

**Report On
Improving Risk Management Strategy in Public Procurement and
Supply Chain of PWD**

By

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20382013**

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
September,2022

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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 “Improving Risk Management Strategy in Public Procurement and Supply Chain of PWD”

Dear Sir,

It is immense pleasure to present my project report. This report was prepared through analyzing the major risks 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,

Ashef Ainan Baksh
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Date: September 01, 2022.

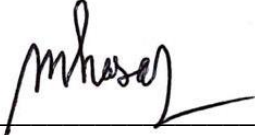
Non-Disclosure Agreement

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 Improving Risk Management Strategy in Public Procurement and Supply Chain 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. Mahmudul Hasan, Executive 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

1.1 Supply Chain and Risk Management

Supply chain is the network where every individual, resources, activities in an organization is connected. Supply chain includes the delivery of raw materials from supplier to manufacturer and the path of finished product to reach from manufacturer to the end user. It is critical path that consists risk in every steps. So risk in supply chain of the organization is the vital issue that to be solved both in the initial stage and also in the various phases of supply chain. An organisation cannot be flourished without managing its supply and other risks.

The process of detecting, evaluating, and managing supply chain risks for an organization is known as supply chain risk management (SCRM). An organization can function more effectively, cut expenses, and improve customer service by putting global supply chain risk management techniques into place.

The term "supply chain management" describes how businesses control the flow of their products, encompassing all the steps taken to turn the raw materials they use into the final items or services they sell. It comprises sourcing, procurement, conversion, and logistics management planning and management.

1.2 Risk in Construction Projects

The performance of construction projects is negatively impacted by the numerous flaws in risk management that make it ineffective as a project management function. The reductionist approach that has been used for many years to control risk in construction projects yields mediocre results and lowers the standard of project management. For instance, the majority of the time, risk is managed through the application of floats or contingencies, which are often clearly insufficient to cover the ramifications of risks that do occur during the project accomplishment because they are not determined based on a thorough analysis of the risks that may affect a specific project. The majority of the time, projects then finish late and over budget. A proper and methodical approach, but more significantly, knowledge and expertise of many kinds, are required to create an effective and efficient risk management. For instance, it involves knowledge of unforeseen occurrences that might happen while a project is being carried out, actions that function effectively or poorly when one of these events occurs, methods to assess risks or calculate the probability that they will occur, and so on. Due to the lack of proactive measures taken to mitigate the risks and uncertainty that every project provides, the lack of an effective project risk management function has significant negative effects on project stakeholder. For instance, failure to take precautions against project scope definition risk, environmental risks, or communication risks, among others, can result in delays, large cost increases, and breaches of contract, among other things.

1.3 Risk Management in Public Works Department (PWD)

Risk management in the utility sector is very limited and ineffective. The main reasons for this situation are the lack of expertise to implement and the loss of knowledge gained during the implementation of each project that may be useful to other projects. Knowledge is an important factor in implementing and improving risk management for construction projects, both from the client's and contractor's perspectives, according to research. To this end, this proposal aims to solve risk management issues in construction projects from a knowledge-based approach and system perspective. Therefore, an effort whose ultimate goal is to improve the knowledge-based risk management system to support risk management in construction projects for persons with disabilities and future projects for persons with disabilities. The aim is to provide a knowledge-based availability with the ability to support and learn from best practice-based risk management methodologies, the ability to propose improvements in risk management based on finding gaps during assessment, and the ability to learn from them. is. In-flight experience gained from construction projects.

1.4 Objective of the Report

- To identify the main reasons risk occurrence in construction projects of PWD.
- Development of risk management functions based on best practices.
- Improving risk management functions in Public Sectors like PWD.
- To offer a tool for assessing current risk management practices that can be modified to the circumstances of projects carried out by the Public Works Department.

Chapter 2 Background

2.1 Risk Management

Risk is a complicated concept (Wang et al, 2004), which is characterized as the likelihood that a negative occurrence may occur in the project and damage its goals (Baloi and Price, 2003) although not usually linked to adverse outcomes. Risk may also bring possibilities, and because most risks result in negative outcomes, people tend to exclusively think about the downside of risk (Baloi and Price, 2003;). Determining the hazards associated with a project and how to prioritize them is one of the most challenging tasks involved in risk management today (del managers are aware that effective risk management is crucial to successful project management (Baloi and Price, 2003). The process of detecting and assessing risk and using strategies to decrease it to a manageable level is known as risk management (Touhidi, 2011).

Therefore, identifying, assessing, and controlling the risk to the project's success is the primary goal of risk management. The following are the primary steps in the risk management process

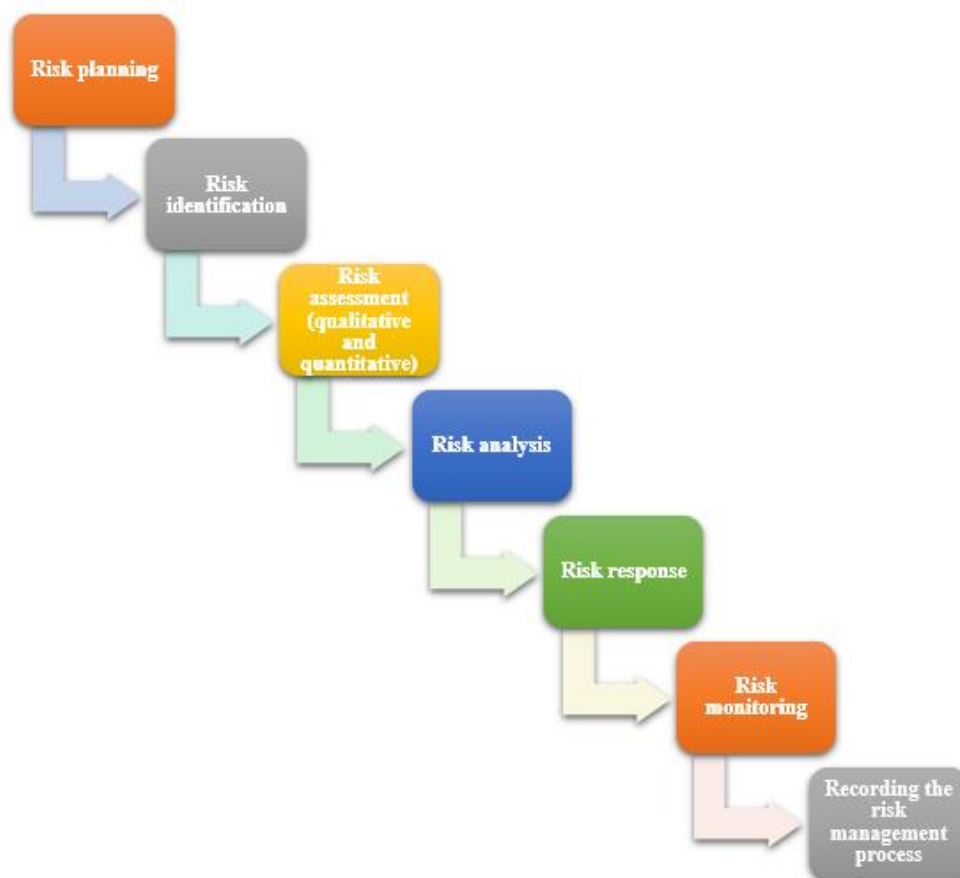


Figure 1 Process of Risk Management

2.2 Infrastructure Projects and Risk

There is a history of problems in significant infrastructure projects. Cost overruns, delays, unsuccessful procurement, or a lack of funding are all quite typical. For instance, the ultimate cost of the eagerly anticipated Eurotunnel between the United Kingdom and France was significantly greater than anticipated, while the Betuwe cargo railway connecting the Netherlands and Germany ended up costing twice as much as first projected, or €2.3 billion. These issues aren't just from the past either. For instance, the construction of the new airport terminal in Kuala Lumpur is now experiencing major cost overruns and delays as a result of repeated design modifications.

The majority of overruns are predictable and preventable. A large portion of the issues we see are the result of poor risk management that is proactive and competent. In the next five years, the direct value losses resulting from inadequate risk management for the pipeline of large-scale projects that exists today might surpass \$1.5 trillion, not to mention the loss in GDP growth and reputational and societal repercussions. Major infrastructure projects experience considerable under management of danger throughout the course of their entire life cycle and at almost every stage of the value chain. Poor risk assessment and risk allocation, for instance through agreements with the financiers and constructors early in the concept and design stage results in higher manifested risks and later shortfalls of private financing.

2.3 Risk Management Process

There are many advantages to identifying and monitoring project-related risks, including the following:

- Making previously hidden costs transparent allows for more effective resource planning.
- Improved project cost tracking and more precise return on investment projections
- Greater understanding of legal standards
- Improved physical injury and sickness prevention
- When changes or difficulties do occur, flexibility is preferable than panic. Steps of risk management process

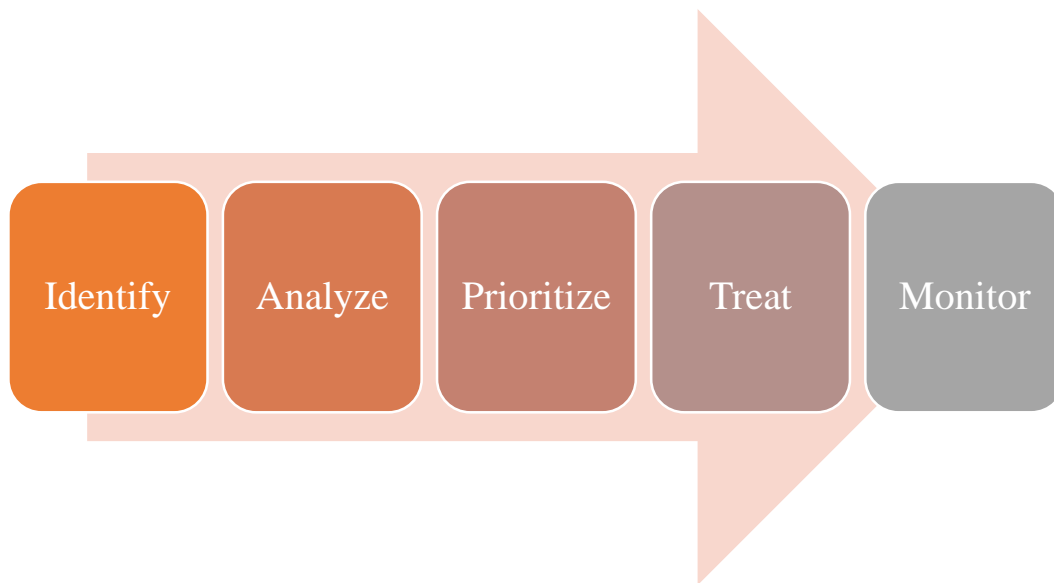


Figure 2 Process of Risk Management overview

Managing risk are identified through 4 (four) key steps cited by Banaitiene and Banaitis on 2012

1. Identification of Risk
2. Assessment of Risk
3. Mitigation of Risk
4. Monitoring of Risk

1. Identification of Risk:

Identification of Risk consists of determining the various types of hazards that arise on a certain project and this identification also describes the characteristics. (Ehsan et al, 2010).

2. Assessment of Risk:

Assessment of risk is the 2nd stage of managing risk in risk analysis procedure. This includes analysis of the information received on the potentiality of the risk. Here quantitative and qualitative both methods can be utilized to assess certain risk.

To calculate risk a humble formula is recurrently used

Risk = likelihood x Impact .
Probability of frequent happening is the likelihood. Impact means the negative/positive consequences that may be occurred for the risk. This is articulated on number between 0 to 1 where 0 means there is no chance and 1 means there is certainty. It is also calculated as percentage (certainty=100%).

3. Mitigation of Risk

For mitigation of risk four different strategies are suggested by Banaitiene and Banaitis on 2012

According to Chartered Institute of Procurement and Supply, 4 (Four) T's are classified for mitigation of risk strategies.

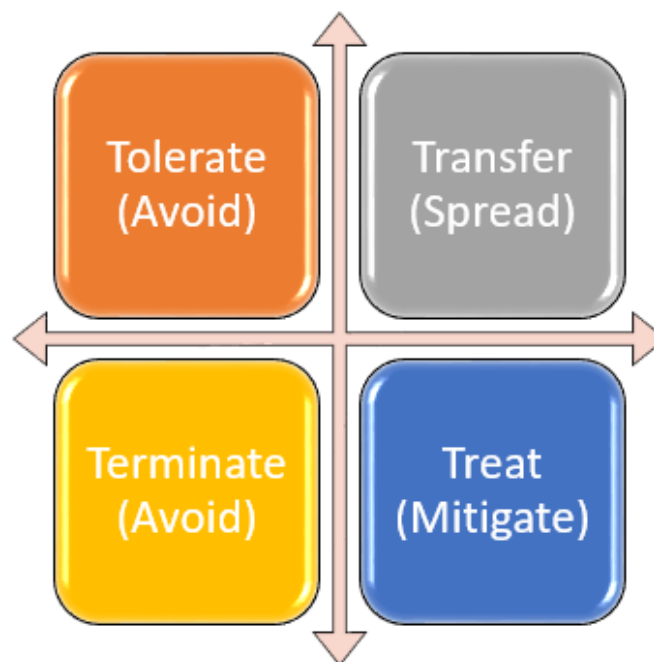


Figure 3 Risk Mitigation Process

4. Monitoring of Risk

When managing risk on construction projects, Ehsan et al. (2010) recommend that both avoidable and unavoidable risk be tracked and backup plans be in place. Predictive indicators should be used to assess risk as the project approaches a risky point. Contingency plans should be developed as alternative courses of action before the risk event occurs.

2.4 Risk Register

In risk management, a risk register is a record that is used to identify potential setbacks in a project. Prior to problems emerging, this method seeks to collectively detect, assess, and resolve risks. Risk management is frequently used in project-related situations, but it can also be useful in manufacturing and product launches. It can be used as a contingency plan for controlling future risk.

2.5 Most Economically Advantageous Tender

A method of evaluation known as the Most Economically Advantageous Tender (MEAT) can be utilized as the selection process, enabling the contractual party to award the contract based on factors other than only price.

The ‘alternative’ criteria which can be used in a MEAT assessment include:

- Quality.
- Price or cost using a cost-effectiveness approach.
- Technical merit.
- Aesthetic and functional characteristics.
- Accessibility.
- Social characteristics.
- Environmental characteristics.
- Innovative characteristics.
- After-sales service and technical assistance.
- Delivery conditions such as date, process and period.

Chapter 3 Methodology

The main method for generating findings for this report is questionnaire survey. A questionnaire is the set of questions given to participants of research project. It may be a component of a broader study. A questionnaire's objective is to collect information from a target audience. A set of questionnaires was prepared for receiving answers from different respondents who work in various offices of PWD. Questionnaire consists of numerous types of questions from the risk in preparation of tenders to the risk in contract management process. The respondents were requested to answer yes or no questions and also share their views to improve the risk in supply chain and procurement procedure of PWD.



Figure 4 Methodology

Chapter 4

Data Collection

In this chapter the data collection procedure is described. A questionnaire with open and close ended questions is prepared which has been administered among PWD's procurement officials in order to identify risk responses in procurement activities

4.1 Questionnaire design

Since this study focuses on analysing different approaches of risk management in PWD's procurement, questionnaire survey is undertaken for assessing procurement risk.

Improper circulation of tender is the first risk. In Open Tendering Method as well as other method wide circulation of tender is required. Without circulating of tender through newspaper, CPTU website can reduce the number of participations in the tender. So, there is risk in transparency.

In PWD and other government organization risk that can be identified is to provide proper time for pre-tender meeting. Pre-tender meeting is very important as the tenderer can clear different anomalies in the tender process. Most of the time adequate time is not given in tenders. So, a question for finding the time given by the procurement entity is attached in the questionnaire. For submission of tender proper time must be given. There is risk of corruption and collusive practice if proper time is not given for submission of the tender.

Risk of Corrupt, Fraudulent, coercive and collusive practices in the total procurement process must be identified. For this reason, yes or no questions are attached in the questionnaire to find if there is any kind of such practices in the procurement and supply chain process of PWD.

Most economically advantageous tenders are the main requirement for PE. If the tender is not economically feasible there is certain chance for cost overrun and time overrun in the contract management phase. So, questions regarding lowest evaluated tenders and most economically advantageous tenders are included in the questionnaire.

Insurance coverage is also major issue during contract management phases. For proper contract management and mitigating any risk in the supply chain phases of contract management stages insurance coverage is major issue. Any risk like death risk of the workers, raw materials supply disruptions, risk of losses of materials can be covered through insurance. So, a question is set to identify about the insurance coverage in contracts.

Major threat for managing a contract through proper supply chain of PWD is inadequate payment to the contractors. Timely payment ensures the risk mitigation of time overrun. If payment is not provided in due time contractor slows their construction works because of not having proper liquid money. So, it is a huge risk for a project and that should be identified.

Contactors poor performance is one of the reasons of delays and that should be identified. So, a question is set regarding that issue.

For time overrun there is provision of imposing liquidated damage to the contractors that can mitigate the risk of time and cost overrun. So, questions about liquidated damage is attached in the questionnaire.

For maintaining financial discipline auditing is very important in every project. So, question is set to gather information about proper auditing system of PWD.

In most of the cases proper risk analysis is not done and risk register is not prepared by the project manager of PWD. This can increase the possibility of risk occurrence. Risk register can lessen the impact if any kind of threat occurs during the construction phases. So, questions regarding proper risk analysis is also generated in this questionnaire.

There is also some questions about sharing the view of respondents for improving the risk management strategies in Public Works Department. Overall, the questions are set for finding the best answers to improve the risk management strategies in procurement and supply chain of PWD.

4.2 Selections of the individuals

PWD officials from Assistant Engineers to Executive Engineers who are directly involved in procurement and supply chain process of PWD are selected for answering the questionnaire.

Emphasis was given on the on-going development projects of PWD; especially those which are in the middle stage of their implementation. Additionally, some completed projects were considered for data collection.

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. Thirteen assistant engineers, five SDEs (Sub Divisional Engineer) and three EEs (Executive Engineers) of PWD who involved in different field divisions and were related to the whole procurement functions (i.e., from project starting to project hand over to the ministry) of their offices were the subjects of the questionnaire survey that was conducted on 21 officials. 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 procurement of PWD, the analysis and integration of the survey data that was gathered were integrated.

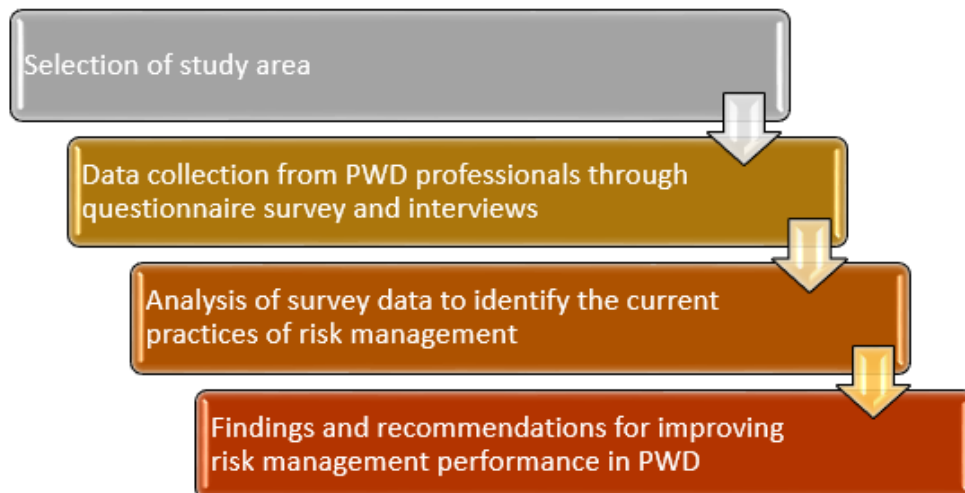


Figure 5 Data Collection Procedure

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

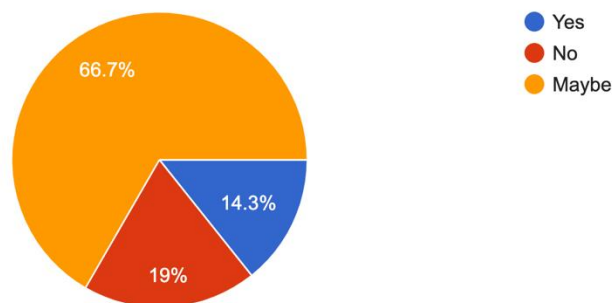


Figure 6 Pre-Bid Meetings

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 experiences.

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

21 responses

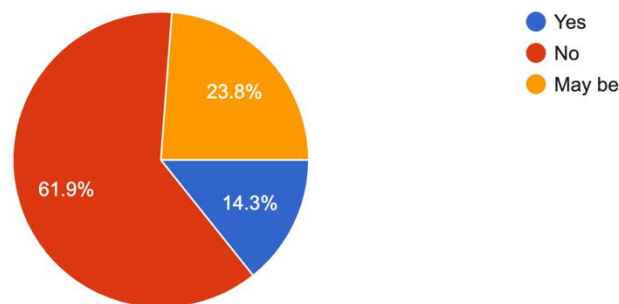


Figure 8 Corrupt Practices in PWD

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

21 responses

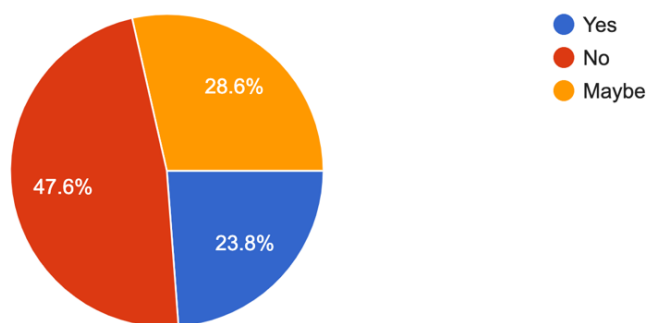


Figure 7 Fraudulent Practices in PWD

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

21 responses

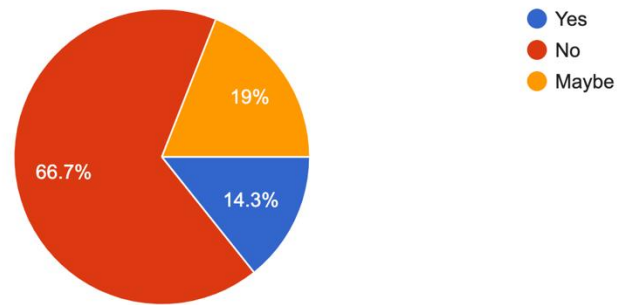


Figure 9 Collusive Practices in PWD

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

21 responses

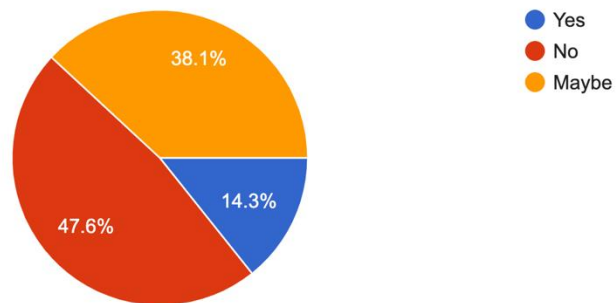


Figure 10 Coercive Practice in PWD

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

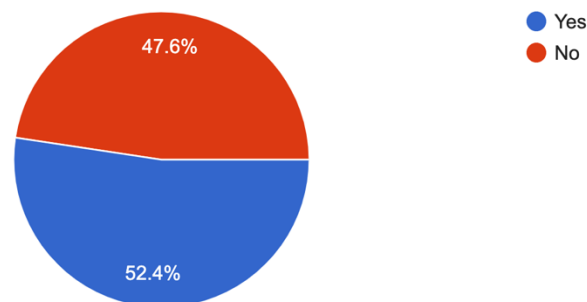


Figure 11 Insurance Coverage in Contracts of PWD

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 85 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

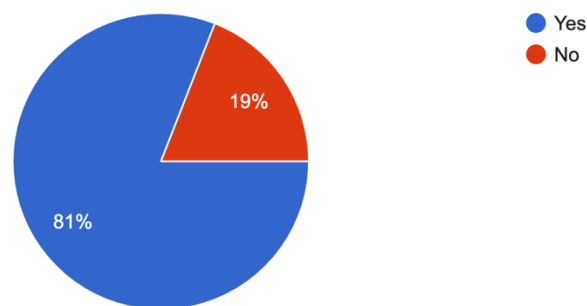


Figure 12 Imposing of Liquidated Damage on Default Contractors

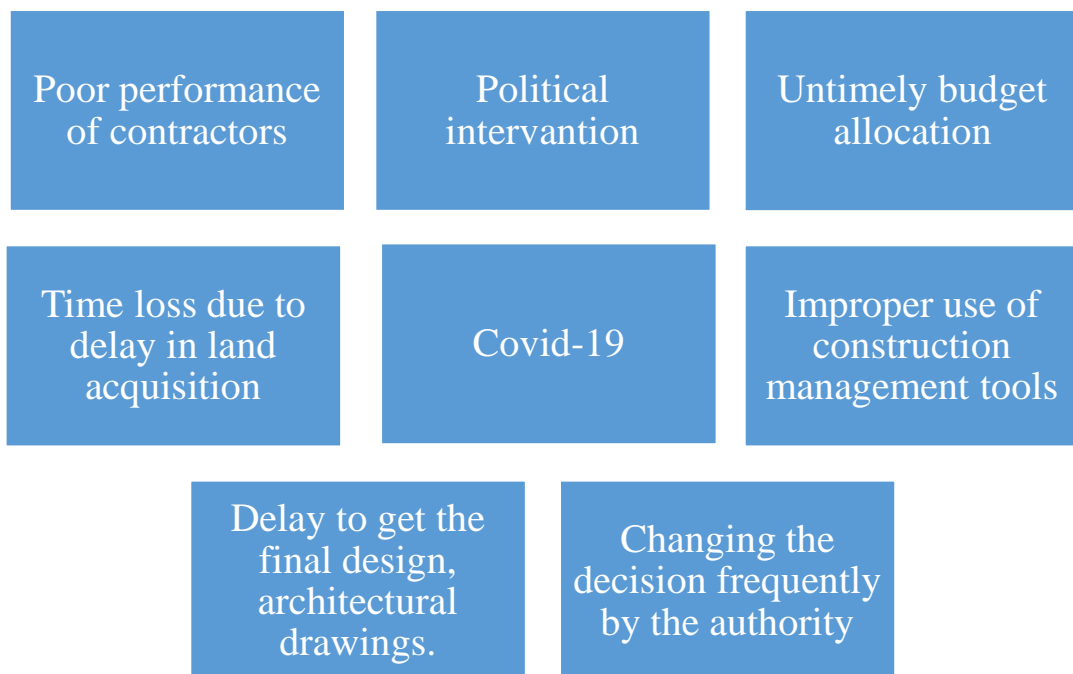


Figure 13 Major causes for the delay of Projects in recent years

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 arcgitectural or structural design as most of the designs are not finalised 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

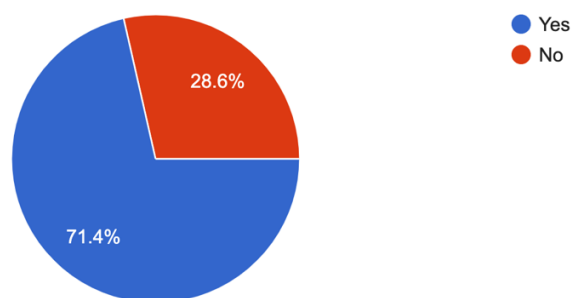


Figure 14 Risk Management Through Auditing

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

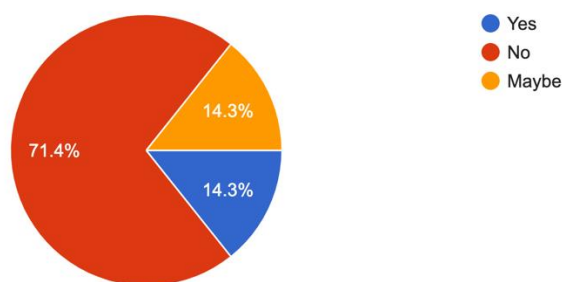


Figure 15 Risk Management Strategies in PWD

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

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

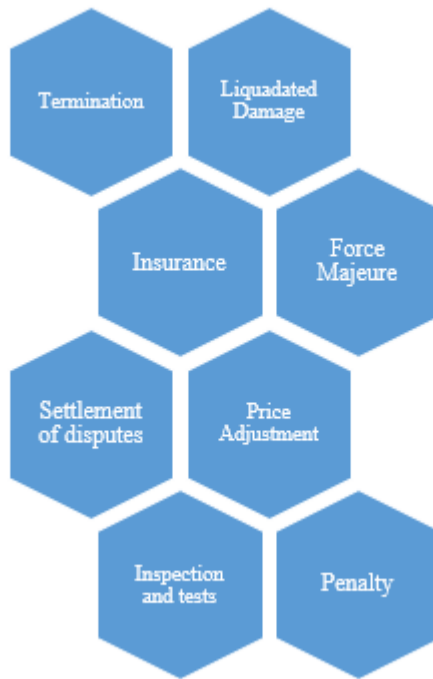


Figure 16 Major Terms and clauses for risk management in Tender Document

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. Finalisation 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 analysed properly to understand the price before doing estimation. This will minimise 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 implementstion 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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Appendix A.