

Report On
Contract Management and Risk Management in Procurement
Process of PWD

By

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An internship report submitted to the BRAC Institute of Governance and Development
(BIGD) in partial fulfillment of the requirements for the degree of
MASTERS IN PROCUREMENT AND SUPPLY MANAGEMENT (MPSM)

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

It is hereby declared that

1. The internship report submitted is my/our own original work while completing degree at BRAC University.
2. The report does not contain material previously published or written by a third party, except where this is appropriately cited through full and accurate referencing.
3. The report does not contain material which has been accepted, or submitted, for any other degree or diploma at a university or other institution.
4. I/We have acknowledged all main sources of help.

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Letter of Transmittal

Shah Eyamin Ul Islam
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Subject: Submission of report on “Contract Management and Risk Management in Procurement Process of PWD”

Dear Sir,

It is immense pleasure to present my project report. This report was prepared through analyzing the major procurement related challenges PWD officials are facing during the tender preparation and contract management phases. During this period, I learned a lot of things and applied my knowledge and skills for generating the report. I did my best to gather information for this report in order to provide in-depth knowledge. I hope that this report meets the requirements and provides insight from an organizational standpoint. Hopefully, you will find my work and effort, informative approach, and well-researched report useful.

Sincerely yours,

Md. Mustafizur Rahman
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Date: January 04, 2023.

Non-Disclosure Agreement

This agreement has made and entered into by and between Public Works Department as the First Party and the undersigned student at BRAC Institute of Governance and Development, BRAC University as the Second Party. The First Party has allowed the Second Party to prepare a report on Contract Management and Risk Management in Procurement Process of PWD in partial fulfillment of the requirements for the degree of Masters of Procurement and Supply Management. The Second Party will have the opportunity to work closely with the officials of the organization and have access to official data and information. Based on work experience, data, and information collected the Second Party will prepare a report. The Second Party will use all sorts of data and information for academic purposes and will not disclose to any party against the interests of the First Party.

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Acknowledgement

At first, I would like to express my sincere thankfulness to God for granting me the ability to successfully complete this project study.

I owe my supervisor a huge debt of appreciation and I'd like to express my heartfelt gratitude to my academic supervisor Shah Eyamin Ul Islam, Senior Trainer, BRAC Institute of Governance and Development (BIGD), BRAC University and workplace supervisor Md. Monirul Islam, Superintend Engineer, Public Works Department for his unwavering support, generous assistance, constructive comments, and invaluable suggestions all through the work's progress

I would really like to thank the officers and staff of BIGD, BRAC University, particularly Tanzina Mizan, Training Officer, BIGD, BRAC University, for her unwavering support throughout the study period.

I also would like to express my heartfelt gratitude to the respondents of the Public Works Department (PWD), notably Executive Engineers, Sub-divisional Engineers, and Assistant Engineers from various PWD offices who assisted me at various phases of the data collection and provided numerous official support.

Finally, I'd like to thank my parents, wife and colleagues for their constant encouragement and support throughout the study.

Executive Summary

Supply chain is the major term in an organisation that includes the delivery of raw materials from supplier to manufacturer and the path of finished product to reach from manufacturer to the end user. In every steps of supply chain there is a probability of numerous kinds of risks (both internal and external). The main theme of this report is to find out the major risks on procurement and supply chain process of Public Works department. The main method of generating findings and results is questionnaire survey. For questionnaire survey 28 questions were prepared and 21 respondents who are working in different offices (from Assistant Engineer to Executive Engineer) answered the questions. Major findings from this survey is that during the tender preparation stage pre-bid meetings time for mitigating the ambiguity of tender proposal, timely payment can reduce time and cost overrun. Insurance coverage can transfer the risk from the contractors to the insurance company, auditing of payment should be done properly. Major recommendations from this report that should be implemented by the key personnel of PWD is that feasibility study must be done for analysing the risks, proper risk management plan must be generated prior to commence of a project, insurance must be ensured as per PCC of the contracts, structural and architectural drawings must be provided on time during construction phase, market should be properly analysed for mitigating cost overrun and every project office must maintain risk register from beginning to the end of project. It is expected that this report will help to improve the risk management strategies and efficiency to overcome external and internal risks of Public Works Department.

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List of Acronyms

SCRM	Supply Chain Risk Management
PWD	Public Works Department
MEAT	Most Economically Advantageous Tender
CPTU	Central Procurement Technical Unit
STD	Standard Tender Document
PCC	Particular Conditions of Contract
CFCC	Corrupt, Fraudulent, Collusive and Coercive Practice.

Keywords

Risk Management Process

Risk Mitigation Strategies

Insurance

Risk Register

Risk Analysis

Risk Management Plan

Chapter 1

Introduction

Contract and construction management are vital components of any construction project. Contract management involves overseeing the creation, execution, and analysis of contracts between various parties involved in a construction project. This includes the client, contractors, subcontractors, suppliers, and other stakeholders. It entails negotiating terms, ensuring compliance, handling modifications, and resolving disputes that may arise during the project. Construction management, on the other hand, involves the overall planning, coordination, and control of a project from inception to completion. It encompasses various aspects such as scheduling, budgeting, resource allocation, quality control, risk management, and ensuring adherence to building codes and safety regulations.

Both contract and construction management work hand in hand to ensure that a construction project progresses smoothly, stays within budget and timeline, meets quality standards, and complies with legal and contractual obligations. Effective communication, attention to detail, and the ability to problem-solve are crucial in these roles.

1.1 Contract and Construction Management in Public Works Department (PWD)

In the realm of public infrastructure development, the Public Works Department (PWD) stands as the cornerstone, entrusted with the task of conceptualizing, planning, and executing diverse projects crucial for societal progress. The efficient management of contracts and construction within the PWD framework is fundamental to realizing the vision of robust, sustainable, and functional infrastructure that caters to the needs of our communities.

1.2 Overview

This report aims to delve into the intricate workings of contract and construction management within the PWD, delineating the comprehensive strategies and methodologies employed to ensure the successful delivery of infrastructure projects. From the inception of a project through

its planning, tendering, execution, to the final handover, the PWD meticulously orchestrates a series of processes aimed at efficiency, transparency, and quality assurance.

1.3 Key Components

1. **Tendering and Contract Initiation:** Unveiling the process of soliciting bids, selecting contractors, and establishing contractual agreements that delineate responsibilities, scope, and quality benchmarks.
2. **Construction Oversight:** Highlighting the critical role of PWD in supervising and managing construction activities, adhering to timelines, quality standards, and safety protocols.
3. **Budget and Resource Management:** Exploring the intricate balance of resource allocation, cost control measures, and adherence to allocated budgets for seamless project execution.
4. **Compliance and Regulatory Adherence:** Emphasizing the PWD's commitment to upholding legal frameworks, safety regulations, and environmental considerations integral to all construction endeavors.
5. **Stakeholder Engagement:** Unveiling the collaborative approach of the PWD, involving stakeholders, communities, and authorities to ensure projects are aligned with societal needs and expectations.

Chapter 2

Background

2.1 Contracts in construction

Contracts within construction projects serve as the backbone for delineating responsibilities, managing risks, and ensuring project success. They outline the parameters for collaboration, setting expectations and legal frameworks essential for all stakeholders.

Legal Framework and Construction Contracts:

In their paper "Construction Contracts: Law and Management" (Uher, 2016), the authors delve into the legal intricacies of construction contracts, emphasizing how these contracts are shaped by legal frameworks, statutes, and case law. They highlight the significance of clarity in contractual terms to mitigate potential disputes.

Types of Construction Contracts:

According to "Construction Contracts: Principles and Practice" (Harris & McCaffer, 2015), there are various types of construction contracts including lump-sum, cost-plus, design-build, and more. The authors discuss how the choice of contract type impacts risk allocation and project dynamics.

Risk Management and Contracts:

In "Construction Contract Risk Management" (Kartam et al., 2008), the authors examine the role of contracts in mitigating risks in construction projects. They discuss how risk allocation mechanisms within contracts affect project outcomes and stakeholder behavior.

Contract Administration and Performance:

"Construction Contract Administration" (Fleming et al., 2017) explores the administration of construction contracts, focusing on monitoring project performance, handling changes, and resolving disputes. The authors emphasize the importance of effective contract administration in ensuring project success.

Technology and Modern Contracting:

"Smart Contracts in Construction" (Yang et al., 2020) investigates the emergence of smart contracts and their potential applications in the construction industry. The authors discuss how

blockchain technology can revolutionize contract execution and management, improving transparency and efficiency.

2.2 Construction Management in Various Projects of PWD

Construction management stands as the linchpin in successful project execution, encompassing planning, coordination, and control. This section introduces the pivotal role of construction management in diverse projects undertaken by the Public Works Department (PWD) of Bangladesh.

1. Project Planning and Scheduling:

a. Resource Allocation and Scheduling Techniques: "Modern Construction Management" (Harris & McCaffer, 2013) explores resource allocation and scheduling methodologies crucial for efficient project planning. b. Risk Assessment and Management: "Construction Management: Principles and Practice" (Levy & Siddharth, 2006) discusses risk assessment strategies and their application in construction projects.

2. Cost Management and Budgeting:

a. Cost Estimation and Control: "Construction Cost Management" (Seeley & Winfield, 2014) details cost estimation techniques and effective cost control measures in construction projects. b. Value Engineering: "Value Management in Construction" (Kelly & Male, 2011) highlights value engineering principles to optimize project costs without compromising quality.

3. Quality Control and Assurance:

a. Quality Standards in Construction: "Total Quality Management in Construction Projects" (Abdul-Rahman et al., 2015) explores quality management strategies and adherence to standards in construction. b. Performance Monitoring and Improvement: "Construction Quality Management" (Kumaraswamy & Dissanayaka, 1998) emphasizes performance monitoring and improvement methodologies.

4. Safety Regulations and Compliance:

a. Occupational Health and Safety: "Construction Safety Management" (Chinda, 2013) delves into occupational health and safety practices essential for construction sites. b. Legal Compliance and Regulations: "Construction Site Safety" (Haslam et al., 2014) discusses legal compliance and regulations for ensuring safety in construction projects.

5. Stakeholder Communication and Engagement:

- a. Stakeholder Management: "Stakeholder Management in Construction Projects" (Akintoye & MacLeod, 1997) explores stakeholder engagement strategies crucial for project success. b. Community Involvement: "Community Participation in Construction Projects" (Ofori, 2000) highlights the importance of community involvement for successful construction projects.

2.3 Process of Contract and Construction Management of PWD

The process of contract and construction management involves a series of steps aimed at ensuring the successful planning, execution, and completion of construction projects. Here's an overview:

1. Project Initiation and Planning:

Needs Assessment: Identify the scope and requirements of the project, considering infrastructure needs, budget constraints, and timelines.

Feasibility Studies: Conduct studies to assess the viability of the project, analyzing technical, financial, and environmental factors.

Budgeting and Resource Allocation: Determine the financial resources required, allocate budgets, and plan for resource needs such as materials, labor, and equipment.

2. Contract Formation:

Tendering Process: Issue invitations to bid, assess proposals from contractors, and select the most suitable bid based on predefined criteria.

Contract Negotiation: Engage in negotiations with the selected contractor(s) to finalize terms, specifications, timelines, and pricing.

Contract Signing: Formalize the agreement between the contracting parties through contract signing and documentation.

3. Contract Administration:

Documentation and Record Keeping: Maintain comprehensive records of all contract-related documents, including amendments, change orders, and correspondence.

Performance Monitoring: Regularly monitor the progress of the project against agreed-upon milestones, ensuring compliance with specifications and timelines.

Change Management: Handle any changes or variations in project scope, costs, or timelines through formal change orders or variations to the contract.

Payment Processing: Manage payment schedules, certify completed work, and process payments as per the agreed-upon terms.

4. Construction Execution:

Project Supervision: Oversee the construction activities, ensuring adherence to plans, safety standards, and quality requirements.

Resource Management: Allocate resources effectively, manage logistics, and coordinate deliveries to support construction activities.

Quality Control: Implement quality assurance measures, conduct inspections, and address any deviations from specifications promptly.

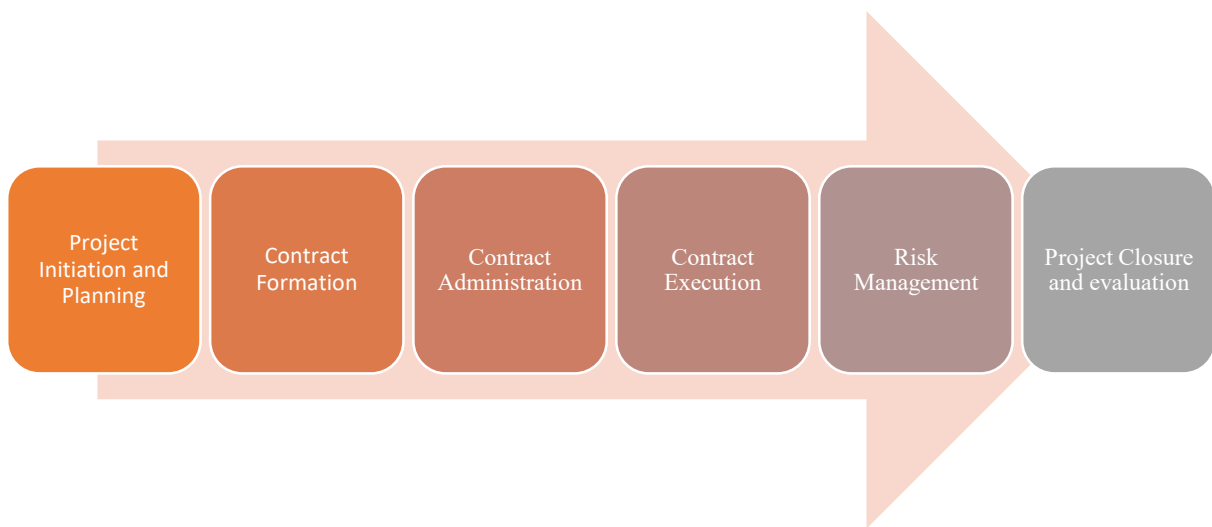


Figure 1: Process of Contract and construction Management

Safety Protocols: Enforce safety measures to protect workers, the public, and the environment.

5. Risk Management:

Risk Identification and Mitigation: Identify potential risks and develop strategies to mitigate them, ensuring proactive risk management throughout the project lifecycle.

Compliance and Legal Considerations: Ensure compliance with local regulations, building codes, environmental standards, and other legal requirements.

6. Project Closure and Evaluation:

Finalization and Handover: Conduct final inspections, certifications, and ensure the completion of all project deliverables.

Documentation and Reporting: Compile project reports, as-built drawings, and documentation for final records and future reference.

Post-Project Evaluation: Assess the overall project performance, identify successes and areas for improvement, and document lessons learned for future projects.

This structured process of contract and construction management ensures effective planning, coordination, and control of construction projects, aiming for successful project delivery while managing risks and ensuring compliance with contractual obligations and quality standards.

Chapter 3

Methodology

This report's conclusions were primarily produced using a questionnaire survey. A questionnaire is a list of inquiries provided to research project participants. It might be a part of a larger research project. The purpose of a questionnaire is to gather data from a target audience. A series of questions was created in order to collect responses from respondents who are employed by PWD in different offices. There are many different kinds of questions about contract and construction management in the questionnaire. In addition to answering a series of questions, the respondents were asked to provide their opinions on how to make PWD's contract and construction management processes better.



Figure 2: Methodology

Chapter 4

Data Collection

This chapter describes the process of gathering data. PWD's procurement officers have been given a questionnaire with both open-ended and closed-ended questions to help identify risk responses in procurement activities.

4.1 Questionnaire design

Since this study focuses on analysing different approaches of contract and construction management in PWD, questionnaire survey is undertaken for assessing contract and construction management system of PWD.

In this questionnaire at first it was asked about the role of the individual in contract and construction management process of PWD. For proper analysing of the system, it is needed to know the role of the individual in the system. So, the question was prepared. Then the individual was asked about the importance of contract management for the success of the project to know about the weightiness of contract management in the implementation of the project. For knowing the commonly used contract types in PWD, a question related to the contract types is prepared. Delays are common in the projects. It is mandatory to find the reasons of delay. So, two questions related to delay of the projects is prepared. A question was prepared regarding the satisfaction of current practices of contract and construction management system was prepared for properly achieving the details about satisfaction of the individual about contract management process of PWD. Unavailability of raw materials are the vital factors for the delay of construction projects. So, a question was prepared to learn about the measures that can be taken to increase the availability of raw materials.

Auditing is the most important factor for compliance of projects. So, a question related to auditing system was prepared to learn about the compliance management system of PWD.

Breaching of contract by the contractors in projects are common practices which must be reduced. So, two questions were prepared to know about the actions taken for proper contract breach management in construction projects. For proper contract and construction management it is important to know the key factors for successful completion of contract. So, a multiple-choice question and an opinion providing question was attached in the questionnaire. This question was important to prepare the recommendation of the report.

4.2 Selections of Individuals

PWD representatives who are directly involved in PWD construction projects, ranging from Assistant Engineers to Additional Chief Engineers, are chosen to respond to the questionnaire. The PWD's ongoing development projects were highlighted, with particular attention paid to those that are midway through their implementation. Furthermore, a few finished projects were taken into account when gathering data.

4.3 Procedure of Data Collection

Every piece of information related to the study is gathered in a way that the conclusions reflect the reality of the issue. 49 Engineers of PWD who involved in different field divisions and were related to the construction projects (i.e., from project starting to project hand over to the ministry) of their offices were the subjects of the questionnaire survey. They were humbly requested to complete the survey based on their knowledge that were carried out under his or her jurisdiction. In order to outline the risk management procedure and backup plan for the construction projects of PWD, the analysis and integration of the survey data that was gathered were integrated.

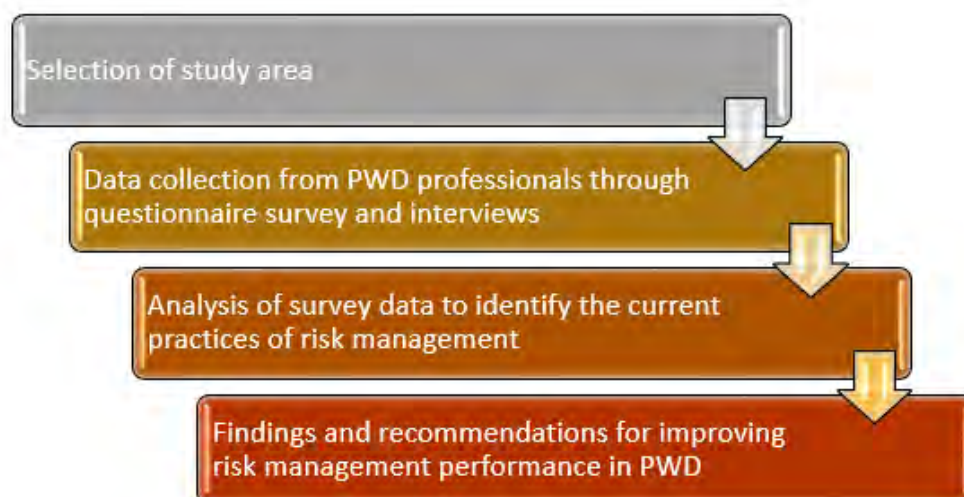


Figure 3: Data Collection Procedure

Chapter 5

FINDINGS AND RESULTS

The information gathered on current procurement risks management is reviewed and provided in this chapter. Pie and bar charts was used to show comparison & results during data analysis. The respondents were asked to fill up total twenty-eight (28) questions regarding procurement activities under his jurisdiction. Responses were received from 21 respondents who are working in different offices related to public procurement and contracts.

5.1 Managing Risk through preparation of tender to the submission stage

Two types of risk occur during the tender preparation stages. The first is that the tender is not widely circulated, and the second is that there is insufficient time in the pre-tender meeting. Pre-bid meeting is a risk mitigating tool which is usually held to clear the ambiguity of the tenderer. It is also the query tool where potential tenderer can clear their confusion before submission of the tender. So, this meeting is very important. According to the survey results, all respondents (100%) stated that bids/proposals were in accordance with PPR advertising principles such as publication of tender (Value above 1.00 Crore) in CPTU website that was easily accessible to potential bidders. All potential bidders receive timely and unambiguous clarifications to bidding/proposal documents, according to 95.2 percent of respondents. There is some uncertainty surrounding the pre-bid meeting. The majority of respondents believe that pre-bid meetings are not properly held. The responses of respondents are shown below.

Are pre bid meetings properly held after publishing of tenders?

21 responses

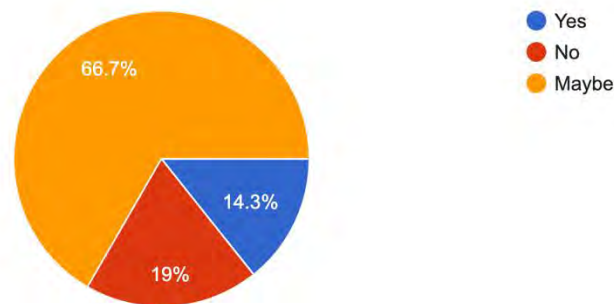


Figure 4: Pre-Bid Meetings Record

Total time provided for the pre-bid by the procuring entity varies in different offices. Only 11.1% said that procuring entity provided 1 day for pre-bid meeting and other responses about providing time less than 1 day. Total time should be given for pre-bid meeting for the tenderers is between 3-5 days. So it is relatively lower in that case.

The number of bids received is reasonable, according to 90.5 percent of respondents, when compared to the number of bidding documents purchased/number of pre-qualified bids. Most PWD offices allow enough time for bid or proposal preparation.

5.2 Managing Risk through processing of Tender

Regarding tender selection, 100 percent respondent responses are evaluated and qualified on the basis of the requirements specified in the documents, such as previous experience, liquid asset, turnover, and an updated license in each PWD office. PPR compliance in procurement practices, according to respondents, helped reduce procurement risks in the early stages. Furthermore, responses to questions about corrupt, fraudulent, collusive, and coercive practices are mixed based on the respondents' personal experience

Did you face any kind of fraudulent practice in the tendering process of your project?

21 responses

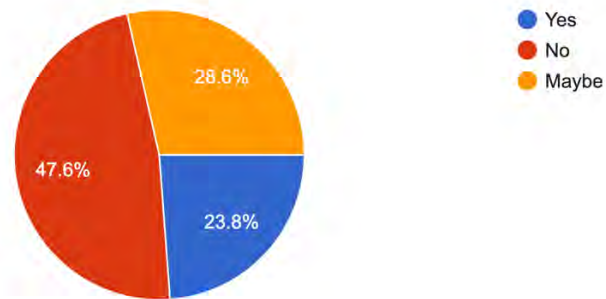


Figure 5: Fraudulent Practices in PWD

Did you face any kind of corrupt practice in the tendering process of your project?

21 responses

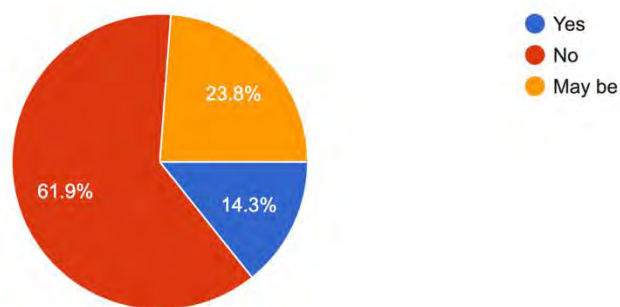


Figure 6: Corrupt Practices in PWD

Did you face any kind of collusive practice in the tendering process of your project?

21 responses

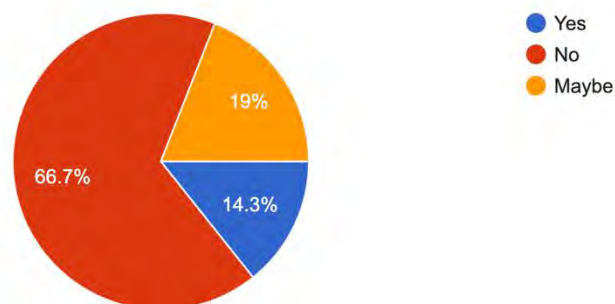


Figure 7: Collusive Practices in PWD

Did you face any kind of coercive practice in the tendering process of your project?

21 responses

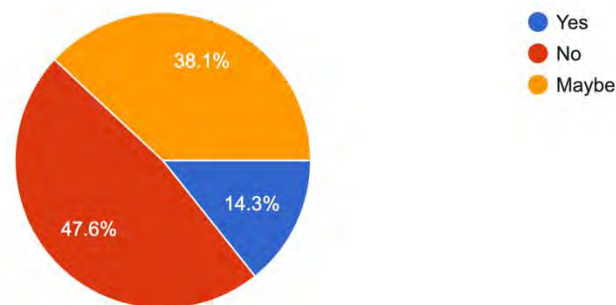


Figure 8: Coercive Practices in PWD

In the case of positive CFCC responses, 71.1 percent of respondents stated that the PE proceeded to the next step as per PPR, either by making the tenderer technically non-responsive or debarring the tenderer from participating in future PWD tenders. One hundred percent of respondents say their division/approving authority always chooses the lowest responsive bidding price for every tender. When asked if they would choose the Most Economically Advantageous Tender (MEAT) over the lowest responsive tender, 85.7 percent said yes.

5.3 Managing risk through insurance coverage

The primary requirement for risk transfer is insurance. Concerning project insurance on contract management, 47.6 percent of respondents reported that PWD projects were often not covered by insurance against collisions and other development hazards. There are special insurance provisions in the tender documentation, but tenderers do not always include everything. When assessing tenders, this section of the tender documentation is disregarded. In the past, there aren't many records of insurance claims. It is a significant flaw in PWD's risk management strategy. In this instance, the respondents recommended that the insurance clause be scrupulously upheld and that, if it is not, the tender should be annulled.

Are your contracts properly insured according to insurance clause stated in the tender documents?

21 responses

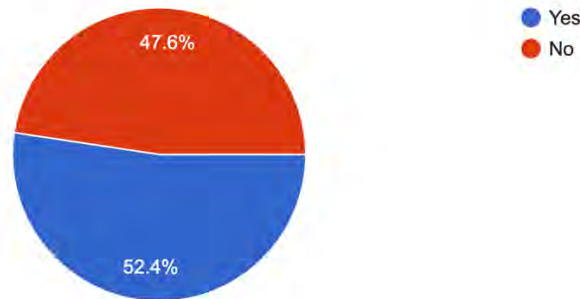


Figure 9: Insurance Coverage in Contracts of PWD

5.4 Managing Risk Through Timely Payment

According to 79% of respondents, contractor bills for completed work were paid in conformance with contractual terms. Perhaps there are documents of late payments due to the lack of funds, particularly in umbrella and revenue projects. However, almost all of the time, payment is made based on the amount of work completed, which is beneficial for risk analysis in PWD.

5.5 Managing Risk in Timely Project Completion

It was discovered that there is still an 81 percent chance of a project being delayed due to poor contractor performance. Other reasons for not meeting project deadlines and not finishing projects on time include issues with acquiring land, site challenges, delays in receiving structural and architectural drawings, implausible completion times stated in tender documents, and so on. According to the findings, in the event of a delay from the actual time of completion, 81 percent of Public work department officials imposed liquidated damage against the contractors.

If yes, did you or will you apply liquidated damage in accordance with contract documents?

21 responses

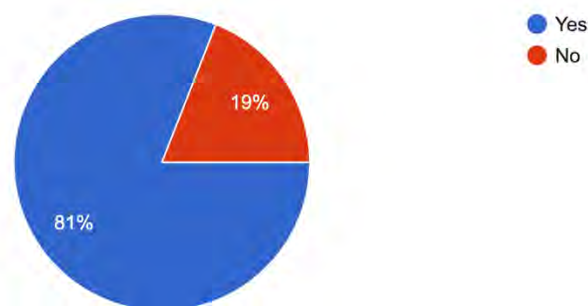


Figure 10: Imposing of Liquidated Damage on Default Contractors

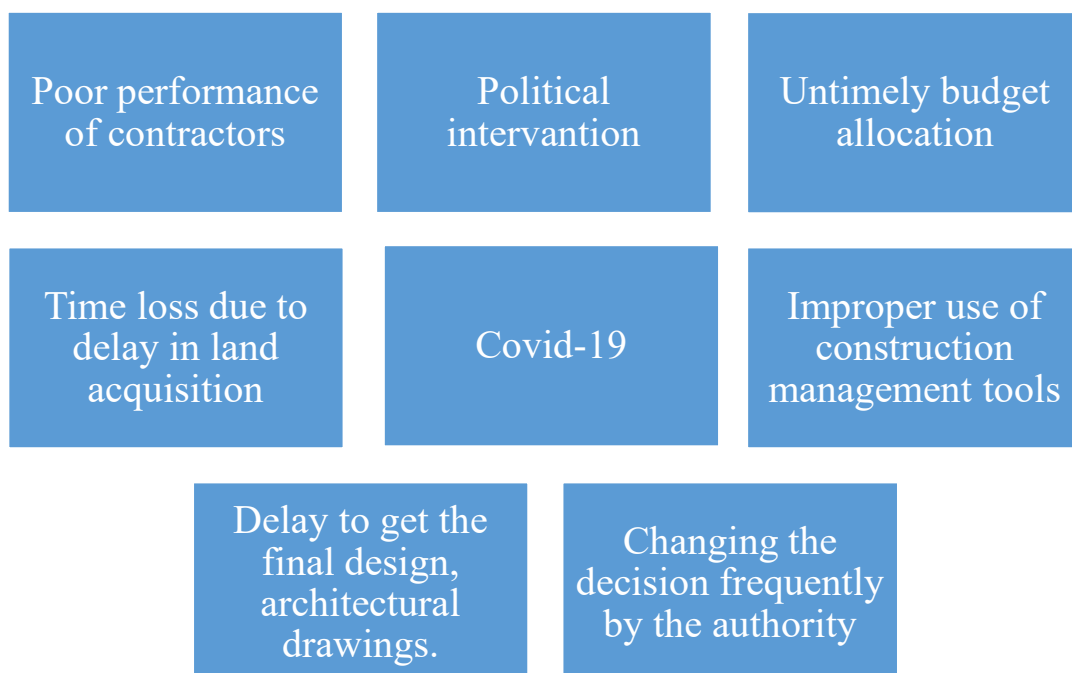


Figure 11: Major causes for the Delay of Projects in Recent Years

Most of the respondent said that maximum projects are not completed on the allocated budget and thus variation occurs.

Major Causes of variation over allocated budget are shown below:

- Changed finished schedule due to the request or demand of end users,
- Change in architectural or structural design as most of the designs are not finalized even the tender has been called
- Estimation was not done properly at the estimation stage.
- Issues regarding proper coordination

5.6 Socio-Political Interference on Managing risk of PWD

Political interference also impacts on the timely project completion. Instability of politics is the bindings of total infrastructure development. Due to the instability like political movement, collisions between political parties, war between the countries impact on the total supply chain process. So that raw material prices can go higher which will impact on the construction process. Contractor wants to delay the work for this price hiking so that materials prices can be reduced. So, time overrun occurs and projects get delayed.

5.7 Auditing and Risk

Auditing is very important document for measuring financial performance. Risk can be mitigated through proper auditing in every division. 90.5% of the respondents' responses that audit report issues in a timely manner and proper auditing is done through C&AG and Ministry of housing of public works in every division.

Are audit reports issued in a timely manner and are recommendations related to procurement generally implemented promptly?
21 responses

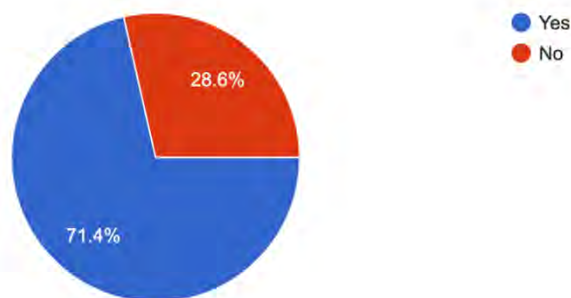


Figure 12: Risk Management Through Auditing

5.8 Managing Risk Through Risk Analysis & Training

According to 71.4 percent of respondents, sound risk management techniques (i.e. identification of risk, evaluation, mitigation, and monitoring) are not implemented in PWD projects. PWD projects are sometimes taken on policy decision to meet people's needs. Sometimes projects don't get the proper feasibility studies. This causes issues with project funding and land acquisition, which slows down project activity and delays project completion. These issues might be reduced if projects are prioritized and properly managed for risk. To properly address prospective issues, nearly all respondents suggested conducting a risk analysis prior to beginning any project and allocating some budget for continuous risk management. All respondents agreed that risk management training is necessary for assessing and controlling procurement risks. Despite the fact that some guidelines are built into the PPR & PWD procurement methods, proper risk management in PWD procurement requires additional training.

Do you think proper risk management strategies are taken for the contracts in projects of PWD?
21 responses

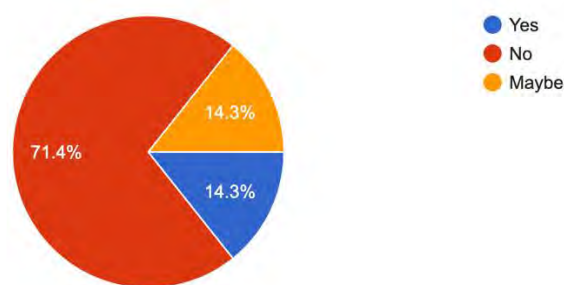


Figure 13: Risk Management Strategies in PWD

5.9 Managing Risk Through e-GP

Electronic Government Procurement is the major tool for effective risk management against CFCC. It is the online based procurement system where eligible tenderer from all over the country can participate without any fear in a certain tender. E-GP brings transparency and accountability in the procurement process. Vast majority of the respondents claims that e-GP can be a very effective way to combat against any kind of corruption or other related practices that was usually done in the time of manual tender.

5.10 Major Terms and Clauses for Risk Management in Tender Document



Figure 14: Major Terms and clauses for risk management in Tender Document

In procurement process Public Procurement Act-2006 and Public Procurement Rules-2008 brings a huge change in risk management strategies in public procurement. Along with PPA-2006 and PPR-2008 CPTU published standard tender document where strategic risk management tool with clauses and terms are used. Major terms and clause for strategic risk management in procurement process as practiced in PWD are as follows:

PWD public procurement does not appropriately incorporate robust risk management. Litigation history is taken into consideration during the appraisal process. Credit commitment is requested from the supplier in the format specified in the standard tender document published in CPTU in order to manage financial risk. For the purpose of reducing risk during the building phase, the contractor is required to provide performance security. In order to guarantee quality after the work is finished, retention money is deducted from each bill payment.

Risk Identification		Risk Assessment		Risk	Remarks	Risk Management
		Likelihood	Impact			
Properly Advertised or not	Yes	0	0	0	No risk	
	No	5	5	25	Corrupt practices may happen if not advertised properly.	Treat
Accessibility to bidders	Yes	0	0	0	No risk	
	No	5	8	40	1) Corrupt practices may encourage 2) Bidders may bid higher price resulting in cost overrun.	Treat
Insurance coverage	Yes	0	0	0	Risk event can be compensated.	
	No	5	7	35	Compensation	Transfer
Price Hike of Materials	Yes	7	9	72	Contractor slows the overall work and hence time overrun occurs	Treat
	No	0	0	0	Smooth Construction process	

Table 1 Risk Management in different sectors of PWD

Chapter 6

Conclusion & Recommendation

The report highlighted the major risks faced by the officials of PWD in procurement and construction phase and finding a proper way to improve the risk management. Some ways are discussed below:

1. Every Procuring Entity (PE) should give sufficient time for pre-tender meeting so that prospective tenderer can clear any kind of anomalies regarding the tender.
2. For effective risk management against CFCC all tenders should be done through e-GP.
3. Funding should be available during construction to overcome funding risk of project.
4. Proper auditing for mitigating financial risk against payment must be done.
5. PE must impose liquidated damage in case of failure of timely completion of project.
6. Insurance must be ensured as per PCC.

For improving the overall risk management some changes should be done and following key strategies should be initiated by the department.

1. Proper feasibility study must be done prior to initiate of a project.
2. Proper project management plan should be designed at the beginning of a project.
3. There should be Risk management plan in any project during implementation of the project and additional risk management fund should be allocated in every project, it may be in form of price escalation or risk management fund.
4. Finalization of designs including finished schedule before starting tendering process by conducting meeting between stakeholders. Documentation of the decisions made in those meeting, thus avoiding any future change. This will prevent dispute what the end result is, what materials to be used, what finished materials to be used.
5. Market should be analyzed properly to understand the price before doing estimation. This will minimize the risk of variation in future.
6. KPIs should be included in the in the contract and these should be monitored properly.
7. Contractors should be treated as an important stakeholder, not like enemy or an opposition.
8. There should be incentive for contractors who performs well.
9. All engineers engaging in project implementation should have enhanced project management and procurement related training.
10. Safety issues must be ensured as per direction and specification.
11. Risk register must be prepared for proper risk analysis prior to commencing a project.

It is expected that this report will help to improve the risk management strategies of Public Works Department. The study may have encouraged researchers to investigate risk management practices in other public organizations. Researchers who are working on the risk management strategies of private sectors can also compare public and private sector risk

management performances. Overall, this report will assist to increase the efficiency to overcome risks in any organization.

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