Improving Performances of CMS in Public Procurement: A Case study on Roads & Highways Department

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Requirements for the Degree of
Masters in Procurement and Supply Management

Submitted by

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CERTIFICATE

This is my pleasure to certify that the dissertation entitled "Improving Performances of CMS in Public Procurement: A Case study on Roads & Highways Department" is the original work of Ms.Nishat Noman that is completed under my direct guidance and supervision. So far I know, the dissertation is an individual achievement of the candidate's own efforts, and it is not a conjoint work. I also certify that I have gone through the draft and final version of the dissertation and found it satisfactory for submission to BRAC Institute of Governance and Development (BIGD), BRAC University in partial fulfillment of the requirements for the degree of Masters in Procurement and Supply Management.

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Abstract

Central Management System (CMS) is an important tool to establish accountability and transparency in procurement in public sector. The role of public procurement is to provide public services with public money by ensuring the better Value for Money (VFM) and Good Governance. CMS encompasses the public procurement process to achieve Good Governance. It improves the efficiency, effectiveness, transparency and accountability of procurement. In this research several attempts were made to decipher the perception of the officers of RHD about the efficient of CMS in public procurement.

To conduct the research questionnaire survey method was used. Around 45 RHD Officials and 5 Computer Operators are interviewed on approximately identical questions to find out the variance of their perception.

It was found that both RHD Officials and Computer Operators still lack the appropriate use of CMS in public procurement. Again Officials need proper training which should be done in a continuous manner.

This dissertation also focuses on the potential scopes for improvement of use of CMS to ensure Good Governance in public procurement.

The limitation of the study could be the time constraints of the research. The research can be further stretched to verify and compare the data of RHD with other similar public organizations.

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Acronyms

ACE: Additional Chief Engineer

AE: Assistant Engineer

CE: Chief Engineer

CPTU: Central Procurement Technical Unit

CMS: Central Management System

RHD: Roads and Highways Department

MoRT&B: Ministry of Road Transport and Bridges

ADP: Annual Development Program

BCS: Bangladesh Civil Service

GoB: Government of Bangladesh.

BIGD:BRAC Institute of Governance and Development

IMED: Implementation, Monitoring and Evaluation Department

MPSM: Masters in Procurement & Supply Management

NGO: Non Government Organization

WB: World Bank

IMF: International Monetary Fund

PE: Procuring Entity

PPA: Public Procurement Act

PPR: Public Procurement Rule

SDE: Sub Divisional Engineer

SE: Superintending Engineer

VFM: Value for Money

LAN: Local Area Network

WAN: Wide Area Network

Chapter 1: Introduction

1. Introduction

The procurement is defined as acquiring resources from outside suppliers. In this sense, procurement activities are very critical to all organizational units from households to firms, organizations, and the government. From the functional viewpoint, procurement is an indispensable activity and its successful achievement is essential to any organization. In the private sector, procurement is considered as a profit center to maximize the firm's profit in saving material cost. However, there is a major distinction in public procurement as it draws its funds from tax revenue. Hence, unlike procurement in the private sector, governmental procurement should reflect public concerns as well as efficiency. Nevertheless, both are quite similar in many ways such as cost savings, quality assurance, supplier relationship, procurement ethics, supply market analysis, green procurement and so on.

Public procurement can make a major impact on national economy. The size of public procurement is quite considerable. It accounts for a significant proportion of the demand for goods and services in the nation and is increasingly considered as an attractive instrument for developing society and nation. As a matter of fact, public procurement has come to play a major role in making society better, and thus, there has been much research in public purchasing and its efficient operations. (Jeong-Wook Choi,2009)

Public procurement monitoring is instrumental in ensuring the most efficient use of public funds. Standards put forward by international treaties as well as international and non-governmental organisations have highlighted the importance of establishing mechanisms for internal and external control exercised by independent auditors, bidders and competitors, and civil society, among others, covering all phases of the procurement process, including the contract implementation. (Maxime Agator, Transparency International,2013)

Good public procurement systems are central to the effectiveness of development expenditure. A transparent and effective public procurement system is important to combat bribery and corruption. Clear rules and practices need to be established and communicated to all stakeholders. These rules then need to be enforced.

Central Management System (CMS) is a software developed in-house to conduct and monitor the procurement process more efficiently. CMS forces the use of the system to produce

- All official estimates

- All tender documentation – except drawings

- All contract documentation for signing

- All payment certificates

- No contract can be paid without having a payment certificate prepared on the system

- Accounts can only be supported by cash books generated on CMS

- Accounts are only acceptable to RHD HQ and CGA if prepared on CMS

Roads and Highways Department (RHD) is responsible and accountable to the People of Bangladesh through the Ministry of Road Transport & Bridges (MoRT&B) for the maintenance and development of the National, Regional and Zilla Road Network within the limited funds allocated to them. At present RHD has a road network of approximately 21,302.08 Km of which 3,812.78 KM National Highways, 4,246.97 Km Regional Highways and 13,242.33 KM District Highways and the Annual Budget is in excess of Taka 3,600 Corer. RHD maintain and develop communication network by public funds through procurement which is managed by CMS.

CMS was implemented in RHD for ensuring Good Governance. Good Governance is, among other things, participatory, transparent and accountable. It is also effective and equitable; and it promotes the rule of law. An important tool of Good Governance is efficient and effective public procurement system that promotes effective and efficient procurement practices and systems to enable government to deliver the services demanded by its constituents in a timely manner; and seek to achieve value for money based on whole life cost. CMS was introduced in RHD by IDC3 project funded by DFID. After 15 months of piloting, training and national trials CMS became operational in all Field Divisions of RHD from July 2005. (GOB, 2014)

CMS is important because transparency is an essential element of Good Governance and Accountability is an essential element of transparency. So, if RHD will overcome its present limitations in implementation of CMS more efficiently, it would ensure accountability as well as Good Governance.

1.1 Statement of the problem

Public procurement systems can help governments optimize resources to obtain better value for money. An enabling environment for Good Governance is thus created when public procurement

systems are strengthened. To ensure the good governance in public procurement, different parameters are introduced in different organization such as E-GP, CMS etc. E-GP has been launched in four Government organizations and CMS has been utilized in only one organization preferably in Roads and Highways Department (RHD).

CMS was introduced from July 2005 in RHD for reducing the wastages in procurement process such as in poor quality materials, poor financial management, lack of control of construction time, lack of control of available funds, lack of control of contracts, poor management. The overall objective was that it will help the procurement of RHD in terms of better Efficiency, Effectiveness, Transparency and Accountability.

Till now CMS is being practiced in RHD, but some explicit and hidden drawbacks such as it does not check against the cash book, does not truly show physical progress, does not show current liability, does not show current commitment in implementing CMS to ensure good governance in procurement in RHD.

This research work therefore intends to develop some recommendations to overcome the barriers in implementing CMS and making able RHD to ensure Good Governance in procurement.

1.2 Objective

The study intends to know about CMS practices in public procurement context in the Public Sector with a focus on Roads and Highways Department. The specific objective is :

-To identify the challenges of implementing CMS in public procurement process in RHD.

1.3 Research Questions

This study intends to know whether after implementation of CMS in RHD, there has been better Efficiency, Effectiveness, Transparency and Accountability of procurement of Roads and Highways department. Thus, the research questions in this connection are:

1. How is CMS being implemented in RHD?

2. Whether CMS is reaching the objectives for which it was implemented?

3. If objectives are not being met, what improvements can be done?

1.4 Scope of the study

This study will examine the present practices of CMS in Roads and Highways Department to establish Good Governance in procurement by reporting and monitoring in a accurate way. From the study, it will identify the effectiveness of CMS and the ways of improvement of CMS for making the system more effective and efficient. This study will not cover the entire field Division of RHD, it will go for survey randomly from the Head office, Divisional offices and officials involved in CMS activities.

1.5 Methodology

Survey will be used as the method for the research work. Survey will be done for both the 1st class officers' and 2nd class officers and computer operators. Emphasis will be given on qualitative methods. The overview of the methodology can be expressed as follows:

***Figure 1.1:** Overview of Methodology*

Survey

↓

Data Accumulation

↓

Data Analysis

↓

Outcome preparation

↓

Results presentation
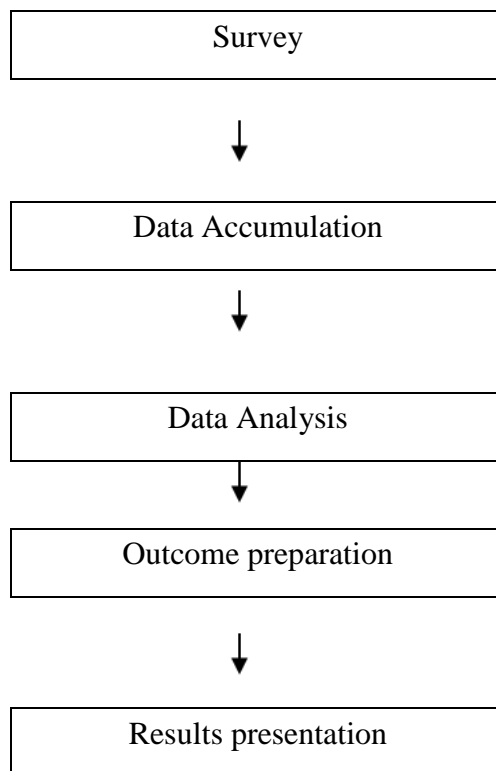
1.5.1 Selection of Study Areas

The study will be limited on the officials and computer operators of Roads and Highways Department. The officers will be both the 1st class officers and 2nd class officers.

1.5.2 Sample Size and Sampling

Some 50 respondents will be selected for survey using online questionnaire. For computer operator, physical questionnaire survey method will be used. Non probabilistic sampling techniques will be used for the survey. This is discussed more in details in the methodology chapter later on.

The purposes of this survey are to find out the answers to following questions:

1. How is CMS being implemented in RHD?

2. Whether CMS is reaching the objective for which it was implemented?

3. If objectives are not being met, what improvements can be done?

1.5. Justification of the study

During the research work several short comings were faced which indicates that there are scope for further study in this field. The study will identify the drawbacks of the existing system of implementing CMS in Roads and Highways Department which will describe the need of rectification and be a basis to improve the system to ensure accountability as an effective monitoring tool.

1.6 Limitations of the study

The major limitations of the study could the time constraint along with the non-responsiveness of the people. Also detailed in-field survey by the researcher himself was not always feasible and for that some data were collected via other surveyors with proper training which could also be a limitation. The limitations are mainly as follows;

1. As this was a non-probabilistic sampling, male and female respondent ratio could not be attained.

2. Comparison of the collected data of RHD could not be done with other public organization as no other organization use CMS.

3. For the purpose of confidentiality, disclosure of names of the interviewees has not been allowed by the interviewees.

4. The data have been collected from mainly field offices of RHD.

1.7 Chapter Outline

The brief chapter outline of the dissertation is as follows:

Chapter	1	Introduction
Chapter	2	Literature Review
Chapter	3	Methodology of the Study
Chapter	4	Data Analysis
Chapter	5	Conclusion and Recommendation
		Appendices

The whole research work is presented in five different chapters. The 'Introduction chapter' provides an introductory discussion which contains background, scope, significance, research objective, research question and limitation of the study and the structure of the dissertation. The Second chapter is the 'Literature Review '. This chapter deals with existing literature on the role of CMS in Public Procurement towards ensuring Good Governance within RHD.

The third chapter is 'Methodology of the Study'. This chapter primarily focuses on the method(s) of data collection along with the justification of using the method(s). It also includes basic parameters to be chosen related to the selected method(s).This chapter presents the methodology applied for collecting and processing data. It will elaborate research methods and techniques used for data collection and analysis.

The fourth chapter is 'Data Analysis'. This chapter will deal with the analysis of collected data and its findings and discussion for interpretation of analyzed data. This chapter also provides the correlation among the different aspects of the collected data.

The fifth and final chapter is the 'Conclusion and Recommendation'. Based on data analysis and discussion, this chapter will come up with some recommendations to improve the use of CMS to fulfill the desired objective to ensure Good Governance in Public Procurement in RHD.

Chapter 2: Literature Review

The quality of public services is increasingly determined by world-class skills in public procurement. The procurement regime applies not only to the public sector, but also to certain utilities. Such bodies' day to day business as well as any real estate developments, joint ventures, restructuring, reorganization or sale programme cannot function without a proper understanding of how procurement regulates their plans. Contractors bidding for work with these bodies also need to know their way along this often confusingly complicated path.

The goal of public sector is not profit maximization as in the case of private sector. These goals can the expressed by the following diagram:
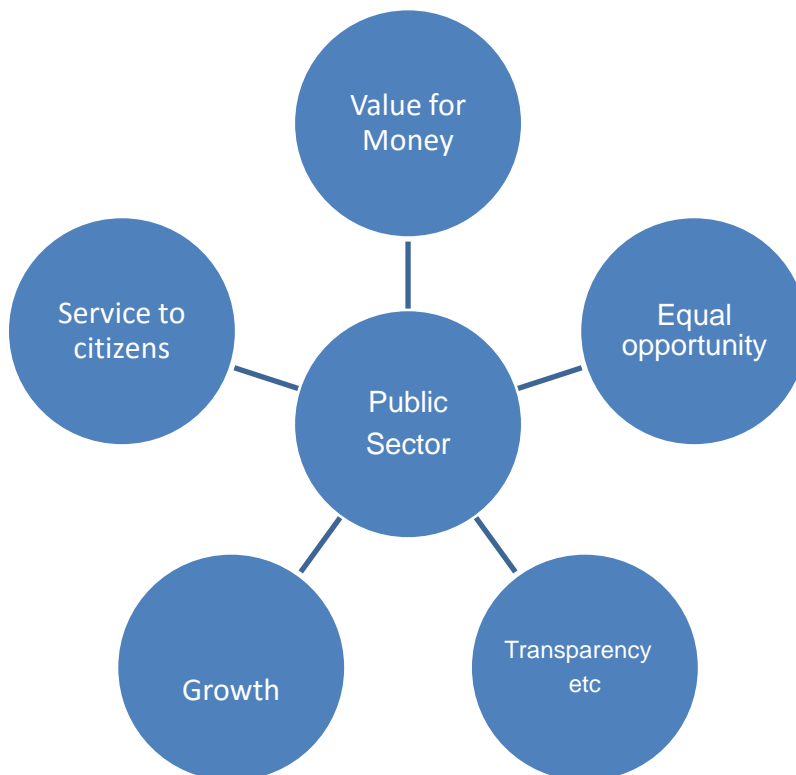
Figure 2.1: Primary goals of public sector ('Purchasing Context' 2011:22)

RHD in Bangladesh procure mainly works and services for design and construction of new roads and bridges , maintenance of existing road network and construction and maintenance of ferries

and Pontoons. To do these activities, RHD official (Preocuring Entity) firstly priorities the works under maintenance /development budget. They prepare estimate accordingly which is approved by the appropriate authority. Then the PE invite the tender through Open Tendering Method(OTM) mostly. For particular cases or urgency of works PE use Request For Quotation Method (RFQ) or Direct Procurement Method(DPM) or Limited Tendering Method(LTM) depending upon the threshold of the work. For complicated work, Two Stage Tendering Method is also used. For consultancy service procurement, RHD mostly follow Quality and Cost Based Selection(QCBS). Least Cost Selection(LCS) Method is also used for small scale service procurement.(GOB, 28 March 2015)

2.1.1. Scope of CMS

Governance has multi dimensions which includes the process by which those in authority are selected, monitored, and replaced Another is the respect of citizens and the state for the country's institutions. And finally, the government's capacity to effectively manage its resources and implement sound policies. Good governance is the key to improvement. There are improvements in capacity, accountability and reducing corruption. Without transparency and accountability other reforms will have only limited impact. (GOB, 15 January 2013) As CMS is an effective monitoring tool which establish accountability and transperancy in procurement process, it leads the organisation towards good governance.

CMS is a means of recording and presenting:

- Value of Work Done
- Planned work
- Expenditure

It provides an "Early Warning" signal for prompt corrective action to recover in a sufficient time to take positive action or if necessary apply for additional funds.

Corruption hampers economic growth, burdens the poor disproportionately and undermines the effectiveness of investment and aid. The Number 1 force in the fight against corruption is our ever-expanding access to information. Transparency is an essential element of Good Governance. Accountability is an essential element of transparency. The core of accountability is the fusion of information and action. CMS helps to have an overview to the Chief Engineer & senior managers of RHD, the Budget Committee, the Planning & Maintenance Wing. It helps the in-house finance department, the Divisional staff – engineers & accountants in financial management. It can be replicated in other Government agencies.

The whole system of controls, financial, physical, (including quality) and others, established by the management in order to carry on the business of the enterprise in an orderly and efficient manner, ensure adherence to management policies, safeguard the assets and secure as far as possible the completeness and accuracy of the records.

Expenditure is a consequence of some physical activity and not a stand-alone activity. In CMS, expenditure can only occur on the completion of a prior measured physical activity. Monitoring of Actual against budget in CMS introduces the control over expenditure. Any system is only as good as the people who operate it. People are what makes a system of internal control work. The responsibility for good internal control rests with the management. The success of any system depends on the action taken by the management. (Wikipedia 2013)

2.1.2. CMS in RHD

In Roads and Highways Department, CMS is controlled centrally in the head office under Superintending Engineer, Management Information System Circle under Additional Chief Engineer, Management Services Wing. MIS Circle comprise of a one Senior Systems Analyst (Programmer-1), Systems Analyst, Hardware (Programmer-1, SAE-1) and Systems Analyst, Software Development (Systems Analyst-1, Programmer-1, Asstt. Programmer-1, SAE-1). MIS Circle also appoint Consultant who are exclusively assigned for operation and maintenance of CMS to operate smoothly. Consultancy expenditure for last five financial years to engage 12 skilled persons to maintain CMS software centrally is given below:

Table 2.1: Year wise expenditure of CMS Unit

Financial Year	Expenditure (Lac Tk)
2014-15(Upto February)	28.83
2013-14	164.47
2012-13	195.27
2011-12	101.50
2010-11	88.23

Source: Progress Report of MIS Circle

2.1.3. Background of CMS

CMS was obtained from an output of CIDC3 project which was extended as TSRM project by DFID. TSRM project was the last phase of DFID's support to the transport sector in Bangladesh, supporting the institutional strengthening of the Roads and Highways Department (RHD) since

1994, originally through the Institutional Development Components (IDC) of the World Bank's Road Rehabilitation and Maintenance Projects. In this project, the target was the inclusive performance of the RHD: its overall delivery in critical areas of maintenance, monitored and measured against agreed robust indicators, and made sustainable through a sector-wide strengthening of the policy and planning basis. Activities were grouped around four broad outputs, as defined in the project Logical Framework:

a) Systems for strengthening financial and physical accountability in RHD (Central Management System (CMS) and RHD Road Asset Management System (RAMS) and Medium-Term Budgetary Framework) are being used fully and effectively;

b) (b) Robust, measurable "milestones" (around work prioritisation, procurement, design and quality assurance) in place for reporting on value for money with the annual road maintenance programme;

c) Road Maintenance Fund established and receiving revenue; and ;

d) (c) Long-term institutional and funding arrangements agreed for the formulation and implementation of transport policy.

2.1.4. Activities of CMS

CMS manages contracts mainly in two modules: The Contract Module and the Field Module.

The Contract Module is used for pre tendering purpose like preparation of estimate, tender document, contract document etc.

The Field Module deals with Finance. It helps the Field Staff to prepare full accounts package for the field offices. It prepares Monthly and yearly account returns, Accounts analysis of receipts and expenditure, Analysis against budget and release of Funds and it creates Direct Link to Authorised Payment Certificates produced on Field Contracts Module The RHD Central Management System (CMS) field module has been developed for managing Contract Information from its inception to the final process. This module is used to enter contract details including BoQs (Bill of Quantities) and Measurements throughout the entire process. Its output allows physical and financial monitoring at field level. The Field Module when fully utilised by the Divisions will be an extremely useful tool for monitoring and therefore managing contracts. It will be used for preparing contracts, engineer's estimates, valuations and payment certificates as well as recording budgets and expenditures for both the Revenue and Development budgets, covering both GoB and Foreign aided projects. (GOB, 13 December 2014)

2.1.5. Benefits of CMS

CMS Web is a versatile and strong management tool. It contains the latest updated information on all RHD contracts that are being handled throughout the country. It is now as easy as a click to get information on any contract and get both its physical work details and financial details.

It manages contracts to
- Identify contracts that are performing well
- Identify contracts that are making slow progress
- Identify contracts that are halted
- Know liability to the contractors
- Identify contracts that are recently paid

It perform to
- Check how an office (Zone/Circle/Division) is performing
- Check how a project is performing
- See achievements
- Identify the problems affecting performance

It gets detailed information like
- Details on contracts such as contractors, schedules, progress etc
- View vouchers, see each recipient
- View detailed measurements - bill item-wise
- Look at each bill (IPC, FPC)
- How much cash RHD generates each year and from where

It monitors budgets to
- Know the budget for a road according to accounts head
- Know the budget for a project
- Know if you are within or exceeding the budget
- View detailed and summary expenditure information

2.2.1 Good Governance through CMS

CMS ensures Good Governance by transparency and accountability. Good governance is about the processes for making and implementing decisions. It's not about making 'correct' decisions, but about the best possible process for making those decisions. Good decision-making processes, and therefore good governance, share several characteristics. Good Governance can be defined as:

1. Good governance means focusing on the organization's purpose and on outcomes for citizens and service users

2. Being clear about the organization's purpose and its intended outcomes for citizens and service users;

3. Making sure that users receive a high quality service; and Making sure that taxpayers receive value for money.

4. Good governance means performing effectively in clearly defined functions and roles

5. Being clear about the functions of the governing body;

6. Being clear about the responsibilities of non-executives and the executive and making sure that those responsibilities are carried out; and

7. Being clear about relationships between Board members and the public.

8. Good governance means promoting values for the whole organization and demonstrating the values of good governance through behavior

9. Putting organizational values into practice; and Individual governors behaving in ways that uphold and exemplify effective governance.

10. Good governance means taking informed, transparent decisions and managing risk

11. Being rigorous and transparent about how decisions are taken;

12. Having and using good quality information, advice and support; and

13. Making sure that an effective risk management system is in operation.

14. Good governance means developing the capacity and capability of the governing body to be effective.

15. Making sure that appointed and elected governors have the skills, knowledge and experience they need to perform well;

16. Developing the capability of people with governance responsibilities and evaluating their performance, as individuals and as a group; and striking a balance, in the membership of the governing body, between continuity and renewal.

17. Good governance means engaging stakeholders and making accountability real

18. Understanding formal and informal accountability relationships;

19. Taking an active and planned approach to dialogue with, and accountability, to the public;

20. Taking an active and planned approach to responsibility to staff; and

21. Engaging effectively with institutional stakeholders.

22. The Good Governance Standard also shows how these principles should be applied if organizations are to live up to the Standard and provides checklists for Board members

(and the Board) and the public to challenge sub-standard performance of public bodies.

(The Scottish Government 2006 online accessed on 15 January 2013)

2.2.2 Characteristics of Good Governance

The main characteristics of Good governance are:

Good governance is accountable

Accountability is a fundamental requirement of good governance. Local government has an obligation to report, explain and be answerable for the consequences of decisions it has made on behalf of the community it represents.

Good governance is transparent

People should be able to follow and understand the decision-making process. This means that they will be able to clearly see how and why a decision was made – what information, advice and consultation council considered, and which legislative requirements (when relevant) council followed.

Good governance follows the rule of law

This means that decisions are consistent with relevant legislation or common law and are within the powers of council. In the case of Victorian local government, relevant legislation includes the Local Government Act 1989 and other legislation such as the Public Health and Wellbeing Act 2008, and the Equal Opportunity Act 2010.**Good governance is responsive**

Local government should always try to serve the needs of the entire community while balancing competing interests in a timely, appropriate and responsive manner.

Good governance is equitable and inclusive

A community's wellbeing results from all of its members feeling their interests have been considered by council in the decision-making process. This means that all groups, particularly the most vulnerable, should have opportunities to participate in the process.

Good governance is effective and efficient

Local government should implement decisions and follow processes that make the best use of the available people, resources and time to ensure the best possible results for their community.

Good governance is participatory

Anyone affected by or interested in a decision should have the opportunity to participate in the process for making that decision. This can happen in several ways – community members may be provided with information, asked for their opinion, given the opportunity to make recommendations or, in some cases, be part of the actual decision-making process. (Wikipedia 2013 online, accessed on 05 February 2014)

In this chapter, an overview of procurement process of RHD, description and background of CMS in RHD, benefits and activities of CMS, inter-relationship of good governance with CMS and characteristics of good governance has been described.

Chapter 3: Methodology of the Study

3.1 Data sources

This is an exploratory research that uses case study method. The study depends on both primary and secondary sources for necessary data and information. Both qualitative and quantitative approach has been used to understand the perception of respondents in regarding to existing performance and find out the possible ways for improvement.

Primary data (qualitative) has been collected from respondents which cover engineers, accountants and computer operators working directly through questionnaire survey and interviews. The questionnaire survey was done mostly by internet and also the researcher has visited some divisional offices to collect field data. After the exchange of general idea of the research objectives, the questionnaire was given to them. They were requested to fill up the questionnaire based on their practical experience regarding the operation of CMS.

Secondary data (quantitative) has been collected from internet (RHD website) about the budget allocation and operation scenario of the CMS.

3.1.1 Sources of Data, Data collection techniques

Primary sources through survey and questionnaire will be used for data collection for this research work. Prior to the collection of data, pre testing of the questionnaire will be conducted with a few prospective interviewee viz. executive engineers of RHD for buyer survey to determine the suitability and accuracy of the questionnaire for the intended purpose of finding out the opportunities and existing condition of CSR in the public procurement. Also time required to complete the survey will be monitored and recorded with a view not to make the questionnaire too time consuming to respond which might deter respondents.

The target interviewees of the survey would be:

- Chief Engineer
- Additional Chief Engineer
- Superintending Engineer
- Executive Engineer
- Sub-divisional Engineer
- Divisional Accountant
- Computer Operator

Gender and experience of the officers within RHD will also be noted while conducting the survey.

Certain number of engineers, accountants and computer operators concerned with CMS has been selected as research sample since this research focuses on operation of CMS, its current status and further improvements to ensure Good Governance in a higher degree. For example, respondent has been selected from different field offices from all over Bangladesh and also officers from the top management.

3.2 Questionnaire design

Both open-ended and close-ended questions were set in the questionnaire to reveal the real perception of the respondents. They were asked to give their perception regarding the current practices of CMS, reason behind performance shortfalls and probable solutions to improve.

3.3 Survey sampling

Target Sample Size:	55
Collected Sample Size:	50
Sample Frame:	1st Class officer of RHD
	2nd Class officer of RHD
	Computer Operators of RHD
Sampling Method:	Non probabilistic sampling
Constraints:	Time, No. of respondent,
Sampling Error:	Response - 50
	Non-response - 00
Survey:	Online Questionnaire for officers
	Physical Questionnaire for Computer Operators

3.4 Determination of sample size

Twenty Field Offices (Sirajgonj, Narayangonj, Laxmipur, Meherpur, Jamalpur, Pabna, Kushtia, Comilla, Feni, Shariatpur, Chandpur, Noakhali, Rajbari, Dhaka, Shatkhira, Panchgor, Sylhet, Khulna, Chittagong & Narail), two Mechanical Divisions and MIS office of RHD have been selected for this study purpose. The selected offices are shown below in Table 3.1.

Table 3.1 *Offices under study*

Type of office	Sample size
Field Division	20
Head office Unit	1
Mechanical Division	2
Total	23

From these offices, the sample size of respondents is forty five who are working in the Field Office and it is shown in Table 3.2.

Table 3.2 *Sample size of respondents*

Type of respondent	Sample size
Additional Chief Engineer	2
Superintending Engineer	3
Executive Engineer	20
Sub-Divisional Engineer	15
Divisional Accountant	5
Computer Operator	5
Total sample size	50

3.5 Data analysis

As a means of processing, collected raw data have been cleaned, arranged and converted into grouped data before analysis. Microsoft Excel has been used for analysis of the data. Both the quantitative and qualitative data have been analyzed to identify the current practices of CMS and the ways to improve performance. The data analysis has also been done to find out the reasons behind the shortfalls in CMS performance as well as to suggest probable solutions to improve the system to ensure Good Governance in RHD.

The Methodology is depicted in the following Figure 3.1.

Figure 3.1 *Research Methodology*

Selection of Study Area
(20 Field Offices,2 Mechanical Division & 1 Head Office Unit of RHD)

↓

Primary Data Collection from RHD Professionals and Computer Operators through Questionnaire Survey and Interviews (Qualitative Data)

↓

Secondary Data Collection from Internet and RHD Website (Quantitative Data)

↓

Analysis of both Collected Survey Data and Secondary Data to Identify the Current Practices of CMS and its improvement suggestions

↓

Analysis of both Quantitative and Qualitative Data to Find out the Reasons behind the Shortfalls in CMS Performance

↓

| Discussion on both Quantitative and Qualitative Data to Suggest Probable Solutions to Improve CMS in RHD |
| :---: |

Chapter 4: Data Analysis

4.1 Overview of the Responses

Around fifty responses were collected by both online questionnaire survey and direct interview and these were analyzed for representativeness with the population. Afterwards more detailed analysis was carried out to investigate the present practice of CMS in public procurement in RHD.

4.1.1 Respondents' position in RHD
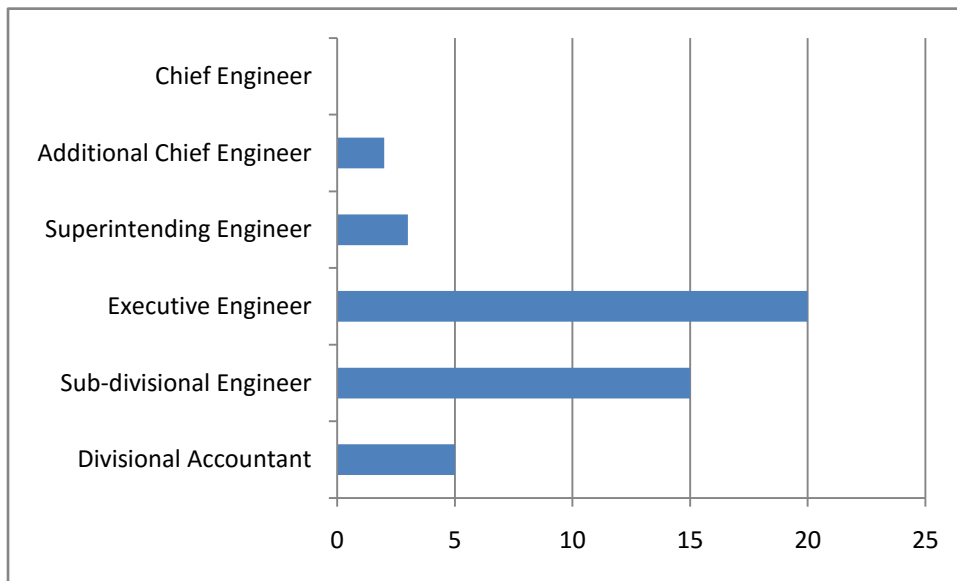
Figure 4.1: Respondents' Position in RHD

Table 4.1: Respondents' position in RHD

Position	Population	Sample
Divisional Accountant	*19.95%*	*1.03%*
Sub-divisional Engineer	*33.05%*	*3.11%*
Executive Engineer	*30.14%*	*4.15%*
Superintending Engineer	*11.43%*	*0.62%*

Additional Chief Engineer	5.40%	0.41%
Chief Engineer	0.21%	0%

So, we have got more response from Executive Engineer and we have got less response from Superintending Engineer and above. Other than this, 4% Computer operators are also interviewed.

4.1.2   Respondents' Job tenure in RHD
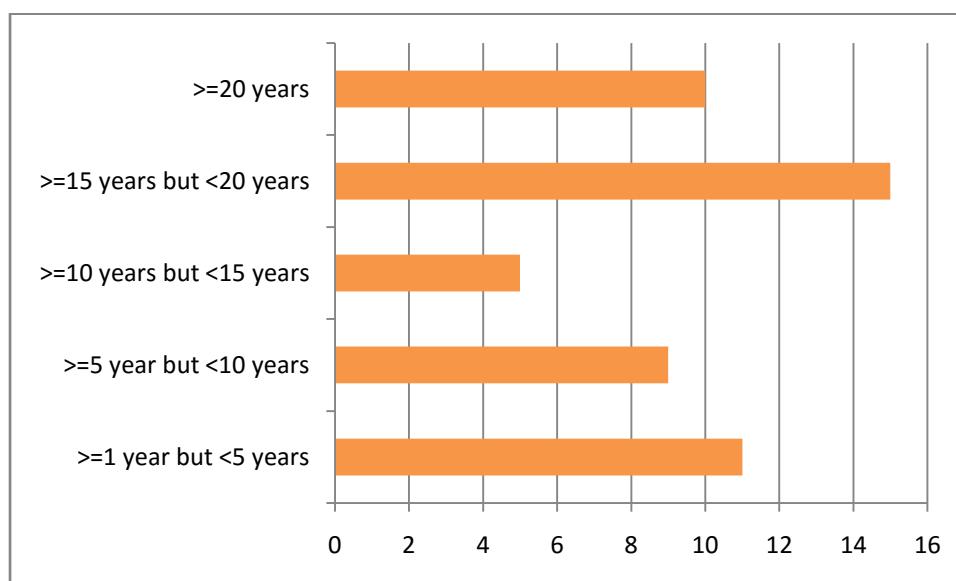
Figure 4.2: *Respondents' Job Tenure in RHD*

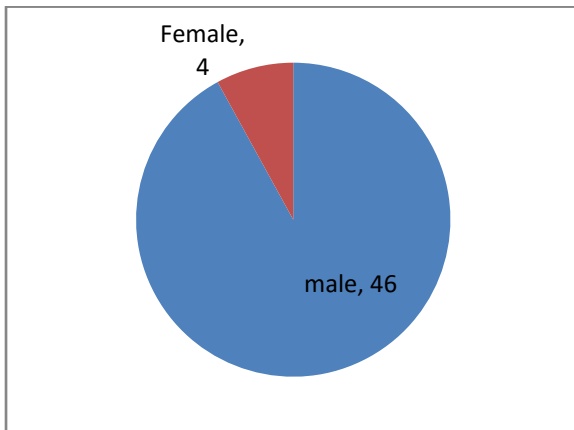*Table 4.2: Respondents' job tenure in RHD*

Job Tenure	Respondent Percentage
>=1 year but <5 years	22%
>=5 year but <10 years	18%
>=10 years but <15 years	10%
>=15 years but <20 years	30%
>=20 years	20%

So from the above data, it can be said that officers from all level of job duration have been included in the interview for which the survey would be a representative one.

4.1.3 Respondents' Gender

Table 4.3: Gender composition

Gender	Population	Sample
Male	93%	92%
Female	07%	08%

**Figure 4.3:** *Gender composition*

According to above graph the majority of the respondents are male. Among the respondents, male was 92 percent and female 8 percent whereas actual male ratio is 93 percent and female ratio is 7 percent. So the sample selection in respect of gender representation is acceptable.

4.2 Results and Analysis

4.2.1 Findings from the qualitative data

To identify the current practices of CMS and to suggest the possible ways of improvement, a questionnaire survey was conducted among 50 respondents (2 Additional Chief Engineer, 3 Superintending Engineer, 20 Executive Engineers, 15 Sub-divisional Engineers, 5 Divisional Accountant and 5 Computer Operator). The results are summarized below.

4.2.1.1 Use of CMS in procurement steps
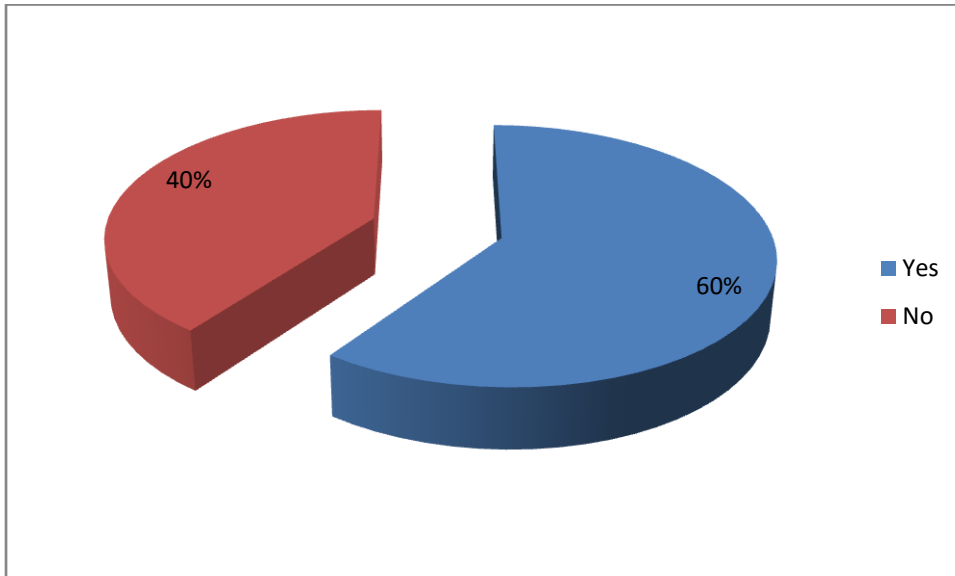
Figure 4.4: *Usage of CMS in Procurement Steps*

In the study it was found that 60 percent respondents answered that they use CMS for every procurement steps e.g. from estimate preparation to Completion Certificate. 40 percent respondents expresses that they do not use CMS in every steps, they only prepare the bill and as a mandatory binding payment is done after CMS entry.

4.2.1.2 Use of CMS in preparation of report
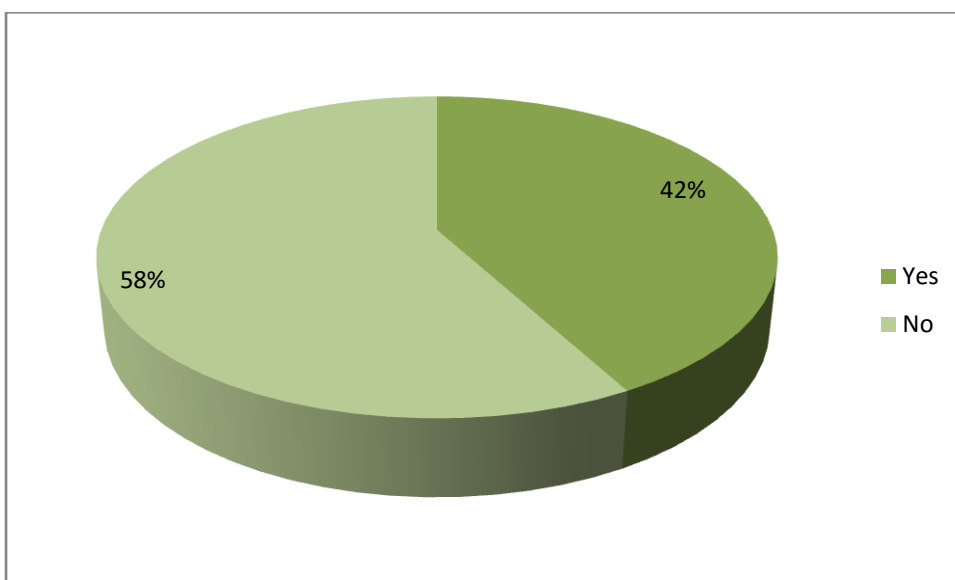
Figure 4.5: *Usage of CMS in Progress Report Preparation*

Anlysing the data it is found that, 58 percent respondents said that they use CMS in preparation of progress report. On the other hand, 42 percent respondents are reluctant to use CMS in preparation of progress report as the monthly progress report format is not incorporated in the software.
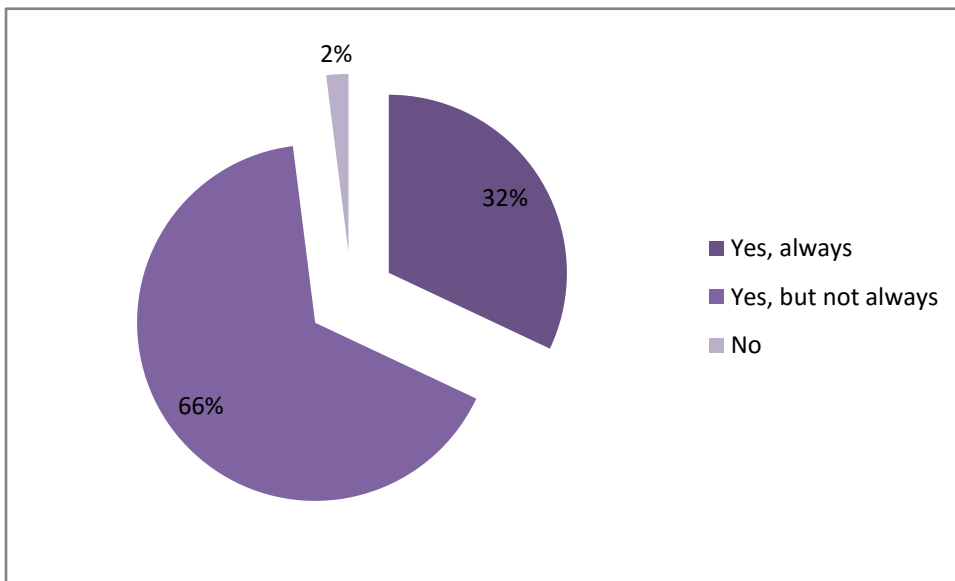
4.2.1.3 Operation of CMS by appropriate authority

Figure 4.6: Use of CMS by Authorized Person

In the study, 66 percent respondents have answered that appropriate authority uses CMS, but for time constrain sometime they are not able to operate or authorize. As a result they delegate it to his subordinate. While, 32 percent respondents argued that always the appropriate authority use CMS. Only 2 percent respondents reported that the appropriate authority never use CMS.

4.2.1.4 Connectivity of CMS with Headquarters
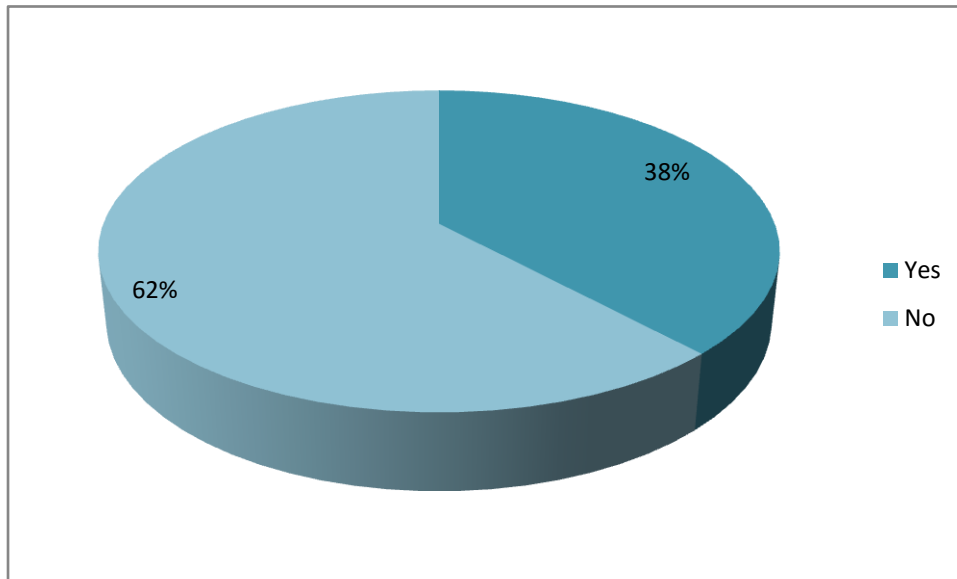
Figure 4.7: Network Connection of CMS with Headquarter

During survey, 62 percent respondents said that there is no direct network connection with headquarters. But 38 percent respondents argued that CMS is connected with headquarters.

4.2.1.5 Synchronization of CMS with eGP
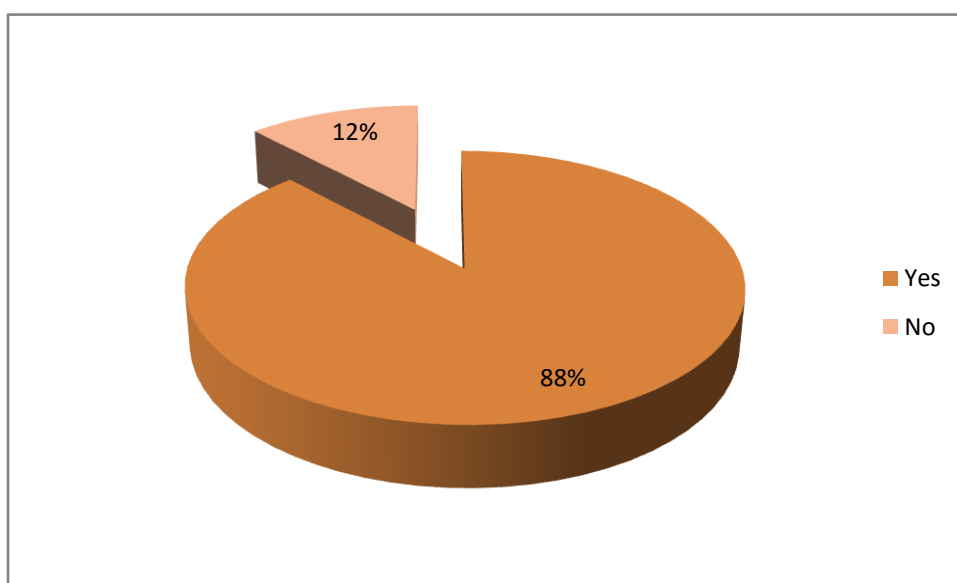
Figure 4.8: Network Connection of CMS with e GP

In the study, 88 percent respondents give their opinion in favor of network connection of CMS with e GP. Only 12 percent respondents are against the theme.

4.2.1.6 Functions of CMS in reporting
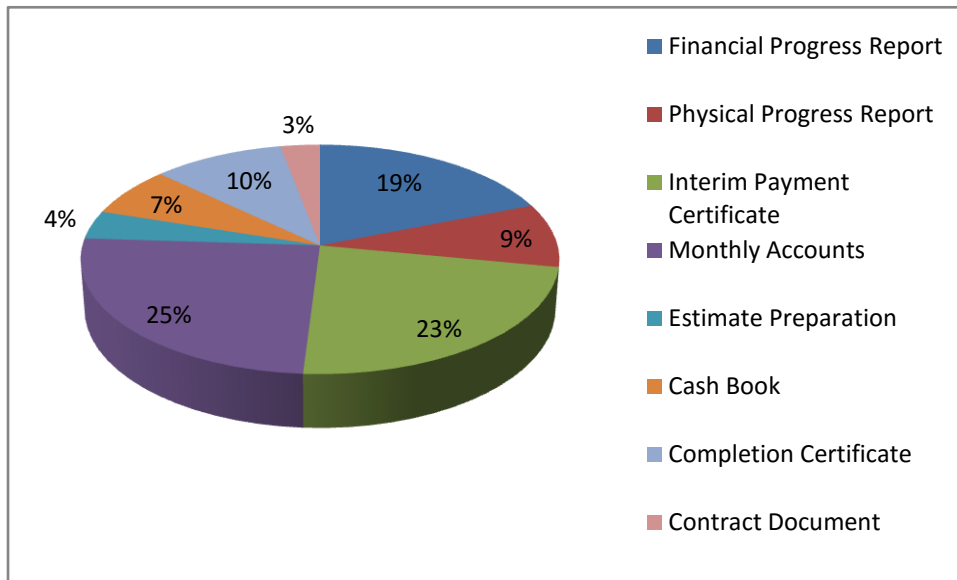
Figure 4.9: Various output of CMS

Among the answer a huge range of output of CMS is obtained. Of that answer, 25 percent is Monthly Accounts, 23 percent is Interim Payment Certificate, 19 percent is Financial Progress Report, 10 percent is Completion Certificate, 9 percent is Physical Progress Report, 7 percent is Cash Book, 4 percent is Estimate preparation and 4 perecent is Contract Document.

4.2.1.7 Time extension in CMS
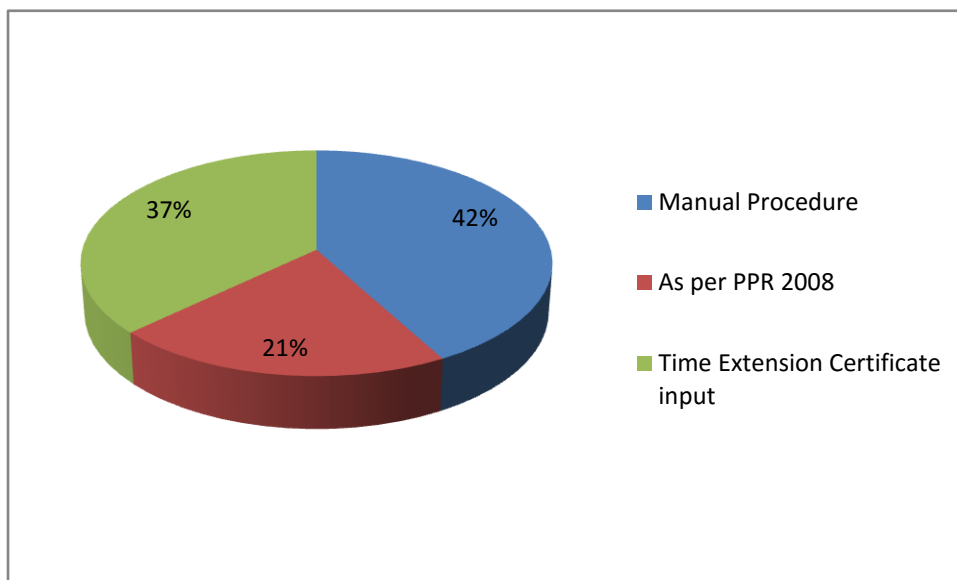
Figure 4.10: Procedure of CMS if a Contract delays

Among the respondents, 42 percent said that they follow manual procedure, 37 percent expressed that they provide inputs of the data and generate by the Time Extension Certificate and 21% follow PPR2008.

4.2.1.8 Limitations of CMS

When respondents were asked, what are the limitations of existing system of using CMS, according to the respondents surveyed there are lots of limitations they face during operation of CMS though it is an effective accountability tool though it could be more efficient.

The limitations are:

- Any modification can be done without prior approval of Chief Engineer.
- Tender Publication is not done through CMS.
- Projects are still outside CMS activities
- Revenue Budget are still not observed by CMS
- Manpower problem
- Old system
- Executive engineer are not prime authority
- Incompatibility of software with latest windows version
- No dummy software for practice and training
- Fund allocation cannot be done by local office. So sometimes delay occur.
- Limited access for correction.
- Not user friendly
- Not available and connected to Sub-Division office
- No option of Electronic Payment
- Field Module is practiced, but Contract Module is not well practiced
- Local Area Network (LAN) connection is absent
- All Divisional Headquarter are not interconnected and management information are not updated automatically
- Absence of mirror server
- Incompatibility of data regarding LRP
- Estimate sheet should be more comprehensive
- Data updated after a month as no online connection

- Lack of data update creates invalid packages which overloads server
- Do not produce Monthly Progress Report

By summarizing these limitations we can see the following broad categories:
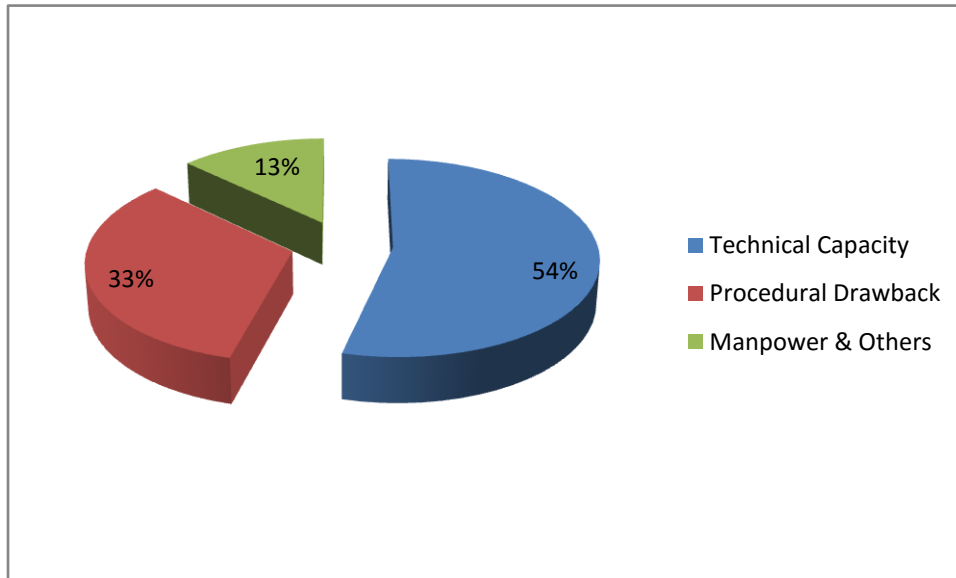
Figure 4.11: *Limitations of CMS*

As per the respondents view 54 percent limitations are about technical capacity, 33 percent areabout procedural drawback and 13 percent are manpower and others. These information give us an idea that CMS is not functioning well enough as it should do because of ignorance, lack of knowledge, lack of training and absence of periodic updating of the system.

4.2.1.9 Improvement Suggestions of CMS

Respondents give several suggestive measures when they were asked for the way of improvement of CMS as they really want to improve the existing system.

The suggestions are as follows:

- All procurement should be through e-tender
- LTM and RFQ should be conducted by e tender by using CMS
- LAN and WAN connection should be installed
- Speed of connection should be enhanced
- Revenue Budget should be included
- All projects should be included
- Capacity strengthening is required

- Server should be updated

- It should be linked with E-GP

- Fiscal year wise contractors should be registered

- Demo version for practice should be available

- No paper work

- Continuous training

- Test report should be uploaded

- Sub-Division office should be covered

- User friendly

- Electronic Fund Transfer should be incorporated

- Mirror server

- Unified item for new item for BOQ

- Accountability of CMS staff for modification

- Digital Signature should be introduced

- Web-base system should be introduced

- Integration with PPR 2008 will enhance the system

Categorizing these above suggestive measures we can summarize as:
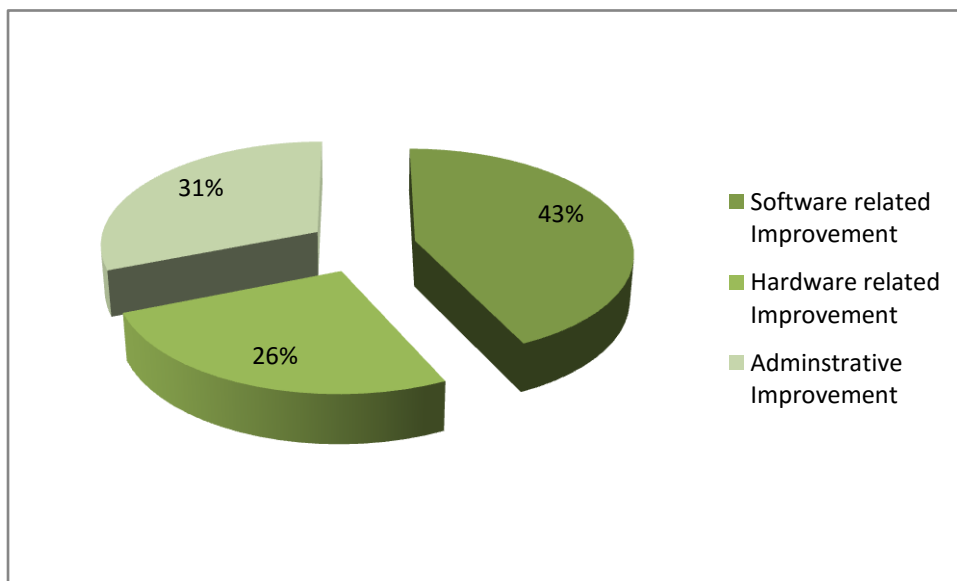
Figure 4.12: *Suggestions for improvement of CMS*

In this chapter, the data obtained by the study has been analysed and presented in graphical presentation which gives us an clear idea of the current practices of CMS in RHD, its limitations and also its improvement suggestion.

Chapter 5: Conclusions and Recommendations

5.1 Conclusion

CMS is a robust accountability tools which can be incorporated in the procurement processes in public procurement like RHD. Accountability is an approach by which Good Governance can be established. This study aimed to examine CMS practices in public procurement in the Public Sector with a focus on Roads and Highways Department of Bangladesh. The specific objective is to identify the challenges of implementing CMS in public procurement process in RHD. The study has outlined the current practices of CMS, day to day problem faced during CMS operation, the need for upgradation, its limitation in practical operation regarding financial matters and a range of suggestions for its improvement.

During the survey it has been found that there is a huge gap and difference in perception and knowledge about CMS within the respondents. Some respondent gave totally opposite remarks than the others regarding some definite information. The respondents are the key players of CMS by which Good Governance can be achieved in public procurement. So, there is a crying need of proper training for knowledge sharing between the officials and staffs who are directly and indirectly involved in CMS operation.

From the analysis it is obvious that there are some shortfalls in current practices of CMS than it could perform efficiently. Only Field Offices use CMS, and therefore the Head Quarter Offices and Projects should use CMS for Financial Management. There is a huge demand of up gradation of CMS which was developed by Consultant and started working in 2005. According to 82 percent respondents the need for technical and procedural upgradation is quite obvious.

Due to absence of network connection between Field Office and Head Office, a continuous operation problem and delay occurs which hampers the flow of work. About 69 percent respondents mentioned the need of LAN and WAN connection.

Again respondents have technical shortfalls like lack of software knowledge, adaptability and practice. More than 74 percent respondents expressed the need of proper training of personnel running the CMS.

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It is not always possible for engineers to monitor full time all the activities of CMS and solve the technical difficulties occur during operation by CMS. According to 80 percent respondents, they have to depend on Head Office Staff assistance which need time and sometimes time is a constraint.

There are also some administrative shortfalls for any modification of contract. Around 62 percent respondents mentioned that there are some limitations of administrative procedures regarding modifications.

5.2 Recommendations

In view of the the results and analysis of both the quantitative and qualitative data in this study, the following recommendations can be made regarding the ways to improve the performance of CMS in RHD.
At present, further development of essential elements of CMS is obvious. By overcoming the shortfalls identified and introducing suggestive measures, CMS can be improved.

Sufficient budget allocation for capacity strengthening and appointing efficient and effective manpower for institutional development can result in sustainable change to achieve desired state of CMS.

Proper monitoring system should be established by efficient manpower. There should be some tactical change in administrative and technical procedure of CMS to improve the system. If engineers establish accountability and transparency, they can influence the system to ensure work quality.

A proper training to the users should be done on a continuous basis which will reduce the gaps of knowledge within the users.

As a public sector organization, RHD expend public money to provide service to public. Moreover, a major portion of RHD's expense is procurement cost of works, goods and services. Thus, to ensure proper use of this public money proper utilization and improvement of CMS can play a vital role towards Good Governance in Roads and Highways Department of Bangladesh.

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Appendix A: Definition of Key Terms

Definitions of key terms as per PPR 2008:

1. **"Contractor"** means a Person under contract with a Procuring Entity for the execution of any Works under the Act.

2. **"CPTU"** means the Central Procurement Technical Unit, established by the in the Implementation Monitoring and Evaluation Division of the Ministry of Planning, for carrying out the purposes of the Act and these Rules.

3. **"Head of the Procuring Entity"** means the Secretary of a Ministry or a Division, the Head of a Government Department or Directorate; or the Chief Executive, by whatever designation called, of a local Government agency, an autonomous or semi-autonomous body or a corporation, or a corporate body established under the Companies Act.

4. **"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.

5. **"Procuring Entity"** means a Procuring Entity having administrative and financial powers to undertake Procurement of Goods, Works or Services using public funds.

6. **"Project Manager"** is the person named in the Contract or any other competent person appointed by the Procuring Entity and notified to the Contractor who is responsible for supervising the execution of the Works and administering the Contract.

7. **"Public Funds"** means any funds allocated to a Procuring Entity under Government budget, or loan, grants and credits placed at the disposal of a Procuring Entity through the Government by the development partners or foreign states or organizations.

8. **"Public Procurement"** means Procurement using public funds.

9. **"Tender or Proposal"**, depending on the context, means a Tender or a Proposal submitted by a Tenderer or a Consultant for delivery of Goods, Works or Services to a Procuring Entity in response to an Invitation for Tender or a Request for Proposal; and for the purposes of the Act, Tender also includes quotation.

10. **"Works"** means all Works associated with the construction, reconstruction, site preparation, demolition, repair, maintenance or renovation of railways, roads, highways or a building, an infrastructure or structure or an installation or any construction work relating to excavation, installation of equipment and materials, decoration, as well as physical Services ancillary to Works, if the value of those Services does not exceed that of the Works themselves.

11. **LTM** - Limited Tendering Method

12. **OTM** - Open Tendering Method

13. **QCBS** - Quality & Cost Based Selection

14. **RFQ** - Request for Quotation

15. **LCS**- Least Cost Selection

16. **DPM**- Direct procurement method

Appendix B: Questionnaire

BRAC Institute of Governance and Development (BIGD), BRAC University

&

The Chartered Institute of Purchasing and Supply (CIPS), UK

Thesis topic: Improving performances of CMS in public procurement: A Case study on Roads & Highways Department

[This research is fully needed for CIPS and BRAC University requirement. This survey questionnaire is prepared for obtaining opinion of the respondent like as Executive Agency of RHD: concerned officers and staffs of CMS operation. And allocated data will be restricted within report document. We solicit your support and cooperation for providing information.]

Part A: Demographic Information

    1. Length of Service:
    2. Position:
    3. Age:
    4. Sex:
    5. Last academic Degree:

Part B: The following 9 questions deal with CMS activities and its operation. You are requested to explain and share your opinion. In case of option, delete the option you do not agree.

Q1. Do you do all procurement steps with CMS?

Ans: A.Yes   B. No

Q2. What kind of regular management reports do you get from CMS?

Ans:

Q3. What procedure do you follow if a contract is delayed?

 Ans:

Q4. Do you get progress report by using CMS?

Ans: A. Yes   B. No

Q5. Does the appropriate authority use CMS?

Ans: A. Yes, always   B. Yes, but not always
C. No

Q6. Does CMS have network connection with headquarter?

Ans: A. Yes   B. No

Q7. Do you think it should be connected with eGP?

Ans: A. Yes   B. No

Q8. In your opinion, what are the limitations of existing system of using CMS?

Q9. How can it be improved?

Appendix C: Workforce of RHD

GOVERNMENT OF PEOPLE'S REPUBLIC OF BANGLADESH
MINISTRY OF ESTABLISHMENT O & M WING

STATISTICS ON CIVIL EMPLOYEES OF THE GOVERNMENT OF BANGLADESH

Name of Ministry Division   : Ministry of Communications
Name of Cadre   : BCS (R&H)
(As on 26/2/2015)

Sl No.	Name of Post (Both Rev & Dev)	Scale of Pay		No. of Sanc. Posts	Existing No.		
		Min	Max		Male	Female	Total
1		2	3	4	5	6	7
1	Chief Engineer			1	1	0	1
2	Additional Chief Engineer			25	24	0	24
3	Additional Chief Engineer (Mechanical)			1	1	0	1
4	Reserved - Additional Chief Engineer			1	1	0	1
5	Superintending Engineer			49	35	1	36
6	Superintending Engineer (Mechanical)			10	9	0	9
7	Reserved - Superintending Engineer			3	2	0	2
8	Reserved - Superintending Engineer (Mechanical)			1	0	0	0
9	Executive Engineer			136	120	9	129
10	Executive Engineer (Mechanical)			15	13	0	13
11	Reserved - Executive Engineer			7	6	1	7
12	Reserved - Executive Engineer (Mechanical)			2	1	0	1
13	Sub-Divisional Engineer			185	140	7	147
14	Sub-Divisional Engineer (Mechanical)			39	6	0	6
15	Reserved - Sub-Divisional Engineer			15	10	2	12
16	Reserved - Sub-Divisional Engineer (Mechanical)			4	3	0	3
17	Assistant Engineer			197	129	19	148
18	Assistant Engineer (Mechanical)			20	7	0	7
19	Reserved - Assistant Engineer			16	5	0	5
20	Reserved - Assistant Engineer			2	0	0	0

(Mechanical)				
	Total :	729	513	39	552

Table: Male female ratio: (As on 26/2/2015)

Post	Male	Female	% Male	% Female
CE	1	0	100%	0%
ACE	26	0	100%	0%
SE	47	1	99%	1%
EE	139	10	93%	7%
SDE	159	9	95%	5%
AE	141	19	88%	12%
Total	513	39	93%	7%

Appendix D: CMS User Manual