

"e-GP in Mechanical Wing Procurement in Roads & Highways:
An Assessment of Efficiency"

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requirement for the degree of
Masters in Procurement and Supply Management

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Declaration

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PREFACE

Before you is presented the final version of my master thesis, written for the master program - “Procurement and Supply Management” of the faculty BRAC Institute of Governance and Development (BIGS) of BRAC University. The research has been carried out during the period September 2014 to May 2015.

This thesis has been started with prior knowledge about the tendering procedures of Roads and Highways Department (RHD) Mechanical Wing as the author is an officer of the same department, serving in the capacity of an Assistant Engineer. My background knowledge about the department also saved me substantial amount of effort and time. The experience both doing the research and the analyses on this particular topic was very challenging, but still it was quite satisfactory as it turned out to be of larger relevancy than was initially expected.

This research has made use of data originating from confidential data sources such as estimates and tender documents and tender evaluation reports; the thesis blinds the references to these sources. Furthermore, this thesis contains a series of interviews with the practicing professionals and experts of this department—both from the field and from the Headquarter. Due to the nature of the results of this report which are often strongly aided by statements made in the interviews, and to protect the reputations of interviewees or their organization the identities of the interviewees had been kept confidential.

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I would also like to express my gratitude to the interviewees working at various levels of Roads and Highways Department (RHD) for their kind cooperation in terms of sharing confidential information with me.

Finally, I would like to thank my family, especially to my parents and to my colleagues and friends. To all, I say thank you for the prayers, support, words of encouragement and wisdom with which this research work has been made possible.

Abstract

This research focuses on the inefficiencies of e-GP in public sector procurement process with reference to Roads and Highways Department civil work contracts.

Roads and Highways Department (RHD) has responsibilities for the construction, repair and maintenance works of highway network of the country. This requires efficiency in procurement process which ensures a much higher Value for Money (VFM).

The goal of this thesis was to identify the inefficiencies in the procurement process especially in e-GP, sources of these inefficiencies and to find the probable solutions. For this purpose the trend and amount of inefficiencies have been quantified from primary data collected from the working divisions of RHD Mechanical Wing. The practicing professionals of RHD have been interviewed through a questionnaire and from their opinions the major parameters of inefficiencies have been identified and their suggestions about improving efficiencies have been congregated.

Deviation as high as 56.55 percent at one end and -9.09 percent on the other end from the engineer's estimate indicate scattered values of bidding, inefficiency, lack of consistency and manipulation in the procurement cycle of RHD.

From the qualitative interview the major parameters of inefficiencies have been identified which include tendency to become the lowest bidder to grab the contract Collusion, no defined rate schedule, e-GP is not fully implemented was mentioned. Due to time and budget constraints, the correlations of major parameters could not be quantified and was kept qualitative.

The recommendations to improve efficiency in the procurement practices include change of mindset and work with commitment for the country, to implement the full e-GP system, increase the financial power of delegated officials, rating on suppliers based on KPI, integrity and devotion on tasks, more advertisement of e-GP, proper planning in higher authorities providing relevant training to the employers of different level, sufficient amount of fund is to provide for mechanical wing in the early of financial year,

short listing of able performers and more support to staff regarding mechanics, driver etc, updated rate schedule, some provisions to face emergency in ferry service and in workshop, proper Training on e-GP among the suppliers, employees and other stakeholders were proposed.

List of Abbreviations

AA	Approving Authority
AO	Approving Officer
ADB	Asian Development Bank
BDA	Bilateral Development Agencies
BLI	Base-line Indicator
BWDB	Bangladesh Water Development Board
CCGP	Central Committee on Government Purchase
CPTU	Central Procurement Technical Unit
DoFP	Delegation of Financial Power
DPM	Direct Procurement Method
e-GP	Electronic Government Procurement
EU	European Union
FY	Fiscal Year
GoB	Government of Bangladesh
HOPE	Head of Procuring Entity
ICB	International Competitive Bidding
IDA	International Development Agency
IMED	Internal Monitoring and Evaluation Department
ITT	Instruction to Tenderers
LTM	Limited Tendering Method
LGED	Local Government Engineering Department
MDB	Multilateral Development Bank
MFI	Multilateral Financial Institution
NOA	Notification of Award
OSTETM	One Stage Two Envelope Tendering Method
OTM	Open Tendering Method
PE	Procuring Entity
POC	Proposal Opening Committee
PP	Procurement Planning
PPA	Public Procurement Act
PPR	Public Procurement Rules
PPRP	Public Procurement Reform Project
PROMIS	Procurement Management Information System
QCBS	Quality and Cost Based Service
REB	Rural Electrification Board
RFQM	Request for Quotation Method
RHD	Roads and Highways Department
STD	Standard tender Document
TEC	Tender Evaluation Committee
TOC	Tender Opening Committee
TSC	Technical Sub-Committee
TSTM	Two-Stage Tendering Method
VFM	Value for Money
WB	World Bank

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“e-GP in Mechanical Wing Procurement in Roads & Highways: An Assessment of Efficiency”

Introduction

Roads and Highways Department (RHD) is responsible for construction and maintenance of the major road network of Bangladesh which includes National highways, Regional highways, District Roads, Bridges, Culverts and Ferries. As a public agency, it follows the public procurement rules for its purchasing of works, goods and services. Since it has a great responsibility for proper utilization of public funds allocated to it, the inefficiencies in the procurement practices of the organization need to be identified and eliminated through proper practices. Mechanical Zone/Wing in RHD has its unique features with unique job responsibilities to assist the overall communication as well as procurement processes in RHD. Mechanical wing is devoted to purchase mechanical equipments, vehicles those support Road construction and Maintenance activities. Moreover, there are Ferries maintained under Mechanical wing which are use for water transportations of goods, vehicles and passengers. Mechanical procurements thus widely vary from the Road Division procurement and there are separate Procurement & Storage divisions under Mechanical Wing. Recently e-Government Procurement (e-GP) is also included in the procurement process. The effectiveness as well as efficiencies of Tendering, e-GP and the whole procurement process may be evaluated through finding out the inefficiencies, loop-holes and taking remedial actions against them.

Background

“Procurement means the purchasing or hiring of goods or acquisition of Goods through purchasing and hiring, and the execution of Works and performance of Services by any contractual means”. (Fineurop-ESCB 2011)

The procurement process in Bangladesh lacked any sound framework in earlier days. So Country Procurement Assessment Report, 2002 (**CPAR**) prepared by World Bank (WB), in agreement with the Government of Bangladesh (GoB), identified several deficiencies in the procurement system of the GoB. Government approved the implementation of the "**Public Procurement Reform Project (PPRP)**" with International Development Agency (IDA) assistance on 14 February, 2002. In 2006, The Public Procurement Act 2006 was passed and to assist and supplement PPA 2006 The Public Procurement Rule 2008 was passed. According to the Act No 24 of 2006—

“An Act to provide for procedures to be followed for ensuring transparency and accountability in the procurement of goods, works or services using public funds and ensuring equitable treatment and free and fair competition among all persons wishing to participate in such procurement including the matters incidental thereto.” (PPA 2006, p. 2)

According to the Act [Section 3 & 4]

- PPA extends to the whole of Bangladesh
- Override other laws: Notwithstanding anything contained in any other law, the provisions of the PPA shall prevail.

Since then, the procurement process in Roads and Highways Department (RHD) under Ministry of Road Transport and Bridges, Government of Bangladesh has followed PPA 2006 and PPR 2008 in procuring goods, works or services. Major portion of the procurement in RHD consists of works, with a few services from consultants and some procurement of goods from suppliers. The public funds used in the procurement process are divided into Development funds and GoB funds. Although following the proper guidelines, there seemed to have wastage and inefficiency and therefore, misuse of these funds and the “value for Money” could not be achieved. The

inefficiency might have been in the procurement process followed by RHD, or it might have been in the internal process in the department, which is yet to be identified. The e-GP guidelines were approved by the Government of the People's Republic of Bangladesh in pursuant to Section 65 of the Public Procurement Act, 2006. As per approved guidelines, e-GP system has been introduced and implemented. The e-GP system has been developed and introduced in two phases. In the first phase, e-Tendering has been introduced on pilot basis in the CPTU and 16 other Procuring Entities (PEs) under 4 (four) sectoral agencies, namely: Bangladesh Water Development Board (BWDB), Local Government Engineering Department (LGED), Roads and Highways Department (RHD) and Rural Electrification Board (REB). As one of the target organizations, RHD is now aiming to achieve 100% e-GP. The Mechanical Zone is responsible for the provision, operation and maintenance of equipment, vehicles and ferries required to undertake the activities of RHD. Mechanical wing started & implemented e-GP in FY2013-14 and in FY2014-15, the procurement of some of the divisions under the wing came under full e-GP. There are various Circles, Divisions & Sub-divisions under Mechanical Zone. Mechanical zone is classified as the following four broad categories:

1. Planning and Ferry Construction
2. Equipment Control and Procurement
3. Mechanical Workshops
4. Mechanical Field Circles

We'll take samples of e-GP from every type of Divisions mentioned above for comparison as well as research.

Problem Statement

Procurement is one of the core activities of Mechanical Procurement of RHD. The rules & regulations regarding procurement is increasing day-by-day because of streamlining the total process to assure quality, value for money (VFM), accountability and transparency. New technologies like e-GP are also being introduced to upgrade the overall process and system. But are they improving the overall scenario? Are they more effective or efficient considering the Public Sector frameworks on

which they are operating? Can e-GP overcome the previous procurement difficulties or problems or is it just acting as a complex tool which is not resolving the problems rather turning itself into a mean to welcome new issues, problems i.e. new inefficiencies? The purpose of the research is to find out the inefficiencies involved in the actual scenario, their causes and finally ways to solve the problems related to inefficiencies.

Research Question

The research questions are:

1. Is there any significant inefficiency found while comparing the engineer's estimates and the contract award value of Mechanical Procurements?
2. What are the reasons behind the inefficiencies along with the parameters?
3. What could be the ways to resolve the inefficiencies?

Broad Objectives

This research will tend to identify the inefficiencies in the electronic procurement process (e-GP) along with the sources of these inefficiencies and will try to find out probable solutions.

Specific Objectives

The specific objectives of this study are:

1. To determine whether there is any inefficiency in the procurement process comparing between engineer's estimates and contract award value.
2. To determine the parameters of these inefficiencies and to find out whether these parameters are significant or not.
3. To suggest probable ways to improve efficiency in the procurement process.

Scopes and Limitations

Only the procurement processes in Mechanical Wing of RHD are considered which excludes Road Division i.e. Civil Engineering related procurements as well as procurements in the special projects within RHD. Comparison with similar organizations like LGED, BWDB and other organizations are not provided which can also be considered as a limitation to the study. There are many types of procurement processes but samples were taken from only those procurements which are executed by Open Tendering Method (OTM) and most importantly the procurements under e-GP is considered ignoring the previous paper-based system. For the purpose of collection of primary data with regard to estimates / tenders, the tender evaluation documents of last two (2) years have been taken. But, it could have been done separately for each different sub-division taking the data for last 5 years so that the trend in inefficiencies could be identified by time-series analysis. E-GP is a new concept for many of the divisions and sub-divisions and therefore it has been implemented very recently. There were some tenders in a few sub-divisions where there was almost no deviation of the award value from the estimated value. It was not tested whether it was due to proficient procurement practices or due to collusions. The parameters of inefficiencies have been identified through qualitative interviews, but the parameters were not statistically tested to find which of those are most significant or which of those are not significant at all.

The summary of scope can be written as follows:

Organization: Roads and Highways Department (RHD)

Wing: Mechanical Zone/Wing

Procurement Process: e-GP

Tendering Method: Open Tendering Method (OTM)

Methodology

A literature review will be performed to develop an understanding about the current status of the procurement practices in Mechanical Zone of Roads and Highways Department (RHD). The Methodology is described as follows:

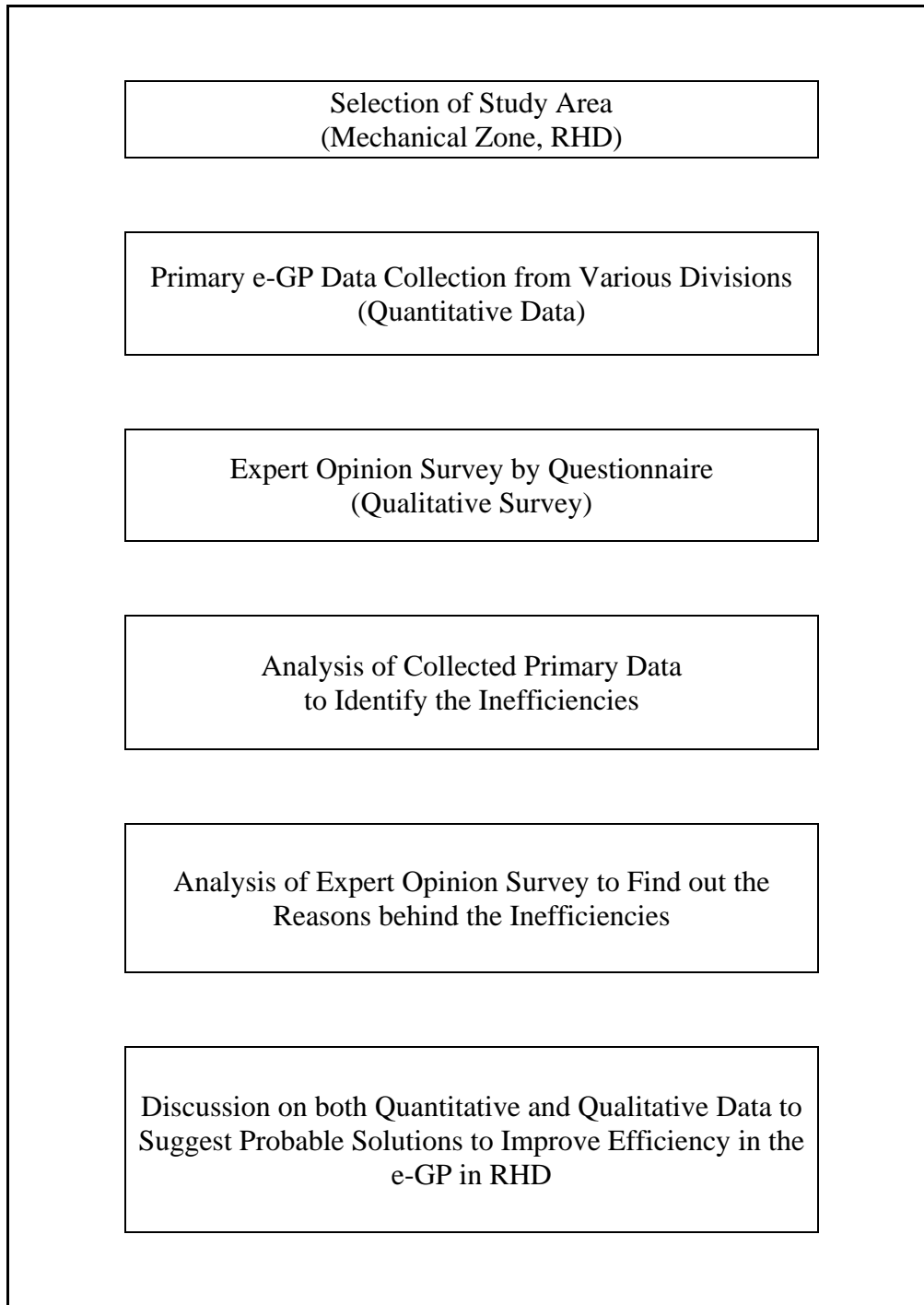


Figure 1.1: Overview of Methodology

Chapter 2: Literature Review

2.1 Introduction

This chapter starts with a brief overview of Mechanical Wing of Roads & Highways Department (RHD) focusing its procurement practices and roles and especially role in e-GP. Various guidelines and literature on procurement rules and laws in both Bangladesh and donor agencies would be reviewed in this chapter to have a generalized concept of the public procurement reform project of Bangladesh and the public procurement laws and rules in practice. It also would study the procurement practices of the donor agencies, especially Asian Development Bank (ADB) for a better understanding of efficient procurement practices.

2.2 RHD Mechanical Wing

RHD is a vital Organization in the Communication network of our Country. It was founded in 1962 and responsible for new construction, repair, maintenance of about 22000 km of road in the Country. For this purpose mechanical support is required most.

2.2.1 Duties & responsibilities of Mechanical Zone in RHD

- Repair & Maintenance of Vehicles, road-construction equipment, machineries, Ferries, Pontoons, Gangways including Propulsion unit with Engines.
- Construction of new Ferries & Pontoon with Gangway.
- Rehabilitation of Ferries & Pontoons.
- Procurement of Vehicles, Construction Equipment & Machineries, Ferry Engines & its spares (Foreign & Local).
- Feeding construction equipment and machinery to different Road Divisions as per requirement.
- Feeding the construction equipment and machinery to the Private Party on hire basis & collection of revenue.

- Disposal of unserviceable Equipment , Vehicle, Ferry, Pontoon, Baily Bridge & other steel materials etc.

All these duties & responsibilities of Mechanical Zone are performed under the supervision of one Additional Chief Engineer (Mechanical). Besides there are 10 Superintending Engineer, 18 Executive Engineer, 21 Sub-divisional Engineers throughout the country. Mechanical Zone performs in the following way:

- There are 3 types of RHD Mechanical Workshops :-
 - (a) 1st line workshops =37 Nos. (Under Civil Road Division)
 - (b) 2nd line workshops = 4 Nos. (Mymensingh, Feni, Rangamati, Rajshahi)
 - (C) 3rd line workshops = 3 Nos. (Dhaka, Chittagong, Santahar)
- Ferry Division = 7 Nos. (Ferry Maintenance Dhaka, Ferry Construction Dhaka, Ferry Division Sylhet, Barishal, Khulna, Bogra, Patuakhali)
- Procurement & Storage Division = 2 Nos. (Dhaka, Chittagong)
- Equipment Control Division = 2 Nos. (Dhaka, Bogra)

Total = 18 Mech. Divisions (under Mechanical Zone)

2.2.1 Duties Vehicle & Equipment Fleet

A large fleet of approximately 2588 nos. of inspection vehicle & equipment are maintained and managed by the Mechanical Zone. Out of which approx. 1407 are Inspection Vehicles (including Project) which comprises Car, Jeep, Pickup, Microbus & Motor Cycle etc.

Road construction Equipment Comprise mainly:

- 3- wheeled steel Road Roller (generally 8 tons dead weight without ballast, 10-12 tons with ballast), 2- wheeled Tandem Roller (ordinarily having 2 rollers of the same dia. behind each other on the same track), Pneumatic (Rubber) Tyre Rollers, sheep-foot Roller-all are being dead weight models, used for compaction.
- Soil Compactors- being vibratory model, also used for compaction,

- Motor Grader- it is provided with a blade which can be adjusted at any angle to cut or spread the soil. It is used for leveling soil, cutting slopes of banks etc.
- Water Tanker, Flat bed Truck, Dump Truck, Crawler/Tyre Dozer, Chain Tractor, Wheeled loader, Excavator, Crane, Bitumen distributor, Mini asphalt Plant, Wrecker etc.

2.2.2 Role of Inspection vehicle & Mechanical Plant

Inspection vehicles are used for Monitoring & Inspecting of the road works & Ferry Services. Mechanical plants are mainly used for:

- Compaction of Earth work.
- Consolidation of pavements including road surface during construction.
- Cutting & Carrying the earth to the road side.
- Mixing the Bitumen as per required ratio within the construction materials & spreading in to the road.

2.2.3 Role of 1st line, 2nd line & 3rd line workshop

1st line workshops are responsible for Routine and preventive maintenance of construction Equipment and Vehicles. The following activities are performed by 1st line Workshop:

- Petty repair works
- Engine servicing
- Washing
- Tyre & battery checking and replacement
- Electrical works
- servicing of Transmission System

2nd line workshops are responsible for Break-down maintenance of construction Equipment and Inspection Vehicles. In addition to 1st line W/S facilities, it includes:

- Engine overhauling
- Transmission system overhauling
- Major repair works

3rd line workshops are responsible for Break-down maintenance of special repair of construction machinery and vehicles. In addition to 1st & 2nd line W/S facilities, it includes:

- Machining works
- Moulding works
- Fule pump works

2.2.4 Role of Ferry

Bangladesh is riverine country for which whenever a road Project is completed it could not be immediately put into service because of the river gap if any. In that circumstances Ferry service is introduced for immediate traffic movement and is continued till construction of Bridge.

Ferry Fleet of RHD

In RHD presently there are 57 (Fifty Seven) running Ferry ghats, 12 new Ferry ghats approved for ferry services & 30 new ferry ghats proposed for approval.

Large number of utility Ferries is running in the RHD to Connect the gap of road network as well as pontoons also.

Now only utility ferries are running the different Ferry ghats they are:-

<u>Type</u>	<u>Nos.</u>	<u>Capacity</u>
1. Utility (UT)-1 (Improved)-biggest	= 06	12 Trucks
2. Utility (UT)-1	=34	9 "
3. Utility (UT)-2 (Imp)	=64	4 " + 2 Cars
4. Utility (UT)-2	=28	4 "
5. Utility (UT)-3 or Upa –Zilla Ferry	=8	2 " + 2 Cars
Total Ferry =	140	
6. There are 4 types of Pontoons :-		
(I) Pontoons Improved (PI)	164	
(II) Pontoons Modified (PM)	1	
(III) Pontoons Old (PO)	3	
(IV) Pontoons Upazilla (PU)	5	
Total Pontoon =	173	

2.2.5 Ferry Construction

The Construction of different type of Ferries, pontoons, Gangways and its re-habilitation works are undertaken by Ferry Construction Division under Ferry Planning Circle, Dhaka.

2.2.6 Ferry Maintenance

The maintenance works of different Ferries, pontoons, Gangways, Engines & Propulsion Unit are done by the 7(seven) Ferry Divisions and 7(seven) workshop Division throughout the Country.

Operation of the Ferry

The operation of the Ferry Includes Supplying of Diesel, Petrol, Oil & Lubricant (DPOL), collecting tolls and deploying necessary operating staffs are the responsibility of the respective Road Divisions. The operating staff like, driver greaser, khalasi etc. of the Ferry are the staffs of Road Division. Ferries & pontoons are allocated to the respective Road Division which is responsible of security safety of the Ferry & pontoons . The respective road Division select lessee for toll Collection & Supply DPOL.

2.2.7 Equipment Control Division

- Update regularly the inventory of Inspection vehicle, equipment.
- Preparing survey report of old and unserviceable equipment, machinery, ferries, pontoon, inspection vehicle, Baily Bridge & other steel materials.
- Feeding construction equipment and machinery to different Road division for departmental work.
- Feeding construction equipment and machinery to different contractors on hire.
- Revenue Collection from the contractors & other clients.

2.2.8 Procurement & Storage Division :

- Foreign and local Procurement of Inspection Vehicles, equipment, Ferry Engine, Propulsion Unit & its spare parts including clearing the same from port.
- Receipt, Storage & Distribution of procured items as described in above.
- Inventory management.

2.3 Background of Procurement and PPR

In 1999, World Bank (WB) and Asian Development Bank (ADB) conducted joint review of the country portfolio performance and prepared an action plan for Government of Bangladesh (GoB) on public procurement. Country Procurement Assessment Report (CPAR), 2002 prepared by WB, in agreement with the GoB, identified several deficiencies in the procurement system of the GoB:

- Absence of sound legal framework governing public sector procurement
- Complex bureaucratic procedure causing delay
- Lack of adequate professional competence of staff to manage public procurement
- Generally poor quality bidding documents and bid evaluation
- Ineffective administration of contracts
- Absence of adequate mechanism for ensuring transparency and accountability

In this key recommendations of CPAR to GoB were:

- Set up a Public Procurement Policy Unit
- Issue Public Procurement Rules
- Streamline Proc. Process & Financial Delegation
- Develop Procurement Management Capacity
- Publish Contract Awards
- Introduce Appeal Procedures

Elements of Reform were:

- Establishing Procurement Policy Unit (CPTU)

- Implementing Reforms/ Rules
- Improving Procurement Management Capacity

2.3.1 Principal Role of Central Procurement Technical Unit (CPTU)

Central Procurement Technical Unit (CPTU) established by the Internal Monitoring and Evaluation Department (IMED) of the Ministry of Planning, for carrying out the purposes of the Act & the Rules. – (PPA 2006 Section 67)

CPTU performs the following responsibilities:

- Monitoring compliance with and implementation of this Act
- Arranging the performance evaluation of necessary functions and responsibilities incidental thereto
- Performing any other responsibilities

2.3.2 Procurement Planning

Procuring Entity (PE) prepares annual Procurement Plan for Revenue Budget at the beginning of each Fiscal Year (FY) and updates the Procurement Plan for Development Project at the beginning of each FY. Updated annual Procurement Plan and Annual Procurement Plan require approval of Head of Procuring Entity (HOPE) or Approving Officer (AO). Preparation of Procurement Planning (PP) shall be mandatory for all Procuring Entities (PE) and should aim at attracting maximum competition for the benefits of the PE. Considering the nature & size of the Procurement, PE decides Splitting/Assembling packages and applicability of the Procurement methods. For Goods & related Services, Works & Physical Services, the methods are—

- Open Tendering Method (OTM)
- Limited Tendering Method (LTM)
- Two-Stage Tendering Method (TSTM)
- Request for Quotation Method (RFQM)
- Direct Procurement Method (DPM)
- One Stage Two Envelope Tendering Method (OSTETM)

For Intellectual & Professional Services there are Quality and Cost Based Service (QCBS) and other methods.

PE arranges to publish the Procurement Plans on their notice boards, and where applicable in their websites & in the websites of the concerned department or directorate or organisations, bulletins and reports. PE shall, for its own purposes, updates the Procurement Plan on a quarterly basis to accommodate delays, re-tendering & other unforeseen changes or constraints. PE keeps CPTU posted online or off-line, if online is not possible, with the Procurement Plans, above the threshold specified in Schedule II (G/W-10 M,S/Phy.S-Tk.5 M), which shall be published on a regular basis in CPTU's website as well. PE shall not generally split a Project component with the intention of avoiding either method or the approval of a higher authority.

2.3.2.1 Determining Package Size

From large packages, there are—

- Benefits from economies of scale
- Management aspects (PE's capacity to manage the whole project)
- Risk aspect (where failure of a sub-supplier may unduly affect critical path)
- Benefits from participation of large international tenderers

From small packages, there are—

- Time element (Procurement items are needed at different times)
- More efficiency and effectiveness in most cases
- Business structure (Some goods or services are not available from a single source)
- Administrative costs of tendering

Considering pros and cons of large and small package size, PE will determine suitable package size for Tender. PE shall not usually split a package into more than five (5) lots for keeping cross-discounts application simple.

2.3.2.2 Seven Key Steps in preparing the Procurement Plan

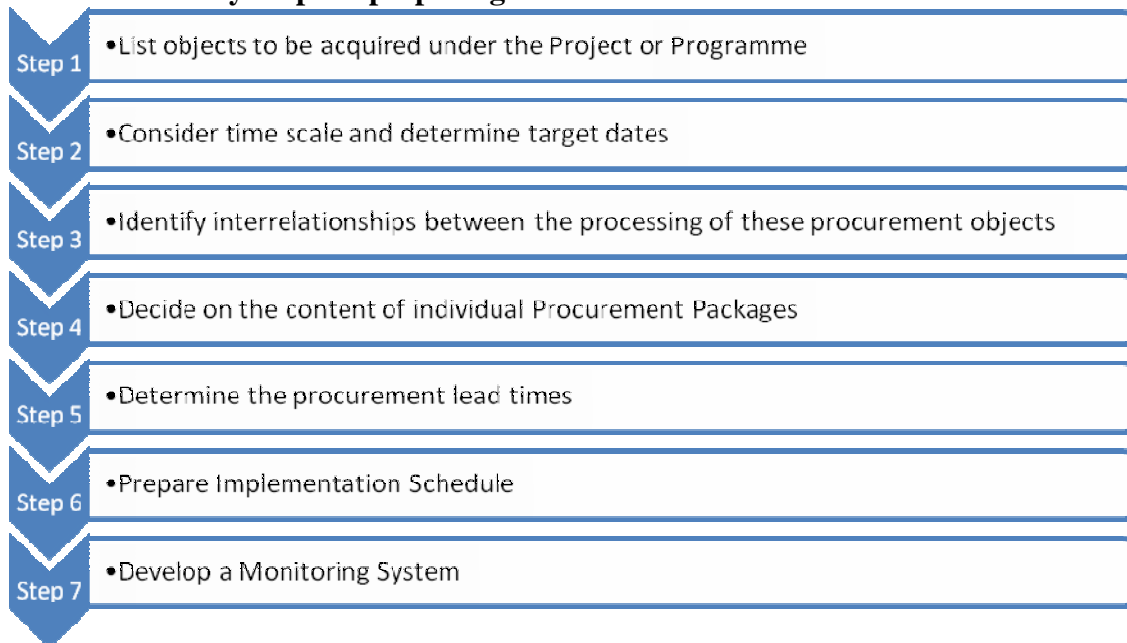


Figure 2.1: Key steps of procurement planning

2.3.3 Public Procurement Committees

- Tender Opening Committee (TOC)/Proposal Opening Committee (POC)
- Tender Evaluation Committee (TEC)/Proposal Evaluation Committee (PEC)
- Technical Sub-Committee (TSC) (Fineurope-ESCB 2011)

2.3.4 Approval Process

There are **three distinct streams of approval** (Fineurop-ESCB 2011)

Approval Stream 1	MINISTRY→DIVISION→DEPARTMENT→DIRECTORATE; Approving Authorities are HOPE (CEO, Secretary), Project Director (PD), Project Manager (PM), Approving Officer (AO), Ministry, Cabinet Committee for Government Purchase (CCGP).
Approval Stream 2	CORPORATION, AUTONOMOUS BODY, SEMI-AUTONOMOUS BODY
Approval Stream 3	COMPANIES

Table 2.1: Approval process

The approval process for Ministry→Division→Department→Directorate chain procurement is shown in the figure below

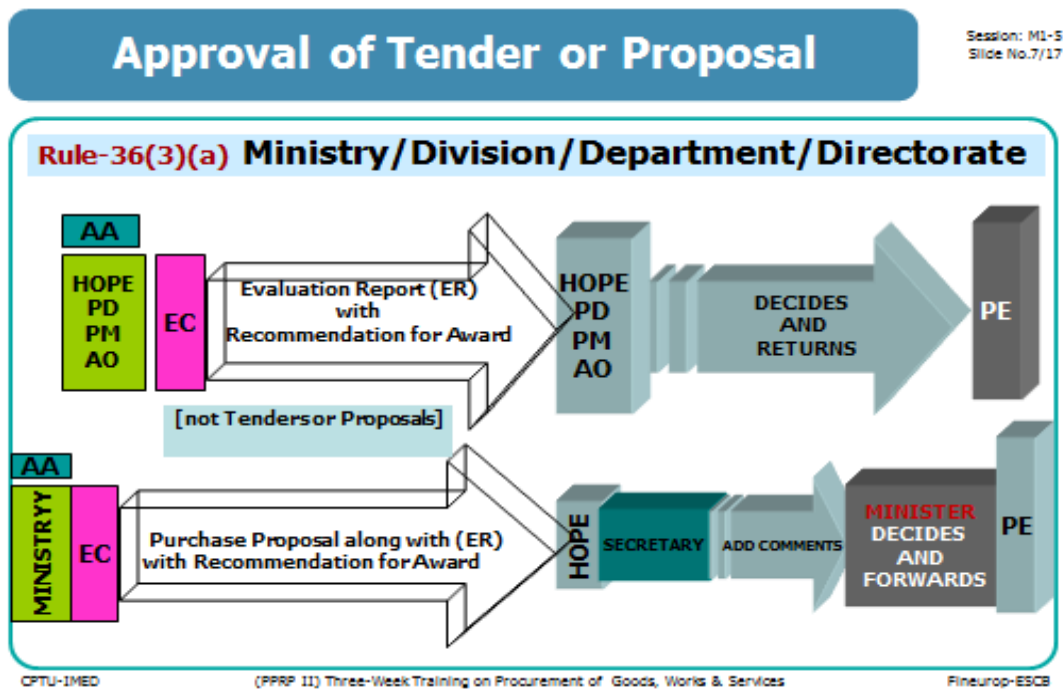


Figure 2.2: Approval of Tender or proposal where Approving Authority (AA) is HOPE or Ministry

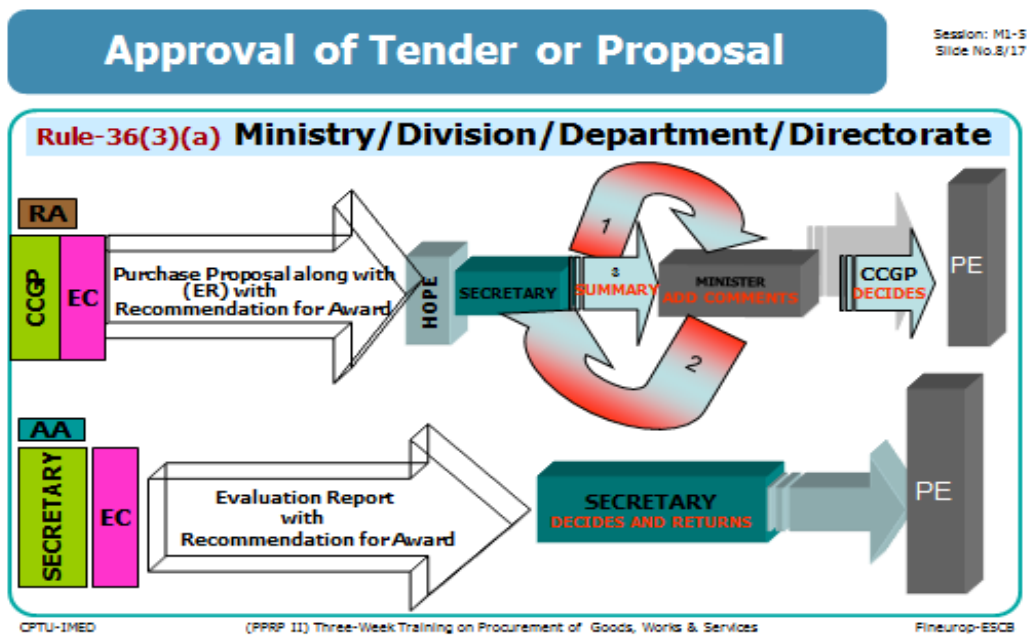


Figure 2.3: Approval of Tender or proposal where AA is Central Committee on Government Purchase (CCGP)

Upon receipt of approval, PE issues Notification of Award (NOA) within 7 working days but before the validity period provided that no complaint or appeal is pending.

Pre-qualification is crucial to submission of Tenders with necessary experience & financial and technical capabilities to undertake the works. Pre-qualification Protects PEs from Tenders submitted by unqualified Tenderers expedites PE's task of evaluating Tenders by limiting Invitation to Tenders to capable Tenderers only, provides an indication of whether there are adequate number of Tenderers and it saves unqualified applicants from the costs of tendering. But Pre-qualification does not waive Post-qualification.

2.3.5 Performance Management

Definition of Performance will depend upon what the system rewards (Fineurop-ESCB 2011, session M2-2)

- Compliance – adherence to rules
- Results – achieving specified objectives

Good practices for managing for results are as follows:

- Linked to the objective of the specific effort
- Few in number
- Feasible
- Understandable
- Clear and explicit targets set that can be obtained but are not a challenge
- Can be measured at reasonable cost

2.3.5.1 Possible elements to monitor

Indicator Types (Fineurop-ESCB 2011)

- Base-line Indicators (BLIs)--Based on review of existing Regulatory Framework
- Compliance Performance Indicators (CPIs)- Relies on data obtained from representative samples of contract's information
-

Elements	KPI
-----------------	------------

Transactions	Percentage of contracts competitively tendered.
Procurement Outputs	Volume of procurement Percentage of Contract within initial Tender validity
Procurement Outcomes	Completed and accepted Contracts

Table 2.2: Elements of monitoring (Fineurop-ESCB 2011)

CPTU has developed a dynamic Public Procurement Web Portal and Computerized real-time Procurement Management Information System (PROMIS) to monitor and enforce compliance of Procurement ACT, Public Procurement Rules. Bangladesh Water Development Board (BWDB), RHD, LGED and Rural Electrification Board (REB) have been selected to pilot the initial MIS system. (Fineurop-ESCB 2011)

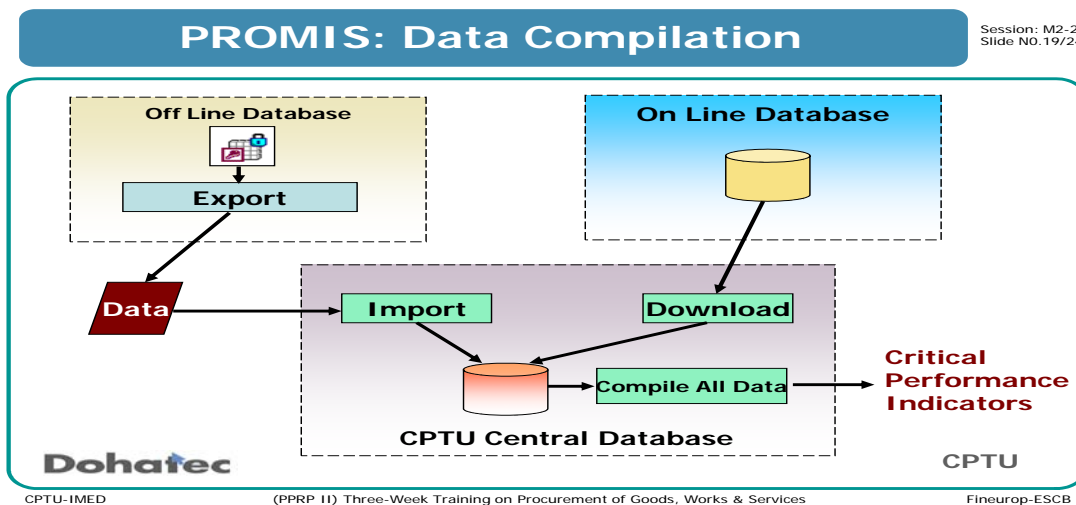


Figure 2.4: PROMIS

2.3.6 Contract

“A contract is an agreement, enforceable by law, between a willing buyer and a willing seller”. (Fineurop-ESCB 2011)

Valid Offers and Acceptance are precedents to formation of a Contract, which in terms are Tender and Notification of Award (NOA) and the rules are clearly laid out in PPA 2006, PPR 2008 and Standard Tender Documents (STDs).

International Practices

- Quantities or Unit Rate / Price
- Lump Sum
- Cost (Reimbursable) Plus Fee
- Supply and Erect / Install
- Design & Construct / Build
- Turnkey
- Concessionary Type Management Contracts (BOO, BOT, BOOT, etc)
- Bill of Quantities(ad-measurement) or Unit Rate / Price
- Framework Contract

Exceptional Practices

Direct Contract (usually unwritten). It has two following forms:

- Direct Cash Purchase (For low value Goods and urgent and essential services)
- Force Account (for hiring of direct labour for departmental needs)

2.3.6.1 Contract Award Criteria

The Procuring Entity shall award the Contract –

- Responsive to the Tender Document
- Lowest evaluated Tender
- Determined to be Post-Qualified

The Procuring Entity preserves the right to vary quantities without any change in the unit prices or other terms –

- Increase/decrease the quantity per item
- Not Exceed the percentage

Performance Security

In National Contracts –

- Bank Draft
- Pay Order
- Bank Guarantee

In International contract –

- Only in the form of Bank Guarantee
- Issued by an internationally reputable bank

- Correspondent bank in Bangladesh

Amount of Performance Security

- 10% for Goods
- 5% for divisible commodities
- 5% to 10% for physical Services
- Validity of PS is 28 days beyond date of completion (including Warranty)

2.3.6.2 Tender Evaluation

Evaluation of Tender(s) for works is one segment in the process of selecting contractor(s) at the economic price from the participating Tenderer(s) in transparent manner with due accountability ensuring fair competition, having adequate capacity to perform the intended Contract under set terms and conditions.

Principles of Evaluation

General

- Expertise and skills of TEC
- Well defined functions of TEC
- Team coherence and awareness

Clarifications

- Ambiguities or inconsistencies
- No change in price or scope acceptable
- Correction of arithmetical errors
- Not directed towards creating undue opportunities for Tenderer

Communication

- No engagement in meetings or conversation: exceptions are COMPLAINTS
- Unsolicited queries
- Acknowledge receipt but no further correspondence criteria
- Pre-disclosed criteria and methodology for its application
- Confidentiality
- Process remains confidential

Committee

- Minimum qualified members as specified participating in evaluation

Timescale

- By the time that contract awarded within the Tender validity

Examination of Tenders

According to ITT-50, the main steps are –

- Preliminary examination
- Technical examination and responsiveness
- Financial evaluation and Price comparison
- Negotiations, if necessary
- Post-qualification

TEC shall recommend Lowest Evaluated Tender Price *PLUS* Provisional Sums, if any, which together comprises the CONTRACT PRICE. PE may increase the level of Performance Security not exceeding 25 per cent of the Contract price to offset additional risks on account of “*unbalanced price*” or “*front loaded*” based on recommendations of TEC. (Fineurop-ESCB 2011)

Processing & Approval (weeks is number)

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Slide NO.37/37

AA	TSC	TEC/PEC	PD/PM/AO/HOPE	BoD	Ministry	CCGP	Total	
PD/PM/AO	2	2	1-appvl 1-NOA	NA	NA	NA	4	6
HOPE	2	3	2-appvl 1-NOA	NA	NA	NA	6	8
BoD	3	3	2-sctny & obsn by CEO 1-NOA	2-appvl Board	NA	NA	8	11
Ministry/Minister	3	3	2-sctny & obsn by HOPE 1-NOA	2-rcdn by Secy.	1-appvl by Minister	NA	9	12
CCGP (a) Simple	3	3	2-scrutiny & obsn by HOPE 1-NOA	3-sctny & obsn by Secy	1-recdh. by Minister	As required Decision before Tender validity period	10+	13+
(b) Complex	4	4	2-scrutiny and observation 1-NOA	3-sctny & obsn by Secy	1-recdh. by Minister	As required Decision before Tender validity period	11+	15+

Figure 2.5: Allowable time for Processing and Approval

2.3.7 Procurement Practices by Major Development Partners

(Fineurop-ESCB 2011)

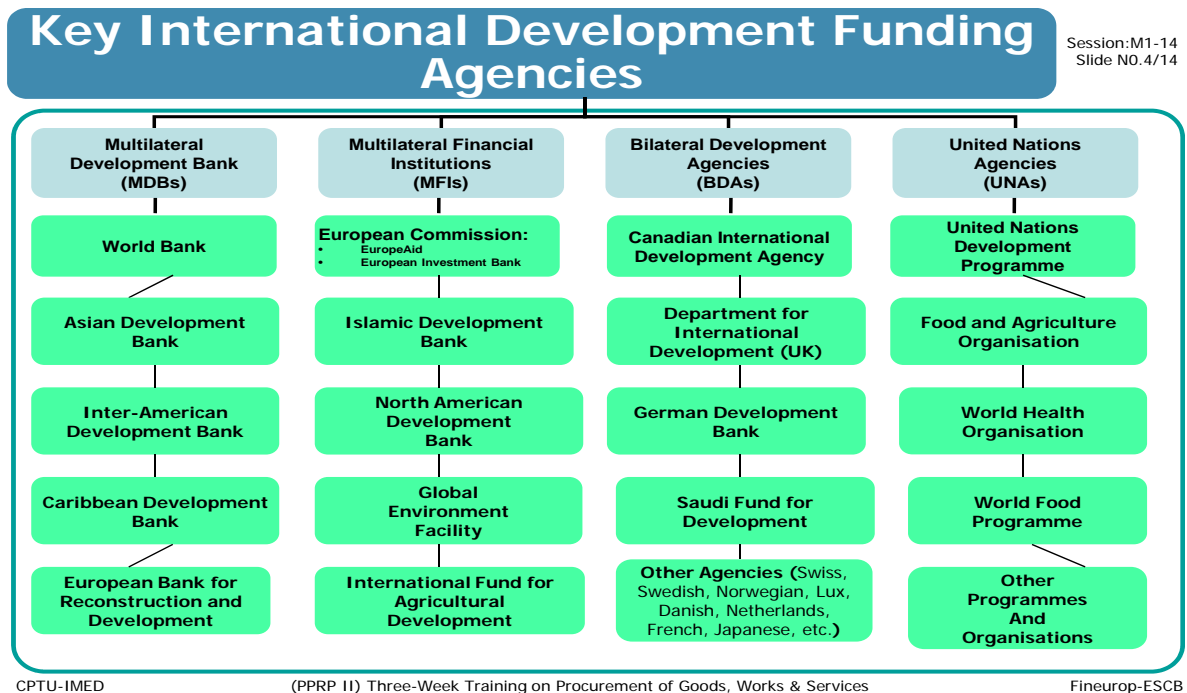


Figure 2.6: Key International Development Funding Agencies

2.3.8 ADB Guidelines for International Competitive Bidding

The objective of International Competitive Bidding (ICB), as described in these Guidelines, is to provide all eligible prospective bidders with timely and adequate notification of a borrower's requirements and an equal opportunity to bid for the required goods and works. (ADB Guidelines 2010, p.10)

The document provides clear guidelines for—

2.3.8.1 Type and Size of Contracts

The bidding documents shall clearly state the type of contract to be entered into and contain the proposed contract provisions appropriate therefore. The most common types of contracts provide for payments on the basis of a lump sum or unit prices, or combinations thereof.

2.3.8.2 Two-Stage Bidding

In the case of turnkey contracts or contracts for large complex facilities or works of a special nature or complex information and communication technology, it may be undesirable or impractical to prepare complete technical specifications in advance. In such a case, a two-stage bidding procedure may be used, under which un-priced technical proposals are invited first. These are prepared on the basis of a conceptual design or performance specification, and are subject to technical as well as commercial clarifications and adjustments. The first stage technical proposal clarification is to be followed by issuance of amended bidding documents and the submission of final technical proposals and priced bids in the second stage. (ADB Guidelines 2010, p.11)

2.3.8.3 Notification and Awarding

Timely notification of bidding opportunities is essential in competitive bidding. For projects that include ICB the borrower is required to prepare and submit to ADB a draft general procurement notice. ADB will arrange for its publication. The notice shall contain information concerning the borrower (or prospective borrower), amount and purpose of the loan, scope of procurement under ICB, and the name, telephone number, email address (or fax number) and address of the borrower's agency responsible for procurement and the address of the website where specific procurement notices will be posted. (ADB Guidelines 2010, p.12)

2.3.8.4 Prequalification of Bidders

Prequalification may be necessary for large or complex works, or in any other circumstances in which the high costs of preparing detailed bids could discourage competition, such as custom-designed equipment, industrial plant, specialized services, some complex information and technology contracts and contracts to be let under turnkey, design and build, or management contracting. This also ensures that invitations to bid are extended only to those who have adequate capabilities and resources. Prequalification shall be based entirely upon the capability and resources of prospective bidders to perform the particular contract satisfactorily, taking into account their (a) experience and past performance on similar contracts, (b) capabilities with respect to

construction or manufacturing facilities, and (c) financial position. Generally, a minimum period of six weeks shall be allowed for the submission of prequalification applications. There shall be no limits on the number of bidders to be prequalified, and all found capable of performing the work satisfactorily in accordance with the approved prequalification criteria shall be prequalified and invited to submit bids. As soon as prequalification is completed the bidding documents shall be made available to the prequalified prospective bidders. (ADB Guidelines 2010, p.13)

2.3.8.5 Bidding Documents

It is essential that the bidding documents provide all the information necessary for bidders to prepare responsive bids. They shall normally include the following: invitation for bids; instructions to bidders; bidding forms; conditions of contract, both general and special; technical specifications; bill of quantities and drawings; schedule of prices; and necessary appendixes, pro-forma bid securities and performance securities. Borrowers shall use the appropriate Standard Bidding Documents (SBDs) issued by ADB with minimum changes, acceptable to ADB, as necessary to address project specific conditions. Any such changes shall be introduced only through bid or contract data sheets, or through special conditions of contract, and not by introducing changes in the standard wording of ADB's SBDs. (ADB Guidelines 2010, p.14)

2.4 E-GP in Bangladesh

The e-GP guidelines were approved by the Government of the People's Republic of Bangladesh in pursuant to Section 65 of the Public Procurement Act, 2006. As per approved guidelines, e-GP system has been introduced and implemented. The e-GP system has been developed and introduced in two phases:

- **e-Tendering System:** Covering complete eTendering processes such as centralized user registration, preparation of Annual Procurement Plan (APP), preparation of Bid\Tender document, preparation of Bids/Tenders, invitation of Tenders, sale of Tender Documents (eTD), conducting online pre-bid meeting, collection of bid\Tender security, on-line Bid\Tender submission, Bid opening & evaluation, negotiations (where applicable), and contract awards.

- **e-Contract Management System (e-CMS):** Covering complete eContract Management processes, such as preparation of work plan and its submission, defining milestone, tracking and monitoring progress, generating reports, performing quality checks, generating running bills, vendor rating and generating completion certificate.

National e-Government Procurement (e-GP) portal (<http://eprocure.gov.bd>) of the Government of the People's Republic of Bangladesh is developed, owned and being operated by the Central Procurement Technical Unit (CPTU), IME Division of Ministry of Planning. The e-GP system provides an on-line platform to carry out the procurement activities by the Public Agencies - Procuring Agencies (PAs) and Procuring Entities (PEs).

The e-GP system is a single web portal from where and through which PAs and PEs will be able to perform their procurement related activities using a dedicated secured web based dashboard. The e-GP system is hosted in e-GP Data Center at CPTU, and the e-GP web portal is accessible by the PAs and PEs through internet for their use.

This complete e-GP solution introduced under the Public Procurement Reform (PPR) Program is being supported by the World Bank and gradually used by all government organizations. This online platform also helps them ensuring equal access to the Bidders/Tenderers and also ensuring efficiency, transparency and accountability in the public procurement process in Bangladesh.

All the stakeholders, including Bidders/Tenderers / Applicants / Consultants (National and International), PEs, procurement related Committees, payment service providers, Development Partners (DPs), media, Operation, Maintenance and Management Entity (OMME), e-GP system administrators, auditors and general public are getting access to e-GP system and information as per the Terms and Conditions and Disclaimer and Privacy Policy.

The e-GP system shall be used by all concerned, for procurement of goods, works and services using public fund, following the 'Government Procurement (e-GP) Guidelines'

prepared under the provision of Section 67 of the PPA -2006 and Rule 128 of PPR-2008 and issued.

2.4.1 E-GP Modules and Functionalities

The e-GP System Comprises of following key Modules/Functionalities:

1. Centralized Registration System

(Contractors/Applicants/Consultants, Procuring Entities and other actors of e-GP)

- Centralized Tenderer /Consultant registration
- Procuring Entity (PE) registration
- Media Registration
- Payment service providers registration
- Development partners registration

2. e-Tendering (e-Publishing/e-Advertisement, e-Lodgment, e-Evaluation, e-Contract award) System

- Annual Procurement Planning (APP) preparation and publishing
- Standard Tender Document (STD) Library
- Preparation and publishing Invitation to Tender
- Preparation and publishing Tender Document
- Online Pre-Tender Meeting
- Publishing Tender Corrigendum / Addendum / Amendment
- Online Tender / Application / Proposal preparation by Tenderers / Applicants / Consultants
- Online Tender Submission / Tender Substitution / Tender Withdrawal
- Online Tender Opening
- Online Tender Evaluation by Technical Committees
- Post Qualification
- Online Negotiations
- Issuance of Notice of Award (NOA)/ LOI
- Online Contracts

3. **Procurement Management Information System (PROMIS)**
 - Compliance monitoring through key procurement performance indicators
 - MIS reports
4. **Workflow management System**
5. **e-Contract Management System (e-CMS)**
 - Work Plan Submission
 - Progress Report generation, submission / acceptance
 - Defining Payment Milestones
 - Running Bill Payment Processing
 - Variation Order / Repeat Order
 - Quality certification
 - Work Completion Certificate
 - Final Payment
 - Supplier Rating
 - Complaint and resolution database
6. **e-Payment System**
 - Registration Fee, Tender document purchase fee, and other services fee Collection
 - Receive Tender Security and performance security submission
 - Transactions for security release and forfeiture handling
7. **System and Security Administration**
 - E-Signature (Generation of Hash/Signature)
 - PKI based digital signature
 - Bid Encryption/ Bid Decryption
 - 128 Bit SSL
8. **Handling Errors and Exceptions**
9. **Application Usability & Help**

- Integrated Inbox / Message Box
- Integrated e-Mail / SMS Gateway
- Dashboards for Procurement Performance Monitoring
- Manuals for all users
- Help desk support

2.4.2 Benefits of e-GP

Benefits of e-GP are enhanced transparency & compliance, increased performance & quality and economic development. The benefits and impacts are mentioned here under some sub-heads:

Development Impact

- Breaking down the physical barriers of space and time, e-GP allows a more transparent and efficient information flow as well as improved access to information and services. Beneficiaries include not only governments and suppliers but also the public at large in having access to transparent information on the public expenditure of taxpayers' money.
- E-GP facilitates higher quality outcomes for public procurement through improved accessibility and interoperability, which enable:
 - ✓ greater business access and competition for government expenditure (creating commercial benefits for business and price and quality gains for government);
 - ✓ integration and automation of many workflow processes for transactions and other supply chain management activities improving efficiency and reducing processing costs; and
 - ✓ greater and easier access to real time and historic information for management and audit (enabling higher quality decision making and planning as well as greater transparency and accountability).
- The implementation of e-GP offers the opportunity of adding value to the relationship between government buyers and private businesses. An effective e-GP program can deliver a broad range of benefits to taxpayers, the economy and the community generally. Online technology provides the potential to

significantly reform the accountabilities and performance of public procurement systems.

Enhanced Transparency & Compliance

- At an early stage, e-GP can provide access to a whole range of public procurement information at low cost and independently of time and location. Governments achieve a high level of transparency if they use the Internet for the free disclosure and distribution of public procurement information. Such information typically include the relevant legislation, policies and guidelines, procurement plans and notices, bidding documents, minutes of procurement activities, and contract award results. In reducing the asymmetry of public procurement information, e-GP contributes to increasing the competition in terms of quantity (participation) and quality (openness and fairness).
- The application of online technologies can ensure compliance with the existing procurement policy and legislation. An e-GP system can automate the required procurement procedures thus allowing neither purchasing agencies nor bidders to deviate from the public procurement process. In this way, e-GP helps governments to reduce the opportunities for corruptive practices.
- While enhanced compliance contributes to avoiding corruption and fraud, the transparency of real-time procurement information allows the early detection of corruptive and fraudulent activities. In addition, e-GP contributes to reducing corruption and fraud by conducting the procurement process online and collecting all procurement data into a securely operated electronic system. Consequently, in-person contacts between purchasing agencies and bidders are no longer required, the risk of manipulating procurement information and documents can be minimized, and the availability and completeness of public procurement audit trails can be improved.

Increased Performance & Quality

- The benefits of online technology for the efficiency and effectiveness of government operations reflect the impact of e-GP on the cost of transactions and value-for-money outcomes. Typically, countries report efficiency gains

from 10 to 20 % of the total volume procured through electronic means resulting from the reduction of transaction costs and prices.

- The potential impact of e-GP on the cost of transactions is linked to savings that are related only to workflow and include significant savings in time due to the automation of the procurement procedures for both sides - purchasers and bidders. The fact that bidders do not have to travel any more to submit a bid in paper, does not only prevent physical attacks on bidders on their way to submit the paper bid, but also saves bidders a lot of time. Transaction costs of the public procurement process drop considerably by using the less expensive Internet rather than print media as public procurement information channel and reducing paperwork in general.
- Price reductions can be achieved as a result of three intrinsic e-GP features: price transparency, stimulation of competition, and innovative public procurement procedures. Price transparency by disclosing contract award results online has reportedly avoided the conclusion of overpriced public contracts and contributed to adjusting prices for goods, works, or services in line with true market price levels. The online publication of procurement notices provides an effective tool to reach out to private businesses in the market thus increasing the participation in public procurement. To this end, increased competition contributes to reducing the prices paid by the government. Innovative approaches in the area of public procurement include the managed aggregation of demand and electronic reverse auctions, when lower prices can be attributed to aggregated purchases and to online negotiation respectively.
- In addition to the measurable outcomes, e-GP can be expected to provide significant but less quantifiable benefits through greatly improved management information and analysis. Currently, most large government organizations will have only limited insights into the wealth of public procurement information scattered around in multiple data formats and different archives and places. The application of digital technology for procurement information disclosure and transactions lays the foundation for

the collection of those data, which provide the basis for performance measuring and monitoring. Besides the safekeeping of public procurement information and data, e-GP ensures a much higher quality of public procurement reporting and decision-making.

Economic Development

- The level of transparency, compliance, performance, and quality of public procurement due to the application of e-GP can achieve a dimension, which does not only provide for the development of a public procurement system that meets internationally recognized standards but also establishes the basis for a sound market economy with significant gains in productivity and competitiveness.
- The efficiency gains due to the application of e-GP can have a clear economic impact. The total public procurement volume of a national economy typically counts for 10 to 20% of the GDP. Procuring only 10% of all public purchases through electronic means with a moderate 10% in price and cost reductions would result in total annual savings equal to one percent of the GDP.
- With government accounting for a substantial proportion of the economy, the speed of take-up of technology by the economy will be significantly influenced by the rate of government adoption. To this end, e-GP catalyzes e-commerce and encourages the participation of small and medium enterprises, promotes the use of modern technology and the implementation of a national technological infrastructure, and supports the development of appropriate capacity and skills with the overall objective of economic growth and development.

2.4.3 Challenges of e-GP

The main implementation challenges are:

- The complexities and risks of e-GP program implementation are frequently misunderstood. Effective e-GP implies that changes occur across areas of personnel and executive behavior, skills, regulations and legislation, operational policies, and business behavior. Few, if any, of these changes will occur simply through the acquisition of some hardware and software, and if

this is the understanding and intended starting point to e-GP then jurisdictions may find that the funds might better be spent on other priorities.

- The full benefits resulting from e-GP adoption will only be realized through significant changes in the organization of public procurement operations and as such will require effective change management and excellent leadership bringing about collective commitment across government constituents and partnership with the business community. In the absence of such change management and leadership, the outcome may be at a net cost with technologies operating alongside or simply replicating traditional operational methods.
- Rather than being a technological add-on to an already complex environment, e-GP needs to be understood as a tool to reform public procurement underpinned by an appropriate policy and legal framework, effective buyer and supplier activation including strong awareness and capacity building programs, technological infrastructure development, established standards, and sustainable operational e-GP applications.
- Only if governments understand the potential benefits of e-GP and demonstrate professional leadership and political will in managing the e-GP program adoption as an integral part of reforming their public procurement systems, they will be able to tap the full potential of e-GP and move forward their development agenda on the basis of increased public procurement governance and performance standards.

2.4.4 Practical Issues facing worldwide

The following questions reflect some major issues which the e-GP Working Group Banks has been repeatedly faced with when assisting countries in introducing the use of electronic means in public procurement:

Does e-GP really improve governance and reduce corruption?

There are multiple examples where the use of electronic means for public procurement reduced the opportunity of corruptive, fraudulent, collusive, and even coercive practices. Bad practices such as attacking bidders on their way to the bid submission, manipulating access to procurement notices, submitting overpriced bids, bypassing mandatory public

procurement procedures, colluding with competitors, or bribing public procurement officials can be prevented by using e-GP systems. However, e-GP is not a guarantor for improved governance and reduced corruption. Strong political will, leadership, and management are required in order to design and implement appropriate e-GP systems which ensure a maximum of transparency and compliance. Interestingly, a recent study² on the introduction of e-GP in 14 countries showed that, in most cases, there is “little penetration of procurement technologies back into the management systems” thus missing the opportunity “to support good monitoring of procurement performance and compliance, market trends, and planning future government procurement”.

Does e-GP really save money?

The same study found efficiency gains such as reduced costs and time among the key benefits of e-GP. While it is easy to understand the potential cost and time savings for purchasing agencies and suppliers as a result of automated transactions and price reductions; it is not easy to quantify these efficiency gains. Countries typically report savings of up to 20% due to a combination of increased price transparency, use of e-Reverse Auction systems, and reduced transaction costs; while other countries report savings of about 10% due to increased competition and reduced transaction costs. Most of the countries report these savings on the basis of estimates, since it is quite cumbersome to quantify the savings as a result of subtracting the cost of online public procurement from the cost of traditional paper based public procurement.

25. Does e-GP eliminate procurement officials?

The introduction of e-GP requires a sound implementation plan which, among others, needs to address the concern of a considerable number of public procurement agents who fear the loss of their job when public procurement is moved online. The e-GP implementation plan should include appropriate programs, e.g. awareness raising, capacity building, retraining, or professional reorientation programs, in order to resolve these fears.

26. Are there security risks? Integrity, confidentiality, non-repudiation, and authentication are critical attributes of public procurement systems. Technology is available to ensure security of e-GP systems, if applied appropriately; but attention needs to be paid in order not to create a situation of unfair competition by using certain

technologies. Public Key Infrastructure, for example, is a technology which provides a high level of security through encryption and digital signatures. Authentication on the basis of digital certificates, however, requires interested suppliers to go and get the digital certificate which can put them at a competitive disadvantage with other suppliers. There is no higher security risk if the authentication during the bidding process is based on an electronic signature without certificate and verified as part of the due diligence during the post-qualification procedure.

What if my suppliers are not connected to the Internet?

Since non-discrimination is one of the basic public procurement principles, e-GP can only be adopted if the infrastructure allows suppliers to MDB e-GP Survey (www.mdb-egp.org) participate in public procurement. All countries are aware that it does not provide any benefit if an e-GP system is designed and implemented without addressing infrastructure constraints. Some countries have decided not to make the use of an e-GP system mandatory but leave it up to the bidders to opt for the electronic or the traditional paper-based approach. Interestingly, this approach does not help to build confidence among bidders in an e-GP system. In other countries, legislation mandates the use of electronic means for public procurement. While this does not raise major issues in countries with good infrastructure, it constitutes a risk of excluding suppliers from competition in countries with infrastructure constraints. Typically, these countries address the connectivity or accessibility issues by providing Internet access points for potential suppliers. There is also evidence that the announcement and introduction of e-GP in a country activates the majority of suppliers to get ready and connected for the web-based government business.

Is new legislation required?

The use of electronic means in the area of public procurement needs to be supported by appropriate legislation as the basis of the legal validity of electronic procurement procedures and documents. While many countries support the use of electronic documents and signatures in their Cyber laws, an increasing number of countries modify their public procurement legislation to include electronic procurement. Some public procurement laws provide a short paragraph on the use of electronic means in public procurement and refer to related policies and procedures as part of the secondary

legislation; whereas other public procurement laws support electronic procurement in a more comprehensive and prescriptive way. Europe's public procurement directives and the current revision of UNCITRAL's procurement model law both are good examples of how to address the use of electronic means in public procurement legislation.

Is e-GP expensive?

The identification of the cost of e-GP in the 14 countries participating in the MDB e-GP survey proved to be difficult since cost records were not or only partly available on sufficient levels of detail and considered to be commercially sensitive. In addition, it is a challenge to quantify the initial cost beyond the design, implementation, and operation of an e-GP system, i.e. the cost of setting up an appropriate policy, legal, and institutional framework as part of the e-GP program implementation. Investing in the required infrastructure can increase the cost considerably even though the infrastructure could be shared with other applications. According to the MDB e-GP survey, the costs for developing and implementing an e-GP system (e-Tendering and e-Purchasing) range from USD 1.07 million for a small system with less than 10,000 suppliers to USD 39.96 million for a large system with more than 50,000 suppliers. The annual operation costs amount to USD 0.37 million and USD 5.5 million respectively.

Who pays for the e-GP system?

Governments select different business models in order to cover the costs of an e-GP system. In some countries, the initial investment and recurrent operation costs are financed from the government budget while in other countries, revenues are generated from system users to cover the cost of operating an e-GP system. Some business models include a public-private partnership approach, i.e. a private firm providing e-GP application services. The outsourcing of fee-based e-GP systems can only be successful if they are part of a sustainable business model which offers a win-win situation for both the government and the operator of the e-GP system. In addition, user fees need to be kept on a reasonable level in order not to run the risk of distracting interested suppliers.

Finally, after having the concept of the procurement practices of different agencies, this research would concentrate on analyzing the data—both quantitative and qualitative—to find out the answers to the research questions in the next chapter which is “**Analysis and Results**”.

Chapter 3: Analysis and Results

Introduction

This chapter analyzes the collected data using the methodology previously explained in chapter one. The data is presented in graphical form for easy understanding. The interpretation of the data has also been presented in this chapter.

Deviations

Deviation is a measure of difference between the observed value of a variable and some other value. The sign of the deviation (positive or negative), reports the direction of that difference (the deviation is positive when the observed value exceeds the reference value). The magnitude of the value indicates the size of the difference.

The deviation between official estimated cost and the quoted amount of the Tenderer who has been awarded is considered and percentage (%) deviation was calculated. The highest and lowest %dev founded in the awarded tenders so far within a division was collected and some other randomly selected data was also collected. The mean of these data was measured and finally the overall mean deviation (%dev) is calculated which represent the overall mechanical wing procurement deviation. Here is the summary in a tabular form:

Division	% Deviation		Avg. % Dev. of Other Samples
	Highest	Lowest	
Chittagong Workshop Div.	8.32%	-2.44%	0.16%
Rangamati Workshop Div.	9.51%	0.89%	1.14%
Tejgaon Workshop Div.	0.20%	0.20%	0.20%
Procurement & Storage Div.	0.00%	0.00%	0.00%
Ferry Construction Div.	45.83%	-9.09%	22.69%
Ferry Division, Sylhet	56.55%	38.06%	49.60%

Table 1.1: Division-wise % Deviation

The highest and lowest deviation is shown below in graphical form:

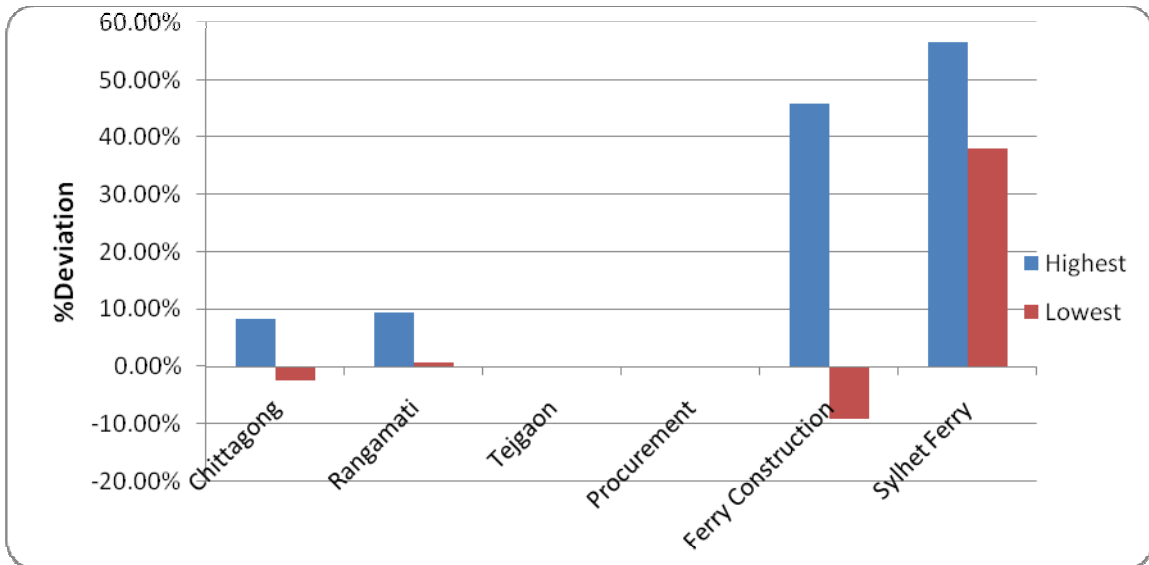


Figure 1.2: Division-wise Highest & Lowest % Deviation

Mean

Mean is a measure of central tendency. There are various types of mean. Only the arithmetic mean is used in this research. Arithmetic Mean or Average is the sum of all of the numbers in a list divided by the number of items in that list.

The mean deviation (%) is shown below in graphical form:

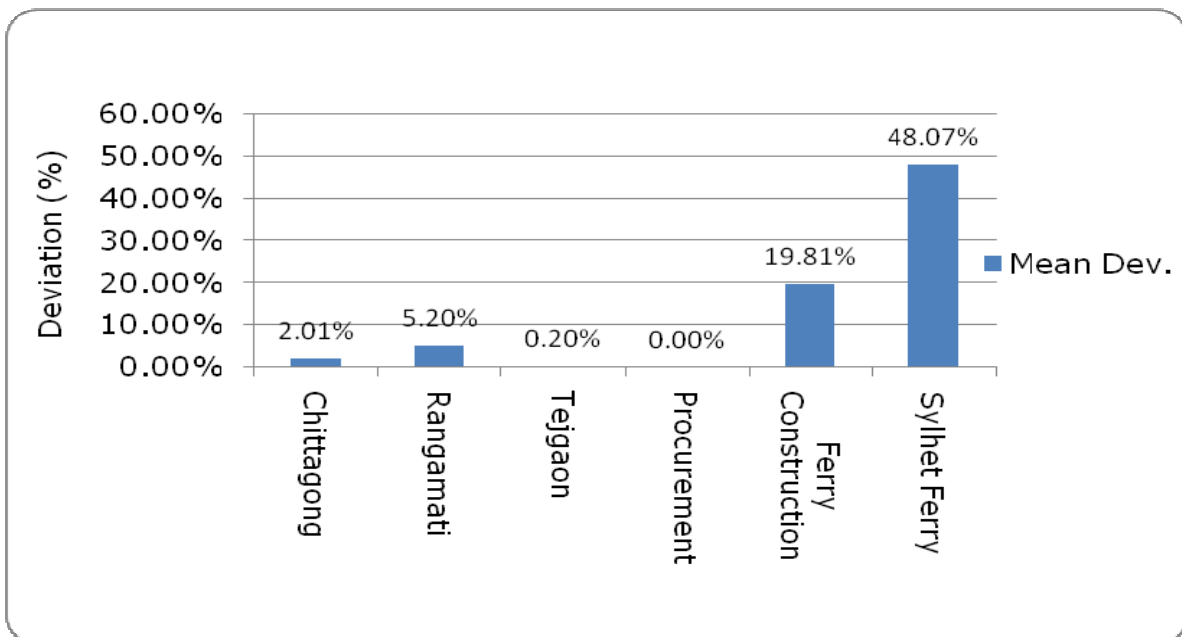


Figure 1.3: Division-wise Mean Deviation (%)

From the analysis on the Engineer’s estimate of contract and the contract award value of contracts of 6 (Six) different types of Mechanical Divisions within RHD, it is found that there are deviations, from large to small, in contract award value which indicates inefficiency in the procurement process. These deviations are either below or above the estimated value of contracts. The Means of absolute value of deviations of all the contracts have been taken and it has been found that Procurement & Storage Division, Dhaka has almost no deviation (0.00%) from the estimated value and Central workshop Division, Tejgaon, Dhaka (0.20%) is also close to it, while Ferry Division, Sylhet has the largest mean deviation (48.07%). and Ferry Construction Division, Dhaka has also large mean deviation (19.81%). It is evident that both “Ferry Division, Sylhet ” and “Ferry Construction Division, Dhaka” have inefficiencies in either estimate or procurement process, but it is not evident if the least deviation in Procurement & Storage Division, Dhaka and Workshop Division, Dhaka is due to manipulation and collusion or not.

Standard Deviation

The standard deviation (SD) is a measure that is used to quantify the amount of variation or dispersion of a set of data values.

The mean deviation (%) is shown below in graphical form:

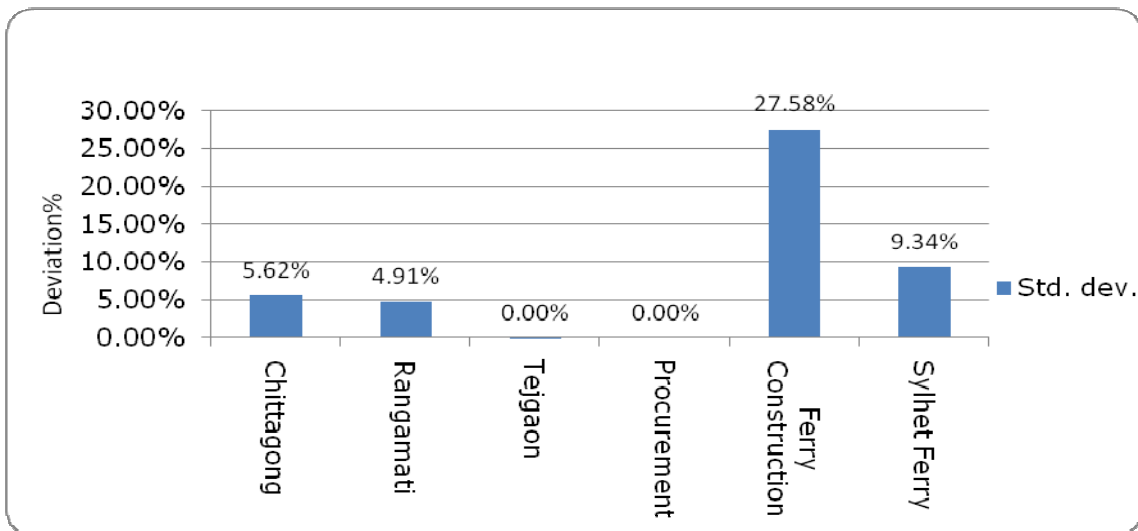


Figure 1.4: Division-wise Standard Deviation (%)

The standard deviations are taken for all the 6 Divisions and it is found that Ferry Construction Division, Dhaka has the largest value of standard deviation (27.58%) and Ferry Division, Sylhet next largest dispersion (9.34%). Naogaon has the least standard deviation (0.009%) while Chandpur (0.038%) and Magura (0.206%) have also very small dispersions from the central value of deviations. Procurement & Storage Division, Dhaka and Workshop Division, Tejgaon have the least standard division (0.00%).

Comparison of Mean and Standard Division

It is found in the comparison that Ferry Division, Sylhet has high deviation (below or above estimated value) of 48.07% as well as high dispersion (9.34%). This indicates that there is error in the estimation as well as in the bidding. The problems in the estimates may be of several types—error in measurement, rate schedule lower than current market price, exclusion of certain items, failure to foresee all the items and working with wrong specification. There might be “front loading” (high rate for one item and very low rate for some other items) in the bidding.

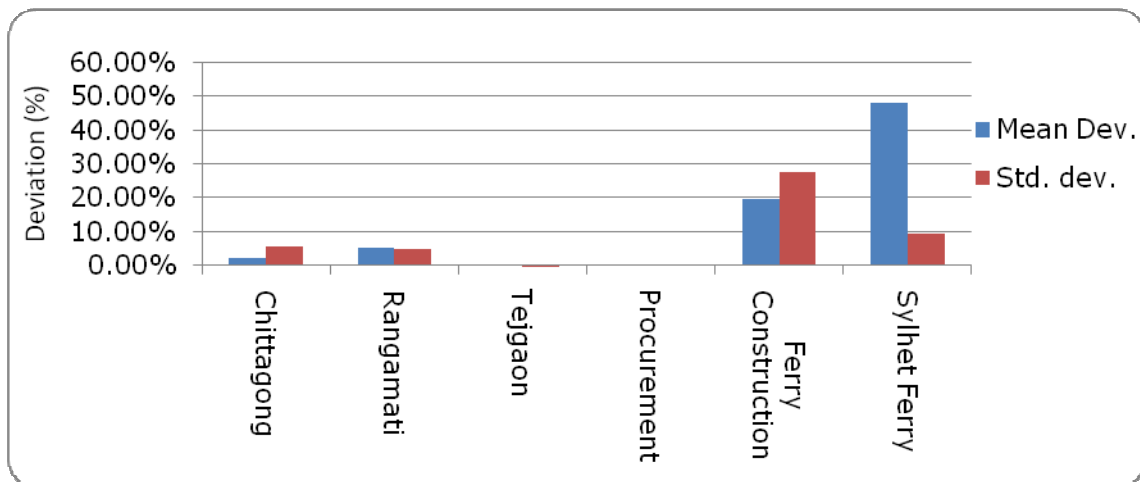


Figure 1.5: Division-wise Mean and Standard Deviation (%)

For Ferry Construction Division, again the Mean of deviations is high (19.81%) and the value of standard deviation (27.58%) is also very high. For Chittagong Workshop Division, the value of standard deviation is also higher than the mean. It again indicates the same inefficiency as that of Ferry Construction Division. As there are Open

Tendering processes, it could be assumed that the values of the bids and consequently the contract award values are scattered and inconsistent. There is very little scope for the same Tenderer to get all the contracts in a Division due to open tendering process, which might be a reason for these scattered values.

In Procurement & Storage Division, Dhaka and Workshop Division, Tejgaon, Dhaka, the values of Means of deviations from the estimated values are very low as well the values of Standard Deviations. While it could indicate very high level of efficiency in estimating the contract value, there is also a possibility of manipulation for such perfect tenders.

Co-efficient of Variation

Coefficient of variation (CV) is a standardized measure of dispersion of a probability distribution or frequency distribution. It is defined as the ratio of the standard deviation to the mean. It is also known as Unitized Risk or Coefficient of Variance. The Co-efficient of variance was measured for all the divisions to find if there are only systematic errors in the process. But it was found that the values varied from 0.00 (Procurement & Storage Division) to 2.79 (Chittagong Workshop Division) and they are scattered. So it can be concluded that there are both systematic and non-systematic errors in the process, but further analyses are required to determine the proportion of both in the process.

Comparison between above or below

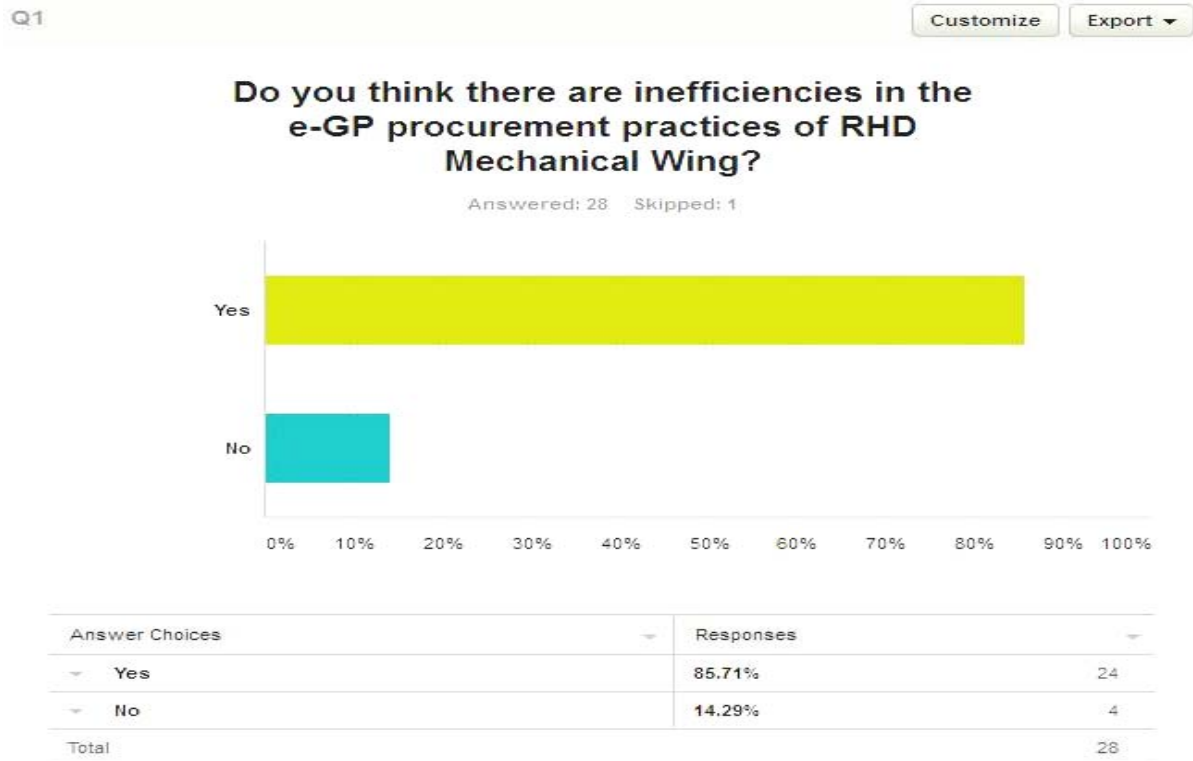
It was found in the data that considerably more contracts were awarded in the contract values below than estimated values than those of the contract values above the estimated contract values. Again, the mean of deviations for contract values below than estimated values was 17.90 percent and the mean of the deviations for the contract values above the estimated values were 5.77 percent. So there is a general propensity for the Tenderers to bid lower than estimated values in open tendering process than bidding higher than estimated values.

Expert Opinion

To identify the possible reasons behind the inefficiencies in the procurement practices in RHD and the possible solutions to improve efficiency an “Expert Opinion Survey” was

conducted among the procurement professionals of RHD. The survey was conducted by an online questionnaire survey and the survey link was provided among 29 experts (Executive Engineers and Sub-divisional Engineers, some of whom are working as project directors, project managers and deputy project managers in several projects) and the results are summarized below:

Inefficiency in e-GP Procurement Practice



According to most of the respondents (24 out of 28), the e-GP in RHD mechanical wing is still inefficient which statistically shows the extent of inefficiencies.

Reasons for Inefficiencies

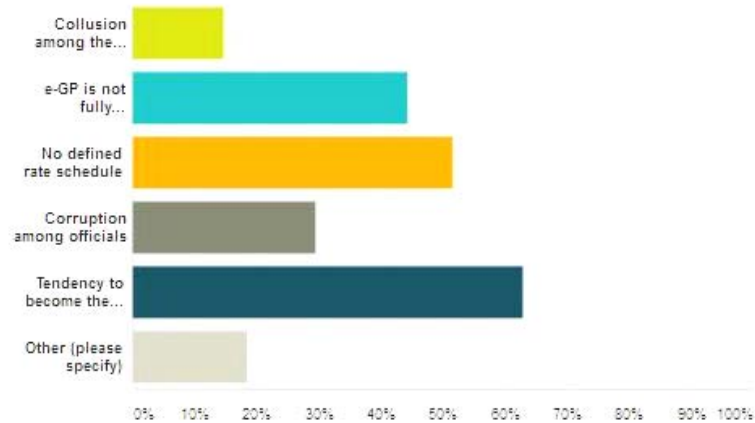
Q2

Customize

Export

What are the reasons behind the inefficiencies, as per your opinion (If Inefficiency exists)?

Answered: 27 Skipped: 2



Answer Choices	Responses
Collusion among the suppliers/contractors	14.81% 4
e-GP is not fully implemented	44.44% 12
No defined rate schedule	51.85% 14
Corruption among officials	29.63% 8
Tendency to become the lowest bidder to grab the contract	62.96% 17
Other (please specify)	18.52% 5

● Responses (5)

🔍 Text Analysis

📁 My Categories

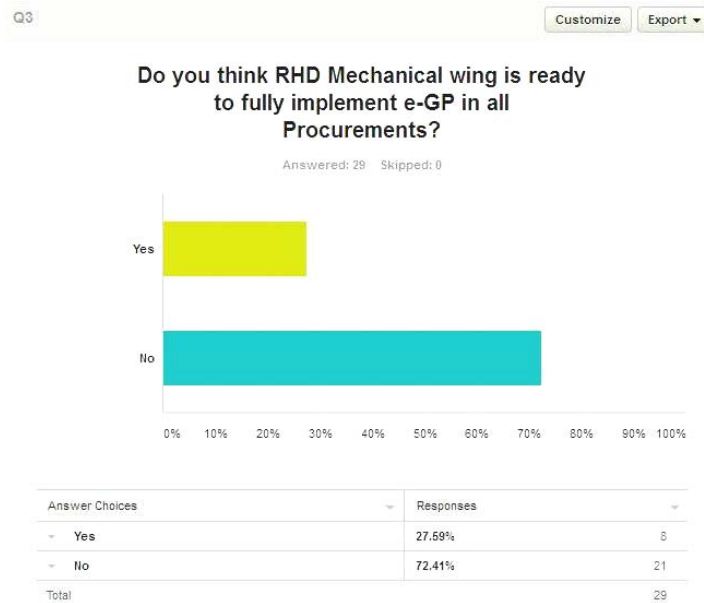
Five possible reasons for inefficiencies were provided in the questionnaire among them three seems the prominent reasons for the inefficiencies:

- Tendency to become the lowest bidder to grab the contract (62.96%)
- No defined rate schedule (51.85%)
- E-GP is not fully implemented (44.44%)

The respondents suggested some new reasons also:

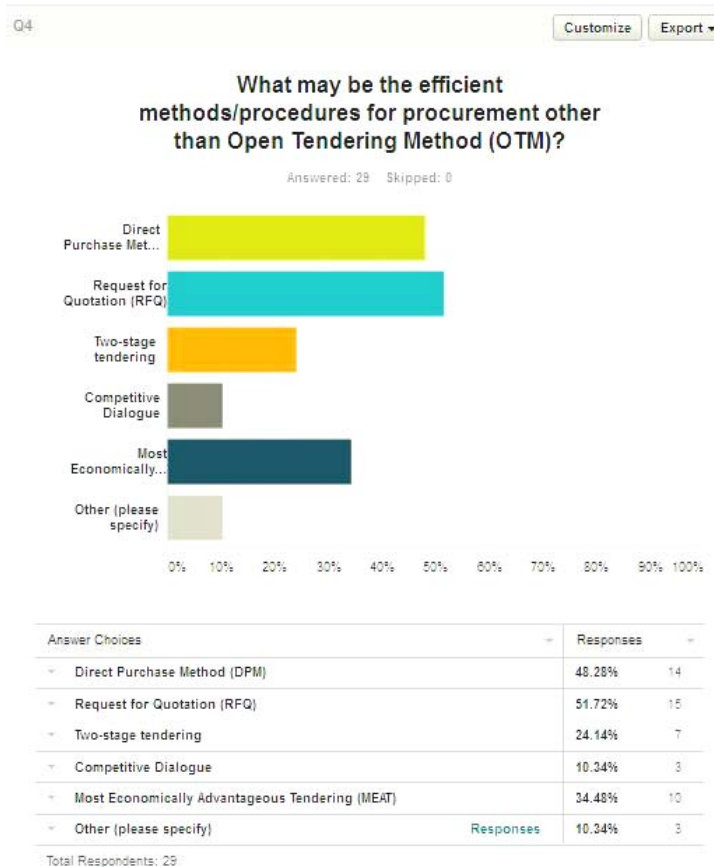
- Small or no provision for emergency
- Bureaucratic Complexity from ministry to RHD and field level RHD
- Present e-GP method does not meet the criteria of available time & small packages required for mechanical repair-maintenance work.
- Delegation of Financial Power is not perfect

Readiness



The majority (72.41%) think that Mechanical wing is still not ready to implement e-GP fully.

Best suited procurement methods



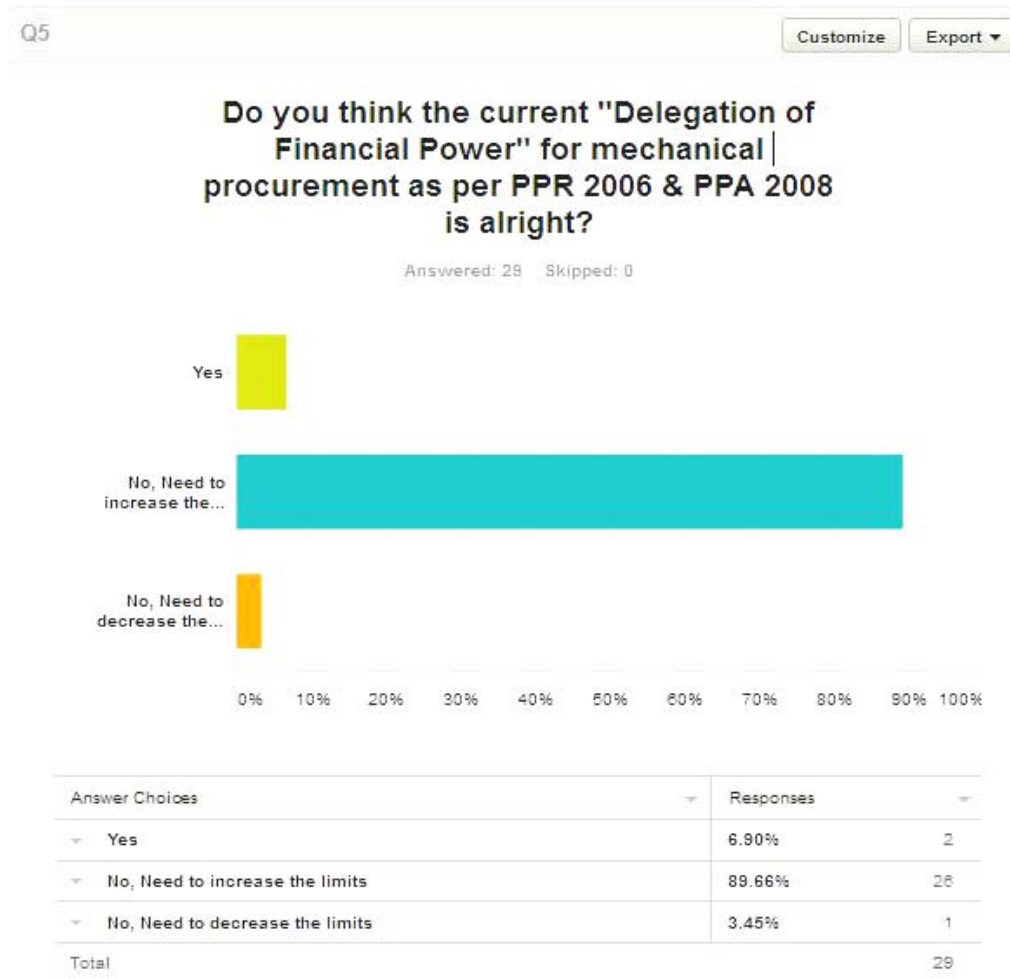
Five possible methods other than OTM were provided in the questionnaire among them three seems more preferable to respondents:

- Request for quotation-RFQ (51.72%)
- Direct Purchase method-DPM (48.28%)
- Most economically advantageous tender MEAT (34.48%)

The respondents suggested some other methods also:

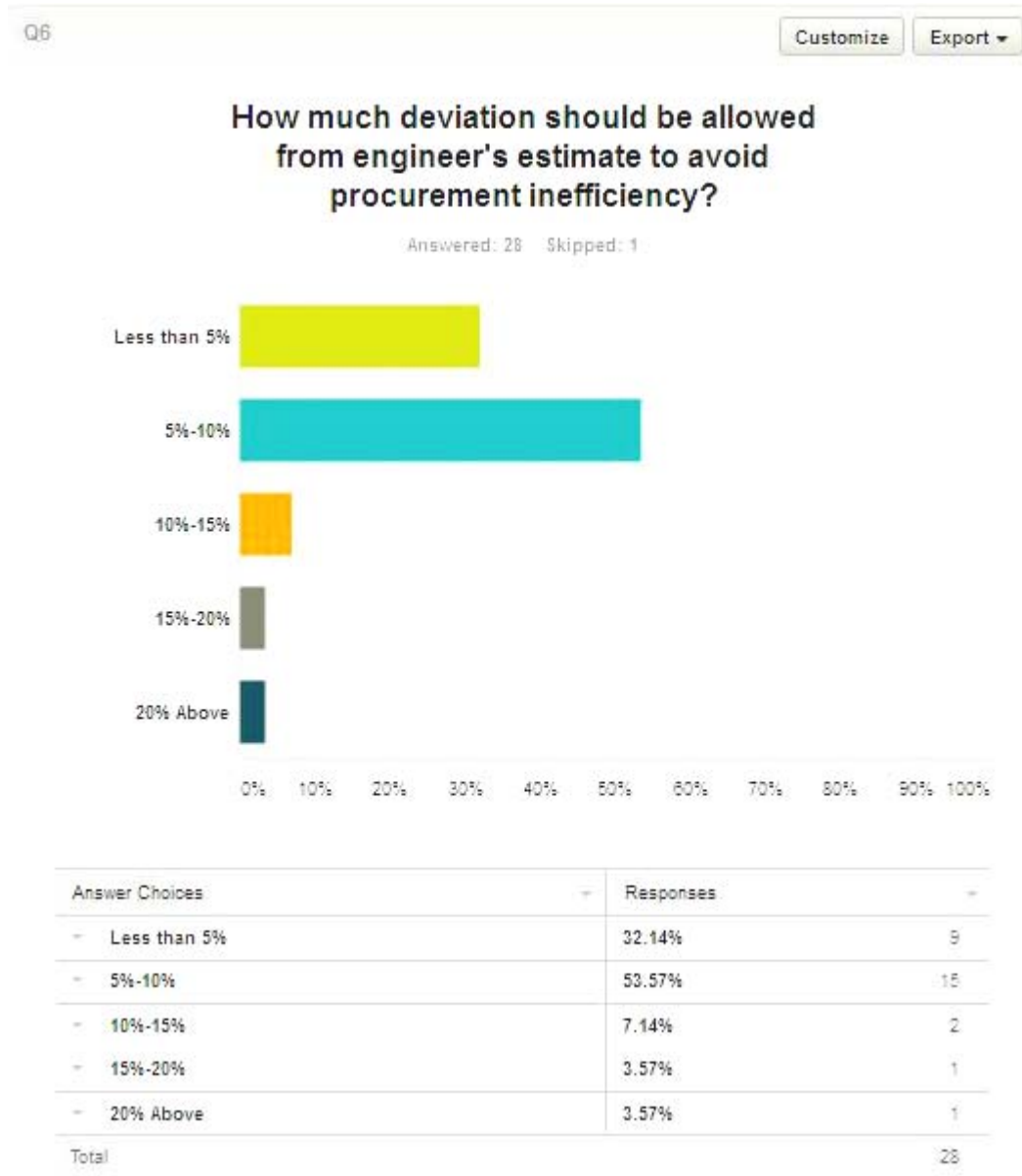
- A special tendering method after repair approval of sudden breakdown (2-5 lac per work or goods, 20 to 50 lac per year)
- Framework contracting

Delegation of financial power (DoFP)



Most of the respondents (89.66%) think that delegation of financial power is not sufficient and the limit should be increased.

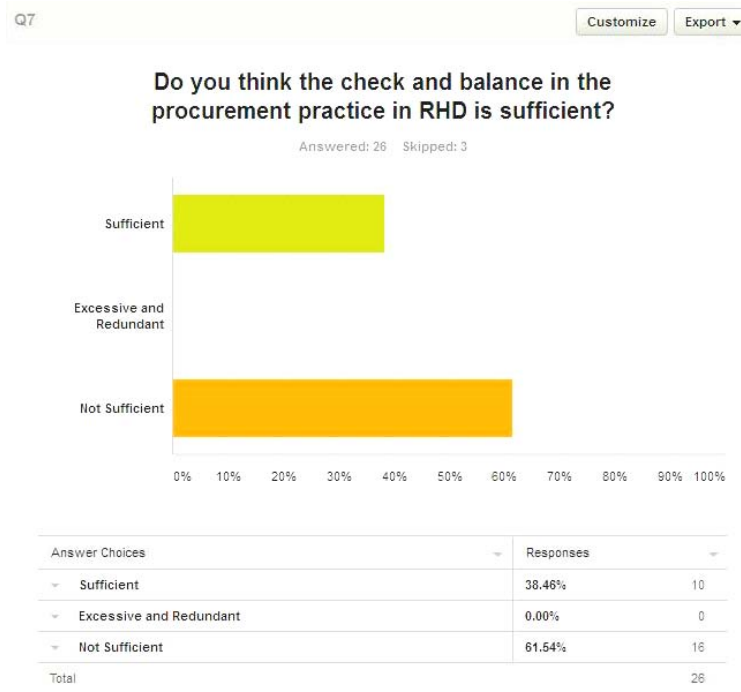
Deviation



More than half of the respondents (53.57%) think that 5%-10% deviation should be allowed. 32.14% suggested below 5%. Very few think deviation should be more than 10%.

Check and balance

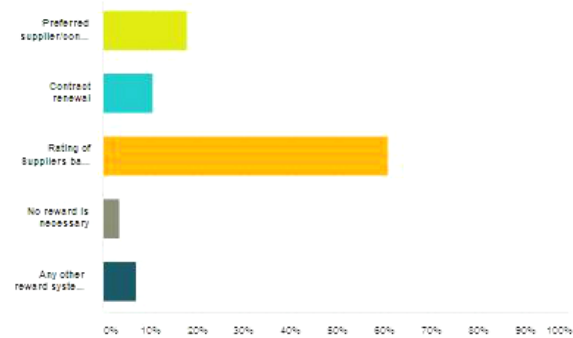
Majority of the respondents (61.54%) think that the existing checks and balance system is sufficient. Better alternatives are needed.



Reward system for supplier performance

What could be the rewards for supplier/contractor reward system as per your opinion?

Answered: 28 Skipped: 1



Answer Choices	Responses
Preferred supplier/contractor list	17.86% 5
Contract renewal	10.71% 3
Rating of Suppliers based on KPI	60.71% 17
No reward is necessary	3.57% 1
Any other reward system (please specify)	7.14% 2

[Responses \(2\)](#)
[Text Analysis](#)
[My Categories](#)

Categorize as... Filter by Category... Search responses

Showing 2 responses

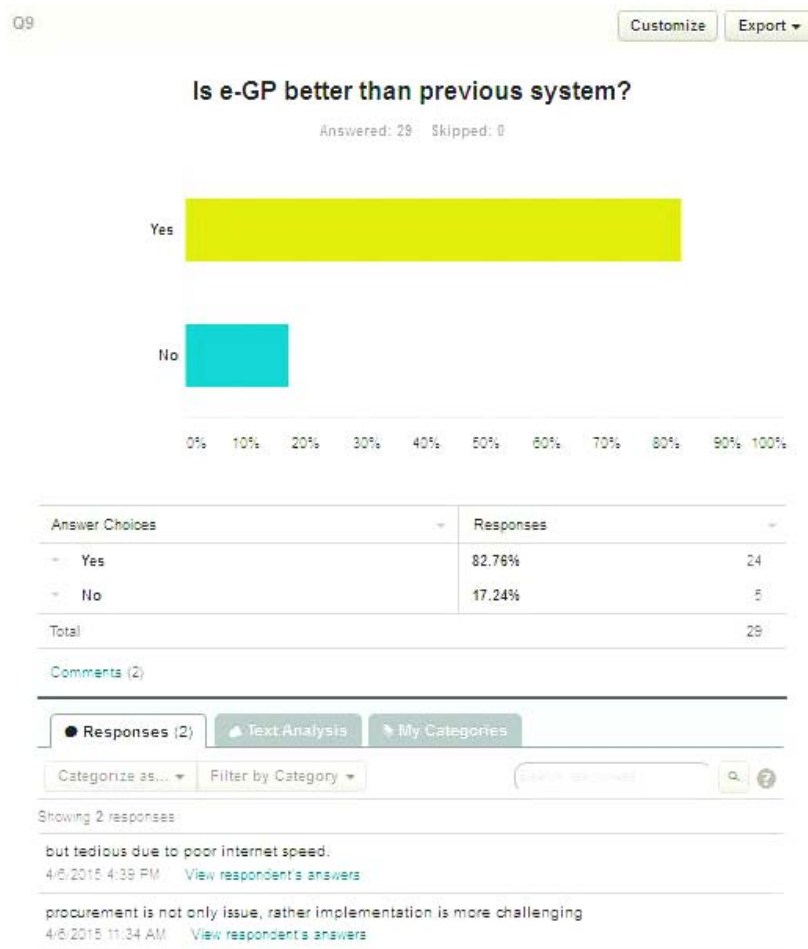
contractor may be rewarded if the work is done before specified time with quality work
 4/7/2016 1:42 PM [View respondents answers](#)

rating of suppliers based on KPI and best supplier of the year awards
 4/6/2016 12:47 PM [View respondents answers](#)

Four possible supplier performance reward methods were proposed through the questionnaire. Rating of the supplier based on KPI was given as choice by most of the respondents (60.71%). The respondents provided some other suggestions also:

- Contractor may be rewarded if the work is done before specified time with quality work.
- Best supplier of the year awards

Goodness of e-GP



Most of the respondents (82.76%) think that e-GP is better than the previous system. A comment section was provided where two comments from the respondents were found:

- e-GP is better but tedious due to poor internet speed
- Procurement is not only issue, rather implementation is more challenging

Suggestions

Finally at the end of the questionnaire, suggestions were sought to the respondents. The question was: “What could be your suggestions to reduce the inefficiencies in the procurement practices in RHD Mechanical Wing?” The following suggestions were found:

- To impart training to the sub-assistant engineers on PPR.
- Change mindset and work with commitment for the country.
- To implement the full e-GP system, increase the financial power of delegated officials, rating on suppliers based on KPI, finally integrity and devotion on tasks.
- e-GP should be more advertised.
- It requires proper planning in higher authorities. Providing relevant training to the employers of different level.
- Sufficient amount of fund is to provide for mechanical wing in the early of financial year.
- There should be special tendering method for sudden breakdown of ferry/pontoon/inspection vehicle (time for tendering 2/3days, value 2-3 lac each work, 50 lac per year).
- There should be a contractor list (few capable contractors) for sudden breakdown work (instant work).
- Honesty and transparency among the office personnel is required.
- Procurement of vehicle, plant, equipment, parts etc should be done through e-GP. Minor repair works should be procured through RFQ method.
- Personnel responsible for e-GP procurement shall be sound in procurement practices, honest in sourcing and evaluation and also expert in computer operation.
- Introducing rate of schedule.
- Short listing of able performers.
- Supporting staff regarding mechanics, driver should be increased.

- Enlisted vendor exclusively distributing original products.
- Updated rate schedule is required.
- Introduction of official rate schedule with regular updates of the prices (preferably at 3 months interval & online update) Increasing the limits of delegation of financial power.
- Break down maintenance is required often in ferry and workshop divisions. For mechanical wing there should have an elevated threshold for DPM and RFQ method.
- Some provisions to face emergency in ferry service and in workshop to be available.
- Maintain trusted suppliers.
- Proper Training on e-GP among the suppliers, employees and other stakeholders. Continuous development of the system to make it user friendly.
- DPM is preferable and Delegation of Financial power should be reviewed.
- Good specification and contract management is required.

Chapter 4: Conclusion

4.1 Introduction

This concluding chapter summarizes the findings and analysis of the study to explain the inefficiencies in the process and suggested the probable solutions. In addition to these this chapter also gives the limitations, assumptions and scope of further study in this field.

4.2 Findings to the research questions

The answers to the research questions are found and summarized in this chapter which was extracted with the help of the quantitative analysis from the data of tender evaluation reports and from the qualitative analysis from the interviews.

Regarding the first research question “Is there any significant inefficiency found while comparing the engineer’s estimates and the contract award value?”—statistical analysis on the Engineer’s estimate of contract and the contract award value of contracts of 6 (Six) divisions of RHD Mechanical Wing were performed, and it is obvious that there are deviations, from large to small, in contract award value which indicates inefficiency in the procurement process. These deviations are either below or above the estimated value of contracts. The Means of absolute value of deviations of all the contracts have been taken and it is found that the contract award values deviate from the engineer’s estimate from 2.01 percent to 48.07 percent, which indicates the lack of consistency in both the procurement process and the bidding process. For further analysis, standard deviations of the deviations from the engineer’s estimates were taken and it was found that the standard deviations, i.e. the dispersions varied up to 27.58 percent which indicates scattered values of bidding and indicates inefficiency and lack of consistency in the procurement cycle. For a few contracts the deviations from the engineer’s estimate was very low. While it could indicate very high level of efficiency in estimating the contract value, but the very little number of this type of contracts indicates a possibility of manipulation for such perfect tenders. The Co-efficient of variance was measured for all the divisions to find if there are only systematic errors in the process. But it was found that the values varied widely and they are scattered. So it can be concluded that there are both systematic and

non-systematic errors in the process. Analysis was conducted to find if there is any relation between the deviation and contract value, but it was found there is no direct correlation between deviations and contract values. Furthermore, there is a general propensity for the tenderers to bid lower than estimated values in open tendering process than bidding higher than estimated values, perhaps to grab the contract.

The findings to the second research question “What are the reasons behind the inefficiencies along with the parameters?” have been summarized from the findings of the interviews conducted on the practicing professionals of RHD. 85.71 percent experts expressed their opinion that there are inefficiencies in the procurement practices of RHD Mechanical Wing which supports the quantitative analysis. In their opinion, the reasons for these inefficiencies are—

- Tendency to become the lowest bidder to grab the contract (62.96%)
- No defined rate schedule (51.85%)
- E-GP is not fully implemented (44.44%)
- Small or no provision for emergency
- Bureaucratic Complexity from ministry to RHD and field level RHD
- Present e-GP method does not meet the criteria of available time & small packages required for mechanical repair-maintenance work.
- Delegation of Financial Power is not perfect

It was found that 82.76 percent of the experts expressed their opinions that e-GP is better than previous system. In view of the suggestions they made for improving efficiencies, the answer to the third research questions has been determined. The ways to improve efficiency are—

- To impart training to the sub-assistant engineers on PPR.
- Change mindset and work with commitment for the country.
- To implement the full e-GP system, increase the financial power of delegated officials, rating on suppliers based on KPI, finally integrity and devotion on tasks.
- e-GP should be more advertised.
- It requires proper planning in higher authorities. Providing relevant training to the employers of different level.

- Sufficient amount of fund is to provide for mechanical wing in the early of financial year.
- There should be special tendering method for sudden breakdown of ferry/pontoon/inspection vehicle (time for tendering 2/3days, value 2-3 lac each work, 50 lac per year).
- There should be a contractor list (few capable contractors) for sudden breakdown work (instant work).
- Honesty and transparency among the office personnel is required.
- Procurement of vehicle, plant, equipment, parts etc should be done through e-GP. Minor repair works should be procured through RFQ method.
- Personnel responsible for e-GP procurement shall be sound in procurement practices, honest in sourcing and evaluation and also expert in computer operation.
- Introducing rate of schedule and short listing of able performers.
- Supporting staff regarding mechanics, driver should be increased.
- Enlisted vendor exclusively distributing original products.
- Updated rate schedule is required.
- Introduction of official rate schedule with regular updates of the prices (preferably at 3 months interval & online update) Increasing the limits of delegation of financial power.
- Break down maintenance is required often in ferry and workshop divisions. For mechanical wing there should have an elevated threshold for DPM and RFQ method.
- Some provisions to face emergency in ferry service and in workshop to be available.
- Proper Training on e-GP among the suppliers, employees and other stakeholders. Continuous development of the system to make it user friendly.
- DPM is preferable and Delegation of Financial power should be reviewed.
- Good specification and contract management is required.

4.3 Scope of further studies

There are many scope of further future studies to fine tune the findings of this research as well as open new areas of study.

- A comparison between different Government departments who does similar nature of works could be performed
- Year wise study could be performed for time-series analysis to find the trends.
- A comparison between Civil and Mechanical procurement regarding efficiency in e-GP can be conducted
- The parameters of inefficiencies identified in the interviews of the experts could be tested statistically to find the correlations and find which parameters are more significant than others.
- The suggestions from the experts could be applied in practice and monitor the results and improvement in efficiency and find their effectiveness.
- A supply chain map could be prepared to identify the value adding activities in the supply chain.

4.4 Conclusion

This research work tried to put a light on the particular areas of inefficiencies that occurs during the e-GP tendering process of RHD Mechanical Wing. The probable solutions to improve the efficiency in the procurement practices has also been identified, which the author believes will go a long way in ensuring justifiable value for money for public sector tendering process.

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Appendix

Research Questionnaire

Expert Opinion Survey on Procurement Process of RHD Mechanical Wing

+ Add Page Title

Dear respondent,

A very good day to you.

I have been doing a research for the requirement of "Masters in Procurement and Supply Management" program under BIGD, BRAC university.

The aim of this research is to find the inefficiencies in the e-GP procurement process in RHD Mechanical wing and suggest the probable solutions for which your expert opinion would be valuable.

The information you provide will be used absolutely for academic purpose. If you have any questions regarding this research, please contact me:

Mohammad Ali Ahmed Khan

Mobile# 01765067027

e-mail: aliahmed.rhd@gmail.com

1. Do you think there are inefficiencies in the e-GP procurement practices of RHD Mechanical Wing?

Yes

No

2. What are the reasons behind the inefficiencies, as per your opinion (If inefficiency exists)?

Collusion among the suppliers/contractors

e-GP is not fully implemented

No defined rate schedule

Corruption among officials

Tendency to become the lowest bidder to grab the contract

Other (please specify)

3. Do you think RHD Mechanical wing is ready to fully implement e-GP in all Procurements?

Yes

No

4. What may be the efficient methods/procedures for procurement other than Open Tendering Method (OTM)?

- Direct Purchase Method (DPM)
- Request for Quotation (RFQ)
- Two-stage tendering
- Competitive Dialogue
- Most Economically Advantageous Tendering (MEAT)
- Other (please specify)

5. Do you think the current "Delegation of Financial Power" for mechanical procurement as per PPR 2006 & PPA 2008 is alright?

- Yes
- No, Need to increase the limits
- No, Need to decrease the limits

6. How much deviation should be allowed from engineer's estimate to avoid procurement inefficiency?

7. Do you think the check and balance in the procurement practice in RHD is sufficient?

- Sufficient
- Excessive and Redundant
- Not Sufficient

8. What could be the rewards for supplier/contractor reward system as per your opinion?

- Preferred supplier/contractor list
- Contract renewal
- Rating of Suppliers based on KPI
- No reward is necessary
- Any other reward system (please specify)

9. Is e-GP better than previous system?

- Yes
- No

Any Specific Comments (please specify)

10. What could be your suggestions to reduce the inefficiencies in the procurement practices in RHD Mechanical Wing?

Done