the reasons for non-practice or partial practice have not been well investigated. Thus, the objective of this research is to contribute to filling this research gap in the context of developing countries by taking up the case of Ethiopia.

To achieve such research objectives, we sought to answer the following research questions:

To what extent are public organizations in Ethiopia practicing PBC in their procurement system? If PBC is not practiced at all or is partially practiced, what are the underlying reasons behind this level of practice? If PBC is fully or partially practiced, does it work better than the traditional prescriptive approach in specific acquisition areas?

3.3 The Methodology Employed

Exploratory research was used to conduct this study. It enables us to better understand the existing situation (Twinn, 1997). It is not a means to arrive at final conclusions; rather, it helps to produce a hypothesis about what is actually going on and to lay a foundation for further study (Elo & Kyngas, 2008). Thus, sampling for this study was not aimed at showing representativeness but at inductively exploring the practice of PBC in the public sector and generating new insights through in-depth investigation. For such type of studies a small number of cases are recommended for analyzing (Kolar, Ahmad, Chan, & Erickson, 2015).
To do this research work, a two-phase approach was chosen for the research design. In the first phase, a factual analysis of the procurement guidelines and the contracts used by Ethiopian public agencies was carried out to determine the extent to which PBC is allowed, regulated, and practiced in Ethiopia. In the second phase, personal interviews were conducted with key informants to find out the reasons underlying the existing level of PBC practice in the public organizations.

Regarding the first phase, the procurement guidelines of the Ethiopian government, the World Bank, and the African Development Bank were critically assessed to check whether they allow using PBC in the procurement of goods, works, and services in the public procurement system of Ethiopia. The reason behind the need to assess different procurement guidelines (especially the guidelines of the World Bank and the African Development Bank) is that, in most developing countries including Ethiopia, government projects are partly or fully financed either by donors and international development agencies such as the World Bank or by the government. As a result, sometimes the government is forced to use the procurement guidelines of the donors as well.

3.3.1 Procurement laws

Regarding the first phase, the procurement guidelines of the Ethiopian government, the World Bank, and the African Development Bank were critically assessed to check whether they allow using PBC in the procurement of goods, works, and services in the public procurement system of Ethiopia. The reason behind the need to assess
different procurement guidelines (especially the guidelines of the World Bank and the African Development Bank) is that, in most developing countries including Ethiopia, the government projects are partly or fully financed either by donors and international development agencies such as the World Bank or by the government. As a result, sometimes the government is required to use the procurement guidelines of the donors as a precondition for getting funds.

3.3.2 Procurement contracts

To assess whether the public organizations used PBC in their procurement system, a comprehensive list of procurement contracts was formally requested via an official written letter presented to 15 public bodies in the federal government of Ethiopia. The researchers purposively selected 15 public organizations of a large-budget group from the federal government, of which 13 public organizations allowed us to view their procurement contracts. The other two public bodies did not offer their cooperation in accessing their procurement contracts. The public organizations in the large-budget group are those organizations for which the government allocates the larger share of the country’s annual budget for different developmental activities. These organizations were consciously selected in order to gain an insight into their PBC practice. This focus on such large-budget organizations enables us to find varieties of contracts for different types of procurement (contracts for the procurement of goods, works, and services).
After getting permission from the head of each public body, we used the contract register as a base to choose the list of contracts from each type of procurement. The lists were classified into four categories: goods, works, consultancy services, and non-consultancy services. The consultancy contracts were grouped by selection method, namely: Quality and Cost-based Selection (QCBS), Least Cost Selection (LCS), Fixed Budget Selection (FBS), and Consultant’s Qualification Selection (CQS), while the goods and works contracts were classified by procurement method: International Competitive Bid (ICB), National Competitive Bid (NCB), Restricted Tender (RT), and Request for Quotation (RFQ). To enable a complete analysis of procurement transactions, the researchers collected delivered contracts. In doing so, we found 312 contracts for our analysis from the contract register from those 13 public organizations. This equates on average to 12 contracts per year for procurement of goods, works, and services for each public organization. From these 13 organizations, 131 contracts of different projects from budget years 2012/13 and 2013/14 were collected from the total of 312 contracts.

Some organizations have better filing systems than others. Due to the lack of proper filing systems, finding the files of selected contracts was very difficult for the researchers. The researchers tried to include contracts for each type of procurement (from goods, works, and services) in each of the organizations selected for this study. But some of the contracts selected from the contract register either were not filed or were missing some important sections. This is mainly because of the high turnover of the procurement staff; in some cases, the existing staff
did not even know where the contracts were filed. Because of this, we ended up finding more contracts from some organizations than from others.

We exhaustively searched and included 131 contracts for analysis. Considering the challenges of getting contracts from the files when the time period was longer, we decided to focus on analyzing the procurement practices of the 2012/2013 and 2013/2014 fiscal years. These 131 contracts were considered sufficient to determine the extent of the practice of PBC in Ethiopian public organizations.

3.3.3 Interviews

To enhance the validity of the information from the procurement rules and contracts analysis, face to face interviews were organized for three different groups of respondents: 16 officials from the Federal Public Procurement and Property Administration Agency (FPPA) and other procuring entities whose contracts are not included in the analysis; 14 procurement officials from public organizations who are not implementing PBC but whose contracts are included in the analysis; and 7 officials from those organizations implementing PBC, totaling 37 participants. Since all of the interviewees were graduates, they could express their ideas in English without any problem, and we used the English language to conduct the interviews. The researchers explained to the interviewees how the information provided by them would be treated confidentially. The interviews helped us to understand a broader picture of their practice of PBC, the challenges to applying PBC, and the future plans they have in relation to PBC.
applicability. The interviews were tape-recorded and transcribed by the researchers. The interviews lasted between 25 to 30 minutes and were conducted at the respondents’ offices. A summary of the interview respondents is provided in Figure 3-1.

To ensure the validity and reliability of the data, the researchers made clear the objectives of the research and created relationships of trust with the informants. After collecting the data, we got to know our data. The data screening process was started by first listening to the records, then transcribing the records, and then reading over the written transcripts. After finalizing the transcription process, we sent the transcribed data to the informants for confirmation. The researchers again reread the transcripts one by one very carefully and studied the notes to list key ideas and recurrent themes of the interviews. Then the relevant pieces, such as words, phrases, and sentences, were ranked. These ranks are the concepts and opinions of the interviewee. This ranking process is called coding.
The decision for coding was based on some important reasons, such as things explicitly stated as important by the interviewee, words or phrases repeated by the different interviewees and similarity to theories and previously published papers. Our aim here was to conceptualize the pattern of the data collection process without any bias.

The next step was choosing the most important codes and creating categories by bringing different codes together. Here, some of the initial codes were dropped, and by combining some others, new codes were created. Then the researchers categorized the codes based on the order of frequency. The researchers were very careful in managing all these processes to enhance the reliability of the data in our research work. Finally, we started the write-ups and analysis based on previous studies published in relevant scientific journals.

3.4 Results

3.4.1 Analysis of the procurement laws

The procurement laws of the Ethiopian government, the World Bank, and the African Development Bank were separately analyzed as follows:

Ethiopian public procurement laws


---

1 This part is analyzed in detailed in Chapter 6.
states that “the specifications to be used by public bodies, as far as possible, have to be expressed in terms of performance, instead of describing the characteristics. Otherwise, they have to be expressed based on the national standards, where such exists, or the internationally recognized standards or building codes.” This typically allows the procuring entities to use PBC in their procurement activities. The law, however, does not prohibit using detailed technical specifications for their procurement.

For the convenience of application of the proclamation, the Ministry of Finance and Economic Development issued a directive in June 2010. But the directive neither contains elements of PBC nor prohibits organizations from using PBC. Furthermore, it does not show how PBC could be applied or for what type of contract it could be used. This results in difficulty for the public organizations in clearly understanding and using PBC for their procurement process. In addition, the regulatory authority can also face difficulties in enforcing the procuring entities’ use of PBC in their procurement process. The absence of clear guidelines on how to use PBC has resulted in a lack of a uniform understanding of the application procedures, and different organizations apply PBC differently based on their level of understanding.

**World Bank procurement laws**

In the World Bank (WB) Procurement Guidelines dated January 2011, Article 2.19 for procurement of goods, works, and non-consultancy services states that “the standards and the technical
specifications stated in the bidding document shall promote the broadest competition possible, while assuring the critical performance or other requirements for the goods and/or works under procurement.” In addition, the guideline states that the borrowers are allowed to use “internationally accepted standards to specify their needs with which the equipment, materials or workmanship shall comply, but the borrowers are also allowed to use the national standards where such international standards are unavailable or inappropriate.” However, in all cases, “the bidding documents are expected to state the equipment, material or workmanship meeting other standards, which promise at least substantial equivalence to the international ones.”

The Bank guidelines neither state the use of performance specifications in the procurement process nor provide any reference materials for how to use PBC in Bank-financed projects. Even though the Bank procurement guidelines do not clearly specify whether the procuring entities are to use PBC or not for procurement of Bank-financed projects, they encourage the borrowers to ensure the achievement of critical performance or other standards for the goods and/or works under procurement. But it is not clear what critical performance means for the borrowers. Nevertheless, the guidelines do not have articles in them that can prohibit using PBC in Bank-financed procurement procedures.

African Development Bank procurement laws

The procurement guidelines of the African Development Bank (AfDB) allow using PBC for projects financed partly or fully by the
AfDB. According to the Procurement and Fiduciary Services Department, Articles 3.14 & 3.15 of Procurement and Fiduciary Services Department (2008) define performance-based contracting and clearly explain how and for which type of procurement PBC can be used for Bank-financed projects. This guideline allows the borrower to use PBC for “the provision of services to be paid based on results achieved and the design, supply, construction (or rehabilitation) and commissioning of the facility or service to be operated by the borrower.” According to the AfDB procurement guidelines, PBC can also be used for the “design, supply and construction of facilities and provision of services for its operation and maintenance for the defined period of time after commissioning.” For such types of contracts, the borrowers are allowed to use PBC for projects that are fully or partly financed by the AfDB. In addition, the guideline clarifies how the payment is to be made based on a number of outputs delivered to a level of quality satisfying the functional and performance needs of the buyer. The contents of the three procurement laws are summarized in Table 3-2.

<table>
<thead>
<tr>
<th>Requirement</th>
<th>Ethiopian law</th>
<th>WB guidelines</th>
<th>AfDB rules and procedures</th>
</tr>
</thead>
<tbody>
<tr>
<td>Must use PBC</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
</tr>
</tbody>
</table>
Encouraged to use PBC
Yes Yes Yes

Allowed to use PBC
Yes Yes Yes

Prohibited to use PBC
No No No

Source: Summarized by the Author

3.4.2 Results of the contract analysis

The contracts included in the samples were 131 of the total estimated 312 contracts from 13 public organizations in budget years 2012/13 and 2013/2014. The 131 contracts analyzed account for about 42% of the total contracts from the 13 public organizations. This enables us to develop a picture of the extent of PBC application in the public sector. Table 3-3 summarizes the total number of contracts included in the sample and the composition of the contracts with respect to the procurement type.

Table 3-3 Composition of Contracts with Respect to Type of Procurement

<table>
<thead>
<tr>
<th>Procurement type</th>
<th>No. of contracts</th>
<th>Percent (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Goods</td>
<td>77</td>
<td>58.83</td>
</tr>
<tr>
<td>Works</td>
<td>27</td>
<td>20.6</td>
</tr>
</tbody>
</table>
Regarding the procurement methods used, of the contracts analyzed, 53 contracts (40.5%) used the ICB method; 74 contracts (56.5%) used the NCB method; 3 contracts (2.3%) used the RT method; and the 1 remaining contract (0.8%) used the shopping method. More specifically regarding the consultants' selection methods, 10 of the contracts (62.5%) used QCBS, 3 contracts (18.75%) used LCS, and the other 1 contract (6.25%) used CQS.

Each contract was analyzed based on the three criteria developed from the literature. The results in Table 3-4 show that from the total of 131 contracts, PBC was fully applied only in 7 (5.4%) of the sample contracts. These contracts fulfilled all the PBC criteria. The other 43 (32.8%) contracts contain some concepts of PBC but missed either one or two of the criteria of PBC or functional specifications. Rather, they contained more detailed technical specifications together with some concepts of performance specifications. These organizations knew the concept of PBC but did not practice it fully. In the remaining 81
(61.8%) contracts, the traditional, descriptive system of contracting was used.

Table 3-4 Practice of PBC System

<table>
<thead>
<tr>
<th>Practice</th>
<th>No. of contracts</th>
<th>Percent (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>PBC not practiced at all</td>
<td>81</td>
<td>61.8</td>
</tr>
<tr>
<td>PBC partially practiced</td>
<td>43</td>
<td>32.8</td>
</tr>
<tr>
<td>- Payment is not related to performance</td>
<td>32</td>
<td></td>
</tr>
<tr>
<td>- Only penalties included, not incentives</td>
<td>43</td>
<td></td>
</tr>
<tr>
<td>- Lack of measurable evaluation criteria</td>
<td>11</td>
<td></td>
</tr>
<tr>
<td>PBC fully practiced</td>
<td>7</td>
<td>0.4</td>
</tr>
<tr>
<td>Total</td>
<td>131</td>
<td>100</td>
</tr>
</tbody>
</table>

Of 13 federal public procuring entities, only one organization started to fully apply PBC in some selected contracts, and the other six procuring entities used it partly by including some concepts of PBC together with detailed technical specifications. The other procuring
entities neither used the PBC system of contracting at all nor included any concepts of PBC/functionality together with their detailed technical specifications. All the contracts that used PBC were design-build-transfer types of contracts for road construction projects. The other 43 contracts that contain technical and performance/functional specifications were mostly used for works contracts in six public organizations. In addition to the performance results achieved, incentives can also be provided for quality innovations and the risk of high investment by the contractor.

Table 3-5 Number of Contracts Collected across the Procuring Entities

<table>
<thead>
<tr>
<th>Procuring entity</th>
<th>Total no. of sample contracts</th>
<th>Number of contracts</th>
<th>PBC system used</th>
<th>Some concepts of PBC included in the specifications</th>
<th>Traditional contracting system used</th>
</tr>
</thead>
<tbody>
<tr>
<td>Addis Ababa University</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Ethiopian Roads Authority</td>
<td>17</td>
<td>7</td>
<td>4</td>
<td>6</td>
<td></td>
</tr>
</tbody>
</table>

77
<table>
<thead>
<tr>
<th>Organization</th>
<th>Respondents</th>
<th>NOTE1</th>
<th>NOTE2</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ethiopian Civil Service University</td>
<td>12</td>
<td>0</td>
<td>0</td>
<td>12</td>
</tr>
<tr>
<td>Ethiopian Revenue and Customs Authority</td>
<td>16</td>
<td>0</td>
<td>0</td>
<td>16</td>
</tr>
<tr>
<td>Ministry of Agriculture</td>
<td>5</td>
<td>0</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>Ministry of Education</td>
<td>10</td>
<td>0</td>
<td>0</td>
<td>10</td>
</tr>
<tr>
<td>Ministry of Finance and Economic Development</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>Ministry of Health</td>
<td>11</td>
<td>0</td>
<td>6</td>
<td>5</td>
</tr>
<tr>
<td>Ministry of Urban Development, Housing, and Construction</td>
<td>17</td>
<td>0</td>
<td>13</td>
<td>4</td>
</tr>
<tr>
<td>Ministry of Water and Energy</td>
<td>9</td>
<td>0</td>
<td>5</td>
<td>4</td>
</tr>
<tr>
<td>Public Procurement and Disposal Agency</td>
<td>7</td>
<td>0</td>
<td>0</td>
<td>7</td>
</tr>
<tr>
<td>Ministry of Transport</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>Sugar Corporation</td>
<td>18</td>
<td>0</td>
<td>12</td>
<td>8</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>31</td>
<td>7</td>
<td>43</td>
<td>81</td>
</tr>
</tbody>
</table>

### 3.4.3 Results of interview analysis

The first extensive interview was conducted with 16 respondents, including PPPAA officials and officials from other 11 procuring entities, mainly procurement department heads, and procurement managers. To have an in-depth understanding on the extent of the
application of PBC in the public procurement system and the reasons for not practicing PBC more in their procurement system, we used open-ended questions. Since the interview questions were open-ended, the PBC issues were discussed more broadly, and hence the researchers were able to develop a broader idea of the impediments to the practice of PBC in the public sector (The interview questions are available from the authors). The interview was recorded and subsequently transcribed. One of the interview questions was “Why PBC is not practiced more in the public procurement system of Ethiopia, even though it is allowed in the public procurement law?”

While the respondents listed a number of points, a summary of the main reasons is shown in Table 3-6. Of the reasons for the low practice of PBC in the public sector, the lack of a clear legal framework, the lack of institutionalized training programs, and the high turnover of procurement professionals are the main ones that were discussed by 94%, 88%, and 63% of the respondents, respectively. Furthermore, a few respondents also raised issues like transparency problems and fear of corruption in using PBC.
Table 3-6 Reasons for Low Practice of PBC

<table>
<thead>
<tr>
<th>List of Reasons</th>
<th>Respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>#</td>
</tr>
<tr>
<td>Lack of clear legal framework</td>
<td>15</td>
</tr>
<tr>
<td>Lack of institutionalized training program on PBC legal framework</td>
<td>14</td>
</tr>
<tr>
<td>High turnover of procurement professionals</td>
<td>10</td>
</tr>
<tr>
<td>Fear of corruption</td>
<td>7</td>
</tr>
<tr>
<td>Transparency problem</td>
<td>4</td>
</tr>
</tbody>
</table>

In addition, a second exclusive interview was conducted with the public officials who were not applying PBC in their procurement system. The interview questions were whether they know the concept and the benefits of PBC, as well as what the reasons were for not applying PBC in their procurement system even though the law allowed it. Fourteen informants from nine public organizations were interviewed. Only five informants knew the concepts and the benefits of PBC for public procurement. The remaining nine informants knew nothing about the concepts and benefits of PBC. The reasons they mentioned for not applying PBC in their procurement system were that they were not given any training on the concepts and how to apply
PBC in the public procurement system, as well as the lack of a clear legal framework in relation to PBC.

Table 3-7 Interview Results for Respondents from Organizations that are Not Applying PBC

<table>
<thead>
<tr>
<th>Do not know the concepts and benefits of PBC</th>
<th>9</th>
</tr>
</thead>
<tbody>
<tr>
<td>Know the concepts and benefits of PBC</td>
<td>5</td>
</tr>
<tr>
<td>Total</td>
<td>14</td>
</tr>
</tbody>
</table>

Furthermore, the third group of interviews was conducted with seven procurement officials from organizations that had started to apply PBC in their procurement system. The interview was related to whether the application of PBC in their procurement system brought any benefit for them or their organization. The informants replied that they got much more benefits by applying PBC as compared to the traditional procurement system. The results of this and others are discussed in detail in the discussion section.

3.5 Discussion of the Results

Our analysis demonstrates the extent of application of PBC in the public procurement system of developing countries by considering the Ethiopian case of selected federal procuring entities. Of 13 procuring entities, only one of them has been using PBC, and it has done so only
on the design-build-transfer types of contracts for road construction projects. However, the organization did not use PBC for its other procurements. This is most importantly due to fear of fraud and corruption, which is a very serious problem in the system. This is because PBC gives more emphasis to the qualitative aspects of the tendering process and is hence highly prone to bias in the selection process. Thus, PBC is at a pilot stage, having started only on a few road projects. On the other hand, six procuring entities including the Ethiopian Roads Authority included some elements of PBC together with detailed technical specifications. These organizations know the concept of PBC but are missing one or more elements of PBC. The remaining procuring entities did not include the concept of PBC/functional specifications in their contract or have not used PBC at all. This indicates that the practice of PBC is at its infancy stage even in the entity that partly used it. Thus, despite policy-level intentions, the concept of PBC has not yet cascaded to the ground level for implementation in many of the procuring entities. Even though the PBC concept is clearly indicated in the procurement law, the public procuring entities have not been using it frequently in their procurement activities. This is partly due to the fact that the procurement directive of 2010 has limitations in terms of clearly defining how to use PBC and what the relations of public procurement officials should be with the contractors or suppliers. The directive lacks an appropriate level of reflection of the concept of PBC in it. This contributes to the procuring entities facing difficulties in understanding the concept and applying it in their procurement system. In addition,
intensive and institutionalized training was not given to all parties involved in the public procurement process (both public and private).

The respondents were asked their views on the major impediments to applying PBC in the procurement system of public organizations. They listed a number of points as demonstrated in Table 3-6.

One of the reasons is a lack of capacity by the procuring entities in the PBC system. Knowledge and skill gaps can lead to resistance to apply PBC (Kleemann & Essig, 2013; Kleemann et al., 2012). When describing their worries, the respondents noted, “The procurement system of the country has faced challenges with a shortage of professionals due to the low salary rate and lack of motivating incentives for maintaining skilled and qualified procurement professionals.” Trained and experienced public procurement officials have been leaving public organizations in search of a better salary.

One of the major functions of FPPA is providing extensive procurement training and capacitating the public sector in public procurement (The Federal Government of Ethiopia, 2009). They have been giving procurement training to those who are involved in the procurement activities of public organizations. However, the FPPA has not been offering any training for the public sector on PBC issues. As a result, the concept of PBC has not yet cascaded to the ground level in many of the public organizations. As demonstrated in Table 3-7, this leads to a situation in which the majority of the government officials and procurement professionals interviewed did not know the concept of PBC. A lack of clear understanding by the officials (from the
regulatory authority and the top public officials) on the PBC concept also contributed to the low application of PBC in the public procurement system.

The other reason most of the respondents raised was that the public procurement directive of 2010 bypassed the concept of PBC. The PBC concept in proclamation number 649/2009 was not reflected and defined in the public procurement directive of 2010. Due to this gap, public procuring entities did not know even the concept of PBC, and they thought that PBC would be very difficult to apply in their procurement system. This is due to the fact that they usually work with the directive rather than the proclamation. Thus, they prefer to continue to use the traditional system of procurement instead of using PBC. This is confirmed by the fact that only one procuring entity uses the PBC system, and only in very few contracts. All the other procuring entities either did not know the concept of PBC and had not yet applied it in their procurement or knew the concept but did not have the capacity to apply it. Generally, the major problem in Ethiopia is a lack of knowledge, practical experience, and clear legal framework to clearly define the concept. This is a matter that requires immediate intervention by the FPPA.

Fear of corruption is one of the other reasons for the low practice of PBC. In line with this, about 44% of the respondents expressed their fear that “applying PBC in public procurement might increase the prevalence of corruption in public organizations.” This is due to the fact that using least cost as the main tender evaluation criteria in the traditional contracting system minimizes having to make judgments on
qualitative aspects of bids. Thus, they believe that PBC opens an opportunity to bias the selection result.

On the other hand, the respondents from public organizations that had started to practice the PBC system did not confirm this point. Rather, they noted that the PBC system minimizes some leaks or holes in the traditional procurement system in relation to the corruption that had been experienced previously.

Fear of transparency is noted by the respondents as one of the reasons for not practicing PBC in the public procurement system. This is due, in part, to the reality that the procurement directive does not clearly state how PBC can be used in the public procurement system. On the other hand, the other respondents who had started to use PBC in their procurement did not prove the suggestions above; rather, they strongly argued that PBC can enhance transparency by clearly indicating the responsibilities of each of the contracting parties.

Furthermore, the other interview was conducted with the officials of the public organization that had started to use PBC in their procurement about how the application of PBC has improved procurement in their organization. The respondents replied that:

[T]he very important thing for PBC is that the system needs to clearly define the problems that need to be solved instead of the processes for how to solve the problems. This enables the procuring entity to measure the end results of the contract. However, they need to design more quantifiable measurement indicators and have qualified personnel for the ongoing monitoring and to evaluate the
end result. It also helps the procuring entity to establish an integrated decision-making system by reducing organizational fragmentation between the designer, the contractor, and the client.

In line with the respondents’ idea, the literature confirms that the main objectives of this type of contract are to bridge gaps that are found between different parties involved in the project execution process – for example, the client, designer, contractor, and end user of the project (Ang, Groosman, & Scholten, 2005). It also enhances the creativity and innovation of the contractors to be able to compete not only on price but also on quality. But it is only sustainable when the contract is supported by incentive modalities. Here, one organization can design and construct the project, and hence the number of parties involved in the implementation process is reduced. As a result, the conflicts that could arise between the client, the designer, and the contractor can be minimized.

Using the PBC system also enhances a continuous dialogue among all involved parties in the construction process and helps to solve any problem in a timely manner (Becker, 2008). This improves the contract administration process as compared to the traditional contracting approach. In spite of all this, the contracts that practiced the PBC system are works contracts (design-build-transfer type of contracts in road construction projects), whereas PBC has not yet been fully practiced in other types of procurement, even in the same procuring entity.
Generally, from the interview, the practitioner procurement officers have different views on PBC as compared to the non-practitioners. A summary of their views is shown in Table 3-8. These results demonstrate the need for policy-makers to give serious consideration to which should come first, “enacting the law or capacitating the procurement professionals,” just like a “chicken and egg” issue. It is similar to, for example, a case in which either someone purchases a vehicle using an alternative fuel without sufficient fuel stations to refuel it, or a fuel dealer opens fuel stations here and there without a sufficient number of alternative fuel vehicles to use them. The question is: Which should come first, from an economic standpoint? For our case, the choice is in the hands of the policy-makers, who must analyze the situation and make an appropriate decision.

Most importantly, procurement requires a high degree of skilled professionalism. It is believed that to achieve successful procurement, both the public and private sector managers should place more emphasis on people and on the knowledge and capabilities they need to be able to meet contemporary demands in the procurement sector. The procurement officials need to be familiar with the concepts of PBC, the relevant trends in technologies, markets, supply capabilities, and skills (Brown & Potoski, 2003; Pomazalová, 2011). This enhances knowledge about PBC and has a positive influence on the officials’ attitude regarding the application of PBC. The views of the different respondents are summarized below in Table 3-8.
Table 3-8 Different Views of Respondents Using PBC and Respondents Not Using PBC

<table>
<thead>
<tr>
<th>Issues</th>
<th>Views of respondents applying PBC</th>
<th>Views of respondents not applying PBC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Corruption issues</td>
<td>Enhances accountability and minimizes corruption</td>
<td>May increase corruption</td>
</tr>
<tr>
<td>Transparency issues</td>
<td>Can determine the responsibility of each party and enhance transparency</td>
<td>May reduce the transparency of the public procurement process</td>
</tr>
<tr>
<td>Procurement risk</td>
<td>The procurement risks transfer to the contractor</td>
<td>More of the procurement risk is left to the procuring entity when using PBC</td>
</tr>
</tbody>
</table>

More importantly, the main objectives of the PBC approach are to lower the overall cost of acquisition and achieve the objectives of the procurement by focusing on performance results (Kleemann et al., 2012). However, the price is still considered as the only and the most important evaluation criterion in Ethiopia in many of the public procurement projects. Public procurement in Ethiopia is still dominated by the principles of competition and fairness, but not quality and performance results.
The FPPA’s future plan

The PPPAA has designed a plan to mitigate the challenges above and apply PBC in all the public procuring entities and hence to improve the efficiency and effectiveness of the public procurement system, reduce costs, and enable both the procuring entities and the contractors to enjoy the benefits of applying PBC. The interviewees from the agency assured us that their organization has a plan to fully apply the PBC system in all the federal public organizations by:

- Providing an extensive and institutionalized training program including PBC and professionalizing the procurement sector in both public and private organizations.
- Revising the law in such a way that it clearly defines the concept of PBC, and designing different advocacy and sensitization programs about the benefits of applying PBC for all parties involved in the public procurement process (for both public and private organizations).
- Establishing a monitoring system to check the applicability of PBC in the public procurement process.

Generally, PBC is not highly practiced in developing countries; hence, this paper provides practitioners in public procurement with new insights on the best practices of PBC, its challenges, and its regulatory framework.

3.6 Conclusion

As presented in the analysis, PBC in the public procurement system of Ethiopia is a newly emerging concept, but it is, however, included in
the public procurement proclamation. Perhaps one of the most important findings of this research work is that the public procuring entities are not practicing it more in their procurement system. Only one public organization has been applying PBC, and only in specific road construction projects. A few other procuring entities included some of the concepts of PBC or functional specifications together with detailed technical specifications.

The other important finding of this research work is that the procurement professionals who are using the PBC system and those who are not using the PBC system for their procurement have different views on the concepts and benefits of PBC. These result from either a lack of proper training on PBC issues or a lack of clear understanding of the law.

Training can enhance the understanding of the public officials on the concept of PBC, how and under which type of procurement PBC can be best applied, and what benefits could be gained by using PBC. The training program should be organized for not only government officials but also private suppliers, consultants, and contractors. In addition, revising the law in such a way that it clearly defines the concept of PBC to the extent that it can easily be understood by the user party should be the primary task to be performed by the regulatory authority.
CHAPTER 4: PBC AS A SOLUTION FOR PUBLIC PROCUREMENT PROBLEMS: SOME ETHIOPIAN EVIDENCE

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.
4.1 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.
4.2 Literature Review

4.2.1 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).
significantly helps to minimize the accountability challenges of public procurement in developing countries (Larbi, 2001).

4.2.2 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).

4.2.3 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.

4.2.4 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.,
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.

4.3 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.
4.4 Results

4.4.1 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 Handling Board and the FPPA related to the most common problems of the public procurement system in Ethiopia are summarized and described in Table 4-1.

<table>
<thead>
<tr>
<th>Problems</th>
<th>Description of the problems</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unable to design clear specification</td>
<td>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.</td>
</tr>
<tr>
<td>Poor quality of goods, works, and services procured</td>
<td>The quality of the goods, works, and services procured is very poor in almost all public organizations.</td>
</tr>
<tr>
<td>Public procurement risk</td>
<td>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.</td>
</tr>
<tr>
<td>Lack of accountability</td>
<td>Lack of a clear accountability system in public procurement results in high corruption prevalence in the sector.</td>
</tr>
<tr>
<td>------------------------</td>
<td>------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>High corruption prevalence in the sector</td>
<td>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.</td>
</tr>
<tr>
<td>Higher transaction cost</td>
<td>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.</td>
</tr>
<tr>
<td>Cost and time overrun</td>
<td>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.</td>
</tr>
</tbody>
</table>

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 4-2.
Table 4-2 Common Problems Identified by the Focus Group Discussions Using the World Café Method

<table>
<thead>
<tr>
<th>Problems</th>
<th>Description of the problems</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lack of proper need identification and specification</td>
<td>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.</td>
</tr>
<tr>
<td>Low quality of products and services acquired</td>
<td>The public organizations usually acquire inferior quality goods, works, and services.</td>
</tr>
<tr>
<td>Competency problem of public procurement officials</td>
<td>The procurement officials working in public organizations are not professionally qualified to manage the contemporary needs of the public organizations.</td>
</tr>
<tr>
<td>Lack of defined accountability</td>
<td>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.</td>
</tr>
<tr>
<td>Time and cost overrun in the contract performance process</td>
<td>In public projects, contract extension and overpayment beyond the allocated budget is the common practice.</td>
</tr>
</tbody>
</table>
As can be seen from Table 4-2, 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 4-3.

<table>
<thead>
<tr>
<th>Problems in current public procurement practice</th>
<th># of respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lack of clear or standard specifications for the needs of public organizations</td>
<td>10</td>
</tr>
<tr>
<td>Lack of a clear accountability system in public organizations</td>
<td>9</td>
</tr>
<tr>
<td>High corruption prevalence in the public procurement system</td>
<td>9</td>
</tr>
</tbody>
</table>
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 4-3, 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.

4.4.2 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 4-4.
<table>
<thead>
<tr>
<th>No.</th>
<th>Identified problems</th>
<th>Possible solutions for using PBC</th>
<th>Solutions suggested by</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>FPPA</td>
</tr>
<tr>
<td>1</td>
<td>Unable to design clear specification based on results</td>
<td>Enhancing procurement professionals’ capability to use PBC.</td>
<td>√</td>
</tr>
<tr>
<td>2</td>
<td>Low quality of products and services acquired</td>
<td>PBC is based on achieving end results; using it helps to improve the quality of the goods, works, and services procured.</td>
<td>√</td>
</tr>
<tr>
<td>3</td>
<td>Risk of procurement</td>
<td>PBC transfers the responsibility and risk of procurement from the procuring entity to the contractor.</td>
<td>√</td>
</tr>
<tr>
<td>4</td>
<td>High corruption prevalence</td>
<td>Using PBC enhances accountability and hence minimizes corruption prevalence.</td>
<td>√</td>
</tr>
<tr>
<td>5</td>
<td>Lack of defined accountability</td>
<td>Establishing a strong accountability system and using PBC minimizes this problem.</td>
<td>√</td>
</tr>
<tr>
<td>6</td>
<td>Time and cost overrun in the contract performance</td>
<td>Using PBC allows contractors to flexibly use their own systems and methodologies during the contract performance</td>
<td>√</td>
</tr>
</tbody>
</table>
process. This helps them exert the maximum effort to delivering the results and hence reduces cost and time overrun in the contract performance process.

Using PBC does not require the procuring entity to do frequent surveillance and hence helps them to reduce transaction cost.

| 7 | Higher transaction cost | Using PBC does not require the procuring entity to do frequent surveillance and hence helps them to reduce transaction cost. |

### 4.4.3 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.

4.5 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 consistency with each other and 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 Brøchner (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.

4.6 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.
5 CHAPTER 5: REVIEW OF PUBLIC PROCUREMENT LAWS RELATED TO PBC

Abstract

Even though Performance-based Contracting (PBC) is a relatively new concept, it is covered by the procurement laws and directives of many governments and international organizations. We analyze the procurement laws and directives of some selected government and international organizations. Overall, we find that many government and international organizations have included PBC concepts in their procurement laws, but with little guidance on their application.
5.1 Introduction

In the last decade, several reforms have been undertaken in the public service delivery process by giving more emphasis to outcomes and results. Given the increasing interest in efficient public service delivery, it is expected that the governments are continuously looking at new ways of improving public service delivery (Amirkhanyan, Kim, & Lambright, 2007). Performance-based contracting (PBC) is one method governments use to carry out procurement activities efficiently and effectively (Martin, 2002). Despite the fact that PBC is a relatively new development in public management, it has been successfully used in various sectors (Behn & Kant, 1999). It allows the government to better control its functional, technical, schedule, and budgetary objectives and outcomes for a particular procurement (Anna, 2008). However, it requires a strong performance evaluation system for payment and uses positive and negative incentives to motivate the suppliers and/or the contractors (Amirkhanyan et al., 2007).

Even though PBC is not the only means for achieving these objectives, it appears to be a promising strategy to set up an effective and efficient public procurement system (Behn & Kant, 1999). It allows procuring entities to acquire products and services through contracts that define the results to be achieved by the contractor, and it gives the supplier and/or the contractor more freedom to propose new approaches to achieve the intended goal (Berkowitz, Gupta, Simpson, & McWilliams, 2005). This is associated with performance end results expressed in outputs, outcomes, or quality (Baquero, 2005; Behn & Kant, 1999; Martin, 2007).
In this chapter, we analyze the legal procurement framework of various institutions and countries with respect to the concepts of PBC. We focus on two research questions. First, to what extent does the procurement laws, guidelines, and directives clearly address PBC concepts? And second, is performance-based contracting explicitly allowed or even supported in these public procurement laws?

We consider the public procurement laws, directives, and guidelines of different countries and international organizations (Ethiopian government, US, World Bank, African Development Bank, and European Union) and analyze them in detail. These countries and institutions were selected because they are the main sources of funds for developing countries. For that reason, these procurement laws, guidelines, and directives determine the level of PBC application in the government procurement of developing countries and of Ethiopia in particular.

5.2 Analysis of the Legal Framework

The practice of the public procurement process critically depends on the contents of the legal framework. In line with this, we analyzed the legal procurement frameworks of international organizations and countries that are relevant to the Ethiopian situation.

5.2.1 The World Bank procurement guidelines

The World Bank, one of the largest sources of assistance for developmental activities, “gives low-interest loans, interest-free credit, and grants” for projects designed to reduce poverty in most developing countries (Tineo, 2007). The World Bank not only provides funds to
developing countries but also assists them to become more efficient and effective in their procurement and contract administration system and hence encourages them to optimally utilize the resources for the public purpose. Procurement contracts are funded by the World Bank in whole or in part in the form of either loans or credits, or any Bank-administered trust funds, are required to follow Bank procurement guidelines for procurement of goods, works, and assignment of consultants (The World Bank, 2011).

The World Bank recently revised its procurement guideline in 2014. The principles, rules, and procedures outlined in these guidelines are required to be applied to all contracts for goods, works, and non-consulting services as well as consultancy services financed in whole or in part by World Bank loans. The January 2011 guidelines of the World Bank for procurement of goods, works, and non-consultancy services, revised in July 2014, addresses performance-based procurement (PBP) in paragraphs 3.16 and 3.17. These are the new paragraphs that were not included in the previous guideline (guideline 2011). PBP is World Bank jargon with an equivalent meaning as PBC.

Article 3.16 spells out performance-based contracting as follows: “Performance-based Procurement, also called Output Based Procurement, refers to competitive procurement processes (ICB, LIB, or NCB) resulting in a contractual relationship where payments are made for measured outputs instead of the traditional way where inputs are measured.” In addition, “The technical specifications define the desired result and which outputs will be measured including how they will be measured.” The technical specification in this guideline is a
broad term; it refers to all the functional as well as performance characteristics of goods, works, and non-consultancy services expressed in measurable terms as outputs, outcomes, or quality. “The aim of those outputs and outcomes is satisfying the functional needs of the procuring entity in terms of quality, quantity, and reliability.” Also, the payment schemes are clearly specified: “Payment is made in accordance with the quantity of outputs delivered, subject to their delivery at the level of quality required.” Meanwhile, the incentive and disincentive packages are defined as follows: “[R]eductions from payments (or retentions) may be made for the lower-quality level of outputs and, in certain cases; premiums may be paid for the higher quality level of outputs.” Also, the procuring entities are not required to describe either the inputs or the work methods for the contractors. In this regard, the guideline state that “the Contractor is free to propose the most appropriate solution, based on mature and well-proven experience, and shall demonstrate that the level of quality specified in the bidding documents will be achieved.”

In addition, the guideline clearly explains for which type of procurement PBP is allowed to be used. Article 3.17 states “Performance-Based Procurement (or Output Based Procurement) can involve: (a) the provision of non-consulting services to be paid on the basis of outputs; (b) design, supply, construction (or rehabilitation), and commissioning of a facility to be operated by the Borrower; or (c) design, supply, construction (or rehabilitation) of a facility, and provision of non-consulting services for its operation and maintenance for a defined period of years after its commissioning.” By default, this
excludes using PBC for procurement of goods and consultancy services. Furthermore, it is not clear to users whether they should use PBC for all works procurement. The World Bank approach allows the procuring entity to specify “what results are to be achieved” in the specification. Here PBC can be used for projects financed in whole or in part by the World Bank. In addition, the guideline specifies the payment schemes and the incentive and disincentive packages in the contract performance process. However, it does not show a surveillance system that enables the procuring entities to prove whether the contractor has achieved the required result specified in the contract document. In addition, the guideline lacks proper performance data collection and evaluation systems, based on which the payment is to be effected. Also, it lacks any support or guidance system on how the incentives and disincentive packages are calculated and determined in the contract performance process. Lack of such supporting documents, capacity building efforts, or piloting in projects, etc. may deter staff and clients from making use of PBC for Bank-financed projects. In this regard, addressing the limitations noted above might help the World Bank to make good use of PBC and of course, achieve value for public money in their procurement process.

5.2.2 Performance-based contracting in procurement directives of EU

The European Union is another one of the sources of funds for developing countries for their poverty reduction and developmental activities as well as to achieve their objectives and UN millennium developmental goals. Accordingly, to ensure efficient and effective
utilization of public funds in the member countries, create
opportunities for SMEs, and enhance innovation, the EU Parliament
and Council developed public procurement regulations back in the
1980s and frequently implemented them through various directives.
These directives must be applied by all member countries and projects
fully or partly financed by the EU fund.

There are three directives that are considered as the public
procurement legislative package of the EU. Specifically, these consist
of the procurement directive, named Directive 2014/24/EU on public
procurement; the utilities Directive 2014/25/EU on procurement by
entities operating in the water, energy, transport, and postal services
sectors; and for the first time a directive on the award of concession
contracts, Directive 2014/23/EU. Accordingly, public procurement
directive 2014/24/EU article 42/3/a and utilities directive 2014/25/EU
article 60/3/a both contain the same statement, namely:

Without prejudice to the mandatory national technical rules, to the
extent that they are compatible to the union law, the technical
specifications shall be formulated in terms of performance or
functional requirements, including environmental characteristics,
provided that the parameters are sufficiently precise to allow renderers
to determine the subject matter of the contract and to allow contracting
entities to award the contract.

In these two directives, performance and functional-related
requirements are considered as an important means to enhance contract
performance and innovation in EU member countries. Meanwhile,
concession directive 2014/23/EU, article 36/1 states that “technical and functional requirements shall define the characteristics required of the works or services that are the subject-matter of the concession.” Unlike public procurement directive 2014/24/EU and utility directive 2014/25/EU (which allows the use of functional or performance specifications), directive 2014/23/EU allows using both technical and functional specifications together for concession contracts. The technical specification here refers to a descriptive type of specification to be used together with the functional specification.

In addition, the two directives (public procurement directive 2014/24/EU article 42/b and utility directive 2014/25/EU article 60/b) elaborated other options that the procuring entities can use when specifying their needs. They can refer to European or national standards or the technical specification. Specifically, it is stated as

without prejudice to the mandatory national technical rules, to the extent that they are compatible to the union law, the technical specifications shall be formulated by reference to technical specifications and, in order of preference, to the national standards transposing European standards, European Technical Assessments, common technical specifications, international standards, other technical reference systems established by the European standardization bodies or – when any of those do not exist – national standards, national technical approvals or national technical specifications related to the design, calculation and execution of the works and use of the supplies; each reference shall be accompanied by the words ‘or equivalent.’
This indicates that PBC is not required to be used in the EU member states and EU funded projects. However, it is allowed for the member states to use it for their procurement for achieving the procurement objectives of EU (i.e. achieving value for public money, opening the market for SMEs, enhancing innovation, etc.).

Generally, the directives for public procurement and the utility sector clearly define how the procuring entities can define their need in two different ways: either in a performance/functional specification or in reference to European/national standards. It also states how the technical specifications that the procuring entity wishes to be met in the procurement process are to be defined, stipulated, and provided in the procurement document. The guidelines allow the procuring entities to freely choose the appropriate approaches for their specific procurement, either a performance approach, combined (containing both technical and functional specifications), or based on the specific standards (either European or national standards). The directives do not clearly define the performance evaluation and the controlling system nor the payment schemes at the end of the contract performance. Also, these directives do not clearly state how the procuring entities can manage the public procurement contract performance evaluation and incentive packages.
5.2.3 **Performance-based contracting in the procurement rules and procedures of AfDB**

Due to the changing circumstances of the world economy, the African Development Bank (AfDB) has been working to set up fiduciary standards in the public procurement sector of the member countries. Despite the procurement policy that has served the Bank and the regional member countries as a standard for the past couple of years, there was a need for more responsive, transparent and flexible contracting systems for their procurement. The AfDB and the member countries realized that the bank’s procurement rules and procedures are prescriptive, too long, complex, and discriminately standardized, particularly, for complex procurement of goods, works and services (African Development Bank Procurement and Fiduciary Services Department, 2014). In addition, to achieve development effectiveness, the African Development Bank (AfDB) and its member states now consider public procurement as a strategic function in the context of public expenditure management and economic governance. The AfDB thus restructured procurement contracts based on performance work statements, more linked to the outcomes and timeline of the work to be performed, i.e., what is to be achieved rather than how to achieve it. In line with this, the AfDB procurement rules and procedures give more attention now to achieving “value for public money,” enabling public organizations to achieve different objectives beyond lowest cost.

Accordingly, the African Development Bank (AfDB), Procurement and Fiduciary Services Department, published procurement rules and procedures in 2008, then revised them in 2012. The rules and
procedures contain the concept of PBC in the form of “Performance-based procurement,” which has an equivalent meaning to PBC and applies to projects financed in whole or in part by the AfDB. More specifically, similar to the WB guideline, article 3.14 of these procurement rules and procedures defines performance-based contracting as follows: “performance-based procurement refers to competitive procurement processes (ICB or NCB) resulting in a contractual relationship where payments are made for measured outputs instead of the traditional way where inputs are measured.”

It is stated here that “the technical specifications define the desired result and which outputs will be measured, including how they will be measured. Those outputs aim at satisfying a functional need both in terms of quality, quantity, and reliability.” The technical specification here again refers to the specifications containing both functional and performance characteristics of the subject of procurement. However, it is a bit different from the definition by Peter (2003), as technical specification for him is a description of the physical characteristics and the way it is produced, constructed, or provided.

These procurement rules and procedures have similar statements with the World Bank procurement guidelines on the payment and incentive issue. Accordingly, these procurement rules and procedures stipulate that “payment is made in accordance with the quantity of outputs delivered, subject to their delivery at the level of quality required. Reductions from payments (or retentions) may be made for the lower-quality level of outputs and, in certain cases; premiums may be paid for the higher quality level of outputs.” The bidding documents
do not require the organization to prescribe the inputs or the work methods and procedures for the contractor, but rather allow the contractor to propose the most appropriate solutions, based on the proven experience on hand, and require them to demonstrate the required results specified in the bidding document.

Article 3.15 of the same procurement rules and procedures clearly explains how and for which type of procurement PBC can be used for AfDB-financed projects. Specifically, it states that “Performance-based Procurement (or Output-based Procurement) can involve: (a) the provision of services to be paid on the basis of outputs; (b) design, supply, construction (or rehabilitation), and commissioning of a facility to be operated by the Borrower; or (c) design, supply, construction (or rehabilitation) of a facility and provision of services for its operation and maintenance for a defined period of years after its commissioning.”

Generally, the procurement rules and procedures specify for which type of procurement PBC can be used. In addition, the payment schemes and incentive packages are clearly stated in the rules and procedures. It is also clearly states that it is mandatory for PBC to be used in AfDB-financed projects for some specified subjects of procurement but not for other procurement types (e.g. goods, building construction, etc.). Similar to the World Bank procurement guideline, the AfDB procurement rules and procedures by default exclude procurement of goods and consultancy services from using PBC, and it is not clear for the users whether PBC is required to be used for all works procurement.
Also, AfDB does not provide guidance notes on how contract performance can be controlled, measured, and evaluated by the users of these rules and procedures. In addition, the AfDB procurement rules and procedures do not contain clear guidance notes on how to calculate and determine the incentive packages in the procurement performance process. This means, perhaps, that successful operationalization of a system would partly depend on the quality of the procurement professionals.

5.2.4 PBC in the public procurement laws of Ethiopia

In Ethiopia, the government is still experiencing significant difficulties in maintaining the roads in a timely fashion, supplying the required goods and services, and providing quality water services to its citizens. Due to the low level of investment and poor maintenance, the municipal water supply, and sanitation, even in the capital, Addis Ababa, is in critical condition (Tineo, 2007). The roads are not maintained in a timely fashion, which results in incurring higher costs for maintenance (Kilimanjaro International Corporation Limited, 212). All the other sectors also have similar experiences in their procurement practices (Chekol & Tehulu, 2014; Ethiopian Government & World Bank, 2010).

Although the government recognizes the problems of such a crisis and has undertaken number of reforms in public procurement, the reform process that has been ongoing for the last 15 years is very slow and has not brought significant change in the procurement sector (Cambridge University Press, 2013; Chekol & Tehulu, 2014).
To address these issues, the government included the PBC concepts in the revised public procurement law passed in 2009, named “Public Procurement and Property Administration Proclamation 649/2009.” The government believes that PBC can help to minimize the limitations found in the traditional, prescriptive procurement approach. It is also believed that PBC can help the government to set the basis for the sustainability of long-term projects, improve their efficiency, create conditions for attracting investment capital, help to maintain the roads in a timely fashion, and minimize cost overrun (Ethiopia, 2009).

Article 29 of the Public Procurement and Property Administration Proclamation 649/2009 of the federal government of Ethiopia states that public organizations are allowed to describe the technical specification of their needs (goods, works, and services) in terms of results required instead of how the work is to be performed. More specifically, article 29(3/a) explains the content of the technical specification as follows: “As far as possible the specification shall be expressed in terms of performance rather than design or descriptive characteristics.” Similarly, article 29(3/b) states another option to define specification “based on national standards, where such exist, or otherwise on internationally recognized standards or building codes.” Here, a building code or building regulation is a set of rules for a specific country or organization that define the standards for newly constructed buildings or non-building structures. Furthermore, article 29(3/c) of the same proclamation provides a statement that the content of the specification is to be designed in such a way that it is “inviting open competition and devoid of any statement having the effect of
restricting competition.” These all indicate that PBC is allowed but not mandatory to use in their procurement process. In addition, the Federal Public Procurement Directive 2010, which explains Public Procurement and Property Administration Proclamation 649/2009, does not have any PBC concepts in it.

Though the public procurement laws of Ethiopia clarify the content of specifications for public organizations to include in their procurement, the proclamation does not specify for which type of procurement (e.g. for goods, works, services and non-consultancy services) PBC is allowed to be used. In addition, the law does not specify how the performance of the contract can be monitored, evaluated, and paid. Furthermore, the law has failed to consolidate the incentive packages that can be applied in the contract performance process, and it is not clear whether it prohibits using a descriptive type of specification together with PBC. Therefore, such limitations in the procurement law may deter the comprehensive application of PBC in the public procurement system.

5.2.5 PBC in the public procurement laws of the US government

As for PBC’s use in the US, it was pioneered within the US Department of Defense (DOD) in the 1990s and later disseminated to the different sectors of federal and state governments (Kleemann, Glas, & Essig, 2012). The US government considered PBC as a preferred contracting method when the federal government privatized many of its public services (Buchanan & Klingner, 2007). The DOD
implemented procurement guidelines by emphasizing the use of PBC over detailed specifications and the design of flexible contracts to provide innovative, technologically advanced, and best-value solutions (US Department of Defense, 2009).

The procurement of complex goods like IT equipment, or procurement in the defense sector in general (e.g. weapon procurement), and procurement of services related to acquiring products, such as maintenance, repair, and training was managed separately in the 1990s in the traditional way. The challenges facing public organizations in the US, specifically the DOD, in achieving their objectives (Buchanan & Klingner, 2007), as well as the increasing needs of more efficiency and effectiveness in the security sector of the US, made it necessary to transform their forces while reducing the budgets (Devries, 2005). In this regard, the US defense leadership and the government realized that the traditional approach was disadvantaged, mainly in two aspects: The defense projects were challenged by schedule and cost overruns while still not satisfying the expected demands of the sector. This is because having contracts with different suppliers was impossible due to a limited number of suppliers in the defense market and the complexity of the goods and services required. Thus, the defense sector faced higher risk of operation failure and increased lifecycle cost after acquiring the goods. Normally, the goods supplied require repair and maintenance, and it is good for the supplier, as well as to get a long-term contract to provide the required spare parts and related services and thereby increase their revenue (Brown, Potoski, & Van Slyke, 2009).
Due to these and other reasons, the US government, and specifically the DOD, changed their procurement system from the traditional input-based approach to performance-based contracting. As a result, many services in the US, ranging from guard and janitorial services to high-tech computer maintenance, from social services to aircraft and technical support, have been provided through this new contracting system in the last decade (Manuel, Halchin, Lunder, & Christensen, 2015).

Specifically, the Federal Acquisition Regulation (FAR) was issued on March 2005. The objective of FAR stated in part 1, subpart 1.102-2, is to make the public procurement system “able to deliver goods, works and service on a timely basis and achieve the best value for public money, while maintaining the public trust in the public organization by establishing a more transparent procurement system and fulfilling public policy objectives.” Four performance standards that the public procurement contracts have to meet, briefly stated in this section of FAR, are: a) “Satisfy the internal customer by providing the required products and services in terms of cost, quality, and timeliness; b) minimize the transaction costs by transferring most responsibilities to the contractor; c) procure goods and services with openness, integrity, and fairness; and d) work with due diligence to fulfill public policy objectives.”

FAR part 37.00, subpart 37.6, defines the scope of policies and procedures for how services are to be acquired using performance-based acquisition methods. Importantly, subpart 37.601 explains that “solicitations may use either a performance work statement or a
statement of objectives.” In addition, it states that “performance-based contracts for services shall include a performance work statement (PWS); measurable performance standards (i.e., in terms of quality, timeliness, quantity, etc.) and the method of assessing contractor performance against performance standards and performance incentives where appropriate.”

Here, FAR clearly states what specifications and standards are required to specify in the procurement document and that will be evaluated accordingly. Specifically, FAR part 16.00, subpart 16.401, also elaborates on how the cost incentives are to be calculated, adjusted, and applied in the public procurement contract performance process. It is stated as “incentive contracts are designed to obtain specific acquisition objectives by (1) establishing reasonable and attainable targets, (2) include appropriate incentive arrangements designed to motivate contractor efforts that might not otherwise be emphasized and wasted.” FAR 16-402-1 to 4 also clearly defines the performance evaluation system and formulas to be applied and the payment schemes that can be effected when it is proved that the required results are achieved.

Therefore, PBC is considered as the preferred method of acquisition of goods and services in all the executive branches of the US government funded by the US Treasury Department. This new contracting approach has now been expanded to all sectors, and the majority of public contracts are now managed through PBC. However, grants and cooperative agreements, as well as contracts with third parties entered by persons using federal funds from a grant,
cooperative agreement, or other federal financial assistance, are not subject to FAR. As a result, projects financed by the US government in developing countries are not required to follow the Federal Acquisition Rules (FAR). However, they are allowed to design their own procurement procedure specific to the project as part of the cooperative agreement, provided that the public procurement principles are maintained.

5.3 Summary

An overview of the procurement policies of the World Bank (WB), African Development Bank (AfDB), European Union, United States of America, and the federal government of Ethiopia was made in relation to the content of PBC concepts.

The aim of the review was not to exhaustively evaluate the whole content of the procurement directives and guidelines, but rather to pinpoint the specific contents of PBC and to determine its clarity for users. The overview clearly shows that PBC is believed to be enhancing economic efficiency, and sustainability and consequently improving innovation in the public procurement process, and it is systematically promoted and cited in the legal framework for public procurement in many countries and international organizations. However, the legal procurement frameworks in some countries and international organizations are still limited in exhaustively addressing the PBC issues in such a way as to fully implement them in their procurement system. More specifically, the legal frameworks have limitations when it comes to specifying mainly the surveillance
systems, contract performance evaluation, and payments at the end of the contract performance. In addition, the legal frameworks have limitations in terms of specifying the incentive packages that can be applied in the contract performance process. The summary of the legal framework analysis is shown in Table 5-1.

Table 5-1 Summary of the PBC Content of the Different Procurement Laws, Guidelines, Rules, and Directives

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Mandatory to use PBC</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Allowed to use PBC</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Encouraged to use PBC</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>PBC specified for use in certain types of procurement</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Performance evaluation systems/Surveillance system</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Incentive and disincentive packages for the actual performance of PBC</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
</tr>
</tbody>
</table>

2 It is not mandatory for the countries receiving aid to use PBC.
6 CHAPTER 6: USING PERFORMANCE-BASED CONTRACTING (PBC) IN PUBLIC PROCUREMENT: THE CASE OF ETHIOPIA

Abstract

Performance-based contracting (PBC) is considered to be a means to improve the efficiency and effectiveness of public procurement. However, it is barely used in developing countries. We investigate behavioral factors (based on the Technology Acceptance Model, TAM) that might explain the low level of PBC use. We use structural equation modeling to test the TAM structure on the use of PBC. The results reveal that perceived usefulness and perceived ease of use have a positive and significant effect on the willingness of procurement officials to use PBC.
6.1 Introduction

Public procurement plays a key role in enhancing good governance and economic development (Arrowsmith, 2010). This is because public procurement accounts for up to 20% of a country’s GDP (Qiao & Cummings, 2003; Weiss & Thurbon, 2006). For example, in Ethiopia, it accounts for about 16% of the country’s GDP and 62% of the annual government budget (Cambridge University press, 2013). It therefore needs to be managed effectively and efficiently to achieve optimum value for public money (Gruneberg, Hughes, & Ancell, 2007; Musanzikwa, 2013).

For the accomplishment of these objectives, public organizations are starting to adopt and adapt new ideas and approaches in their procurement systems. Applying performance-based contracting (PBC) is one of the newer options, and it is believed to improve the procurement system in public organizations (Behn & Kant, 1999). This is because PBC is a contracting approach based on results rather than on the manner in which such results are achieved (Sumo, van der Valk, & van Weele, 2012). The PBC system uses functional and performance terms to describe contracts – for example, how a completed building will operate for the purpose needed, instead of how the building is to be constructed (Martin & Peter, 2005). However, most developing countries are not frequently using PBC for their public procurement process (Ssengooba, McPake, & Palmer, 2012).

The use of PBC in public procurement has benefits that include, but are not limited to: increased likelihood of meeting procurement
objectives (Boykin, 2005); enhanced performance and getting better value for public money (Straub, 2009); minimized performance risk for the buyer (Hypko, Tilebein, & Gleich, 2010); avoidance of the need for detailed descriptions of specifications (Straub, 2009); and more flexibility for the contractor to be able to propose innovative solutions (Sultana, Rahman, & Chowdhury, 2013). Despite all these benefits, application of PBC in developing countries is still limited (Larbi, 2001; Ssengooba et al., 2012), and research on the reasons why this is the case seems to be lacking completely. Here, we try to fill that gap by determining the perceptions of procurement professionals on willingness to use PBC in the public procurement system.

Thus, the main objective of this research is to examine the willingness of the procurement professionals to use PBC in the public procurement of developing countries. We use the Technology Acceptance Model (TAM) to investigate the perceptions of public procurement professionals on the willingness to use PBC.

The remaining part of this chapter is arranged in five sections. Section 2 provides a short overview of the theoretical and conceptual framework; section 3 defines the methodology applied for the research, while section 4 elucidates the results of data analysis and section 5 presents a discussion of results. Finally, the last section of the chapter portrays the conclusion and recommendation of the research results.

6.2 Theoretical and Conceptual Framework

In many situations, public officials regard procurement as an administrative and clerical activity, and they do not integrate it with the
strategic goal of the organization (Thai, 2001). As the nature of the job itself is clerical, it differs from a more strategic contributor to the public organizations. As a result, those that hold these jobs, public procurement officers, become an impediment to public procurement reform and the application of anew system (Greiling, 2006). Their interpretation is reflected either in resistance to change from the existing systems or in failure to properly apply a newly adopted system (Amirkhanyan, Kim, & Lambright, 2007).

The shift from traditional contracting (sometimes termed as regulatory contracting) to PBC can be regarded as a paradigm shift (Becker, 2008). This is due to the fact that PBC’s effect is reflected in different ways, i.e. Changes in the basic role of the contract, in the assumptions on which the contract is based, and in the expectations of various contracting parties regarding the contract (Brown & Potoski, 2003). Also PBC’s adoption is influenced considerably by the perceptions of public officials on PBC’s contribution to the achievement of the organizational goals (Straub, 2009).

To reveal the factors influencing the willingness of procurement professionals to use PBC in their procurement system, we reviewed different options: Theory of Planned Behavior, Theory Restricted Action, and Theory of Technology Acceptance Model. We found TAM as more relevant to reveal the perceptions of procurement professionals regarding using PBC. For the last two decades researchers considered Davis’s (1989) TAM as the most important and influential model to explain the acceptance of information technology or new systems at either an individual or organization level. Many theorists like Ajzen
(1991) also adapted the model to explain individuals’ causal relationships and to predict users’ acceptance of information technology or new systems. They have further explained that an individual’s subjective assessment of the possible conclusion regarding a particular behavior of users, explained in terms of a user’s internal attitudes, beliefs, and intentions, together with the effective evaluation of these conclusions would subsequently generate either positive or negative feelings about a particular behavior. However, the TAM is not only used in information technology; a number of researchers have also used TAM to determine a user’s behavior, particularly with regard to diverse types of newly adopted systems (Dulcic, Pavlic, & Silic, 2012).

![Technology Acceptance Model](image)

**Figure 6-1 Technology Acceptance Model**

TAM has been developed by Davis (1989) and has been applied to various situations in which new technologies and systems are available (Srinivasan, Lilien, & Rangaswamy, 2002). It identifies usefulness and ease of use as important variables or beliefs, which are prejudiced by external variables to determine the behaviors towards a new system.
and the actual willingness to use it. On top of that, the perception of procurement professionals in particular is also highly influenced by the organization’s intention to use the new system (Dulcic et al., 2012). In view of this, in our research, we add one more variable, “organizational intention to use PBC,” which seems to have an influence on the willingness of procurement officials to use PBC. This is due to fear for job security, as civil servants are not willing to do something that the organization does not explicitly support. Although the TAM incorporates perceived usefulness and perceived ease of use as determining constructs to apply in a variety of technologies and systems, the model needs to be expanded to be able to incorporate other factors as well (Calisir, Gumesoy, & Bayram, 2009). Next to individual variables like prior experience, self-efficacy, and past experience with the system, organizational influences and the character of the system or technology to be applied are also identified as antecedents to cognitive characteristics for perceived usefulness and perceived ease of use (Sternad & Bobek, 2013). In this regard, we believe that “organizational intention to use PBC” is an important construct that reflects the theoretical as well as practical perspectives related to enhancing the willingness of procurement professionals in the public procurement system, and we included it in the TAM to analyze its effect together with other variables. However, the core ideology of the model remains unchanged.

Perceived Usefulness (PU)

It is true that employees, managers in particular, are forced to improve their work performance, and are required to consider adopting
new systems and technologies. In fact, a newly adopted system should have an effect on their perception, as it is useful and enhances their performance. Davis (1989) defines perceived usefulness (PU) as “a degree which refers to individual beliefs that using a particular system would improve and increase someone's job performance within an organizational context.” PU is whether the individual or the organization believes the newly adopted system is useful and improves their job performance (Machogu, 2012).

When individuals perceive that PBC is useful, their confidence to use it increases and hence the intention to use it is enhanced. The confidence in the new system can be developed indifferent ways. It can be through training, understanding the system, and good word of mouth from previous users (Kim, 2008; Venkatesh & Davis, 1996). Therefore, having confidence in how the new system works and what benefit it brings is an important step for procurement professionals to use PBC in the public procurement system. Adopting and applying new systems and technology is a strategic imperative when there are tangible rewards for using it, but it can be risky if applying it without prior clarity on whether the new system will benefit the organization (Srinivasan et al., 2002). Perceived usefulness is also directly influenced by perceived ease of use (Dishaw & Strong, 1999). When individuals perceive that the newly adopted system is not more difficult to use for their job, they perceive it as useful.

We hypothesize that:
$H_1$: PU builds confidence in procurement professionals’ willingness to use PBC.

$H_2$: PU has a positive influence on an organization’s intention to use PBC.

**Perceived Ease of Use (PEU)**

Davis (1989) defines perceived ease of use (PEU) as “the extent to which a person believes that the newly adopted system is friendly and does not require too much effort, time, and cost to use.” People are unlikely to be comfortable with a new system that does not help them to perform their tasks smoothly in spite of due implementation efforts (Lederer, Maupin, Sena, & Zhuang, 2000).

Typically, public organizations ‘interest in procurement effectiveness, efficiency, economy, and expediency grows (Buchanan & Klingner, 2007). But these require public procurement knowledge, which can have positive effects on the adoption of contemporary trends and newly developed systems in the public procurement system (Pomazalová, 2011). Having appropriate procurement knowledge helps the procurement professionals to develop confidence in the new ideas and systems (Kiama, 2014). This indirectly enhances the public procurement officials’ perception of their capability to use PBC.

On the other hand, a lack of such knowledge and skills is considered to be a barrier for the successful application of the new system (Chuttur, 2009; Claassen, van Weele, & van Raaij, 2008). In this regard, the procurement professionals perceive PBC as if it is more complicated and difficult to use in the public procurement system. As a
result, they do not have the confidence required to use PBC in the public procurement process. However, enhancing the capability of public procurement professionals or their organizations to easily use PBC in the procurement system is fundamental in the application process (Chien, Gillenson, & Sherrell, 2002). This is because perceived ease of use increases users’ acceptance of the newly adopted system (Venkatesh & Davis, 1996). When users perceive PBC as a user-friendly system, they do have strong confidence about using it. Similarly, it increases the intentions of organization to use it (Srinivasan et al., 2002; Venkatesh & Davis, 1996). Thus, we hypothesized that:

\[ H_3: \text{PEU of procurement professionals on PBC develops confidence in procurement officials regarding PBC.} \]

\[ H_4: \text{Procurement professionals’ PEU of PBC enhances their PU of PBC.} \]

\[ H_5: \text{An organization’s PEU of PBC enhances their intention to use PBC in the public procurement system.} \]

**Organizational Intention (OI) to use PBC**

Organization intention (OI) to use PBC is the behavioral intention determined by both the personal attitude that the person or an organization has, which could be reflected in the actual behavior, and the subjective norm (Chuttur, 2009). To determine the intention of the organization to use PBC, it is important to consider the two main constructs of the TAM, perceived ease of use and perceived usefulness. Bandura (1982) emphasizes the importance of both perceived ease of
use and perceived usefulness in determining the intention to use the system. Bandura used the term “information quality” instead of “perceived usefulness” and he included in his work the costs as well as the efforts for accessing the system equivalent to perceived ease of use. These two terms determine the intentions of the organization or an individual to use or not to use the system. Each of these constructs has its own influence on the behavioral intention to use the system (Dulcic et al., 2012).

Perceptions of leadership, management, and employees of an organization can characterize the nature and effectiveness of work in the organization. Perception is the way an individual interprets his own life experiences (Johnson & Medcof, 2007). It is an important but very challenging part of human behavior. Thus, leaders and managers must realize and understand that all individuals have different perceptions of the same thing (Otara, 2011). This individual difference should be properly managed and can be used as a means of organizational success.

However, it should be backed by the organization’s support and intent to use it. Procurement professionals are more willing to use PBC when there is an organizational intention to use PBC (Chuttur, 2009). In this regard, the top management should put more focus on internal capacity building and allocate the resources required for adopting the new system (Srinivasan et al., 2002). More importantly, the top management’s understanding on the importance of PBC can enhance the successful delivery of the anticipated results to a public organization (Aladwani, 2001). Otherwise, a deepened resistance from
officials and other public employees will cause its failure from the outset (Brown & Potoski, 2003). Thus, the role of leaders is fundamental during the implementation of the new system (Machogu, 2012). This is because leaders are engineers for designing a vision of the change and are supposed to provide the required support to the employees and show appropriate behavior to their followers (Machogu, 2012; Pomazalová, 2011). This helps them to have confidence in the new system, and it increases the willingness of employees during its implementation.

Therefore, it can be hypothesized that:

\( H_6: \) Procurement officers’ confidence in using PBC in the public procurement system is enhanced when there is organizational appreciation for the advantages of PBC.

\( H_7: \) An organization’s appreciation of the advantages of PBC has an influence on the willingness of procurement professionals to use PBC.

\( H_8: \) Confidence of procurement professionals in the benefits of PBC has an effect on the willingness of procurement professionals to use PBC.

**Procurement Professionals’ Confidence (PPC) in using PBC**

The intention to use the system is determined by the attitude towards the behavior (Dishaw & Strong, 1999). The key study by Davis (1989), in essence, assesses the external variables determining the behavior towards the new adopted system. The TAM model requires that procurement officers need to be provided with the
required knowledge and skill. A lack of technical skill, of course, creates problems preventing them from easily using new systems, and hence it affects the willingness of procurement officials to use PBC (Anna, 2008). This helps them also to have a clear understanding and knowledge of the strategic benefits of PBC for their organizational goals (Machogu, 2012; Otara, 2011; Pomazalová, 2011). In this way, it enhances their perception of its usefulness, which together with their capability to use the system will enhance their willingness to use PBC.

**Willingness to Use PBC (WU)**

The willingness to use the new system is directly influenced by the determinants of the procurement professionals ‘behavioral intention to use it. To understand the willingness to use it, we need to understand the difference between attitude acceptance and behavioral acceptance. Attitude acceptance mainly contains the concepts of affective and cognitive, whereas behavioral acceptance includes the actual system use (Arning & Ziefle, 2007). When the procurement professionals perceive that PBC is easy to use and useful, they can have more confidence and be more willing to use it in their procurement system.

We developed our conceptual model based on theoretical analysis. One more variable is included with the technology acceptance model for our analysis (i.e. organizational intention to use PBC). Figure 6-2 depicts the theoretically developed conceptual model, for testing and empirically analyzing. The constructs are linked with the arrows to specify the hypothesized causal relationships between them in the direction of the arrows.
6.3 The Methodology Used

6.3.1 The research sample and measurement

This study uses the theoretical framework of the Technology Acceptance Model (TAM) as a main foundation for collecting and assessing empirical facts on the willingness of procurement professionals to use PBC.

To test the research hypotheses, validated data collection tools (questionnaires) were adapted from published literatures to ensure reliability. Except for some minor modifications to measure individual procurement professionals’ perception regarding using PBC in the public procurement system, the structure is the same. The items were
developed with a seven-point Likert scale comprising (1) strongly disagree to (7) strongly agree, and participants were asked to report their opinions on the scale. The questionnaire is shown in Appendix A. The questionnaires were physically distributed to public procurement officials and their managers who are working in federal ministries of Ethiopia. A total of 400 printed questionnaires were personally distributed to the participants. They were randomly selected from an estimated total number of 560 officers. Of 400 questionnaires, 211 (53%) were returned; 8 questionnaires were excluded from the analysis as they were found to be either invalid or containing missing values, and hence, 203 questionnaires (51%) were used for the analysis.

6.3.2 Model specification

As indicated in Figure 6-2, the conceptual/analytical model proposes particular causal relationships among a set of exogenous variables such as perceived ease of use (PEU); through mediating variables such as perceived usefulness (PU), confidence of procurement professionals to use PBC (CPP), and organizational intention to use PBC (OI); and outcome variable, willingness to use PBC in their procurement system (WU). Structural Equation Modeling (SEM) was used to analyze the causal association because (a) it enables us to estimate multiple and dependent relationships among such variables; (b) it has the power to characterize unobserved concepts in the variables’ relationships; (c) it has the capacity to reduce or correct errors during estimation; and (d) it has the capacity to identify the model by stating associations among the variables (McDonald & Ringo Ho, 2002). All of the parameters and fit indices were estimated using
the maximum likelihood procedures. We used SPSS-Amos software to analyze the data.

6.4 Results of the Analysis

6.4.1 Descriptive analysis of respondents’ characteristics

The majority (more than 96%) of the respondents were working as full-time procurement officials in 48 federal public organizations in various positions such as procurement specialist, procurement expert, contract administration officer, project engineer, and head of procurement department. The remaining 4% of the respondents were working as an IT expert or property disposal expert, however, they are doing procurement activities as well (e.g. in specification writing, tender evaluation committee, and tender endorsing committee, etc.). Since the majority of the respondents were public procurement professionals, the accuracy of the data collected was assured.
Table 6-1 Respondents’ Procurement Experience and Education

<table>
<thead>
<tr>
<th>Item</th>
<th>#</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Years of experience</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt;1 year</td>
<td>21</td>
<td>10</td>
</tr>
<tr>
<td>1-5 years</td>
<td>76</td>
<td>37.45</td>
</tr>
<tr>
<td>6-10 years</td>
<td>68</td>
<td>33.5</td>
</tr>
<tr>
<td>&gt;10 years</td>
<td>38</td>
<td>19.05</td>
</tr>
<tr>
<td>Total</td>
<td>203</td>
<td>100</td>
</tr>
<tr>
<td><strong>Educational qualification</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Certificate</td>
<td>4</td>
<td>2</td>
</tr>
<tr>
<td>College Diploma</td>
<td>7</td>
<td>3.4</td>
</tr>
<tr>
<td>First Degree</td>
<td>147</td>
<td>72.4</td>
</tr>
<tr>
<td>Master’s Degree and above</td>
<td>45</td>
<td>22.2</td>
</tr>
<tr>
<td>Total</td>
<td>203</td>
<td>100</td>
</tr>
</tbody>
</table>
As indicated in Table 6-1, the majority of the respondents, about 52.22%, had 5 or more years of experience in public procurement-related activities. Furthermore, about 54% of the respondents had degrees in either procurement, Business Administration, or Finance, while the rest (46%) of the respondents were professional civil engineers, construction engineers, lawyers, IT specialists, or graduates of management and economics who were working in procurement-related positions in the federal public organizations.

6.4.2 Reliability of the items

We used Cronbach’s alpha to measure the internal consistency of the variables. The Cronbach’s alpha value of each of the factors was computed so as to assess the reliability of item scales for measuring the factors.

Table 6-2 Statistical Reliability

<table>
<thead>
<tr>
<th>Constructs</th>
<th>Value of Cronbach’s Alpha</th>
</tr>
</thead>
<tbody>
<tr>
<td>PU</td>
<td>.789</td>
</tr>
<tr>
<td>PEU</td>
<td>.710</td>
</tr>
<tr>
<td>OI</td>
<td>.867</td>
</tr>
<tr>
<td>CPP</td>
<td>.759</td>
</tr>
<tr>
<td>WU</td>
<td>.895</td>
</tr>
</tbody>
</table>
As depicted in Table 6-2, the results of Cronbach`s alpha value for each of our variables is greater than the minimum limit (0.7), indicating that the elements are reliable measures of the variables.

6.4.3 Confirmatory Factorial Analysis

We used Confirmatory Factor Analysis (CFA) to prove the fit of the observed variables with the theoretical model. The difference between the estimated matrices and the observed ones can be minimized by using confirmatory factor analysis. This is mainly important to analyze whether the observed and unobserved variables have a theoretical relationship among each other (Schreiber, Stage, Kin, Nora, & Barlow, 2006).

In the CFAs, all of the factors in the measurement model were expected to co-vary among each other. A good model fit is represented by a non-significant chi-square value. The sensitivity of chi-square to sample size, however, led us to examine other model fit indices as well, such as the ratio of chi-square to degree of freedom (X²/df), Goodness-of-Fit Index (GFI), Normed-Fit Index (NFI), Comparative-Fit Index (CFI), and Root Mean Square Error of Approximation (RMSEA). To improve the value of model fit, we did covariance analysis between the constructs (See Annex B).
Table 6-3 Computation of Degrees of Freedom

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Chi-square</td>
<td>143.353</td>
</tr>
<tr>
<td>Degrees of freedom</td>
<td>82</td>
</tr>
<tr>
<td>Probability level</td>
<td>.000</td>
</tr>
</tbody>
</table>

Fitness of the model: RMSEA (.061), NFI (.903), CFI (.955), and GFI (.922)

“The ratio of chi-square with degree of freedom ($x^2$/df) should be within a range of 2 to 1 to indicate acceptable fit between the hypothetical model and the sample data” (Hooper, Couglan, & Mullen, 2008). Here the ratio of the chi-square ($\chi^2$) statistic to degree of freedom ($x^2$/df) is within the acceptable range (i.e. $x^2$/df=1.75).

We used RMSEA to check whether the model can fit to the true population parameter. “The statistical analysis results of RMSEA with a value of $\leq .05$ indicate a good fit, while $\leq .08$ indicates adequate fit” (Ingram, Cope, Harju, & Wuensch, 2000). Here, as shown in Table 6-3, the value of RMSEA (.061) indicates an adequate fit. In addition, the values of CFI, GFI as well as NFI need to be .90 or above so that the model will be regarded as fit (Hu & Bentler, 1998). Thus, the values of NFI (.903), CFI (.955), and GFI (.922) indicate, that there is a good fit among the observed data and the model. To achieve these results, we did a detailed factorial analysis (see Annex B & C).
6.4.4 *Hypotheses testing*

We used SEM to measure multiple associations among the exogenous and endogenous variables in one model at the same time. Structural Equation Modeling is designed to test causal relationships of the variables, as suggested by Carr & Pearson (1999). It is used for estimating the influence of one variable over the other following a path analysis. The hypotheses test results and the path coefficients of the structural model are shown in Figure 6-3. We found some results of the model estimates to be statistically significant and in the expected direction, whereas some others were not. The dotted lines in Figure 6-3 show the non-significant paths.

![Figure 6-3 A Causal Model of Willingness to Use PBC](image-url)
The hypotheses of this research were assessed to check whether the variables have statistically significant relationships among each other.

*Table 6-4 Hypotheses Test Results*

<table>
<thead>
<tr>
<th>Label</th>
<th>Estimate</th>
<th>S.E.</th>
<th>C.R.</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>PU</td>
<td>PEU</td>
<td>1.060</td>
<td>.189</td>
<td>5.602 ***</td>
</tr>
<tr>
<td>OI</td>
<td>PU</td>
<td>.659</td>
<td>.280</td>
<td>2.351 .019</td>
</tr>
<tr>
<td>OI</td>
<td>PEU</td>
<td>-.097</td>
<td>.382</td>
<td>-.254 .799</td>
</tr>
<tr>
<td>CPP</td>
<td>PU</td>
<td>.654</td>
<td>.171</td>
<td>3.821 ***</td>
</tr>
<tr>
<td>CPP</td>
<td>OI</td>
<td>.011</td>
<td>.051</td>
<td>.214 .830</td>
</tr>
<tr>
<td>CPP</td>
<td>PEU</td>
<td>.240</td>
<td>.217</td>
<td>1.107 .268</td>
</tr>
<tr>
<td>WU</td>
<td>CPP</td>
<td>.854</td>
<td>.100</td>
<td>8.554 ***</td>
</tr>
<tr>
<td>WU</td>
<td>OI</td>
<td>.031</td>
<td>.047</td>
<td>.668 .504</td>
</tr>
</tbody>
</table>

From the regression result, the positive signs of factor loadings and the level of significance of the structural parameter estimate support some of the hypotheses, those denoted by H₁, H₂, H₄, and H₈ in the model. Specifically, the path loading of (1) perceived usefulness (PU) from perceived ease of use (PEU) (b=1.060; p <.001), (2) confidence of procurement professionals (CPP) from perceived usefulness (PU) (b=.654; p<.001), (3) organizational intention (OI) from perceived usefulness (PU) (b=.659; p<.05), and (4) willingness to use (WU) from confidence of procurement professionals (CPP) (b=.854; p<.001) were statistically significant. Predictably, the data appears to support the null hypothesis.

However, the factor loadings and the significance level of the structural parameter estimate do not support the other hypotheses, which were denoted by H₃, H₅, H₆, and H₇ in the model. The path
loadings of confidence of procurement professionals (CPP) (1) from perceived ease of use (PEU) (b=.240; p>.05) and (2) from organizational intention (OI) (b=.011; p>.05) were not statically significant. Similarly, the path loading of willingness to use (WU) from organizational intention (OI) (b=.031; p>.05) was not statistically significant. Moreover, H5 negatively links PEU with organizational intention (OI), and the parameter estimate of this path was not statistically significant and found not in the expected direction (b= - .097; p>.05)

6.5 Discussion of the Results

In this study, we extended the TAM model through the addition of organizational intention to use PBC, which has a strong influence on the willingness of the procurement professionals to use PBC. The objective of this research has been to determine the quantitative effect of various factors on willingness to use PBC in the public procurement system of developing countries. We used data from Ethiopia. All the hypotheses were examined to check whether the associations among constructs are statistically significant.

The results revealed a significant effect of perceived usefulness (PU) on confidence of procurement professionals and their willingness to use PBC in the public procurement system. Perhaps usefulness, partly, gets its power through fully mediating the effect of ease of use on CPP. We found the strongest influence in the relation between PEU and PU (b=1.06; p<.001). This implies that procurement professionals
had strong confidence in PBC when they perceive it to be more useful for their procurement activity.

The other part of the results indicates that PEU has a strong impact on PU, but it does not have a direct and significant relationship with confidence of procurement professionals. Similar to the research results found by Davis (1989) and Dulcic et al. (2012), procurement professionals’ intention to use PBC depends on their perception of usefulness, and not only on ease of use. On top of that, both PU and PEU significantly affect confidence of procurement professionals (CPP), which in turn has a positive and significant influence on their willingness to use PBC. These two important TAM constructs are, more importantly, the major contributors to determine willingness of procurement professionals. Thus, the findings with respect to H1 and H4 suggest that procurement professionals perceive PBC as easy to use for their procurement provided that they perceive it as useful. Apparently, this finding is comparable with the findings of other researchers that PU and PEU have a significant and positive influence on the attitude of the implementers of the new system (Vijayasarathy, 2004). More specifically, the strong association between PU and CPP can be interpreted by the user as a higher perceived value of the usefulness of PBC for procurement activities. However, the value for ease of use is relevant only if the users perceive it as useful.

Hypotheses H6 and H7 concerning the effect of the organizational intention to use PBC on CPP in PBC and on willingness to use was not confirmed. The organizational intention to use PBC does not have a significant effect on the confidence and willingness of procurement
professionals to use PBC. Theoretically, the association between these constructs was expected to be strong, as the government sector is considered to be risk-averse. But addition to the TAM did not work. In actual fact, as opposed to the prediction, the study did not support the view that the organization’s intention to use PBC in public procurement has an effect on the confidence of procurement professionals and their willingness to use it in the public procurement system. It means procurement professionals care less about the organizational support for using a PBC system. Usefulness and ease of use were stronger and more powerful predictors of the procurement professionals’ confidence in using PBC than was the organizational intention to use. This indirectly had an influence on the willingness of the procurement professionals to use PBC in public procurement.

This research also examined the effects of CPP on willingness of procurement professionals to use PBC. As predicted, we found a strong and significant association between the two constructs. This suggests that when procurement professionals have confidence on its usefulness and ease of use, they are willing to use PBC in their procurement system regardless of whether there is organizational intention to use PBC or not. This is in line with the literature on the technology acceptance model stated by Park (2009). Such willingness often has the meaning of voluntariness, or having a positive attitude towards using the new system in their day to day practice (Dent & Goldberg, 1999; Devis, 1993; Venkatesh & Davis, 1996). Thus, the positive result on the willingness of procurement officials to use PBC bodes well for successfully implementing PBC in the public procurement system of
Ethiopia, provided that some other external factors that determine “ease of use” such as having a clear legal framework and enhancing professional capacity are properly addressed.

6.6 Conclusion

PBC is a newly developed contracting system that is believed to be able to improve the performance of the public procurement system. To apply this newly adopted contracting system in public procurement, understanding the willingness of procurement professionals to use PBC is imperative to achieve successful results in the implementation process. Based on our empirical results, we can draw the following conclusions.

Firstly, the findings of the study reveal that this simple structure (TAM) can correctly explain the willingness level of procurement professionals. Second, the attitude of the public organizations towards PBC is not a major factor in determining the willingness of the procurement professionals. We did find that confidence created by procurement professionals in relation to the PBC system is valuable in the development of a positive attitude in the organization towards this newly adopted system.

Implementation of PBC in the public procurement system critically depends on its ease of use. To improve ease of use, a number of options are available. Specifically, improving the legal framework, enhancing the capacity of procurement professionals, and provide guidance on how to implement the new system are some of the important options to be considered. Positive results we found in
relation to the perceptions of procurement professionals regarding willingness to use PBC can serve as a foundation for the successful implementation of PBC in the public procurement system.

The findings of this study support the TAM proposed by Davis (1989) and have theoretical and practical allusions. In relation to theoretical implication, it shows how the (TAM) works in the context of public procurement when adopting the new system in the sector.

The study also has practical implications. In this regard, the study results provide insights for government to design strategies on how to enhance the willingness of the procurement officials to use PBC and increase the use of PBC in the public procurement system, thus, increasing the benefits that could be gained by using it. Nevertheless, the results and facts found in this research can also be used as benchmarks for future research on how PBC can effectively be implemented in the public procurement system of developing countries.

Some limitations should also be noted. Although this research involved a large number of participants in Ethiopia, it may not represent the practice of developing countries in general.
CHAPTER 7: SUMMARY, DISCUSSION, AND LIMITATIONS

7.1 Introduction

This dissertation integrates a number of antecedents to performance-based contracting (PBC), with a specific focus on why PBC is not practiced more in the public procurement systems of developing countries. Public procurement in developing countries is focused on a least cost approach of selection (Tineo, 2007). This is at least partly due to the fact that these countries prefer to apply a highly regulated procurement system to minimize fraud and corruption, as corruption is rampant in the system (Burguet & Che, 2004; Schapper, Veiga Malta, & Gilbert, 2006). The focus of this is simply compliance with the defined procurement process as a means of avoidance or elimination of corruption risk.

Using least cost avoids the need to make judgments on qualitative aspects of bids and can work well for less complicated procurement (Qiao & Cummings, 2003). The simple approach, considering only least cost for bid evaluation and award for all types of procurement, however, does not provide value for public money in the public procurement system. In using a least cost bid, the bidders do not pay much attention to quality-related aspects; rather, they tend to offer a lower price at the expense of quality and to deliver only the minimum required quality and sometimes even less than that (Hannah, Ray, Wandersman, & Chien, 2010). Due to the agency problem, this
commonly results in buying low-quality goods and services (Bergen, Dutta, & Walker, 2001). However, considering the quality aspects too is necessary in order to achieve the ultimate goals of public procurement (Qiao & Cummings, 2003). For this and other problems, using PBC in the public procurement system of developing countries is considered to increase procurement efficiency, enhance accountability and transparency, increase the quality of the procurement, and achieve value for public money in general (Devries, 2005; Martin, 2007; Stankevich, Qureshi, & Queiroz, 2009).

Accordingly, it is valuable to explore why PBC is barely practiced in the public procurement of developing countries and what hinders its application in the public procurement system.

This dissertation analyzed the contracting approaches (i.e. performance or behavioral), the practice of PBC in developing countries, the PBC contents of the legal framework for some selected international institutions and countries, and the perceptions of the procurement professionals regarding the use of PBC. Below, a brief summary of the main findings of the empirical work is provided together with a discussion of these findings. This discussion focuses on the contribution of the research presented in this dissertation to the PBC literature on the public procurement of developing countries.

7.2 **Summary of the Main Findings**

Chapter 2 focuses on exploring the literature on the conceptual meaning of PBC, how to design a PBC system, the payment and incentive schemes, and the advantages and disadvantages of using PBC
in the public procurement system, particularly in developing countries. The agency theory (Eisenhardt, 1999) and transaction cost economics theory (Williamson, 1987) are employed as guiding frameworks to examine the applicability of PBC in the public procurement systems of developing countries. The agency theory is based mainly on two assumptions – conflict of goals and information asymmetry of the two contracting parties (Nilakant & Rao, 1994).

Conflict of goals of the contracting parties appears due to the wealth-maximization goal of the principal and the utility-maximization goal of the agent. On the other hand, information asymmetry is created when one party has more information than the other in the decision-making process. With these agency problems the principal has a shortage of the information that would allow them to observe whether the agent is behaving as required. Therefore, depending on the information the principal has, the contracts should be designed based either on the behavior-based (descriptive/traditional) approach or the performance-based (PBC) approach. The principal designs a descriptive approach for contracting when they are able to control the behaviors of the contractors, whereas a performance-based approach is preferred when they buy complicated goods and services and the contractors’ payment is based on the delivery of required results.

On the other hand, the transaction cost economics theory assumption is developed based on the idea that the risk of opportunism is inherent in the contract performance process due to bounded rationality, namely that the decision-makers lack some sort of cognitive capability and hence have limits to their rationality (Brown
& Potoski, 2003). Normally, the decision-makers intend to perform rationally but their intention is limited by information access and by processing and communication ability (Gruneberg, Hughes, & Ancell, 2007; Rindfleisch & Heide, 1997). As a result, parties in the contract have difficulties in knowing and fully predicting all the possible future scenarios (Brown & Potoski, 2003), and it is difficult for the principal to fully spell out all the possible conditions in the contract. As a result, the contract cannot completely manage opportunistically behaving contractors in the contract performance process, and hence the principal uses one of two alternative contracting approaches – either behavioral or performance (Brown & Potoski, 2003; Chiles & McMackin, 1996; Doer, Lewis, & Eaton, 2005; Geyskens, Steenkamp, & Kumar, 2006). In this dilemma, using a performance-based contracting approach is considered to be a solution for minimizing the risk of opportunism in the public procurement system. Therefore, the theory suggests that using PBC has the power to influence the opportunistic behaviors of the contractors in the contract performance process, and the two theories (agency theory and transaction cost economics theory) complement each other to reveal the behaviors of the contractors in the PBC approach.

The other important finding is that the previous research outputs pertinent to the topic increased over the last decade but were limited to specific areas (the practice of developed countries) and sectors (e.g. health, human service, etc.). The research findings to date do not clearly show whether PBC will also work in the context of developing countries. This focus on sector- and area-specific empirical research
hinders the development of a general theoretical framework of PBC. Thus, this study confirms that this research area is still under-theorized and needs more research and investigation, especially as regards its applicability in the context of developing countries. In addition, the conceptual definition of PBC is clearly outlined, and advantages and disadvantages of using PBC are analyzed and outlined based on the evidence from the literature.

Chapter 3 analyzes the practice of performance-based contracting in the public procurement systems of developing countries. This study was conducted among the federal procuring entities of Ethiopia. Perhaps the most important finding of this research work is that the majority of public organizations have not yet used PBC even though it is allowed by the law. This is mainly due to (1) fear of corruption, since PBC uses qualitative aspects of the bid in addition to price for bid evaluation and award, which supports the arguments of Burguet and Che (2004), (2) lack of skilled manpower in public procurement, (3) lack of a proper training system for PBC, and (4) lack of a clear legal framework on PBC issues in public procurement.

Chapter 4 focuses on exploring whether using PBC can minimize some of the existing problems of public procurement in developing countries. Again agency theory (Eisenhardt, 1999) and transaction cost economics theory (Williamson, 1987) are employed as a framework to analyze the existing problems of public procurement and how using PBC can minimize such problems. More importantly, public procurement in developing countries is associated with a number of problems (Larbi, 2001). Most of the problems in the contract
performance process arise either due to cognitive capability that the principal is unable to predict the entire future scenario and not able to include all the required information in the contract agreement (Rindfleisch & Heide, 1997; Williamson, 1987) or due to goal incongruence and information asymmetry between the contracting parties (Eisenhardt, 1999), as each tends to work in their own personal interest rather than the common goal. Using PBC is suggested as a solution for such problems in the public procurement system (Ng & Nudurupati, 2010; Stankevich et al., 2009; Straub, 2009). The data analysis in this study confirms the suggestions and finds that using PBC minimizes some of the common problems in the public procurement of developing countries. Specifically, using PBC is expected to minimize problems of accountability, corruption, and procurement cost and time overrun, and to improve quality in public procurement.

Chapter 5 examines the PBC contents of the legal framework for public procurement in some selected international organizations and countries. To understanding the reason why developing countries barely use PBC in their procurement system, the content related to PBC concepts in the legal framework for public procurement of selected countries and international organizations is examined and checked for whether it allows, requires, or prohibits the use of PBC in the public procurement system. PBC is normally a long-term contract than that of the traditional contracting approach since the contractor carries out all the associated risk and responsibilities, and in some contracts the contractor is required to undertake the maintenance of the
goods or facilities for a specified period of time. The analysis results revealed that PBC is systematically promoted and cited in the legal framework for public procurement in many countries and international organizations. However, most of the procurement laws, directives, and rules and procedures lack a proper guide on how to evaluate the contract performance, pay at the end of the contract performance, and apply incentive packages in the contract performance process. The lack of a properly guiding legal framework contributes considerably to the low practice of PBC in the public procurement systems of developing countries.

Chapter 6 focuses on analyzing the perceptions of procurement professionals regarding willingness to use PBC in the public procurement system. The potential justifications for the rejection or acceptance of a newly developed technology or system have become an important researchable topic in order to gauge the level of acceptance of the new system or technology by the users. Depending on the type of technology or system, different factors affect the acceptance motives of individuals or organizations (Dishaw & Strong, 1999). This research examines the influence of perceived usefulness and perceived ease of use on the willingness of the procurement professionals to use PBC in the public procurement system.

The regression analysis on perceptions of the procurement professionals regarding using PBC revealed that when procurement professionals perceive PBC as useful, they are more willing to use it in the public procurement system. The findings of this study support the TAM proposed by Davis (1989). Perceived ease of use has a
significant effect on the confidence of procurement professionals to use PBC only when they perceive it as useful. It is concluded that a clear understanding on the benefits of PBC and how to apply it in the public procurement system enhances the willingness of procurement professionals to use PBC.

Thus, each of the findings of the individual chapters enhances the understanding and knowledge of how developing countries adopt and use PBC in the public procurement system. Out of these different issues, we can elicit a set of key messages and implications for further research on public procurement, PBC practice, and the public procurement legal framework.

7.3 Implications and Contributions

This study offers important contributions from the theoretical, academics, and practical perspectives. From the theoretical perspective, the study widens the theoretical research related to PBC in a transaction cost economics theory approach, proposed by Williamson (1987) and Brown and Potoski (2003), and the agency theory and uncertainty proposed by Nilakant and Rao (1994) and Eisenhardt (1989). In addition, it shows how the transaction cost economics and agency theories can be used together and complement each other in PBC research. The two theories are found to complement each other to minimize the opportunistic behavior of the agents in the public procurement system. These clearly determine what contracting approach the principal should use to control the behavior of the agent – either behavioral or performance.
Second, the study contributes to literature revealing the features of PBC in the public procurement system of developing countries, which was a gap in the area.

From the practical perspective, this study has contributions for the public procurement of developing countries. It helps the developing countries, particularly practitioners in developing countries, to understand the concepts and the benefits of PBC. Besides, this research helps the developing countries to know how PBC can be designed and applied in public procurement. More importantly, it shows the need for strengthening the knowledge and skills of the procurement officials to be able to design functional and performance specifications and to evaluate accordingly before applying PBC in the procurement system. This is essential to enhance the perception of the procurement professionals on its usefulness and ease of use, which is crucial for implementing a new system.

The other important contribution is that this study pinpoints the importance of having a clear legal framework for the application of PBC in the public procurement system. Practically, many international organizations and countries do not have clear legal frameworks. More specifically, the laws do not clearly define how to evaluate the performance of the contractors or how to devise the payment and incentive packages related to the performance of the contractors.

Overall, all the studies in this dissertation support the use of performance-based contracting in the public procurement system; however, improving the legal framework and the knowledge and skills
of the procurement professionals is stipulated as an important task to be done before launching the PBC application. In line with this, the leadership commitment to allocate the necessary resources and willingness to professionalize the procurement system can also play a major role in this regard.

7.4 Limitations and Future Research

In spite of all, our research has limitations that could be addressed in future work. More importantly, some of the findings of the research depend on a relatively qualitative analysis of contracts from organizations in the public sector and interviews with some individuals who work in the public organizations. Payne & Williams (2005) clarify that generalizability claims are less clear in qualitative research; however, they can be taken as benchmarks to conduct further research on the issue by studying with a larger scope and population and using both quantitative and qualitative analysis.

In addition, our research finding has limitations on scope, as it covers a limited population in one specific country and thus may not represent all developing countries. We suggest further research in the area based on data sources from different developing countries.

This dissertation can likely be used as a starting point for further research in the area of performance-based contracting, more importantly on what conditions are required to adopt PBC and apply it in public procurement, and how to include PBC concepts in the public procurement laws and to develop a cost model in the public procurement system. In addition, education or training programs are
required to clarify the conceptual understanding and purpose of PBC in public procurement and will mitigate some fears and myths regarding its use. Furthermore, additional research could be carried out on how to develop performance standards and data collection tools for contractors’ performance, based on which contractors’ performance can be measured, evaluated, and paid.
References


doi:[http://doi.org/10.1016/S0378-7206(98)00101-3](http://doi.org/10.1016/S0378-7206(98)00101-3)


Youth Services Review, 32, 1430-1436. doi:10.1016/j.childyouth.2010.06.014


Improvement. *Health Affairs*, 23(2), 127-141. doi:10.1377/hlthaff.23.2.127


Tate, W. L., Ellram, L. M., Bals, L., Hartmann, E., & van der Valk, W. (2010). An Agency Theory Perspective on the Purchase of


Acknowledgement

First and above all, I praise and thank God, the almighty, for providing me the opportunity and blessings throughout my research work to complete the research successfully. In addition, this dissertation appears in its current form due to the assistance and guidance of several people. I would therefore like to provide my deepest thanks to all of them.

Firstly, I would like to express my deepest gratitude to my supervisor Prof.dr. Jan Telgen for his continuous support throughout this PhD project, and for his patience, motivation, and immense knowledge on my research topic. Without his guidance and constant feedback, this PhD would not have been achievable. His guidance helped me during the entire time of the research and writing of this thesis. I could not imagine having had a better supervisor and mentor for my PhD study.

My sincere thanks also goes to Dr. Bertha Vallejo, project coordinator of NICHE/ETH020 at Tilburg University, who provided me with enormous support and encouragement on my research work. Bertha, this is the fruit of all your effort; without your precious support, it would not have been possible to conduct this research. A very special gratitude also goes out to Nuffic for helping and providing me with the funding for the research project.

I would also like to thank all the staff members at the University of Twente who helped me in my stay in the university. In particular, I would like to thank NeilsPauls for his valuable comments on the quantitative analysis in Chapter 6 of this dissertation, and Frederik,
NeilsUnk, and Klaas for their extended support during my stay in the university. I would also like to thank my friends Lemessa, Atakilt, Beza, Tigistu Tesfaye, and others for all their contributions and encouragement in this research work.

I must express my gratitude to Wubayehu, my wife, my son Bereket and my daughter Meva for their continued support and patience during my stay in The Netherlands while I left them alone in Ethiopia. I am grateful for Wubayehu’s willingness to take care of our kids when I could not be with them due to this PhD study.

Last but not least, I would like to thank my family: my parents, Sintayehu and Girma, and my brothers and sisters for supporting me spiritually throughout my time writing this thesis and my life in general. I should also extend my special gratitude to my elder brother, Getie, for all his support and encouragement in all steps of my life.
Annex A: Measures of Chapter 6

1. Perceived usefulness of performance-based specification/contracting (Davis, 1993)
   a. Using the performance-based specification system increases the productivity of our procurement activities
   b. Using performance-based specification can enhance procurement effectiveness in my organization
   c. Overall, I find the performance-based specification system useful in our procurement activities

2. Perceived ease of use of performance-based specification/contracting (Davis, 1993)
   a. I find the performance-based specification system enables us to get what we want to get
   b. It is easy for me to know what responsibilities are to be performed by the procuring entity and what is to be performed by the contractor when using performance-based specification
   c. The relation with contractors in the performance-based specification system is clear and understandable
   d. Overall, I find the performance-based specification system easy to use

3. Organizational intention for performance-based specification/contracting (Chien et al., 2002)
   a. Top managers keep telling procurement managers the organization must gear up now to meet the needs of the organization by using the performance-based specification system
   b. Top managers make an effort to convince procurement managers on the benefits of the new performance-based specification system

4. Confidence of procurement professionals on using performance-based specification/contracting (Chien et al., 2002)
   a. Using the performance-based specification system is more convenient for our procurement
b. Using the performance-based specification for our procurement saves us more money

c. The performance-based specification system has more benefit than traditional procurement (technical specification) system

5. **Willingness to use Performance-Based Specification/contracting (Vijayasarathy, 2004)**

   a. I intend to use the performance-based specification/performance-based contracting for procurement of our needs

   b. I intend to use performance-based specification frequently in our procurement

   c. I intend to use performance-based specification to meet our procurement needs
Annex B: Factorial Analysis for Chapter 6
Annex C: Regression Analysis for Chapter 6